TRADUZIONE

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Titolo: **"VACCINI AD ACIDI NUCLEICI"**

Titolare: **ModernaTX, Inc.**, con sede in 325 Binney Street Cambridge, MA 02142 / STATI UNITI

DESCRIZIONE

CAMPO DELL'INVENZIONE

L'invenzione riguarda i vaccini, in particolare i vaccini ad acidi nucleici (NAV). In particolare, l'invenzione riguarda vaccini a base di acido ribonucleico (RNA), *vale a dire.*, vaccini a mRNA.

CONTESTO DELL'INVENZIONE

La vaccinazione è un modo efficace per fornire protezione profilattica contro malattie infettive, incluse, a titolo esemplificativo, malattie virali, batteriche e/o parassitarie, come influenza, AIDS, infezione da virus dell'epatotisi, colera, malaria e tubercolosi e molte altre malattie. Ad esempio, le infezioni da influenza sono la settima causa di morte negli Stati Uniti con 200.000 ricoveri e 40.000 decessi osservati negli Stati Uniti all'anno e causano circa 3-5 milioni di ricoveri e tra circa 300.000 e 500.000 decessi in tutto il mondo all'anno. Milioni di persone ricevono ogni anno vaccini antinfluenzali per proteggerli dall'influenza stagionale. La vaccinazione può anche prevenire rapidamente la diffusione di una pandemia influenzale emergente.

Un vaccino tipico contiene un agente che assomiglia a una forma indebolita o morta dell'agente patogeno, che potrebbe essere un microrganismo, come batteri, virus, funghi, parassiti, o una o più tossine e/o una o più proteine, ad esempio, proteine di superficie (vale a

Ing. Ines Sangiacomo
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dire antigeni) di un tale microrganismo. L'antigene o l'agente nel vaccino può stimolare il sistema immunitario del corpo a riconoscere l'agente come un invasore estraneo, generare anticorpi contro di esso, distruggerlo e sviluppare una memoria dello stesso. La memoria indotta dal vaccino consente al sistema immunitario di agire rapidamente per proteggere il corpo da uno qualsiasi di questi agenti che incontrerà in seguito.

La produzione di vaccini utilizzata nella tecnica ad esempio, la produzione di vaccini antigenici, prevede diverse fasi, inclusa la generazione di antigeni, la purificazione e l'inattivazione degli antigeni e la formulazione del vaccino. In primo luogo, l'antigene viene generato attraverso la coltura di virus in linee cellulari, la crescita di batteri nei bioreattori o la produzione di proteine ricombinanti derivate da virus e batteri in colture cellulari, lieviti o batteri. Le proteine ricombinanti vengono quindi purificate e i virus e batteri vengono inattivati prima di essere formulati con adiuvanti in vaccini. È stata una sfida ridurre drasticamente i tempi e le spese associati alle attuali tecnologie nello sviluppo dei vaccini.

Un altro ostacolo allo sviluppo di nuovi vaccini è la costante evoluzione della maggior parte degli agenti infettivi, come virus e batteri. I virus spesso mutano le loro proteine di superficie per generare nuovi antigeni che possono aiutarli a scavalcare il sistema immunitario attivo che è stato immunizzato dai vaccini contenenti i virus. Al contrario, i batteri acquisiscono e mutano le proteine chiave per eludere la difesa dell'ospite e le applicazioni di antibiotici efficaci.

Ad esempio, i virus dell'influenza A, B e C sono gli agenti eziologici dell'influenza. L'emoagglutinina (HA), la principale glicoproteina del pericapside dei virus dell'influenza A e B, o il suo omologo, l'emoagglutinina-esterasi (HE) nel virus dell'influenza C, è il serbatoio naturale dei virus. La rapida evoluzione della proteina emoagglutinina (HA) del virus dell'influenza provoca l'emergere costante di nuovi ceppi, rendendo la risposta immunitaria adattativa dell'ospite solo parzialmente protettiva nei confronti di nuove infezioni. La sfida più

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grande per la terapia e la profilassi contro l'influenza e altre infezioni utilizzando i vaccini tradizionali è la limitazione della portata dei vaccini, fornendo protezione soltanto contro sottotipi strettamente correlati. Inoltre, la lunghezza odierna del processo di produzione inibisce qualsiasi reazione rapida allo sviluppo e alla produzione di un vaccino adattato in una situazione di pandemia.

WO 2013/143555 descrive il rilascio di HA-RNA complessato con liposomi F4 che contengono DOTMA/DOPE 1:1 Petsch et al. (2012) "Protective efficacy of in vitro synthesized, specific mRNA vaccines against influenza A virus infection", Nature Biotechnology, vol. 30, no. 12, pagine 1210-1216, e WO2012116810 descrive a mRNA HA. Nell'esempio 1 di WO 2012/116810, tutti gli mRNA sono stati complessati con protamina come vettore.

È di grande interesse sviluppare nuovi vaccini e nuovi approcci per combattere le malattie infettive e gli agenti infettivi.

SOMMARIO DELL'INVENZIONE

In base alla descrizione qui contenuta, la presente invenzione fornisce un vaccino ad acido nucleico, comprendente:

uno o più polinucleotidi di RNA messaggero (mRNA) aventi una cornice di lettura aperta codificante per almeno un polipeptide antigenico di agente infettivo, in cui l'agente infettivo è un ceppo di influenza A o di influenza B o combinazioni di essi,

in cui l'uno o più polinucleotidi di mRNA comprendono almeno una modificazione chimica, in cui l'almeno una modificazione chimica è scelta dal gruppo costituito da pseudouridina, N1-metilpseudouridina, 2-tiouridina, 4-tiouridina, 5-metilcitosina, 2-tio-1-metil-1-deaza-pseudouridina, 2-tio-1-metil-pseudouridina, 2-tio-5-aza-uridina, 2-tio-diidropseudouridina, 2-tio-diidrouridina, 2-tio-pseudouridina, 4-metossi-2-tio-pseudouridina, 4-metossi-pseudouridina, 4-tio-1-metil-pseudouridina, 4-tio-pseudouridina, 5-aza-uridina, diidropseudouridina, 5-metossiuridina, e 2'-O-metiluridina, e

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Consulente in P.I. n° USBM-041R

in cui l'uno o più polinucleotidi di mRNA sono formulati in una nanoparticella di lipide cationico avente un rapporto molare di 20-60% di lipide cationico, 0,5-15% di lipide modificato con PEG, 25-55% di sterolo e 5-25% di lipide non cationico.

In un ulteriore aspetto, la presente invenzione fornisce detto vaccino per l'uso come un agente terapeutico o profilattico.

In un ulteriore aspetto, la presente invenzione fornisce detto vaccino per l'uso in un metodo per prevenire o trattare un'infezione virale dell'influenza, il metodo comprendendo la somministrazione del vaccino a un soggetto.

La presente invenzione e alcune sue forme di realizzazione preferite sono illustrate nelle rivendicazioni allegate.

In alcune forme di realizzazione, la nanoparticella lipidica cationica comprende un rapporto molare di circa il 50% di lipide cationico, circa l'1,5% di lipide modificato con PEG, circa il 38,5% di colesterolo e circa il 10% di lipide non cationico. In alcune forme di realizzazione, la nanoparticella lipidica cationica comprende un rapporto molare di circa il 55% di lipide cationico, circa il 2,5% di lipide-PEG, circa il 32,5% di colesterolo e circa il 10% di lipide non cationico. In alcune forme di realizzazione, il lipide cationico è un lipide cationico ionizzabile e il lipide non cationico è un lipide neutro e lo sterolo è un colesterolo. In alcune forme di realizzazione, la nanoparticella lipidica cationica ha un rapporto molare di 50:38,5:10:1,5 di lipide cationico:colesterolo: PEG2000-DMG:DSPC.

In alcune forme di realizzazione, la nanoparticella lipidica cationica ha un diametro medio di 50-150 nm. In alcune forme di realizzazione, la nanoparticella lipidica cationica ha un diametro medio di 80-100 nm. In alcune forme di realizzazione, il vaccino include 1,5 mg/mL di polinucleotide di RNA e 35-45 mg/mL di lipidi. In alcune forme di realizzazione, il NAV include circa 2 mg/mL di polinucleotide di RNA e circa 40 mg/mL di lipidi.

In alcune forme di realizzazione, la cornice di lettura aperta è codone-ottimizzata. In

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alcune forme di realizzazione, l'uno o più polinucleotidi di RNA codificano un ulteriore polipeptide antigenico. In alcune forme di realizzazione, l'ulteriore polinucleotide di RNA comprende almeno una modificazione chimica e una cornice di lettura aperta codone-ottimizzata, detta cornice di lettura aperta codificando un polipeptide antigenico.

In alcune forme di realizzazione, l'uno o più polipeptide antigenico è scelto da quelle proteine elencate nelle Tabelle 6-16, Tabelle 29-30, o loro frammenti. In alcune forme di realizzazione, la cornice di lettura aperta dell'uno o più polinucleotidi di RNA e/o la cornice di lettura aperta del secondo polinucleotide di RNA ciascuno, indipendentemente, codifica per un polipeptide antigenico scelto dalle Tabelle 6-16, Tabelle 29-30, o loro frammenti. In alcune forme di realizzazione, ciascuna della cornice di lettura aperta dell'uno o più polinucleotidi di RNA è scelta da qualsiasi delle sequenze di RNA della Tabella 28, o suoi frammenti.

Nell'invenzione, il virus è un ceppo di Influenza A o Influenza B o loro combinazioni. In alcune forme di realizzazione, il ceppo di Influenza A o Influenza B è associato a uccelli, maiali, cavalli, cani, esseri umani o primati non umani. In alcune forme di realizzazione, il polipeptide antigenico codifica per una proteina emoagglutinina o un suo frammento. In alcune forme di realizzazione, la proteina emoagglutinina H1, H2, H3, H4, H5, H6, H7, H8, H9, H10, H11, H12, H13, H14, H15, H16, H17, H18 o un loro frammento. In alcune forme di realizzazione, la proteina emoagglutinina non comprende un dominio di testa (HA1). In alcune forme di realizzazione, la proteina emoagglutinina comprende una porzione del dominio di testa (HA1). In alcune forme di realizzazione, la proteina emoagglutinina non comprende un dominio citoplasmatico. In alcune forme di realizzazione, la proteina emoagglutinina comprende una porzione del dominio citoplasmatico. In alcune forme di realizzazione, la proteina emoagglutinina troncata. In alcune forme di realizzazione, la proteina emoagglutinina troncata comprende una porzione del dominio transmembrana. In alcune forme di realizzazione, la sequenza amminoacidica della proteina emoagglutinina o un suo frammento comprende almeno

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il 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98% o 99% di identità con qualsiasi delle sequenze amminoacidiche fornite nella Tabella 6-14. In alcune forme di realizzazione, il virus è scelto dal gruppo costituito da H1N1, H3N2, H7N9 e H10N8. In alcune forme di realizzazione, il polipeptide antigenico è scelto da quelle proteine elencate nelle Tabelle 6-14, o loro frammenti.

In alcune forme di realizzazione, il NAV è multivalente. In alcune forme di realizzazione, la cornice di lettura aperta dell'uno o più polinucleotidi di RNA codifica per almeno 2, 3, 4, 5, 6, 7, 8, 9 o 10 polipeptidi antigenici. In alcune forme di realizzazione, la cornice di lettura aperta dell'uno o più polinucleotidi di RNA codifica per almeno 10, 15, 20 o 50 polipeptidi antigenici. In alcune forme di realizzazione, la cornice di lettura aperta dell'uno o più polinucleotidi di RNA codifica 2-10, 10-15, 15-20, 20-50, 50-100 o 100-200 polipeptidi antigenici.

Nell'invenzione, la modificazione chimica è scelta dal gruppo costituito da pseudouridina, N1-metilpseudouridina, 2-tiouridina, 4'-tiouridina, 5-metilcitosina, 2-tio-1-metil-1-deaza-pseudouridina, 2-tio-1-metil-pseudouridina, 2-tio-5-aza-uridina, 2-tio-diidropseudouridina, 2-tio-diidrouridina, 2-tio-pseudouridina, 4-metossi-2-tio-pseudouridina, 4-metossi-pseudouridina, 4-tio-1-metil-pseudouridina, 4-tio-pseudouridina, 5-aza-uridina, Diidropseudouridina, 5-metossiuridina e 2'-O-metiluridina. In alcune forme di realizzazione, il polinucleotide di RNA include una seconda modificazione chimica in cui detta seconda modificazione chimica è scelta da una qualsiasi di quelle elencate nelle Tabelle 22 e 23.

In alcune forme di realizzazione, il polinucleotide di RNA comprende SEQ ID NO 2459-2621. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide avente almeno l'80% di identità di sequenza con SEQ ID NO 2459-2621. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide codificante per una sequenza amminoacidica avente almeno il 90% di identità di sequenza per

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SEQ ID NO 2254. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide codificante la sequenza amminoacidica di SEQ ID NO 2254. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide codificante per una sequenza amminoacidica avente almeno il 90% di identità di sequenza per SEQ ID NO 2259. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide codificante la sequenza amminoacidica di SEQ ID NO 2259. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide codificante per una sequenza amminoacidica avente almeno il 90% di identità di sequenza per SEQ ID NO 2192. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide codificante la sequenza amminoacidica di SEQ ID NO 2192. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide codificante per una sequenza amminoacidica avente almeno il 90% di identità di sequenza per SEQ ID NO 2200. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide codificante la sequenza amminoacidica di SEQ ID NO 2200. In alcune forme di realizzazione, il polinucleotide di RNA comprende SEQ ID NO 2046. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide avente un'identità di sequenza dell'80-98% con SEQ ID NO 2046. In alcune forme di realizzazione, il polinucleotide di RNA comprende SEQ ID NO 2119. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide avente un'identità di sequenza dell'80-98% con SEQ ID NO 2119. In alcune forme di realizzazione, il polinucleotide di RNA comprende SEQ ID NO 2054. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide avente un'identità di sequenza dell'80-98% con SEQ ID NO 2054. In alcune forme di realizzazione, il polinucleotide di RNA comprende SEQ ID NO 2127. In alcune forme di realizzazione, il polinucleotide di RNA comprende un polinucleotide avente un'identità di sequenza dell'80-98% con SEQ ID NO 2127.

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La descrizione fornisce anche il vaccino dell'invenzione per l'uso in un metodo per indurre una risposta immunitaria antigene-specifica in un soggetto comprendente la somministrazione dei vaccini dell'invenzione al soggetto in una quantità efficace per produrre una risposta immunitaria antigene-specifica. In alcune forme di realizzazione, la risposta immunitaria antigene-specifica comprende una risposta delle cellule T. In alcune forme di realizzazione, la risposta immunitaria antigene-specifica comprende una risposta delle cellule B. In alcune forme di realizzazione, il metodo per produrre una risposta immunitaria antigene-specifica prevede una singola somministrazione del vaccino. In alcune forme di realizzazione, il metodo comprende inoltre la somministrazione di una dose di richiamo del vaccino. In alcune forme di realizzazione, il vaccino viene somministrato al soggetto mediante iniezione intradermica o intramuscolare.

In alcune forme di realizzazione, la dose di richiamo del vaccino viene somministrata al soggetto il giorno ventuno. In alcune forme di realizzazione, al soggetto viene somministrato un dosaggio compreso tra 10 ug/kg e 400 ug/kg del vaccino. In alcune forme di realizzazione, nel vaccino somministrato al soggetto è incluso un dosaggio di 25 microgrammi del polinucleotide di RNA. In alcune forme di realizzazione, nel vaccino somministrato al soggetto è incluso un dosaggio di 100 microgrammi del polinucleotide di RNA. In alcune forme di realizzazione, nel vaccino somministrato al soggetto è incluso un dosaggio di 400 microgrammi del polinucleotide di RNA. In alcune forme di realizzazione, il polinucleotide di RNA si accumula a un livello 100 volte superiore nel linfonodo locale rispetto al linfonodo distale.

L'invenzione fornisce anche il vaccino dell'invenzione per l'uso in metodi per prevenire o trattare l'infezione virale dell'influenza comprendente la somministrazione a un soggetto del vaccino dell'invenzione. In alcune forme di realizzazione, la risposta immunitaria antigene-specifica comprende una risposta delle cellule T. In alcune forme di realizzazione, la risposta immunitaria antigene-specifica comprende una risposta delle cellule B. In alcune forme di

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realizzazione, il metodo per produrre una risposta immunitaria antigene-specifica prevede una singola somministrazione del vaccino. In alcune forme di realizzazione, il vaccino viene somministrato al soggetto mediante iniezione intradermica o intramuscolare.

Nell'invenzione, i polinucleotidi di NAV possono codificare uno o più polipeptidi di un ceppo di influenza come antigene. Tali antigeni includono, ma non sono limitati a, quegli antigeni codificati dai polinucleotidi elencati nelle Tabelle qui presentate. Nella tabella, il numero di accessione GenBank o il numero di accessione GI rappresenta la CDS completa o parziale dell'antigene codificato. I polinucleotidi di NAV possono comprendere una regione di una qualsiasi delle sequenze elencate nelle tabelle o l'intera regione codificante dell'mRNA elencato. Possono comprendere regioni ibride o chimeriche, o mimetici o varianti.

I dettagli delle varie forme di realizzazione dell'invenzione sono esposti nella descrizione di seguito. Altre caratteristiche, scopi e vantaggi dell'invenzione diverranno chiari dalla descrizione e dai disegni, e dalle rivendicazioni.

BREVE DESCRIZIONE DEI DISEGNI

Questi e altri scopi, caratteristiche e vantaggi risulteranno evidenti dalla seguente descrizione di forme di realizzazioni particolari dell'invenzione, come illustrato nei disegni allegati, in cui analoghi caratteri di riferimento si riferiscono alle stesse parti nelle diverse viste. I disegni non sono necessariamente in scala, essendo invece posto l'accento sull'illustrazione dei principi di varie forme di realizzazione dell'invenzione.

La Figura 1 è uno schema di un costrutto polinucleotidico. La Figura 1A è uno schema di un costrutto polinucleotidico insegnato nella Domanda di brevetto US co-pendente di proprietà comune 13/791,922 depositata il 9 marzo 2013 (US2013/0259924).

La Figura 1B è uno schema di un costrutto polinucleotidico lineare.

La Figura 2 è uno scema di una serie di polinucleotidi chimerici della presente invenzione.

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La Figura 3 è uno schema di una serie di polinucleotidi chimerici illustrante vari modelli di modificazioni posizionali e mostrante regioni analoghe a quelle regioni di un polinucleotide di mRNA.

La Figura 4 è uno schema di una serie di polinucleotidi chimerici illustrante vari modelli di modificazioni posizionali basate sulla Formula I.

La Figura 5 è uno schema di una serie di polinucleotidi chimerici illustrante vari modelli di modificazioni posizionali basate sulla Formula I e illustrante ulteriormente un terminale 3' bloccato o strutturato.

Le Figure 6A e 6B sono schemi di costrutti circolari della presente invenzione.

Le Figure 7A-7B sono schemi di costrutti circolari della presente invenzione.

Le Figure 8A-8B sono schemi di costrutti circolari della presente invenzione. La Figura 8A mostra un costrutto circolare comprendente almeno una regione sensore e una regione spaziatore. La Figura 8B mostra un costrutto circolare non codificante.

La Figura 9 è uno scema di un costrutto circolare non coficicante della presente invenzione.

La Figura 10 mostra i titoli di neutralizzazione di HA di un vaccino antinfluenzale a mRNA modificato chimicamente rispetto ai vaccini proteico e a mRNA non modificato.

La Figura 11 mostra i titoli di inibizione dell'emoagglutinina nei topi dopo vaccinazione con diverse dosi e formulazioni di mRNA codificante la proteina emoagglutinina del virus H1N1.

La Figura 12A-AD mostra la sopravvivenza percentuale dei topi dopo la vaccinazione e la provocazione con il virus dell'influenza A/PR/8/34. La Figura 12A mostra la sopravvivenza percentuale a 1 settimana dopo la provocazione. La Figura 12B mostra la sopravvivenza percentuale a 2 settimane dopo la provocazione. La Figura 12C mostra la sopravvivenza percentuale a 3 settimane dopo la provocazione. La Figura 12D mostra la sopravvivenza

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percentuale a 4 settimane dopo la provocazione.

La Figura 13 mostra i titoli medi di inibizione dell'emoglutinazione dei topi dopo la vaccinazione e la provocazione con il virus dell'influenza A/PR/8/34

Le Figure 14A-14C mostrano le risposte alle citochine IFNy delle cellule T CD4. La Figura 14A mostra la produzione di IFNγ dopo stimolazione di proteina/peptide H1. La Figura 14B mostra la produzione di IFNγ dopo stimolazione di proteina/peptide H7. La Figura 14C mostra la produzione di IFNγ dopo stimolazione con PMA+ionomicina.

Le Figure 15A-15D mostrano la produzione di IgG in seguito alla stimolazione con proteina/peptide H1 e H7.

La Figura 16 è un grafico che mostra i titoli di inibizione dell'emoagglutinina (HAI) rispetto a H10 dopo la somministrazione del vaccino MC3 con formulazione H10N8/N1-metil pseudouridina /C0 ai dosaggi indicati.

La Figura 17 è un grafico che mostra i titoli di inibizione dell'emoagglutinina (HAI) rispetto a H10 dopo la somministrazione del vaccino MC3 con formulazione H10N8/N1-metil pseudouridinaIC1 ai dosaggi indicati.

La Figura 18 è un grafico che confronta i titoli di inibizione dell'emoagglutinina (HAI) rispetto a H7 dopo la somministrazione di 10 μg/dose della formulazione H7N9/C0 rispetto alla formulazione H7N9/C1.

La Figura 19 è un grafico dei titoli medi di inibizione dell'emoagglutinina (HAI) in campioni di siero di macaco cinomolgo in vari punti temporali prima e dopo la somministrazione delle formulazioni e dei dosaggi indicati.

La Figura 20 è un grafico che mostra la carica virale di H7N9 in furetti sottoposti a provocazione al giorno 21 dopo aver ricevuto una singola immunizzazione.

Le Figure 21A-21D presentano la sopravvivenza dei topi e i titoli HAI nei topi sottoposti a provocazione con una dose letale dopo la somministrazione di una singola dose di

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NAV a mRNA codificante H7N9. La Figura 21A mostra la sopravvivenza al giorno 7 dopo la provocazione. La Figura 21B mostra la sopravvivenza al giorno 21 dopo la provocazione. La Figura 21C mostra la sopravvivenza al giorno 84 dopo la provocazione. La Figura 21D mostra i titoli HAI.

La Figura 22 mostra un allineamento di sequenze amminoacidiche di proteine emoagglutinina da ceppi di influenza A H7N9 rispetto a una sequenza consenso.

La Figura 23 mostra un allineamento di sequenze amminoacidiche di proteine emoagglutinina da ceppi di influenza A H10N8 rispetto a una sequenza consenso.

DESCRIZIONE DETTAGLIATA

È di grande interesse nei campi della terapia, della diagnostica, dei reagenti e per i saggi biologici essere in grado di progettare, sintetizzare e rilasciare un acido nucleico, ad esempio un acido ribonucleico (RNA), ad esempio un RNA messaggero (mRNA) codificante per un peptide o polipeptide di interesse all'interno di una cellula, sia esso in vitro, in vivo, in situ o ex vivo, così da ottenere esiti fisiologici benefici per la cellula, il tessuto o l'organo e, in definitiva, per un organismo. Un risultato benefico è quello di causare la traduzione intracellulare dell'acido nucleico e la produzione di almeno un peptide o polipeptide codificato di interesse.

Di particolare interesse è la capacità di progettare, sintetizzare e rilasciare un acido nucleico, ad esempio, un acido ribonucleico (RNA), ad esempio un RNA messaggero (mRNA), che codifica per un antigene, ad esempio, un antigene derivato da un microrganismo infettivo, a scopo di vaccinazione.

La presente invenzione è esposta nelle rivendicazioni allegate.

Sono descritte nel presente contesto composizioni (incluse composizioni farmaceutiche) e metodi per la selezione, la progettazione, la preparazione, la realizzazione, la formulazione, e/o l'uso di vaccini ad acido nucleico (NAV) dove almeno un componente del NAV è una molecola di acido nucleico, *ad esempio,* un polinucleotide. In particolare, sono descritte nel

Ing. Ines Sangiacomo
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presente contesto composizioni (incluse composizioni farmaceutiche) e metodi per la selezione, la progettazione, la preparazione, la realizzazione, la formulazione, e/o l'uso di vaccini ad acido nucleico (NAV) dove almeno un componente del NAV è un polinucleotide. In particolare, sono descritte nel presente contesto composizioni (incluse composizioni farmaceutiche) e metodi per la selezione, la progettazione, la preparazione, la realizzazione, la formulazione, e/o l'uso di vaccini ad acido nucleico (NAV) dove almeno un componente del NAV è un polinucleotide di RNA, *ad esempio*, un polinucleotide di mRNA che codifica un antigene, *ad esempio*, un antigene derivato da un microrganismo infettivo.

Sono anche forniti sistemi, processi, dispositivi e kit per la selezione, la progettazione e/o l'utilizzo dei NAV descritti nel presente contesto.

Secondo la presente invenzione, i polinucleotidi sono modificati in modo da evitare le carenze o fornire miglioramenti rispetto ad altre molecole di polinucleotidi della tecnica.

Sebbene siano stati fatti tentativi per produrre vaccini a RNA funzionali, inclusi vaccini a mRNA e vaccini a RNA autoreplicante, l'efficacia terapeutica di questi vaccini a RNA non è stata ancora completamente stabilita. Abbastanza sorprendentemente, gli inventori hanno scoperto una classe di formulazioni per il rilascio di vaccini a mRNA in vivo che dà come risultato risposte immunitarie significativamente migliorate e per molti aspetti sinergiche, inclusa una generazione potenziata di antigeni e produzione di anticorpi funzionali con capacità di neutralizzazione. Questi risultati si ottengono anche quando vengono somministrate dosi significativamente più basse dell'mRNA rispetto alle dosi di mRNA utilizzate in altre classi di formulazioni a base di lipidi. Le formulazioni dell'invenzione hanno dimostrato risposte immunitarie in vivo significative e inattese sufficienti a stabilire l'efficacia di vaccini a mRNA funzionali come agenti profilattici e terapeutici.

L'invenzione comporta, per alcuni aspetti, la sorprendente scoperta che le formulazioni di nanoparticelle lipidiche (LNP) migliorano significativamente l'efficacia dei vaccini a mRNA,

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inclusi i vaccini a mRNA modificati chimicamente. L'efficacia dei vaccini a mRNA formulati in LNP è stata esaminata in vivo utilizzando diversi antigeni virali distinti e in una varietà di modelli animali diversi. I risultati qui presentati dimostrano l'inaspettata efficacia superiore dei vaccini a mRNA formulati in LNP rispetto ad altri vaccini a mRNA formulati in altri vettori a base lipidica così come antigeni proteici.

Oltre a fornire una risposta immunitaria potenziata, le formulazioni dell'invenzione generano una risposta immunitaria più rapida a seguito di una singola dose di antigene rispetto ad altri vaccini a base di mRNA o proteine testati. Uno studio qui descritto ha coinvolto la vaccinazione endovenosa (EV), intramuscolare (IM) o intradermica (ID) di topi, seguita da provocazione con una dose letale di virus. Oltre a tutti gli animali vaccinati sopravvissuti alla dose letale, sono state osservate risposte immunitarie precoci significativamente più forti (attività antivirale tramite saggio di neutralizzazione del virus e inibizione di HA (HAI)) rispetto all'antigene proteico e ad altre formulazioni a base di lipidi (lipoplex). I dati dimostrano che già 1 settimana dopo la vaccinazione due gruppi di animali che hanno ricevuto una formulazione di mRNA-LNP (ID o IM) hanno mostrato titoli HAI superiori a 40, rispettivamente a 60 e 114. Un titolo HAI maggiore di 40 è ritenuto sufficiente per proteggere da una provocazione letale dell'influenza. La risposta rapida è stata inaspettata, in particolare se confrontata con la risposta osservata con i vaccini ad antigene proteico e a mRNA formulati in altri vettori lipidici (lipoplex), che a una settimana e anche a tre settimane dopo la vaccinazione hanno continuato a mostrare titoli HAI inefficaci minori di 40.

In ciascuno dei punti temporali successivi (3 settimane e 5 settimane), le formulazioni dell'invenzione hanno continuato a fornire risposte terapeutiche significativamente più forti rispetto all'antigene proteico. In effetti, la formulazione di mRNA-LNP sia chimicamente non modificata sia modificata somministrata per via EV aveva titoli HAI migliorati rispetto all'antigene proteico. Entro la settimana 3, tutti gli animali che hanno ricevuto una formulazione

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di mRNA-LNP mediante somministrazione IM o ID hanno mostrato un'attività HAI maggiore di 40, rispetto all'antigene proteico, che a una settimana e tre settimane ha continuato a mostrare titoli HAI minori di 40. Entro la settimana 5 una formulazione di mRNA-LNP somministrata per via ID aveva un'attività HAI sorprendente superiore a 10.000, in contrasto con il titolo HAI di circa 400 per l'antigene proteico in quel punto temporale. I topi che hanno ricevuto una formulazione di mRNA-LNP hanno anche mostrato un'attività neutralizzante di 79-250 (IM) e 250 (ID) mediante saggio di microneutralizzazione, rispetto all'antigene proteico, che aveva un'attività di neutralizzazione non rilevabile in quel punto temporale. Entro la settimana 5 dopo la vaccinazione, cinque dei sei gruppi formulati con LNP hanno mostrato un'elevata attività neutralizzante tra 789 e 24892. Al contrario, i topi vaccinati con l'antigene proteico hanno mostrato attività neutralizzante solo in 3 topi su 5 e solo tra 79 e 250.

Le formulazioni di mRNA-LNP dell'invenzione hanno anche prodotto risposte immunitarie quantitativamente e qualitativamente migliori rispetto ai vaccini a mRNA formulati in un diverso vettore lipidico (lipoplex). Alla settimana 5 il vaccino a mRNA-lipoplex ha prodotto titoli HAI di 197, rispetto a quelli raggiunti dalle formulazioni mRNA-LNP dell'invenzione (titoli HAI di 635-10.152). In tutti gli altri punti temporali e per tutti i vaccini a mRNA-lipoplex, nessuno dei titoli HAI ha raggiunto il livello critico superiore a 40. Inoltre, i vaccini a mRNA-lipoplex non hanno determinato alcuna attività neutralizzante rilevabile nell'attività di microneutralizzazione, anche fino a cinque settimane dopo la vaccinazione.

I dati qui descritti dimostrano che le formulazioni dell'invenzione hanno prodotto miglioramenti inaspettati significativi rispetto sia ai vaccini antigenici proteici esistenti sia alle formulazioni di vaccini a mRNA, includenti: recupero al 100% dalla provocazione letale dell'influenza con rapida insorgenza di titoli anticorpali protettivi dopo 1 settimana e titoli anticorpali elevati, *vale a dire,* 50 volte rispetto all'mRNA non modificato e 20 volte rispetto al vaccino proteico.

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Inoltre, le formulazioni di mRNA-LNP dell'invenzione erano superiori ad altre formulazioni lipidiche anche quando la dose di mRNA era significativamente inferiore rispetto alle altre formulazioni lipidiche. Ad esempio, i dati sopra descritti sono stati generati utilizzando 10 µg di mRNA nelle formulazioni di mRNA-LNP in contrasto con 80 µg di mRNA nella formulazione di mRNA-lipoplex.

Le formulazioni dell'invenzione hanno anche mostrato una forte efficacia in diversi modelli animali non roditori, inclusi primati non umani. È stata osservata una vaccinazione altamente efficace nei macachi cinomolghi e nei furetti. I macachi cinomolghi sono stati vaccinati con varie dosi di formulazioni di mRNA-LNP (50 pg/dose, 200 pg/dose, 400 pg/dose). Abbastanza sorprendentemente, le formulazioni di vaccino dell'invenzione a tutte le dosi misuravano titoli virali significativamente ridotti nei polmoni dei furetti quando esposti al virus solo 7 giorni dopo la singola vaccinazione. Aumenti statisticamente significativi del titolo anticorpale misurati mediante HAI e microneutralizzazione sono stati rilevati già 7 giorni dopo la vaccinazione e per l'intera durata dello studio (84 giorni). Una singola vaccinazione è stata in grado di eliminare tutti i virus nella maggior parte degli animali.

La LNP utilizzata negli studi qui descritti è stata utilizzata in precedenza per rilasciare siRNA in vari modelli animali così come nell'essere umano. Alla luce delle osservazioni fatte in associazione con il rilascio di siRNA delle formulazioni LNP, il fatto che la LNP sia utile nei vaccini è piuttosto sorprendente. È stato osservato che il rilascio terapeutico di siRNA formulato in LNP provoca una risposta infiammatoria indesiderabile associata a una risposta di IgM transitoria, portando tipicamente a una riduzione della produzione antigenica e a una risposta immunitaria compromessa. In contrasto con i risultati osservati con siRNA, qui viene dimostrato che le formulazioni di LNP-mRNA dell'invenzione generano livelli di IgG potenziati, sufficienti per metodi profilattici e terapeutici invece di risposte di IgM transitorie.

1. Vaccini ad acidi nucleici (NAV)

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I vaccini ad acidi nucleici (NAV) della presente descrizione comprendono uno o più polinucleotidi, *ad esempio*, costrutti polinucleotidici, che codificano uno o più antigeni di tipo selvatico o ingegnerizzati. Polinucleotidi esemplificativi, *ad esempio,* costrutti polinucleotidici, includono polinucleotidi di RNA codificanti antigeni, *ad esempio*, mRNA. Nella descrizione, i polinucleotidi della descrizione, *ad esempio*, polinucleotidi di RNA codificanti antigeni, possono includere almeno una modificazione chimica. I riferimenti nel presente contesto a "NAV dell'invenzione" si riferiscono a quelli esposti nelle rivendicazioni allegate.

Le composizioni di NAV dell'invenzione possono comprendere altri componenti inclusi, ma non limitati a, agenti di tollerizzazione o adiuvanti.

Agente o composizione di tollerizzazione

Laddove si verificano effetti collaterali mediati dall'autoimmunità, mRNA di tollerizzazione e/o come quelli insegnati ad esempio in USSN 61/892,556 depositata il 18 ottobre 2013, e PCT/US2014/61104 depositata il 17 ottobre 2014) vengono co-somministrati con il NAV per indurre tolleranza antigene-specifica.

Adiuvanti

Adiuvanti o immunopotenziatori possono anche essere somministrati con o in combinazione con uno o più NAV.

In una forma di realizzazione, un adiuvante agisce come co-segnale per attivare le cellule T e/o le cellule B e/o le cellule NK in merito all'esistenza di un'infezione.

I vantaggi degli adiuvanti includono il potenziamento dell'immunogenicità degli antigeni, la modificazione della natura della risposta immunitaria, la riduzione della quantità di antigene necessaria per un'immunizzazione efficace, la riduzione della frequenza delle immunizzazioni di richiamo necessarie e una migliore risposta immunitaria negli anziani e vaccinati immunocompromessi. Questi possono essere co-somministrati tramite qualsiasi via, ad esempio per via intramuscolare, sottocutanea, EV o intradermica.

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Coadiuvanti utili nella presente invenzione possono includere, ma non sono limitati a, naturali o sintetici. Possono essere organici o inorganici.

Gli adiuvanti possono essere scelti da una qualsiasi delle classi (1) sali minerali, ad esempio idrossido di alluminio e gel di fosfato di alluminio o calcio; (2) emulsioni incluse: emulsioni oleose e formulazioni a base di tensioattivi, ad esempio emulsione olio in acqua stabilizzata con detergente microfluidificato, saponina purificata, emulsione olio in acqua, emulsione acqua in olio stabilizzata; (3) adiuvanti particellari, ad esempio virosomi (veicoli liposomialiunilamellari che incorporano emoagglutinina influenzale), complesso strutturato di saponine e lipidi, polilattide co-glicolide (PLG); (4) derivati microbici; (5) immunomodulatori umani endogeni; e/o (6) veicoli inerti, come particelle d'oro; (7) coadiuvanti derivati da microrganismi; (8) composti tensioattivi; (9) carboidrati; o loro combinazioni.

Gli adiuvanti per i vaccini ad acidi nucleici a DNA (DNA) sono stati descritti, ad esempio, in Kobiyama, et al. Vaccines, 2013, 1(3), 278-292. Qualsiasi degli adiuvanti descritti da Kobiyama può essere utilizzato negli RNAV della presente invenzione.

Altri adiuvanti che possono essere utilizzati negli RNAV della presente invenzione includono uno qualsiasi di quelli elencati nel database web di adiuvanti per vaccini, Vaxjo; http://www.violinet.org/vaxjo/ e descritti ad esempio in Sayers, et al., J. Biomedicine and Biotechnology, volume 2012 (2012), ID articolo 831486, 13 pagine

La scelta di coadiuvanti appropriati risulterà evidente a un esperto del settore con competenza ordinaria. Adiuvanti specifici possono includere, senza limitazione, complesso liposoma cationico-DNA JVRS-100, adiuvante del vaccino idrossido di alluminio, adiuvante del vaccino fosfato di alluminio, adiuvante solfato di alluminio e potassio, alidrogel, ISCOM(s)™, adiuvante completo di Freund, adiuvante incompleto di Freund, adiuvante del vaccino CpG DNA, tossina del colera, subunità della tossina B del colera, liposomi, adiuvante del vaccino saponina, adiuvante DDA, adiuvanti a base di squalene, adiuvante della subunità B Etx,

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adiuvante del vaccino IL-12, adiuvante mutante del vaccino LTK63, adiuvante TiterMax Gold, adiuvante del vaccino Ribi, adiuvante Montanide ISA 720, adiuvante del vaccino P40 derivato da Corynebacterium, adiuvante MPL™, AS04, AS02, adiuvante del vaccino lipopolisaccaridico, adiuvante dipeptide muramile, CRL1005, adiuvante del vaccino Corynebacterium parvum ucciso, Montanide ISA 51, adiuvante del vaccino componente di Bordetellapertussis, adiuvante del vaccino liposomiale cationico, adiuvante del vaccino dipeptidicoadamantilammide, Arlacel A, adiuvante VSA-3, adiuvante del vaccino alluminio, adiuvante del vaccino poligenico, Adjumer™, glucano algale, Bay R1005, Theramide®, stearil tirosina, Specol, algammulina, Avridina®, gel di fosfato di calcio, proteina di fusione genica CTA1-DD, complesso DOC/allum, Gamma Inulina, adiuvante Gerbu, GM-CSF, GMDP, hIFN-gamma ricombinante/Interferone-g, Interleuchina-1β, Interleuchina-2, Interleuchina-7, peptide Sclavo, Reidragel LV, Reidragel HPA, Loxoribina, MF59, Liposomi MTP-PE, Murametide, Murapalmitina, D-Murapalmitina, NAGO, Vescicole tensioattive non ioniche, PMMA, Cocleati proteici, QS-21, SPT (formulazione antigenica), adiuvante del vaccino in nanoemulsione, AS03, adiuvante del vaccino Quil-A, adiuvante del vaccino RC529, adiuvante del vaccino LTR192G, tossina termolabile di E.coli, LT, adiuvante solfato di alluminio idrossifosfato amorfo, adiuvante del vaccino fosfato di calcio, adiuvante seppico incompleto Montanide, Imiquimod, Resiquimod, AF03, Flagellina, Poli(I:C), ISCOMATRIX®, adiuvante del vaccino Abisco-100, adiuvante del vaccino microparticelle di albumina-eparina, adiuvante del vaccino AS-2, adiuvante del vaccino B7-2, adiuvante del vaccino DHEA, Immunoliposomi contenenti anticorpi contro molecole costimolatorie, SAF-1, proteoliposomi Sendai, matrici lipidiche contenenti Sendai, treonilmuramil dipeptide (TMDP), adiuvante del vaccino particelle Ty, adiuvante del vaccino bupivacaina, adiuvante del vaccino DL-PGL (poliestere poli(DL-lattide-co-glicolide)), adiuvante del vaccino IL-15, adiuvante del vaccino LTK72, adiuvante del vaccino MPL-SE , mutante non tossico E112K della tossina del colera

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mCT-E112K e/o Matrix-S.

Altri adiuvanti che possono essere co-somministrati con i NAV dell'invenzione includono, ma non sono limitati a, interferoni, TNF-alfa, TNF-beta, chemochine come CCL21, eotassina, HMGB1, SA100-8alfa, GCSF, GMCSF, granulisina, lattoferrina, ovoalbumina, CD-40L, agonisti CD28, PD-1, PD1 solubile, L1 o L2, o interleuchine come IL-1, IL-2, IL-4, IL-6, IL-7, IL-10, IL-12, IL-13, IL-21, IL-23, IL-15, IL-17 e IL-18. Questi possono essere somministrati con il NAV sullo stesso polinucleotide codificato, ad esempio policistronico, o come mRNA separato che codifica per l'adiuvante e l'antigene.

Valenza

I NAV della presente invenzione possono variare nella loro valenza. La valenza si riferisce al numero di componenti antigenici nel NAV o polinucleotide (ad esempio, polinucleotide di RNA) o polipeptide di NAV. In alcune forme di realizzazione, i NAV sono monovalenti. In alcune forme di realizzazione, i NAV sono bivalenti. In alcune forme di realizzazione i NAV sono trivalenti. In alcune forme di realizzazione, i NAV sono multivalenti. I vaccini multivalenti possono comprendere 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,12,13,14, 15, 16, 17, 18, 19, 20 o più antigeni o frazioni antigeniche (ad esempio, peptidi antigenici, eccetera). I componenti antigenici dei NAV possono essere su un singolo polinucleotide o su polinucleotidi separati.

Sostanze terapeutiche

I NAV della presente invenzione possono essere utilizzati come agenti terapeutici o profilattici. Sono forniti per l'uso in medicina e/o per l'attivazione di cellule effettrici immunitarie, ad esempio, stimolare/trasfettare le PBMC ex vivo e reinfondere le cellule attivate. Ad esempio, un NAV qui descritto può essere somministrato a un soggetto, in cui i polinucleotidi vengono tradotti in vivo per produrre un antigene. Vengono fornite composizioni, metodi, kit e reagenti per la diagnosi, il trattamento o la prevenzione di una malattia o

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condizione negli esseri umani e in altri mammiferi. Gli agenti terapeutici attivi della descrizione includono NAV, cellule contenenti NAV o polipeptidi tradotti dai polinucleotidi contenuti in detti NAV.

Qui vengono forniti metodi per indurre la traduzione di un polipeptide (*ad esempio*, antigene o immunogeno) in una cellula, tessuto oppure organismo utilizzando i polinucleotidi dei NAV qui descritti. Tale traduzione può essere *in vivo, ex vivo, in coltura o in vitro*. La cellula, il tessuto o l'organismo viene messo a contatto con una quantità efficace di una composizione contenente un NAV che contiene un polinucleotide che ha almeno una regione traducibile codificante per il polipeptide di interesse (*ad esempio*, antigene o immunogeno).

Viene fornita una "quantità efficace" della composizione di NAV basata, almeno in parte, sul tessuto bersaglio, sul tipo di cellula bersaglio, sui mezzi di somministrazione, sulle caratteristiche fisiche del polinucleotide (ad esempio, dimensione ed estensione dei nucleosidi modificati) e altri componenti del NAV, e altri determinanti. In generale, una quantità efficace della composizione di NAV fornisce una risposta immunitaria indotta o potenziata in funzione della produzione di antigeni nella cellula, preferibilmente più efficiente di una composizione contenente un corrispondente polinucleotide non modificato codificante per lo stesso antigene. Una maggiore produzione di antigeni può essere dimostrata da un aumento della trasfezione cellulare (vale a dire, la percentuale di cellule trasfettate con il NAV), un aumento della traduzione proteica dal polinucleotide, una diminuzione della degradazione dell'acido nucleico (come dimostrato, ad esempio, dall'aumento della durata della traduzione proteica da un polinucleotide modificato), o alterata risposta immunitaria innata della cellula ospite.

Gli aspetti della descrizione riguardano metodi per indurre la traduzione in vivo di un antigene polipeptidico in un soggetto mammifero che ne abbia necessità. Al suo interno, una quantità efficace di una composizione di NAV contenente un polinucleotide che ha almeno una modificazione strutturale o chimica e una regione traducibile codificante per il polipeptide (*ad*

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esempio, antigene o immunogeno) viene somministrata al soggetto utilizzando i metodi di rilascio qui descritti. Il polinucleotide è fornito in una quantità e in altre condizioni tali affinché il polinucleotide sia tradotto nella cellula. La cellula in cui è localizzato il polinucleotide o il tessuto in cui è presente la cellula possono essere presi di mira con uno o più cicli di somministrazione di NAV.

In alcuni casi, i NAV somministrati comprendenti polinucleotidi dirigono la produzione di uno o più polipeptidi che forniscono un'attività correlata al sistema immunitario funzionale che è sostanzialmente assente nella cellula, nel tessuto o nell'organismo in cui il polipeptide è tradotto. Ad esempio, l'attività funzionale mancante può essere di natura enzimatica, strutturale o di regolazione genica. In casi correlati, i polinucleotidi somministrati dirigono la produzione di uno o più polipeptidi che aumentano (ad esempio, sinergicamente) un'attività funzionale correlata al sistema immunitario che è presente ma sostanzialmente carente nella cellula in cui il polipeptide è tradotto.

Inoltre, il polipeptide antagonizza, direttamente o indirettamente, l'attività di una frazione biologica presente nella, sulla superficie della, o secreta dalla cellula. Esempi di frazioni biologiche antagonizzate includono lipidi (ad esempio, colesterolo), una lipoproteina (ad esempio, lipoproteina a bassa densità), un acido nucleico, un carboidrato, una tossina proteica come le tossine shiga e tetaniche, o una tossina a piccole molecole come le tossine botuliniche, del colera e della difterite. Inoltre, la molecola biologica antagonizzata può essere una proteina endogena che mostra un'attività indesiderabile, come un'attività citotossica o citostatica.

Le proteine descritte nel presente contesto possono essere ingegnerizzate per la localizzazione all'interno della cellula, potenzialmente all'interno di un compartimento specifico come il citoplasma o il nucleo, o sono ingegnerizzate per la secrezione dalla cellula o la traslocazione nella membrana plasmatica della cellula.

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In alcuni casi, i polinucleotidi dei NAV e i loro polipeptidi codificati in conformità con la presente descrizione possono essere utilizzati per il trattamento di una qualsiasi di una varietà di malattie, disturbi e/o condizioni, incluse ma non limitate alle infezioni virali (*ad esempio*, influenza, HIV, HCV, RSV), infezioni parassitarie o infezioni batteriche.

Il soggetto a cui può essere somministrato l'agente terapeutico soffre o può essere a rischio di sviluppare una malattia, un disturbo o una condizione deleteria. Vengono forniti metodi per identificare, diagnosticare e classificare i soggetti su queste basi, che possono includere diagnosi clinica, livelli di biomarcatori, studi di associazione sull'intero genoma (GWAS) e altri metodi noti nel settore.

Gli agenti possono essere somministrati simultaneamente, *ad esempio*, in una dose unitaria combinata (*ad esempio*, fornendo il rilascio simultaneo di entrambi gli agenti). Gli agenti possono anche essere somministrati a un intervallo di tempo specifico, ad esempio, ma non limitato a, un intervallo di minuti, ore, giorni o settimane. In generale, gli agenti possono essere contemporaneamente biodisponibili, *ad esempio*, rilevabili, nel soggetto. In alcuni casi, gli agenti possono essere somministrati essenzialmente simultaneamente, ad esempio due dosi unitarie somministrate contemporaneamente, o una dose unitaria combinata dei due agenti. In altri casi, gli agenti possono essere somministrati in dosaggi unitari separati. Gli agenti possono essere somministrati in qualsiasi ordine o come una o più preparazioni che includono due o più agenti. In un caso preferito, almeno una somministrazione di uno degli agenti, *ad esempio*, il primo agente, può essere fatto entro pochi minuti, una, due, tre o quattro ore, o anche entro uno o due giorni dall'altro agente, ad esempio, il secondo agente. In alcuni casi, le combinazioni possono ottenere risultati sinergici, *ad esempio*, maggiori dei risultati additivi, ad esempio, almeno il 25, 50, 75, 100, 200, 300, 400 o 500% in più rispetto ai risultati additivi.

Modulazione della risposta immunitaria

Attivazione della risposta immunitaria

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Secondo la presente descrizione, i NAV comprendenti i polinucleotidi qui descritti, ad esempio comprendenti polinucleotidi di RNA, possono fungere da singola composizione come vaccino. Come qui utilizzato, un "vaccino" si riferisce a una composizione, ad esempio una sostanza o un preparato che stimola, induce, provoca o migliora l'immunità in un organismo, *ad esempio*, un organismo animale, ad esempio un organismo di mammifero (*ad esempio*, un essere umano). Preferibilmente, un vaccino fornisce immunità contro una o più malattie o disturbi nell'organismo, inclusa l'immunità profilattica e/o terapeutica. Vaccini esemplificativi includono uno o più agenti che assomigliano a un agente infettivo, *ad esempio,* un microrganismo patogeno e possono essere costituiti, *ad esempio,* da forme vive, attenuate, modificate, indebolite o uccise di microrganismi patogeni, o antigeni da essi derivati, incluse combinazioni di componenti antigenici. In casi esemplificativi, un vaccino stimola, induce, provoca o migliora l'immunità in un organismo o provoca o imita l'infezione nell'organismo senza indurre alcuna malattia o disturbo. Un vaccino introduce un antigene nei tessuti, nello spazio extracellulare o nelle cellule di un soggetto e provoca una risposta immunitaria, proteggendo così il soggetto da una particolare malattia o infezione da agenti patogeni. I polinucleotidi della presente descrizione possono codificare un antigene e quando i polinucleotidi sono espressi nelle cellule, si ottiene una risposta immunitaria desiderata.

I NAV possono essere somministrati a scopo profilattico o terapeutico come parte di uno schema di immunizzazione attiva a soggetti sani o all'inizio dell'infezione durante la fase di incubazione o durante l'infezione attiva dopo l'insorgenza dei sintomi.

I NAV della presente descrizione possono anche essere somministrati come trattamento di seconda linea dopo che i trattamenti standard di prima linea come antibiotici e antivirali non sono riusciti a indurre l'immunità passiva. A questo proposito, i NAV della presente invenzione sono utili in contesti in cui si è sviluppata resistenza ai trattamenti di prima linea e la malattia persiste e induce malattie croniche.

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L'uso dell'RNA in o come vaccino supera gli svantaggi della vaccinazione genetica convenzionale che prevede l'incorporazione del DNA nelle cellule in termini di sicurezza, fattibilità, applicabilità ed efficacia per generare risposte immunitarie. Le molecole di RNA sono considerate significativamente più sicure dei vaccini a DNA, poiché gli RNA si degradano più facilmente. Vengono eliminati rapidamente dall'organismo e non possono integrarsi nel genoma e influenzare l'espressione genica della cellula in modo incontrollabile. È anche meno probabile che i vaccini a RNA causino gravi effetti collaterali come la generazione di malattie autoimmuni o anticorpi anti-DNA (Bringmann A. et al., Journal of Biomedicine and Biotechnology (2010), volume 2010, articolo ID623687). La trasfezione con RNA richiede solo l'inserimento nel citoplasma della cellula, che è più facile da ottenere che nel nucleo. Tuttavia, l'RNA è suscettibile alla degradazione dell'RNasi e ad altre decomposizioni naturali nel citoplasma delle cellule.

Vari tentativi per aumentare la stabilità e la durata di conservazione dei vaccini a RNA. US 2005/0032730 di Von DerMulbe et al. descrive il miglioramento della stabilità delle composizioni di vaccino a mRNA aumentando il contenuto di G(guanosina)/C(citosina) delle molecole di mRNA. US 5580859 di Felgner et al. insegna a incorporare sequenze polinucleotidiche che codificano per proteine regolatrici che si legano a e regolano le stabilità dell'mRNA. Pur non desiderando essere vincolati dalla teoria, si ritiene che i vaccini polinucleotidici (NAV) dell'invenzione daranno come risultato una migliore stabilità ed efficacia terapeutica dovute almeno in parte alla specificità, purezza e selettività della progettazione dei costrutti.

Inoltre, determinati nucleosidi modificati, o loro combinazioni, quando introdotti nei polinucleotidi dei NAV dell'invenzione attiveranno la risposta immunitaria innata. Tali molecole attivanti sono utili come adiuvanti quando combinate con polipeptidi e/o altri vaccini. In determinati casi, le molecole attivanti contengono una regione traducibile che codifica per

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una sequenza polipeptidica utile come vaccino, fornendo così la capacità di essere un autoadiuvante.

In un caso, i polinucleotidi dei NAV della presente descrizione possono essere usati nella prevenzione, nel trattamento e nella diagnosi di malattie e disturbi fisici causati da agenti infettivi. Il polinucleotide della presente descrizione può codificare almeno un polipeptide di interesse (antigene) e può essere fornito a un individuo per stimolare il sistema immunitario a proteggersi dagli agenti patogeni. A titolo di esempio non limitativo, l'attività biologica e/o l'effetto di un antigene o di un agente infettivo possono essere inibiti e/o aboliti fornendo uno o più polinucleotidi che hanno la capacità di legarsi a e neutralizzare l'antigene e/o l'agente infettivo.

A titolo di esempio non limitativo, i polinucleotidi che codificano per un immunogeno possono essere rilasciati nelle cellule per attivare molteplici vie di risposta innata (si veda la pubblicazione internazionale n. WO2012006377 e la pubblicazione di brevetto U.S. n. US20130177639). Come altro esempio non limitativo, i polinucleotidi dei NAV della presente descrizione che codificano per un immunogeno possono essere rilasciati in un vertebrato in una quantità di dose sufficientemente grande da essere immunogeni per il vertebrato (si vedano la pubblicazione internazionale n. WO2012006372 e WO2012006369 e la pubblicazione US n. US20130149375 e US20130177640).

I NAV della presente invenzione possono essere utilizzati in vari contesti a seconda della prevalenza dell'infezione o del grado o livello di necessità medica non soddisfatta. I NAV della presente invenzione possono essere utilizzati per trattare e/o prevenire l'infezione influenzale, vale a dire malattie e condizioni correlate all'infezione da virus influenzale (stagionale e pandemica).

I sintomi dell'infezione influenzale includono tosse secca, febbre, brividi, mialgie che progrediscono verso insufficienza respiratoria e rischio di infezioni batteriche secondarie (ad

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esempio, MRSA). L'influenza stagionale è ubiquitaria ed è costituita da tre ceppi principali (A [H1N1], A [H3N2] e B), che sono coperti dal vaccino annuale. L'influenza pandemica si verifica perché l'esclusiva capacità di riassortimento dei virus consente lo spostamento antigenico e il trasferimento tra ceppi di influenza aviaria e suina. Una preoccupazione emergente nel sud-est asiatico è il potenziale pandemico di diversi nuovi ceppi. Tali focolai pandemici hanno un alto tasso di mortalità con pochi trattamenti disponibili. Gli antivirali forniscono sollievo solo sintomatico e devono essere somministrati nelle prime 48 ore.

I NAV della presente invenzione hanno proprietà superiori in quanto producono titoli anticorpali molto più grandi, producono risposte precoci rispetto agli antivirali disponibili in commercio e possono essere somministrati dopo il periodo critico di 48 ore pur mantenendo l'efficacia.

Pur non volendo essere vincolati dalla teoria, gli inventori ipotizzano che i NAV dell'invenzione, come polinucleotidi di mRNA, siano progettati meglio per produrre la conformazione proteica appropriata sulla traduzione poiché i NAV cooptano il meccanismo cellulare naturale. A differenza dei vaccini tradizionali che sono prodotti ex vivo e possono innescare risposte cellulari indesiderate, i NAV vengono presentati al sistema cellulare in modo più nativo. Agli effetti superiori possono aggiungersi anche le formulazioni utilizzate che non possono servire né a schermare né a trafficare i NAV.

Secondo la presente invenzione, i NAV rappresentano un vaccino attivo su misura che non solo può prevenire l'infezione ma può limitare la trasmissione dell'influenza.

In alcuni casi, i NAV possono essere utilizzati per prevenire l'influenza pandemica reagendo ai nuovi ceppi emergenti con il processo di produzione del vaccino molto rapido basato sul NAV. In alcune forme di realizzazione, un nuovo NAV per il trattamento o la prevenzione profilattica di focolai influenzali, inclusi i ceppi emergenti (ad esempio, H10N8), può essere prodotto in meno di sei settimane, dal momento dell'identificazione dell'antigene al

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vaccino disponibile.

In alcuni casi, una singola iniezione di un singolo antigene che codifica per il polinucleotide di NAV può fornire protezione per un'intera stagione influenzale.

I polinucleotidi dei NAV dell'invenzione non sono RNA autoreplicanti. Gli RNA autoreplicanti sono stati descritti, ad esempio, nella pubblicazione US n. US20110300205 e pubblicazione internazionale n. WO2011005799 e WO2013055905.

In una forma di realizzazione, i polinucleotidi dei NAV dell'invenzione possono codificare peptidi anfipatici e/o anfipatici immunogenici.

In una forma di realizzazione, una formulazione dei polinucleotidi dei NAV dell'invenzione può inoltre comprendere un peptide anfipatico e/o anfipatico immunogenico. A titolo di esempio non limitativo, i polinucleotidi comprendenti un peptide anfipatico e/o anfipatico immunogenico possono essere formulati come descritto nella pubblicazione US n. US20110250237 e pubblicazione internazionale nn. WO2010009277 e WO2010009065.

In una forma di realizzazione, i polinucleotidi dei NAV dell'invenzione possono essere immunostimolanti. A titolo di esempio non limitativo, i polinucleotidi possono codificare in tutto o in parte il genoma di un virus a RNA a filamento senso positivo o negativo (si vedano la pubblicazione internazionale n. WO2012092569 e la pubblicazione US n. US20120177701). In un altro esempio non limitativo, i polinucleotidi immunostimolatori della presente invenzione possono essere formulati con un eccipiente per la somministrazione come qui descritto e/o noto nella tecnica (si veda la pubblicazione internazionale n. WO2012068295 e la pubblicazione US n. US20120213812). I polinucleotidi possono inoltre comprendere una regione di sequenza codificante per una citochina che promuove la risposta immunitaria, come una monochina, linfochina, interleuchina o chemochina, come IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-12, INF-α, INF-γ, GM-CFS, LT-a o fattori di crescita come hGH.

In una forma di realizzazione, la risposta del vaccino formulato mediante i metodi qui

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descritti può essere potenziata mediante l'aggiunta di vari composti per indurre l'effetto terapeutico. A titolo di esempio non limitativo, la formulazione di vaccino può includere un peptide legante MHC II o un peptide avente una sequenza simile a un peptide legante MHC II (si vedano le pubblicazioni internazionali nn. WO2012027365,WO2011031298 e la pubblicazione U.S. n. US20120070493, US20110110965). Come altro esempio, le formulazioni di vaccino possono comprendere composti nicotinici modificati che possono generare una risposta anticorpale al residuo della nicotina in un soggetto (si veda la pubblicazione internazionale n. WO2012061717 e la pubblicazione U.S. n. US20120114677).

In una forma di realizzazione, la quantità efficace dei polinucleotidi dei NAV dell'invenzione fornita a una cellula, un tessuto o un soggetto può essere sufficiente per la profilassi immunitaria.

In un caso, i polinucleotidi dei NAV dell'invenzione possono essere somministrati con altri composti profilattici o terapeutici. A titolo di esempio non limitativo, il composto profilattico o terapeutico può essere un adiuvante o un richiamo. Come usato nel presente contesto, quando si fa riferimento a una composizione profilattica, come un vaccino, il termine "richiamo" si riferisce a una somministrazione aggiuntiva della composizione profilattica. Un richiamo (o vaccino di richiamo/booster) può essere somministrato dopo una precedente somministrazione della composizione profilattica. Il tempo di somministrazione tra la somministrazione iniziale della composizione profilattica e il richiamo può essere, ma non è limitato a, 1 minuto, 2 minuti, 3 minuti, 4 minuti, 5 minuti, 6 minuti, 7 minuti, 8 minuti, 9 minuti, 10 minuti, 15 minuti, 20 minuti 35 minuti, 40 minuti, 45 minuti, 50 minuti, 55 minuti, 1 ora, 2 ore, 3 ore, 4 ore, 5 ore, 6 ore, 7 ore, 8 ore, 9 ore, 10 ore, 11 ore, 12 ore, 13 ore, 14 ore, 15 ore, 16 ore, 17 ore, 18 ore, 19 ore, 20 ore, 21 ore, 22 ore, 23 ore, 1 giorno, 36 ore, 2 giorni, 3 giorni, 4 giorni, 5 giorni, 6 giorni, 1 settimana, 10 giorni, 2 settimane, 3 settimane, 1 mese, 2 mesi, 3 mesi, 4 mesi, 5 mesi, 6 mesi, 7 mesi, 8 mesi, 9 mesi, 10 mesi, 11 mesi, 1 anno, 18 mesi,

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2 anni, 3 anni, 4 anni, 5 anni, 6 anni, 7 anni, 8 anni, 9 anni, 10 anni, 11 anni, 12 anni, 13 anni, 14 anni, 15 anni, 16 anni, 17 anni, 18 anni, 19 anni, 20 anni, 25 anni, 30 anni, 35 anni, 40 anni, 45 anni, 50 anni, 55 anni, 60 anni, 65 anni, 70 anni, 75 anni, 80 anni, 85 anni, 90 anni, 95 anni o più di 99 anni.

In un caso, i polinucleotidi dei NAV dell'invenzione possono essere somministrati per via nasale in modo simile alla somministrazione di vaccini vivi. In un altro aspetto, il polinucleotide può essere somministrato per via intramuscolare o intradermica in modo simile alla somministrazione di vaccini inattivati noti nella tecnica.

In un caso, i NAV dell'invenzione possono essere utilizzati per proteggere da e/o prevenire la trasmissione di una minaccia emergente o ingegnerizzata che può essere nota o sconosciuta.

In un'altra forma di realizzazione, i NAV possono essere formulati con i metodi qui descritti. In un aspetto, la formulazione può comprendere un NAV o un polinucleotide che può avere un effetto terapeutico e/o profilattico su più di una malattia, disturbo o condizione.

Inoltre, gli anticorpi NAV della presente invenzione possono essere utilizzati per la ricerca in molte applicazioni, come, ma non solo, l'identificazione e la localizzazione di proteine intracellulari ed extracellulari, l'interazione proteica, le vie di segnalazione e la biologia cellulare.

In un altro caso, il NAV può essere utilizzato per ridurre il rischio o inibire l'infezione da virus influenzali come, ma non solo, l'infezione altamente patogena dal virus dell'influenza aviaria (come, ma non limitato a, il sottotipo H5N1) e l'infezione da virus influenzali umani (come, ma non limitato a, il sottotipo H1N1 e il sottotipo H3N2). Il polinucleotide qui descritto che può codificare una qualsiasi delle sequenze proteiche descritte nel brevetto U.S. n. 8470771, può essere utilizzato nel trattamento o per ridurre il rischio di un'infezione influenzale.

In un caso, il NAV può essere utilizzato come vaccino e può inoltre comprendere un

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adiuvante che può consentire al vaccino di stimolare una risposta immunitaria più elevata. A titolo di esempio non limitativo, l'adiuvante potrebbe essere un'emulsione olio in acqua submicronica che può stimolare una risposta immunitaria più elevata nelle popolazioni pediatriche umane (si vedano ad esempio i vaccini con adiuvanti descritti nella pubblicazione di brevetto U.S. n. US20120027813 e nel brevetto U.S. n. US8506966).

II. Agenti infettivi e antigeni

I NAV della presente invenzione possono essere utilizzati per proteggere, trattare o curare infezioni derivanti dal contatto con un agente infettivo. Nell'invenzione, l'agente infettivo è un ceppo di influenza A o influenza B o loro combinazioni.

A. Gestione dell'infezione

Combinazioni di antibiotici

In un caso, i NAV della presente invenzione, ad esempio, i NAV comprendenti uno o più polinucleotidi codificanti antigeni della presente descrizione possono essere somministrati in combinazione con uno o più antibiotici.

Agenti antibatterici

Gli agenti antibatterici includono, tuttavia senza limitazione, amminoglicosidi (ad esempio, amikacina (AMIKIN®), gentamicina (GARAMYCIN®), kanamicina (KANTREX®), neomicina (MYCIFRADIN®), netilmicina (NETROMYCIN®), tobramicina (NEBCIN®), Paromomicina (HUMATIN®)), ansamicinas (ad esempio, geldanamicina, erbimicina), carbacefem (ad esempio, loracarbef (LORABID®), Carbapenemi (ad esempio, ertapenem (INVANZ®), doripenem (DORIBAX®), imipenem/cilastatina (PRIMAXIN®), meropenem (MERREM®), cefalosporini (prima generazione) (ad esempio, cefadroxil (DURICEF®), cefazolina (ANCEF®), cefalotina o cefalotina (KEFLIN®), cefalexina (KEFLEX®), cefalosporine (seconda generazione) (ad esempio, cefaclor (CECLOR®), cefamandolo (MANDOL®), cefoxitina (MEFOXIN®), cefprozil (CEFZIL®), cefuroxima (CEFTIN®,

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ZINNAT®)), cefalosporine (terza generazione) (ad esempio, cefixima (SUPRAX®), cefdinir (OMNICEF®, CEFDIEL®), cefditoren (SPECTRACEF®), cefoperazone (CEFOBID®), cefotaxima (CLAFORAN®), cefpodoxima (VANTIN®), ceftazidima (FORTAZ®), ceftibuten (CEDAX®), ceftizoxima (CEFIZOX®), ceftriaxone (ROCEPHIN®)), cefalosporine (quarta generazione) (ad esempio, cefepime (MAXIPIME®)), cefalosporine (quinta generazione) (ad esempio, ceftobiprolo (ZEFTERA®)), glicopeptidi (ad esempio, teicoplanina (TARGOCID®), vancomicina (VANCOCIN®), telavancina (VIBATIV®)), lincosamidi (ad esempio, clindamicina (CLEOCIN®), lincomicina (LINCOCIN®)), lipopeptide (ad esempio, daptomicina (CUBICIN®)), macrolidi (ad esempio, azitromicina (ZITHROMAX®, SUMAMED®, ZITROCIN®), claritromicina (BIAXIN®), diritromicina (DYNABAC®), eritromicina (ERYTHOCIN®, ERYTHROPED®), roxitromicina, troleandomicina (TAO®), telitromicina (KETEK®), spectinomicina (TROBICIN®)), monobactami (ad esempio, aztreonam (AZACTAM®)), nitrofurani (ad esempio, furazolidone (FUROXONE®), nitrofurantoina (MACRODANTIN®, MACROBID®)), penicilline (ad esempio, amoxicillina (NOVAMOX®, AMOXIL®), ampicillina (PRINCIPEN®), azlocillina, carbenicillina (GEOCILLIN®), cloxacillina (TEGOPEN®), dicloxacillina (DYNAPEN®), flucloxacillina (FLOXAPEN®), mezlocillina (MEZLIN®), meticillina (STAPHCILLIN®), nafcillina (UNIPEN®), oxacillina (PROSTAPHLIN®), penicillina G (PENTIDS®), penicillina V (PEN-VEE-K®), piperacillina (PIPRACIL®), temocillina (NEGABAN®), ticarcillina (TICAR®)), combinazioni di penicillina (ad esempio, amoxicillina/clavulanato (AUGMENTIN®), ampicillina/sulbactam (UNASYN®), piperacillina/tazobactam (ZOSYN®), ticarcillina/clavulanato (TIMENTIN®)), polipeptidi (ad esempio, bacitracina, colistina (COLY-MYCIN-S®), polimixina B, chinoloni (ad esempio, ciprofloxacina (CIPRO®, CIPROXIN®, CIPROBAY®), enoxacina (PENETREX®), gatifloxacina (TEQUIN®), levofloxacina (LEVAQUIN®), lomefloxacina (MAXAQUIN®), moxifloxacina (AVELOX®), acido nalidixico (NEGGRAM®), norfloxacina (NOROXIN®), ofloxacina

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(FLOXIN®, OCUFLOX®), trovafloxacina (TROVAN®), grepafloxacina (RAXAR®), sparfloxacina (ZAGAM®), temafloxacina (OMNIFLOX®)), solfonamidi (ad esempio, mafenide (SULFAMYLON®), solfonamidocrisoidina (PRONTOSIL®), solfacetamide (SULAMYD®, BLEPH-10®), solfadiazina (MICRO-SULFON®), solfadiazina di argento (SILVADENE®), solfametizolo (THIOSULFIL FORTE®), solfametossazolo (GANTANOL®), solfanilimide, solfasalazina (AZULFIDINE®), solfisossazolo (GANTRISIN®), trimetoprim (PROLOPRIM®), TRIMPEX®), trimetoprim-solfametossazolo (co-trimossazolo) (TMP-SMX) (BACTRIM®, SEPTRA®)), tetracicline (ad esempio, demeclociclina (DECLOMYCIN®), doxiciclina (VIBRAMYCIN®), minociclina (MINOCIN®), oxitetraciclina (TERRAMYCIN®), tetraciclina (SUMYCIN®, ACHROMYCIN® V, STECLIN®)), farmaci contro i micobatteri (ad esempio, clofazimina (LAMPRENE®), dapsone (AVLOSULFON®), capreomicina (CAPASTAT®), cicloserina (SEROMYCIN®), etambutolo (MYAMBUTOL®), etionamide (TRECATOR®), isoniazide (I.N.H.®), pirazinamide (ALDINAMIDE®), rifampina (RIFADIN®, RIMACTANE®), rifabutina (MYCOBUTIN®), rifapentina (PRIFTIN®), streptomicina), e altri (ad esempio, arsfenamina (SALVARSAN®), cloramfenicolo (CHLOROMYCETIN®), fosfomicina (MONUROL®), acido fusidico (FUCIDIN®), linezolide (ZYVOX®), metronidazolo (FLAGYL®), mupirocina (BACTROBAN®), platensimicina, quinupristina/dalfopristina (SYNERCID®), rifaximina (XIFAXAN®), tiamfenicolo, tigeciclina (TIGACYL®), tinidazolo (TINDAMAX®, FASIGYN®)).

B. Contesti e/o situazioni terapeutici/he

I NAV della presente invenzione possono essere utilizzati in vari contesti a seconda della prevalenza dell'infezione o del grado o livello di necessità medica non soddisfatta. Alcune applicazioni dei NAV della descrizione sono illustrate nella Tabella 1.

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Tabella 1. Agenti infettivi per prevalenza e necessità medica

	Necessità non soddisfatta (bersaglio agente infettivo)		
Prevalenza	**Benigna a lungo termine Sequele a lungo termine**	**Morbilità a breve termine ma qualche trattamento**	**Mortalità a breve termine; nessun trattamento disponibile**
Obiquitaria	HPV, HCV, UTRI	Batteri Dengue, Chikungunya, ETEC e GI e S. Pneumo PNA	influenza stagionale e pandemica, MRSA e TB
Popolazioni a rischio	VZV, Lyme e Chlamydia, N. gonorrhea e HSV	Norovirus, HEV, CMV, HIV e N. meningitis	Klebsiella, Pseudomonas, Rabbia e C. difficile
Malattia rara	--	VEV	malattie mediate da tossine, hantavirus, arborvirus come JE, WNV e EEE
Alcune abbreviazioni includono: HPV - papillomavirus umano; HCV - Virus dell'epatite C; HEV - Enterovirus umano; MERS-CoV: Sindrome respiratoria del Medio Oriente da Coronavirus; VZV - Virus della varicella-zoster; MRSA - stafilococco aureo resistente alla meticillina; TB - tubercolosi; WNV - virus del Nilo occidentale; VEV - virus dell'esantema vescicolare; EEE - Encefalite equina orientale, JE - Encefalite giapponese, ETEC - E. coli enterotossigeno.			

Influenza (stagionale e pandemica)

I sintomi dell'influenza includono tosse secca, febbre, brividi, mialgie che progrediscono verso insufficienza respiratoria e rischio di infezioni batteriche secondarie (ad esempio, MRSA). L'influenza stagionale è ubiquitaria ed è costituita da tre ceppi principali (A [H1N1], A [H3N2] e B), che sono coperti dal vaccino annuale. L'influenza pandemica si verifica perché l'esclusiva capacità di riassortimento dei virus consente lo spostamento antigenico e il trasferimento tra ceppi di influenza aviaria e suina. Una preoccupazione emergente nel sud-est asiatico è il potenziale pandemico di diversi nuovi ceppi. Tali focolai pandemici hanno un alto tasso di mortalità con pochi trattamenti disponibili. Gli antivirali forniscono sollievo solo sintomatico e devono essere somministrati nelle prime 48 ore.

I NAV della presente invenzione hanno proprietà superiori in quanto producono titoli anticorpali molto più grandi, producono risposte precoci rispetto agli antivirali disponibili in

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commercio e possono essere somministrati dopo il periodo critico di 48 ore pur mantenendo l'efficacia.

Pur non volendo essere vincolati dalla teoria, gli inventori ipotizzano che i NAV dell'invenzione, come polinucleotidi di mRNA, siano progettati meglio per produrre la conformazione proteica appropriata sulla traduzione poiché i NAV cooptano il meccanismo cellulare naturale. A differenza dei vaccini tradizionali che sono prodotti ex vivo e possono innescare risposte cellulari indesiderate, i NAV vengono presentati al sistema cellulare in modo più nativo. Agli effetti superiori possono aggiungersi anche le formulazioni utilizzate che non possono servire né a schermare né a trafficare i NAV.

Secondo la presente invenzione, i NAV rappresentano un vaccino attivo su misura che non solo può prevenire l'infezione ma può limitare la trasmissione dell'influenza.

In alcune forme di realizzazione, i NAV possono essere usati per prevenire l'influenza pandemica reagendo a nuovi ceppi emergenti con il processo di produzione del vaccino molto rapido basato sui NAV. In alcune forme di realizzazione, un nuovo NAV per il trattamento o la prevenzione profilattica di focolai influenzali, inclusi i ceppi emergenti (ad esempio, H7N9 e H10N8), può essere prodotto in meno di sei settimane, dal momento dell'identificazione dell'antigene al vaccino disponibile.

In alcuni casi, una singola iniezione di un singolo antigene che codifica per il polinucleotide di NAV può fornire protezione per un'intera stagione influenzale.

Influenza: mantenimento della memoria antigenica

Le composizioni di NAV della presente invenzione possono anche essere utilizzate per mantenere o ripristinare la memoria antigenica in un soggetto o popolazione come parte di un piano di vaccinazione.

Con la velocità e la versatilità della tecnologia dei NAV della presente invenzione, è ora possibile creare un piano di vaccinazione che copra l'intervallo sia temporale sia di ceppi virali.

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In una forma di realizzazione, possono essere create composizioni di NAV che includono polinucleotidi che codificano uno o più antigeni influenzali annuali. Come usato qui, un antigene influenzale annuale è un antigene che è scelto da un ceppo di influenza usato come componente di un vaccino antinfluenzale di un particolare anno. Ad esempio, il ceppo dell'influenza A, virus A/Port Chalmers/1/1973(H3N2)-like, rappresenta un ceppo componente del vaccino dell'emisfero settentrionale dal 1974 al 1975.

Secondo la presente descrizione viene sviluppato uno schema o un piano di vaccinazione che consente non solo la vaccinazione continua nell'anno in corso, ma anche vaccinazioni antigeniche di richiamo della memoria attraverso anni, ceppi o gruppi di questi per stabilire e mantenere la memoria antigenica in una popolazione. In questo modo, è meno probabile che una popolazione soccomba a qualsiasi pandemia o focolaio che coinvolga la recidiva di ceppi più vecchi o la comparsa di antigeni da ceppi più vecchi.

Qualsiasi combinazione di ceppi di componenti del vaccino precedenti utilizzati per creare o progettare un vaccino antigenico di richiamo della memoria viene qui indicata come set di riferimento.

In un caso, i NAV che sono vaccini di richiamo della memoria antigenica vengono somministrati per potenziare la memoria antigenica per un periodo di 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 35, 40, 45, 50 o più anni.

In un caso, i NAV che sono vaccini di richiamo della memoria antigenica vengono somministrati per potenziare la memoria antigenica per anni storici alternati, inclusi anni alterni dai ceppi dei componenti di vaccino passati rispetto a un anno in corso. In alcuni casi la selezione dei componenti del vaccino può essere ogni 3°, 4°, 5°, 6°, 7°, 8°, 9°, 10° o più anni.

In un caso, i NAV che sono vaccini di richiamo della memoria antigenica vengono somministrati per potenziare la memoria antigenica per periodi di dieci anni.

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In alcuni casi, i NAV che sono vaccini di richiamo della memoria antigenica vengono somministrati per potenziare la memoria antigenica e sono scelti da un certo numero di ceppi di influenza di tipo A come prima selezione combinata con una selezione da un certo numero di ceppi di influenza di tipo B o altri ceppi qui elencati. Il numero di selezioni di tipo A o di tipo B può essere indipendentemente, 1, 2, 1, 4, 5, 6, 7, 8, 9, 10 o più.

In tutti i casi, i ceppi di vaccino di richiamo della memoria antigenica per la codifica antigenica nei NAV possono essere scelti dai componenti di vaccino dell'emisfero settentrionale o meridionale indipendentemente.

In alcuni casi, il vaccino di richiamo NAV può essere utilizzato in una popolazione una volta o periodicamente per creare l'immunità di gregge. Tale immunità è presente quando è protetto più del 30% di una popolazione.

I componenti o ceppi di influenza che possono essere utilizzati nei vaccini di richiamo della memoria antigenica includono, ma non sono limitati a, quelli nelle Tabelle 2-5.

Tabella 2. Componenti del vaccino antinfluenzale per anno

Emisfero settentrionale	**H1N1**	**H3N2**	**Ceppo B**	**Ceppo B aggiuntivo per QIII**
1974-1975	N/A	Virus A/Port Chalmers/1/1973(H3N2)-like	Virus B/HongKong/05/1972-like	N/A
1975-1976	Virus A/Scotland/840/74-like H1N1	Virus A/Port Chalmers/1/1973(H3N2)-like	Virus B/HongKong/05/1972-like	N/A
1976-1977	N/A	Virus A/Victoria/3/75(H3N2)-like	Virus B/HongKong/05/1972-like	N/A
1977-1978	N/A	Virus A/Victoria/3/75(H3N2)-like	Virus B/HongKong/05/1972-like	N/A
1978-1979	Virus A/USSR/90/77(H1N 1)-like	Virus A/Texas/1/77(H3N2)-like	Virus B/HongKong/05/1972-like	N/A

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Emisfero settentrionale	**H1N1**	**H3N2**	**Ceppo B**	**Ceppo B aggiuntivo per QIII**
1979-1980	Virus A/USSR/90/77(H1N 1)-like	Virus A/Texas/1/77(H3N2)-like	N/A	N/A
1980-1981	VirusA/Brazil/11/78(H1N1)-like	VirusA/Bangkok/01/1979 (H3N2)-like	Virus B/Singapore/222/79-like	N/A
1981-1982	Virus A/Brazil/11/78(H1N 1)-like	Virus A/Bangkok/01/1979 (H3N2)-like	Virus B/Singapore/222/79-like	N/A
1982-1983	Virus A/Brazil/11/78(H1N 1)-like	Virus A/Bangkok/01/1979 (H3N2)-like	Virus B/Singapore/222/79-like	N/A
1983-1984	Virus A/Brazil/11/78(H1N 1)-like	Virus A/Philippines/2/82(H3N2)-like	Virus B/Singapore/222/79-like	N/A
1984-1985	Virus A/Chile/1/83 (H1N1)-like	Virus A/Philippines/2/82(H3N2)-like	Virus B/USSR/100/83-like	N/A
1985-1986	Virus A/Chile/1/83 (H1N1)-like	Virus A/Philippines/2/82(H3N2)-like	Virus B/USSR/100/83-like	N/A
1986-1987	Virus A/Chile/1/83 (H1N1)-like	Virus A/Christchurch/4/1985(H3N2)-like e virus A/Mississippi/1/85(H3N2)-like	Virus B/Ann Arbor/1/86-like	N/A
1987-1988	Virus A/Singapore/6/1986 (H1N1)-like	Ceppo A/Leningrad/360/1986(H3N2)-like	N/A	N/A
1988-1989	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Sichuan/02/87(H3N2)-like	Virus B/Beijing/1/87-like	N/A
1989-1990	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Shanghai/11/87(H3N2)-like	Virus B/Yamagata/16/88-like	N/A
1990-1991	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Guizhou/54/89(H3N2)-like	Virus B/Yamagata/16/88-like	N/A

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Emisfero settentrionale	H1N1	H3N2	Ceppo B	Ceppo B aggiuntivo per QIII
1991-1992	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Beijing/353/89(H3N2)-like	Virus B/Yamagata/16/88-like	N/A
1992-1993	N/A	Virus A/Beijing/353/89(H3N2)-like	Virus B/Yamagata/16/88-like	N/A
1993-1994	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Beijing/32/92(H3N2)-like	Virus B/Panama/45/90-like	N/A
1994-1995	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Shangdong/9/93(H3N2)-like	Virus B/Panama/45/90-like	N/A
1995-1996	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Johannesburg/33/94(H3N2)-like	Virus B/Beijing/184/93-like	N/A
1996-1997	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Wuhan/359/95(H3N2)-like	Virus B/Beijing/184/93-like	N/A
1997-1998	Virus A/Bayern/7/95(H1N 1)-like	Virus A/Wuhan/359/95 (H3N2)-like	Virus B/Beijing/184/93-like	N/A

Tabella 3. Componenti del vaccino antinfluenzale per anno-emisfero meridionale

Emisfero meridionale	H1N1	H3N2	Ceppo B	Ceppo B aggiuntivo per QIV
1975	N/A	Virus A/Port Chalmers/1/1973(H3N2)-like	Virus B/HongKong/05/1972-like	N/A
1976	Virus A/Scotland/840/74-like (H1N1)	Virus A/Port Chalmers/1/1973(H3N2)-like	Virus B/HongKong/05/1972-like	N/A
1977	N/A	Virus A/Victoria/3/75(H3N2)-like	Virus B/HongKong/05/1972-like	N/A
1978	N/A	Virus A/Victoria/3/75(H3	Virus B/HongKong/05/19	N/A

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Emisfero meridionale	**H1N1**	**H3N2**	**Ceppo B**	**Ceppo B aggiuntivo per QIV**
		N2)-like	72-like	
1979	Virus A/USSR/90/77(H1N1)-like	Virus A/Texas/1/77(H3N2)-like	Virus B/HongKong/05/1972-like	N/A
1980	Virus A/USSR/90/77(H1N1)-like	Virus A/Texas/1/77(H3N2)-like	N/A	N/A
1981	Virus A/Brazil/11/78(H1N1)-like	Virus A/Bangkok/01/1979 (H3N2)-like	Virus B/Singapore/222/79-like	N/A
1982	Virus A/Brazil/11/78(H1N1)-like	Virus A/Bangkok/01/1979 (H3N2)-like	Virus B/Singapore/222/79-like	N/A
1983	VirusA/Brazil/11/78(H1N1)-like	VirusA/Bangkok/01/1979 (H3N2)-like	Virus B/Singapore/222/79-like	N/A
1984	Virus A/Brazil/11/78(H1N 1)-like	Virus A/Philippines/2/82(H3N2)-like	Virus B/Singapore/222/79-like	N/A
1985	Virus A/Chile/1/83 (H1N1)-like	Virus A/Philippines/2/82(H3N2)-like	Virus B/USSR/100/83-like	N/A
1986	Virus A/Chile/1/83 (H1N1)-like	Virus A/Philippines/2/82(H3N2)-like	Virus B/USSR/100/83-like	N/A
1987	Virus A/Chile/1/83 (H1N1)-like	Virus A/Christchurch/4/1985(H3N2)-like e virus A/Mississippi/1/85(H3N2)-like	Virus B/Ann Arbor/1/86-like	N/A
1988	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Leningrad/360/1986(H3N2)-like	N/A	N/A
1989	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Sichuan/02/87(H3N2)-like	Virus B/Beijing/1/87-like	N/A
1990	Virus	Virus	Virus	N/A

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Emisfero meridionale	H1N1	H3N2	Ceppo B	Ceppo B aggiuntivo per QIV
	A/Singapore/6/1986 (H1N1)-like	A/Shanghai/11/87(H3N2)-like	B/Yamagata/16/88-like	
1991	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Guizhou/54/89(H3N2)-like	Virus B/Yamagata/16/88-like	N/A
1992	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Beijing/353/89(H3N2)-like	Virus B/Yamagata/16/88-like	N/A
1993	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Beijing/353/89(H3N2)-like	Virus B/Yamagata/16/88-like	N/A
1994	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Beijing/32/92(H3N2)-like	Virus B/Panama/45/90-like	N/A
1995	VirusA/Singapore/6/1986 (H1N1)-like	Virus A/Shangdong/9/93(H3N2)-like	Virus B/Panama/45/90-like	N/A
1996	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Johannesburg/33/94(H3N2)-like	Virus B/Beijing/184/93-like	N/A
1997	Virus A/Singapore/6/1986 (H1N1)-like	Virus A/Wuhan/359/95(H3N2)-like	Ceppo B/Beijing/184/93-like	N/A
1998	Virus A/Bayern/7/95(H1N1)-like	Virus A/Wuhan/359/95(H3N2)-like	Virus B/Beijing/184/93-like	N/A
1999	Virus A/Beijing/262/95(H1N1)-like	Virus A/Sydney/5/97(H3N2)-like	Virus B/Beijing/184/93-like	N/A

Tabella 4. Componenti del vaccino antinfluenzale per anno nell'emisfero settentrionale

Emisfero settentrionale	H1N1	H3N2	Ceppo B	Ceppo B aggiuntivo per QIII
novembre 1998-aprile	Virus A/Beijing/262/95(H	Virus A/Sydney/5/97(H3N2)	Virus B/Beijing/184/93-	N/A

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Emisfero settentrionale	**H1N1**	**H3N2**	**Ceppo B**	**Ceppo B aggiuntivo per QIII**
1999	1N1)-like	-like	like	
novembre 1999-aprile 2000	Virus A/Beijing/262/95 (H1N1)-like	Virus A/Sydney/5/97 (H3N2)-like	Virus B/Beijing/184/93-like o virus B/Shangdong/7/97-like	N/A
2000-2001	Virus A/New Caledonia/20/99 (H1N1)-like	Virus A/Moscow/10/99 (H3N2)-like	Virus B/Beijing/184/93-like	N/A
2001-2002	Virus A/New Caledonia/20/99(H1 N1)-like	Virus A/Moscow/10/99(H3 N2)-like	Virus B/Sichuan/379/99-like	N/A
2002-2003	Virus A/New Caledonia/20/99(H1 N1)-like	Virus A/Moscow/10/99(H3 N2)-like	Virus B/Hong Kong/330/2001-like	N/A
2003-2004	Virus A/New Caledonia/20/99(H1 N1)-like	Virus A/Moscow/10/99(H3 N2)-like	Virus B/Hong Kong/330/2001-like	N/A
2004-2005	Virus A/New Caledonia/20/99(H 1 N1)-like	Virus A/Fujian/411/2002(H3 N2)-like	Virus B/Shanghai/361/2002-like	N/A
2005-2006	Virus A/New Caledonia/20/99(H 1 N1)-like	Virus A/California/7/2004 (H3N2)-like	Virus B/Shanghai/361/2002-like	N/A
2006-2007	A/New Caledonia/20/99(H 1 N1)-like	Virus A/Wisconsin/67/2005 (H3N2)-like	Virus B/Malaysia/2506/2004-like	N/A
2007-2008	Virus A/Solomon Islands/3/2006 (H1N1)-like	Virus A/Wisconsin/67/2005 (H3N2)-like	Virus B/Malaysia/2506/2004-like	N/A
2008-2009	Virus A/Brisbane/59/2007 (H1N1)-like	Virus A/Brisbane/10/2007(H 3N2)-like	Virus B/Florida/4/2006-like	N/A
2009-2010	Virus A/Brisbane/59/2007 (H1N1)-like	Virus A/Brisbane/10/2007 (H3N2)-like	Virus B/Brisbane/60/2008-like	N/A
2010-2011	Virus A/California/7/2009	Virus A/Perth/16/2009 (H3N2)-like	Virus B/Brisbane/60/200	N/A

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Emisfero settentrionale	H1N1	H3N2	Ceppo B	Ceppo B aggiuntivo per QIII
	(H1N1)-like		8-like	
2011-2012	Virus A/California/7/2009 (H1N1)-like	Virus A/Perth/16/2009 (H3N2)-like	Virus B/Brisbane/60/2008-like	N/A
2012-2013	Virus A/California/7/2009 (H1N1)pdm09-like	Virus A/Victoria/361/2011 (H3N2)-like	Virus B/Wisconsin/1/2010-like	Virus B/Brisbane/60/2008-like
2013-2014	Virus A/California/7/2009 (H1N1)pdm09-like	Virus A(H3N2) antigenicamente come il virus prototipico propagato da cellule A/Victoria/361/2011	Virus B/Massachusetts/2/ 2012-like	Virus B/Brisbane/60/2008-like
2014-2015	Virus A/California/7/2009 (H1N1)pdm09-like	Virus A/Texas/50/2012 (H3N2)-like	Virus B/Massachusetts/2/ 2012-like	Virus B/Brisbane/60/2008-like

Tabella 5. Componenti del vaccino antinfluenzale per anno-emisfero meridionale

Emisfero meridionale	H1N1	H3N2	Ceppo B	Ceppo B aggiuntivo per QIII
1999	Virus A/Beijing/262/95(H1N1)-like	Virus A/Sydney/5/97(H3N2)-like	Virus B/Beijing/184/93-like	N/A
maggio-ottobre 2000	Virus A/New Caledonia/20/99 (H1N1)-like	Virus A/Moscow/10/99 (H3N2)-like	Virus B/Beijing/184/93-like o virus B/Shangdong/7/97-like	N/A
maggio-ottobre 2001	Virus A/New Caledonia/20/99 (H1N1)-like	Virus A/Moscow/10/99 (H3N2)-like	Virus B/Sichuan/379/99-like	N/A
2002	Virus A/New Caledonia/20/99(H1N1)-like	Virus A/Moscow/10/99(H3N2)-like	Virus B/Sichuan/379/99-like	N/A
2003	Virus A/New Caledonia/20/99(H1N1)-like	Virus A/Moscow/10/99(H3N2)-like	Virus B/Hong Kong/330/2001-like	N/A
2004	Virus A/New	Virus	Virus B/Hong	N/A

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Emisfero meridionale	**H1N1**	**H3N2**	**Ceppo B**	**Ceppo B aggiuntivo per QIII**
	Caledonia/20/99(H1N1)-like	A/Fujian/411/2002(H3N2) - like	Kong/330/2001-like	
2005	Virus A/New Caledonia/20/99(H1N1)-like	Virus A/Wellington/1/2004(H3N2)-like	Virus B/Shanghai/361/2002-like	N/A
2006	Virus A/New Caledonia/20/99(H1N1)-like	Virus A/California/7/2004 (H3N2)-like	Virus B/Malaysia/2506/2004-like	N/A
2007	A/New Caledonia/20/99(H1N1)-like	Virus A/Wisconsin/67/200 5 (H3N2)-like	Virus B/Malaysia/2506/2004-like	N/A
2008	Virus A/Solomon Islands/3/2006 (H1N1)-like	Virus A/Brisbane/10/2007 (H3N2)-like	Virus B/Florida/4/2006-like	N/A
2009	Virus A/Brisbane/59/2007 (H1N1)-like	Virus A/Brisbane/10/2007 (H3N2)-like	Virus B/Florida/4/2006-like	N/A
2010	Virus A/California/7/2009 (H1N1)-like	Virus A/Perth/16/2009 (H3N2)-like	Virus B/Brisbane/60/2008-like	N/A
2011	Virus A/California/7/2009 (H1N1)-like	Virus A/Perth/16/2009 (H3N2)-like	Virus B/Brisbane/60/2008-like	N/A
2013	Virus A/California/7/2009(H1N1)pdm09 like	Virus A/Perth/16/2009 (H3N2)-like	Virus B/Brisbane/60/2008-like	N/A
2013	Virus A/California/7/2009 (H1N1)pdm09-like	Virus A/Victoria/361/2011 (H3N2)-like	Virus B/Wisconsin/1/2010-like	Virus B/Brisbane/60/2008-like
2014	Virus A/California/7/2009 (H1N1)pdm09-like	Virus A/Texas/50/2012 (H3N2)-like	Virus B/Massachusetts/2/ 2012-like	Virus B/Brisbane/60/2008-like

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Antigeni influenzali

In alcune forme di realizzazione, i polninucleotidi di NAV possono codificare uno o più polipeptidi di un ceppo influenzale come antigene. Tali antigeni includono, ma non sono limitati a, quegli antigeni codificati dai polinucleotidi elencati nelle Tabelle 6-18. Nella tabella, il numero di accessione GenBank rappresenta la CDS completa o parziale dell'antigene codificato. I polinucleotidi di NAV possono comprendere una regione di una qualsiasi delle sequenze elencate nelle tabelle o l'intera regione codificante dell'mRNA elencato. Possono comprendere regioni ibride o chimeriche, o mimetici o varianti.

Uno qualsiasi dei ceppi citati nelle Tabelle 6-14 può anche essere utilizzato in un vaccino di richiamo della memoria antigenica come descritto nel presente contesto.

Tabella 6. Antigeni dell'influenza H1N1

Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
Virus dell'influenza A (A/Bayern/7/95(H1N1)) Gene NA per neuraminidasi, RNA genomico	mRNA lineare 1.459 bp	AJ518104.1 GI:31096418
mRNA del virus dell'influenza A (A/Brazil/1 1/1978(X-71)(H1N1)) per emoagglutinina HA1, variante di fuga 1	mRNA lineare 1.072 bp	X86654.1 GI:995549
mRNA del virus dell'influenza A (A/Brazil/11/1978(X-71)(H1N1)) per emoagglutinina HA1, variante di fuga 2	mRNA lineare 1.072 bp	X86655.1 GI:995550
mRNA del virus dell'influenza A (A/Brazil/11/1978(X-71)(H1N1)) per emoagglutinina HA1, variante di fuga 3	mRNA lineare 1.072 bp	X86656.1 GI:995551
mRNA del virus dell'influenza A (A/Brazil/11/1978(X-71)(H1N1)) per emoagglutinina HA1, variante di fuga 4	mRNA lineare 1.072 bp	X86657.1 GI:995552
mRNA del virus dell'influenza A (A/Brevig_Mission/1/18(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.220 bp	AF116575.1 GI:4325017
Virus dell'influenza A (A/Brevig_Mission/1/18(H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250356.2 GI:13260556

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
mRNA del virus dell'influenza A (A/Brevig Mission/1/1918(H1N1)) nucleoproteina (np), cds completa	mRNA lineare 1.497 bp	AY744935.1 GI:55273940
mRNA del virus dell'influenza A (A/Brevig Mission/1/1918(H1N1)) polimerasi PB2 (PB2), cds completa	mRNA lineare 2.280 bp	DQ208309.1 GI:76786704
mRNA del virus dell'influenza A (A/Brevig Mission/1/1918(H1N1)) polimerasi PB1 (PB1), cds completa	mRNA lineare 2.274 bp	DQ208310.1 GI:76786706
mRNA del virus dell'influenza A (A/Brevig Mission/1/1918(H1N1)) polimerasi PA (PA), cds completa	mRNA lineare 2.151 bp	DQ208311.1 GI:76786708
mRNA del virus dell'influenza A (A/camel/Mongolia/1982(H1N1)) emoagglutinina, cds parziale	mRNA lineare 366 bp	M73975.1 GI:324242
mRNA del virus dell'influenza A (A/camel/Mongolia/1982(H1N1)) proteina della matrice, cds parziale	mRNA lineare 460 bp	M73978.1 GI:324402
mRNA del virus dell'influenza A (A/camel/Mongolia/1982(H1N1)) neuraminidasi (NA), cds parziale	mRNA lineare 310 bp	M73976.1 GI:324579
mRNA del virus A dell'influenza A/cammello/Mongolia/82 proteina NS1, cds parziale	mRNA lineare 273 bp	M73977.1 GI:324768
mRNA del virus dell'influenza A (A/camel/Mongolia/1982(H1N1) PA polimerasi, cds parziale	mRNA lineare 227 bp	M73974.1 GI:324931
mRNA del virus dell'influenza A (A/camel/Mongolia/1982(H1N1)) proteina PB1, cds parziale	mRNA lineare 531 bp	M73973.1 GI:324971
mRNA del virus dell'influenza A (A/camel/Mongolia/82(H1N1)) polimerasi 2 (P2), cds parziale	mRNA lineare 379 bp	M73972.1 GI:324993
mRNA del virus dell'influenza A (A/chicken/Hong Kong/14/1976(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 1.169 bp	U46782.1 GI:1912328
mRNA del virus dell'influenza A (A/Chonnam/07/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.452 bp	AY297141.1 GI:31871990

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mRNA del virus dell'influenza A (A/Chonnam/07/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.137 bp	AY297154.1 GI:32140347
mRNA del virus dell'influenza A (A/Chonnam/18/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.458 bp	AY297143.1 GI:31871994
mRNA del virus dell'influenza A (A/Chonnam/18/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AY297156.1 GI:32140355
mRNA del virus dell'influenza A (A/Chonnam/19/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.458 bp	AY310410.1 GI:31872389
mRNA del virus dell'influenza A (A/Chonnam/19/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.167 bp	AY299502.1 GI:32140392
mRNA del virus dell'influenza A (A/Chonnam/51/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.443 bp	AY310412.1 GI:31873090
mRNA del virus dell'influenza A (A/Chonnam/51/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.161 bp	AY299498.1 GI:32140384
mRNA del virus dell'influenza A (A/Chungbuk/50/2002(H1N1)) neuraminidasi (NA), cds parziale	mRNA lineare 1.425 bp	AY297150.1 GI:31872010
mRNA del virus dell'influenza A (A/Chungbuk/50/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.161 bp	AY299506.1 GI:32140400
Virus dell'influenza A (A/Denmark/40/2000(H1N1)) gene NA per neuraminidasi, RNA genomico	mRNA lineare 1.458 bp	AJ518095.1 GI:31096400
mRNA del virus dell'influenza A (A/Denver/1/57(H1N1)) neuraminidasi, cds parziale	mRNA lineare 379 bp	AF305216.1 GI:10732818
Virus dell'influenza A (A/Denver/1/57(H1N1)) gene della proteina della matrice, cds parziale	mRNA lineare 442 bp	AF305217.1 GI:10732820
Virus dell'influenza A (A/Denver/1/57(H1N1)) gene dell'emoagglutinina, cds parziale	mRNA lineare 215 bp	AF305218.1 GI:10732822

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
mRNA del virus dell'influenza A (A/duck/Australia/749/80(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 981 bp	U47309.1 GI:1912348
mRNA del virus dell'influenza A (A/duck/Australia/749/80(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.777 bp	AF091312.1 GI:4585166
mRNA del virus dell'influenza A (A/duck/Bavaria/1/77(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.777 bp	AF091313.1 GI:4585168
mRNA del virus dell'influenza A (A/duck/Bavaria/2/77(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 981 bp	U47308.1 GI:1912346
mRNA del virus dell'influenza A (A/duck/Eastern China/103/2003(H1N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.458 bp	EU429749.1 GI:167859463
mRNA del virus dell'influenza A (A/duck/Eastern China/152/2003(H1N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.461 bp	EU429751.1 GI:167859467
Virus dell'influenza A (A/Duck/Ohio/118C/93 (H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250361.2 GI:13260576
Virus dell'influenza A (A/Duck/Ohio/175/86 (H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250358.2 GI:13260565
Virus dell'influenza A (A/Duck/Ohio/194/86 (H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250360.2 GI:13260573
Virus dell'influenza A (A/Duck/Ohio/30/86 (H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250359.2 GI:13260570
mRNA del virus dell'influenza A ceppo A/Fiji/15899/83(H1N1) per neuraminidasi	mRNA lineare 1.460 bp	AJ006954.1 GI:4210707
mRNA del virus dell'influenza A (A/Fiji/15899/83(H1N1)) per la proteina PB2	mRNA lineare 2.341 bp	AJ564805.1 GI:31442134
mRNA parziale del virus dell'influenza A (A/Fiji/15899/83(H1N1)) per la proteina PB1	mRNA lineare 2.113 bp	AJ564807.1 GI:31442138

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
Virus dell'influenza A (A/FM/1/47 (H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.395 bp	AF250357.2 GI:13260561
mRNA del virus dell'influenza A (A/goose/Hong Kong/8/1976(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 1.091 bp	U46021.1 GI:1912326
mRNA del virus dell'influenza A (A/goose/Hong Kong/8/1976(H1N1)) polimerasi (PB1), cds parziale	mRNA lineare 261 bp	U48284.1 GI:1912372
mRNA del virus dell'influenza A (A/oca/Hong Kong/8/1976(H1N1)) nucleoproteina (NP), cds parziale	mRNA lineare 1.395 bp	U49093.1 GI:1912384
mRNA del virus dell'influenza A (A/Guangzhou/1561/2006(H1N1)) segmento 4 emoagglutinina (HA), cds completa	mRNA lineare 1.775 bp	EU382986.1 GI:170762603
mRNA del virus dell'influenza A (A/Guangzhou/1561/2006(H1N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.462 bp	EU382993.1 GI:170762617
mRNA del virus dell'influenza A (A/Guangzhou/1684/2006(H1N1)) segmento 4 emoagglutinina (HA), cds completa	mRNA lineare 1.775 bp	EU382987.1 GI:170762605
mRNA del virus dell'influenza A (A/Guangzhou/1684/2006(H1N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.462 bp	EU382994.1 GI:170762619
mRNA del virus dell'influenza A (A/Guangzhou/483/2006(H1N1)) segmento 4 emoagglutinina (HA), cds completa	mRNA lineare 1.775 bp	EU382981.1 GI:170762593
mRNA del virus dell'influenza A (A/Guangzhou/483/2006(H1N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.462 bp	EU382988.1 GI:170762607
mRNA del virus dell'influenza A (A/Guangzhou/506/2006(H1N1)) segmento 4 emoagglutinina (HA), cds completa	mRNA lineare 1.775 bp	EU382982.1 GI:170762595
mRNA del virus dell'influenza A (A/Guangzhou/506/2006(H1N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.461 bp	EU382989.1 GI:170762609
mRNA del virus dell'influenza A (A/Guangzhou/555/2006(H1N1)) segmento 4 emoagglutinina (HA), cds completa	mRNA lineare 1.775 bp	EU382983.1 GI:170762597

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
mRNA del virus dell'influenza A (A/Guangzhou/555/2006(H1N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.462 bp	EU382990.1 GI:170762611
mRNA del virus dell'influenza A (A/Guangzhou/657/2006(H1N1)) segmento 4 emoagglutinina (HA), cds completa	mRNA lineare 1.775 bp	EU382984.1 GI:170762599
mRNA del virus dell'influenza A (A/Guangzhou/657/2006(H1N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.462 bp	EU382991.1 GI:170762613
mRNA del virus dell'influenza A (A/Guangzhou/665/2006(H1N1)) segmento 4 emoagglutinina (HA), cds completa	mRNA lineare 1.775 bp	EU382985.1 GI:170762601
mRNA del virus dell'influenza A (A/Guangzhou/665/2006(H1N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.462 bp	EU382992.1 GI:170762615
mRNA del virus dell'influenza A (A/Gwangju/55/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.431 bp	AY297151.1 GI:31872012
mRNA del virus dell'influenza A (A/Gwangju/55/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.179 bp	AY299507.1 GI:32140402
mRNA del virus dell'influenza A (A/Gwangju/57/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.446 bp	AY297152.1 GI:31872014
mRNA del virus dell'influenza A (A/Gwangju/57/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.167 bp	AY299508.1 GI:32140404
mRNA del virus dell'influenza A (A/Gwangju/58/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.434 bp	AY297153.1 GI:31872016
mRNA del virus dell'influenza A (A/Gwangju/58/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AY299509.1 GI:32140406
mRNA del virus dell'influenza A (A/Gwangju/90/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.446 bp	AY297147.1 GI:31872002
mRNA del virus dell'influenza A (A/Gwangju/90/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.164 bp	AY299499.1 GI:32140386

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
Virus dell'influenza A (A/Hong Kong/437/2002(H1N1)) gene NA parziale per neuraminidasi, RNA genomico	mRNA lineare 1.403 bp	AJ518101.1 GI:31096412
Virus dell'influenza A (A/Hong Kong/747/2001(H1N1)) gene NA parziale per neuraminidasi, RNA genomico	mRNA lineare 1.352 bp	AJ518102.1 GI:31096414
mRNA del virus dell'influenza A (A/London/1/1918(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 563 bp	AY184805.1 GI:32395285
mRNA del virus dell'influenza A (A/London/1/1919(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 563 bp	AY184806.1 GI:32395287
mRNA del virus dell'influenza A (A/Loygang/4/1957(H1N1)) nucleoproteina, cds completa	mRNA lineare 1.565 bp	M76604.1 GI:324255
Virus dell'influenza A (A/Lyon/651/2001(H1N1)) gene NA parziale per neuraminidasi, RNA genomico	mRNA lineare 1.318 bp	AJ518103.1 GI:31096416
mRNA del virus dell'influenza A (A/mallard/Alberta/119/98 (H1N1)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 947 bp	AY664487.1 GI:51011891
mRNA del virus dell'influenza A (A/duck/Alberta/35/76(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 981 bp	U47310.1 GI:1912350
mRNA del virus dell'influenza A (A/duck/Alberta/35/76(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.777 bp	AF091309.1 GI:4585160
Virus dell'influenza A (A/duck/Alberta/35/76(H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250362.2 GI:13260579
mRNA del virus dell'influenza A (A/mallard/Tennessee/11464/85 (H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 981 bp	U47307.1 GI:1912344
mRNA del virus dell'influenza A (A/mallard/Tennessee/11464/85 (H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.777 bp	AF091311.1 GI:4585164
mRNA del virus dell'influenza A (A/New Caledonia/20/1999(H1N1)) segmento 7 proteina della matrice 2 (M2), cds completa	mRNA lineare 294 bp	HQ008884.1 GI:302566794

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
mRNA del virus dell'influenza A (A/New Jersey/4/1976(H1N1)) nucleoproteina, cds completa	mRNA lineare 1.565 bp	M76605.1 GI:324581
mRNA del virus dell'influenza A (A/New Jersey/8/1976(H1N1)) nucleoproteina, cds completa	mRNA lineare 1.565 bp	M76606.1 GI:324583
mRNA del virus dell'influenza A (A/New_York/1/18(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.220 bp	AF116576.1 GI:4325019
mRNA del virus dell'influenza A (A/Ohio/3523/1988(H1N1)) nucleoproteina, cds completa	mRNA lineare 1.565 bp	M76602.1 GI:324889
mRNA del virus dell'influenza A (A/Pusan/22/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.455 bp	AY310411.1 GI:31872391
mRNA del virus dell'influenza A (A/Pusan/22/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.149 bp	AY299503.1 GI:32140394
mRNA del virus dell'influenza A (A/Pusan/23/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.440 bp	AY297144.1 GI:31871996
mRNA del virus dell'influenza A (A/Pusan/23/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.158 bp	AY297157.1 GI:32140357
mRNA del virus dell'influenza A (A/Pusan/24/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.449 bp	AY297145.1 GI:31871998
mRNA del virus dell'influenza A (A/Pusan/24/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.128 bp	AY299494.1 GI:32140376
mRNA del virus dell'influenza A (A/Pusan/44/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.431 bp	AY297148.1 GI:31872004
mRNA del virus dell'influenza A (A/Pusan/44/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.167 bp	AY299504.1 GI:32140396
mRNA del virus dell'influenza A (A/Pusan/45/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.434 bp	AY297146.1 GI:31872000

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
mRNA del virus dell'influenza A (A/Pusan/45/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.167 bp	AY299496.1 GI:32140380
mRNA del virus dell'influenza A (A/Pusan/46/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.422 bp	AY310408.1 GI:31872385
mRNA del virus dell'influenza A (A/Pusan/46/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AY299497.1 GI:32140382
mRNA del virus dell'influenza A (A/Pusan/47/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.437 bp	AY297149.1 GI:31872008
mRNA del virus dell'influenza A (A/Pusan/47/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.170 bp	AY299505.1 GI:32140398
Virus dell'influenza A (A/Arabia Saudita/7971/2000(H1N1)) gene NS1 parziale per la proteina 1 non strutturale e gene NS2 parziale per la proteina 2 non strutturale, RNA genomico	mRNA lineare 789 bp	AJ519463.1 GI:31096450
mRNA del virus dell'influenza A (A/Seoul/11/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.452 bp	AY297142.1 GI:31871992
mRNA del virus dell'influenza A (A/Seoul/11/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AY297155.1 GI:32140349
mRNA del virus dell'influenza A (A/Seoul/13/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.452 bp	AY310409.1 GI:31872387
mRNA del virus dell'influenza A (A/Seoul/13/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.167 bp	AY299500.1 GI:32140388
mRNA del virus dell'influenza A (A/Seoul/15/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.449 bp	AY297140.1 GI:31871988
mRNA del virus dell'influenza A (A/Seoul/15/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.149 bp	AY299501.1 GI:32140390
mRNA del virus dell'influenza A (A/Seoul/33/2002(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.437	AY310407.1 GI:31872383

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
	bp	
mRNA del virus dell'influenza A (A/Seoul/33/2002(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.167 bp	AY299495.1 GI:32140378
mRNA del virus dell'influenza A(A/swine/Arnsberg/6554/1979(H1N1)) per l'emoagglutinina HA1	mRNA lineare 1.050 bp	Z46437.1 GI:565609
mRNA del virus dell'influenza A (A/swine/Beijing/47/1991(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 1.595 bp	U46783.1 GI:1912330
mRNA del virus dell'influenza A (A/swine/Beijing/94/1991(H1N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.565 bp	U49091.1 GI:1912380
mRNA del virus dell'influenza A (A/swine/Belgium/1/83(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.778 bp	AF091316.1 GI:4585174
Virus dell'influenza A (A/swine/Cotes d'Armor/0118/2006(H1N1)) mRNA parziale per precursore dell'emoagglutinina (gene HA1)	mRNA lineare 1.116 bp	AM490219.1 GI:222062898
Virus dell'influenza A (A/swine/Cotes d'Armor/0136_18/2006(H1N1)) mRNA parziale per precursore dell'emoagglutinina (gene HA1)	mRNA lineare 1.043 bp	AM490223.1 GI:222062906
Virus dell'influenza A (A/swine/Cotes d'Armor/0184/2006(H1N1)) mRNA parziale per precursore dell'emoagglutinina (gene HA1)	mRNA lineare 1.089 bp	AM490220.1 GI:222062900
Virus dell'influenza A (A/swine/Cotesd'Armor/0227/2005(H1N1)) mRNA parziale per precursore dell'emoagglutinina (gene HA1)	mRNA lineare 1.068 bp	AM490221.1 GI:222062902
Virus dell'influenza A (A/swine/Cotes d'Armor/0250/2006(H1N1)) mRNA parziale per precursore dell'emoagglutinina (gene HA1)	mRNA lineare 1.024 bp	AM490222.1 GI:222062904
Virus dell'influenza A (A/swine/Cotes d'Armor/736/2001(H1N1)) gene HA parziale per emoagglutinina, RNA genomico	mRNA lineare 1.011 bp	AJ517820.1 GI:38422533
Virus dell'influenza A (A/Swine/England/195852/92 (H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250366.2 GI:13260593
Virus dell'influenza A, gene PB2 per la proteina della polimerasi 2, RNA genomico, ceppo	mRNA lineare 2.268	AJ311457.1 GI:13661037

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
A/Swine/Finistere/2899/82	bp	
Virus dell'influenza A, gene PB1 per la proteina della polimerasi 1, RNA genomico, ceppo A/Swine/Finistere/2899/82	mRNA lineare 2.341 bp	AJ311462.1 GI:13661047
Virus dell'influenza A gene PA per la proteina della polimerasi A, RNA genomico, ceppo A/Swine/Finistere/2899/82	mRNA lineare 2.233 bp	AJ311463.1 GI:13661049
Virus dell'influenza A (gene A/swine/Finistere/2899/82(H1N1) M1 per la proteina 1 della matrice e gene M2 per la proteina 2 della matrice, RNA genomico	mRNA lineare 1.002 bp	AJ316059.1 GI:20068128
Virus dell'influenza A (A/swine/Finistere/2899/82(H1N1)) Gene NS1 per la proteina 1 non strutturale e gene NS2 per la proteina 2 non strutturale, RNA genomico	mRNA lineare 864 bp	AJ344037.1 GI:20068185
mRNA del virus dell'influenza A (A/swine/Germany/2/1981(H1N1)) per PA polimerasi	mRNA lineare 838 bp	X75786.1 GI:438106
mRNA del virus dell'influenza A (A/swine/Germany/2/1981(H1N1)) per neuraminidasi (parziale)	mRNA lineare 305 bp	Z30277.1 GI:530399
mRNA del virus dell'influenza A (A/swine/Germany/2/1981(H1N1)) per l'emoagglutinina	mRNA lineare 1.730 bp	Z30276.1 GI:563490
165. mRNA del virus dell'influenza A (A/swine/Germany/8533/1991(H1N1)) per precursore dell'emoagglutinina	mRNA lineare 1.730 bp	Z46434.1 GI:565611
mRNA del virus dell'influenza A (A/swine/Guangdong/711/2001(H1N1)) emoagglutinina (HA) non funzionale, sequenza parziale	mRNA lineare 1.690 bp	AY852271.1 GI:60327789
mRNA del virus dell'influenza A (A/swine/Haseluenne/IDT2617/03(H1N1)) emoagglutinina, cds completa	mRNA lineare 1.809 bp	EU163946.1 GI:157679548
mRNA del virus dell'influenza A (A/swine/Hokkaido/2/81 (H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 981 bp	U47306.1 GI:1912342
mRNA del virus dell'influenza A (A/swine/Hokkaido/2/81(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.778 bp	AF091306.1 GI:4585154
mRNA del virus dell'influenza A (A/swine/Hong	mRNA	U44482.1

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
Kong/168/1993(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	lineare 1.113 bp	GI:1912318
mRNA del virus dell'influenza A (A/swine/Hong Kong/168/1993(H1N1)) neuraminidasi (NA), cds parziale	mRNA lineare 416 bp	U47817.1 GI:1912354
mRNA del virus dell'influenza A (A/swine/Hong Kong/168/1993(H1N1)) polimerasi (PB2), cds parziale	mRNA lineare 286 bp	U48286.1 GI:1912358
mRNA del virus dell'influenza A (A/swine/Hong Kong/168/1993(H1N1)) polimerasi (PB1), cds parziale	mRNA lineare 379 bp	U48283.1 GI:1912370
mRNA del virus dell'influenza A (A/swine/Hong Kong/168/1993(H1N1)) polimerasi (PA), cds parziale	mRNA lineare 308 bp	U48850.1 GI:1912376
mRNA del virus dell'influenza A (A/swine/Hong Kong/168/1993(H1N1)) nucleoproteina (NP), cds parziale	mRNA lineare 1.397 bp	U49096.1 GI:1912390
mRNA del virus dell'influenza A (A/swine/Hong Kong/172/1993(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 1.315 bp	U46020.1 GI:1912324
mRNA del virus dell'influenza A (A/swine/Hong Kong/176/1993(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 1.113 bp	U45451.1 GI:1912320
mRNA del virus dell'influenza A (A/swine/Hong Kong/273/1994(H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 1.330 bp	U45452.1 GI:1912322
mRNA del virus dell'influenza A (A/swine/Hong Kong/273/1994(H1N1)) neuraminidasi (NA), cds parziale	mRNA lineare 241 bp	U47818.1 GI:1912356
mRNA del virus dell'influenza A (A/swine/Hong Kong/273/1994(H1N1)) polimerasi (PB2), cds parziale	mRNA lineare 328 bp	U48287.1 GI:1912360
mRNA del virus dell'influenza A (A/swine/Hong Kong/273/1994(H1N1)) polimerasi (PB1), cds parziale	mRNA lineare 240 bp	U48282.1 GI:1912368
mRNA del virus dell'influenza A (A/swine/Hong Kong/273/1994(H1N1)) polimerasi (PA), cds parziale	mRNA lineare 336 bp	U48851.1 GI:1912378
mRNA del virus dell'influenza A (A/swine/Hong	mRNA	U49092.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
Kong/273/1994(H1N1)) nucleoproteina (NP), cds parziale	lineare 1.422 bp	GI:1912382
mRNA del virus dell'influenza A (A/swine/IDT/Re230/92hp(H1N1)) emoagglutinina, cds completa	mRNA lineare 1.761 bp	EU163947.1 GI:157679550
mRNA del virus dell'influenza A (A/swine/IN/1726/1988(H1N1)) nucleoproteina (segmento 5), cds completa	mRNA lineare 1.550 bp	L46849.1 GI:954755
mRNA del virus dell'influenza A (A/swine/Iowa/15/30 (H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 981 bp	U47305.1 GI:1912340
mRNA del virus dell'influenza A (A/swine/Iowa/15/30(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.778 bp	AF091308.1 GI:4585158
Virus dell'influenza A (A/Swine/Iowa/30 (H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250364.2 GI:13260586
mRNA del virus dell'influenza A (A/swine/Iowa/17672/88 (H1N1)) precursore dell'emoagglutinina (HA), cds parziale	mRNA lineare 981 bp	U47304.1 GI:1912338
Virus dell'influenza A (A/swine/Italy/3364/00(H1N1)) gene NS1 parziale per la proteina 1 non strutturale e gene NS2 parziale per la proteina 2 non strutturale, RNA genomico	mRNA lineare 864 bp	AJ519462.1 GI:31096447
mRNA del virus dell'influenza A (A/swine/Italy-Virus/671/87(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.777 bp	AF091315.1 GI:4585172
mRNA del virus dell'influenza A (A/swine/Italy/v147/1981(H1N1)) per emoagglutinina HA1	mRNA lineare 1.028 bp	Z46436.1 GI:854214
Virus dell'influenza A (A/swine/Morbihan/0070/2005(H1N1)) mRNA parziale per precursore dell'emoagglutinina (gene HA1)	mRNA lineare 1.118 bp	AM490218.1 GI:222062896
mRNA del virus dell'influenza A (A/swine/Nebraska/1/92(H1N1)) proteina HA, cds completa	mRNA lineare 1.770 bp	L09063.1 GI:290722
mRNA del virus dell'influenza A (A/swine/Nebraska/1/1992(H1N1)) segmento 5 nucleoproteina (NP), cds completa	mRNA lineare 1.550 bp	L11164.1 GI:290724
mRNA del virus dell'influenza A	mRNA	U46943.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/swine/Netherlands/12/1985(H1N1)) emoagglutinina (HA), cds parziale	lineare 981 bp	GI:1912336
mRNA del virus dell'influenza A (A/swine/Netherlands/12/85(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.776 bp	AF091317.1 GI:4585176
mRNA del virus dell'influenza A (A/swine/Netherlands/25/1980(H1N1)) per nucleoproteina	mRNA lineare 539 bp	X75791.1 GI:438105
mRNA del virus dell'influenza A (A/swine/Netherlands/3/1980(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 981 bp	U46942.1 GI:1912334
mRNA del virus dell'influenza A (A/swine/Netherlands/3/80(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.778 bp	AF091314.1 GI:4585170
Virus dell'influenza A (A/NJ/11/76 (H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250363.2 GI:13260583
mRNA del virus dell'influenza A (A/Swine/Quebec/192/81 (SwQc81)) neuraminidasi, cds completa	mRNA lineare 1.438 bp	U86144.1 GI:4099318
mRNA del virus dell'influenza A (A/Swine/Quebec/5393/91 (SwQc91)) neuraminidasi, cds completa	mRNA lineare 1.438 bp	U86145.1 GI:4099320
mRNA del virus dell'influenza A (A/swine/Schleswig-Holstein/1/1992(H1N1)) per precursore dell'emoagglutinina	mRNA lineare 1.730 bp	Z46435.1 GI:854216
mRNA del virus dell'influenza A (A/swine/Schleswig-Holstein/1/1993(H1N1)) per nucleoproteina	mRNA lineare 1.554 bp	Z46438.1 GI:854222
mRNA del virus dell'influenza A (A/swine/Wisconsin/1/61(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.778 bp	AF091307.1 GI:4585156
212. mRNA del virus dell'influenza A (A/swine/Wisconsin/1/1967(H1N1)) nucleoproteina, cds completa	mRNA lineare 1.565 bp	M76607.1 GI:325086
mRNA del virus dell'influenza A (A/swine/Wisconsin/1915/1988(H1N1)) nucleoproteina, cds completa	mRNA lineare 1.565 bp	M76608.1 GI:325088
mRNA del virus dell'influenza A	mRNA	L46850.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/swine/WI/1915/1988(H1N1)) nucleoproteina (segmento 5), cds completa	lineare 1.550 bp	GI:954757
Virus dell'influenza A (A/Switzerland/8808/2002(H1N1)) gene parziale m1 per proteina della matrice 1 e gene parziale m2 per proteina della matrice 2, RNA genomico	mRNA lineare 729 bp	AJ532568.1 GI:31096461
mRNA del virus dell'influenza A (A/human/ Taiwan/0012/00(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362803.1 GI:14571975
mRNA del virus dell'influenza A (A/human/ Taiwan/0016/00(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362779.1 GI:14571927
mRNA del virus dell'influenza A (A/Taiwan/0016/2000 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303752.1 GI:32330993
mRNA del virus dell'influenza A (A/human/ Taiwan/0030/00(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362780.1 GI:14571929
mRNA del virus dell'influenza A (A/Taiwan/0030/2000 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303704.1 GI:32330897
mRNA del virus dell'influenza A (A/Taiwan/0032/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604804.1 GI:50727488
mRNA del virus dell'influenza A (A/Taiwan/0061/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604795.1 GI:50727470
mRNA del virus dell'influenza A (A/Taiwan/0069/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604803.1 GI:50727486
mRNA del virus dell'influenza A (A/Taiwan/0078/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604805.1 GI:50727490
mRNA del virus dell'influenza A (A/Taiwan/0094/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604797.1 GI:50727474
mRNA del virus dell'influenza A (A/Taiwan/0116/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604796.1 GI:50727472
mRNA del virus dell'influenza A (A/human/	mRNA	AF362781.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
Taiwan/0130/96(H1N1)) emoagglutinina (HA), cds parziale	lineare 564 bp	GI:14571931
mRNA del virus dell'influenza A (A/Taiwan/0130/96 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303707.1 GI:32330903
mRNA del virus dell'influenza A (A/human/ Taiwan/0132/96(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362782.1 GI:14571933
mRNA del virus dell'influenza A (A/Taiwan/0132/96 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303708.1 GI:32330905
mRNA del virus dell'influenza A (A/human/ Taiwan/0211/96(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362783.1 GI:14571935
mRNA del virus dell'influenza A (A/Taiwan/0211/96 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303709.1 GI:32330907
mRNA del virus dell'influenza A (A/human/ Taiwan/0235/96(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362784.1 GI:14571937
mRNA del virus dell'influenza A (A/Taiwan/0235/96 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303710.1 GI:32330909
mRNA del virus dell'influenza A (A/human/ Taiwan/0255/96(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362785.1 GI:14571939
mRNA del virus dell'influenza A (A/Taiwan/0255/96 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303711.1 GI:32330911
mRNA del virus dell'influenza A (A/human/ Taiwan/0337/96(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362786.1 GI:14571941
mRNA del virus dell'influenza A (A/human/ Taiwan/0342/96(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362787.1 GI:14571943
mRNA del virus dell'influenza A (A/Taiwan/0342/96 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303714.1 GI:32330917
mRNA del virus dell'influenza A (A/human/	mRNA	AF362788.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
Taiwan/0464/99(H1N1)) emoagglutinina (HA), cds parziale	lineare 561 bp	GI:14571945
mRNA del virus dell'influenza A (A/human/Taiwan/0562/95(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362789.1 GI:14571947
mRNA del virus dell'influenza A (A/Taiwan/0562/95 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	GI AY303720.1: 32330929
mRNA del virus dell'influenza A (A/human/ Taiwan/0563/95(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362790.1 GI:14571949
mRNA del virus dell'influenza A (A/Taiwan/0563/95 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303721.1 GI:32330931
mRNA del virus dell'influenza A (A/human/ Taiwan/0657/95(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362791.1 GI:14571951
mRNA del virus dell'influenza A (A/Taiwan/0657/95 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303724.1 GI:32330937
mRNA del virus dell'influenza A (A/Taiwan/0859/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604801.1 GI:50727482
mRNA del virus dell'influenza A (A/human/ Taiwan/0892/99(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362792.1 GI:14571953
mRNA del virus dell'influenza A (A/Taiwan/0983/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604800.1 GI:50727480
mRNA del virus dell'influenza A (A/Taiwan/1007/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068163.1 GI:158452199
mRNA del virus dell'influenza A (A/Taiwan/1015/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068171.1 GI:158452215
mRNA del virus dell'influenza A (A/Taiwan/112/1996-1(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AF026153.1 GI:2554950
mRNA del virus dell'influenza A (A/Taiwan/112/1996-	mRNA	AF026154.1

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
2(H1N1)) emoagglutinina (HA), cds parziale	lineare 1.176 bp	GI:2554952
mRNA del virus dell'influenza A (A/Taiwan/117/1996-1(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AF026155.1 GI:2554954
mRNA del virus dell'influenza A (A/Taiwan/117/1996-2(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AF026156.1 GI:2554956
mRNA del virus dell'influenza A (A/Taiwan/117/1996-3(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AF026157.1 GI:2554958
mRNA del virus dell'influenza A (A/Taiwan/118/1996-1(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AF026158.1 GI:2554960
mRNA del virus dell'influenza A (A/Taiwan/118/1996-2(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AF026159.1 GI:2554962
mRNA del virus dell'influenza A (A/Taiwan/118/1996-3(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.176 bp	AF026160.1 GI:2554964
mRNA del virus dell'influenza A (A/human/Taiwan/1184/99(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362793.1 GI:14571955
mRNA del virus dell'influenza A (A/Taiwan/1184/99 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303726.1 GI:32330941
mRNA del virus dell'influenza A (A/human/Taiwan/1190/95(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362794.1 GI:14571957
mRNA del virus dell'influenza A (A/Taiwan/1190/95 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303727.1 GI:32330943
mRNA del virus dell'influenza A (A/Taiwan/1523/2003(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604808.1 GI:50727496
mRNA del virus dell'influenza A (A/Taiwan/1566/2003(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604806.1 GI:50727492
mRNA del virus dell'influenza A	mRNA	AF138710.2

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
(A/Taiwan/1769/96(H1N1)) proteina della matrice M1 (M), cds parziale	lineare 875 bp	GI:4996871
mRNA del virus dell'influenza A (A/Taiwan/1906/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604799.1 GI:50727478
mRNA del virus dell'influenza A (A/Taiwan/1922/2002(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604802.1 GI:50727484
mRNA del virus dell'influenza A (A/Taiwan/2069/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068168.1 GI:158452209
mRNA del virus dell'influenza A (A/Taiwan/2157/2001 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303733.1 GI:32330955
mRNA del virus dell'influenza A (A/Taiwan/2175/2001 (H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AY303734.1 GI:32330957
mRNA del virus dell'influenza A (A/human/Taiwan/2200/95(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 564 bp	AF362795.1 GI:14571959
mRNA del virus dell'influenza A (A/Taiwan/2200/95 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303737.1 GI:32330963
mRNA del virus dell'influenza A (A/Taiwan/2966/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068170.1 GI:158452213
mRNA del virus dell'influenza A (A/Taiwan/3168/2005(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068174.1 GI:158452221
mRNA del virus dell'influenza A (A/human/ Taiwan/3355/97(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362796.1 GI:14571961
mRNA del virus dell'influenza A (A/Taiwan/3355/97 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303739.1 GI:32330967
mRNA del virus dell'influenza A (A/Taiwan/3361/2001 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303740.1 GI:32330969
mRNA del virus dell'influenza A (A/Taiwan/3361/2001	mRNA	AY303741.1

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
(H1N1)) emoagglutinina (HA), cds parziale	lineare 561 bp	GI:32330971
mRNA del virus dell'influenza A (A/Taiwan/3518/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068169.1 GI:158452211
mRNA del virus dell'influenza A (A/human/ Taiwan/3825/00(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 581 bp	AF362797.1 GI:14571963
mRNA del virus dell'influenza A (A/Taiwan/3896/2001 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303746.1 GI:32330981
mRNA del virus dell'influenza A (A/Taiwan/3896/2001 (H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AY303747.1 GI:32330983
mRNA del virus dell'influenza A (A/Taiwan/4050/2003(H1N1)) emoagglutinina, cds parziale	mRNA lineare 494 bp	AY604807.1 GI:50727494
mRNA del virus dell'influenza A (A/Taiwan/4054/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068160.1 GI:158452193
mRNA del virus dell'influenza A (A/human/ Taiwan/4360/99(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362798.1 GI:14571965
mRNA del virus dell'influenza A (A/Taiwan/4360/99 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303748.1 GI:32330985
mRNA del virus dell'influenza A (A/human/ Taiwan/4415/99(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362799.1 GI:14571967
mRNA del virus dell'influenza A (A/Taiwan/4415/99 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303749.1 GI:32330987
mRNA del virus dell'influenza A (A/Taiwan/4509/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068165.1 GI:158452203
mRNA del virus dell'influenza A (A/human/ Taiwan/4845/99(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362800.1 GI:14571969
mRNA del virus dell'influenza A (A/Taiwan/4845/99	mRNA	AY303750.1

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
(H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	lineare 303 bp	GI:32330989
mRNA del virus dell'influenza A (A/human/ Taiwan/4943/99(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362801.1 GI:14571971
mRNA del virus dell'influenza A (A/Taiwan/5010/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068167.1 GI:158452207
mRNA del virus dell'influenza A (A/human/ Taiwan/5063/99(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362802.1 GI:14571973
mRNA del virus dell'influenza A (A/Taiwan/5063/99 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303751.1 GI:32330991
mRNA del virus dell'influenza A (A/Taiwan/5084/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068166.1 GI:158452205
mRNA del virus dell'influenza A (A/Taiwan/511/96(H1N1)) proteina della matrice M1 (M), cds parziale	mRNA lineare 875 bp	AF138708.2 GI:4996867
mRNA del virus dell'influenza A (A/Taiwan/557/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068156.1 GI:158452185
mRNA del virus dell'influenza A (A/Taiwan/562/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068159.1 GI:158452191
mRNA del virus dell'influenza A (A/human/ Taiwan/5779/98(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AF362778.1 GI:14571925
mRNA del virus dell'influenza A (A/Taiwan/5779/98 (H1N1)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 303 bp	AY303702.1 GI:32330893
mRNA del virus dell'influenza A (A/Taiwan/6025/2005(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068172.1 GI:158452217
mRNA del virus dell'influenza A (A/Taiwan/607/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068157.1 GI:158452187
mRNA del virus dell'influenza A	mRNA	EU068162.1

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
(A/Taiwan/615/2006(H1N1)) emoagglutinina (HA), cds parziale	lineare 507 bp	GI:158452197
mRNA del virus dell'influenza A (A/Taiwan/645/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068164.1 GI:158452201
mRNA del virus dell'influenza A (A/Taiwan/680/2005(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068173.1 GI:158452219
mRNA del virus dell'influenza A (A/Taiwan/719/2006(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 507 bp	EU068158.1 GI:158452189
mRNA del virus dell'influenza A (A/Thailand/CU124/2006(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	EU021285.1 GI:154224724
mRNA del virus dell'influenza A (A/Thailand/CU32/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021265.1 GI:154224704
mRNA del virus dell'influenza A (A/Thailand/CU32/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021264.1 GI:154224775
mRNA del virus dell'influenza A (A/Thailand/CU41/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021247.1 GI:154224686
mRNA del virus dell'influenza A (A/Thailand/CU41/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021246.1 GI:154224757
mRNA del virus dell'influenza A (A/Thailand/CU44/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021259.1 GI:154224698
mRNA del virus dell'influenza A (A/Thailand/CU44/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021258.1 GI:154224769
mRNA del virus dell'influenza A (A/Thailand/CU51/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021255.1 GI:154224694
mRNA del virus dell'influenza A (A/Thailand/CU51/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021254.1 GI:154224765
mRNA del virus dell'influenza A	mRNA	EU021249.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/Thailand/CU53/2006(H1N1)) neuraminidasi (NA), cds completa	lineare 1.413 bp	GI:154224688
mRNA del virus dell'influenza A (A/Thailand/CU53/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021248.1 GI:154224759
mRNA del virus dell'influenza A (A/Thailand/CU57/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021257.1 GI:154224696
mRNA del virus dell'influenza A (A/Thailand/CU57/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021256.1 GI:154224767
mRNA del virus dell'influenza A (A/Thailand/CU67/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021251.1 GI:154224690
mRNA del virus dell'influenza A (A/Thailand/CU67/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021250.1 GI:154224761
mRNA del virus dell'influenza A (A/Thailand/CU68/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021261.1 GI:154224700
mRNA del virus dell'influenza A (A/Thailand/CU68/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021260.1 GI:154224771
mRNA del virus dell'influenza A (A/Thailand/CU75/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021263.1 GI:154224702
mRNA del virus dell'influenza A (A/Thailand/CU75/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021262.1 GI:154224773
mRNA del virus dell'influenza A (A/Thailand/CU88/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021253.1 GI:154224692
mRNA del virus dell'influenza A (A/Thailand/CU88/2006(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.698 bp	EU021252.1 GI:154224763
mRNA del virus dell'influenza A (A/turkey/England/647/1977(H1N1)) nucleoproteina, cds completa	mRNA lineare 1.565 bp	M76603.1 GI:325094
Virus dell'influenza A (A/turkey/France/87075/87(H1N1))	mRNA	AJ416626.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
Gene N1 per neuraminidasi, RNA genomico	lineare 1.445 bp	GI:39840719
mRNA del virus dell'influenza A (A/turkey/Germania/3/91(H1N1)) per PB2 polimerasi (parziale)	mRNA lineare 394 bp	Z30272.1 GI:456652
mRNA del virus dell'influenza A (A/turkey/Germania/3/91(H1N1)) per neuraminidasi (UTR)	mRNA lineare 97 bp	Z30275.1 GI:530398
mRNA del virus dell'influenza A (A/turkey/Germania/3/91(H1N1)) per PA polimerasi	mRNA lineare 264 bp	Z30274.1 GI:530401
mRNA del virus dell'influenza A (A/turkey/Germania/3/91(H1N1)) per PBI polimerasi (parziale)	mRNA lineare 247 bp	Z30273.1 GI:530403
mRNA del virus dell'influenza A (A/turkey/Germania/3/91(H1N1)) per emoagglutinina HA1	mRNA lineare 1.038 bp	Z46441.1 GI:854218
mRNA del virus dell'influenza A (A/turkey/Minnesota/1661/1981(H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 981 bp	U46941.1 GI:1912332
mRNA del virus dell'influenza A (A/turkey/Minnesota/1661/81(H1N1)) segmento 4 precursore dell'emoagglutinina (HA), cds completa	mRNA lineare 1.777 bp	AF091310.1 GI:4585162
mRNA del virus dell'influenza A (A/turkey/North Carolina/1790/1988(H1N1)) nucleoproteina, cds completa	mRNA lineare 1.565 bp	M76609.1 GI:325096
Virus dell'influenza A (A/Weiss/43 (H1N1)) gene della neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF250365.2 GI:13260589
mRNA del virus dell'influenza A (A/Wilson-Smith/1933(H1N1)) proteina nucleocapside (NP), cds completa	mRNA lineare 1.497 bp	EU330203.1 GI:167989512
mRNA del virus dell'influenza A (A/Wisconsin/3523/1988(H1N1)) neuraminidasi (NA), cds parziale	mRNA lineare 241 bp	U47816.1 GI:1912352
mRNA del virus dell'influenza A (A/Wisconsin/3623/1988(H1N1)) nucleoproteina, cds completa	mRNA lineare 1.565 bp	M76610.1 GI:325103
mRNA del virus dell'influenza A (A/WI/4754/1994(H1N1)) PB1 (PB1), cds parziale	mRNA lineare 235	U53156.1 GI:1399590

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
	bp	
mRNA del virus dell'influenza A (A/WI/4754/1994(H1N1)) PB2 (PB2), cds parziale	mRNA lineare 168 bp	U53158.1 GI:1399594
mRNA del virus dell'influenza A (A/WI/4754/1994(H1N1)) PA (PA), cds parziale	mRNA lineare 621 bp	U53160.1 GI:1399598
mRNA del virus dell'influenza A (A/WI/4754/1994(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.778 bp	U53162.1 GI:1399602
mRNA del virus dell'influenza A (A/WI/4754/1994(H1N1)) NP (NP), cds parziale	mRNA lineare 200 bp	U53164.1 GI:1399606
mRNA del virus dell'influenza A (A/WI/4754/1994(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.458 bp	U53166.1 GI:1399610
mRNA del virus dell'influenza A (A/WI/4754/1994(H1N1)) M (M), cds completa	mRNA lineare 1.027 bp	U53168.1 GI:1399614
mRNA del virus dell'influenza A (A/WI/4754/1994(H1N1)) NS (NS), cds completa	mRNA lineare 890 bp	U53170.1 GI:1399618
mRNA del virus dell'influenza A (A/WI/4755/1994(H1N1)) PB1 (PB1), cds parziale	mRNA lineare 203 bp	U53157.1 GI:1399592
mRNA del virus dell'influenza A (A/WI/4755/1994(H1N1)) PB2 (PB2), cds parziale	mRNA lineare 173 bp	U53159.1 GI:1399596
mRNA del virus dell'influenza A (A/WI/4755/1994(H1N1)) PA (PA), cds parziale	mRNA lineare 621 bp	U53161.1 GI:1399600
mRNA del virus dell'influenza A (A/WI/4755/1994(H1N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.778 bp	U53163.1 GI:1399604
mRNA del virus dell'influenza A (A/WI/4755/1994(H1N1)) NP (NP), cds parziale	mRNA lineare 215 bp	U53165.1 GI:1399608
mRNA del virus dell'influenza A (A/WI/4755/1994(H1N1)) neuraminidasi (NA), cds parziale	mRNA lineare 209	U53167.1 GI:1399612

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
	bp	
mRNA del virus dell'influenza A (A/WI/4755/1994(H1N1)) M (M), cds completa	mRNA lineare 1.027 bp	U53169.1 GI:1399616
mRNA del virus dell'influenza A (A/WI/4755/1994(H1N1)) NS (NS), cds completa	mRNA lineare 890 bp	U53171.1 GI:1399620
mRNA del virus dell'influenza A (A/WSN/33) segmento 5 proteina nucleocapsode (NP), cds parziale	mRNA lineare 543 bp	AF306656.1 GI:11935089

Tabella 7. Antigeni dell'influenza H3N2

Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
1. mRNA del virus dell'influenza A (A/Aichi/2/1968(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.704 bp	EF614248.1 GI:148910819
2. mRNA del virus dell'influenza A (A/Aichi/2/1968(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 1.698 bp	EF614249.1 GI:148910821
3. mRNA del virus dell'influenza A (A/Aichi/2/1968(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 1.698 bp	EF614250.1 GI:148910823
4. mRNA del virus dell'influenza A (A/Aichi/2/1968(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 1.698 bp	EF614251.1 GI:148910825
5. mRNA del virus dell'influenza A (A/Akita/1/1995(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.032 bp	U48444.1 GI:1574989
6. mRNA del virus dell'influenza A (A/Beijing/32/1992(H3N2)) per l'emoagglutinina	mRNA lineare 1.041 bp	Z46392.1 GI:609020
7. mRNA del virus dell'influenza A (A/Canada/33312/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501516.1 GI:21314288
8. mRNA del virus dell'influenza A (A/Charlottesville/10/99 (H3N2)) emoagglutinina, cds parziale	mRNA lineare 987 bp	AF297094.1 GI:11228917

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
9. mRNA del virus dell'influenza A (A/Charlottesville/49/99 (H3N2)) emoagglutinina, cds parziale	mRNA lineare 987 bp	AF297096.1 GI:11228921
10. mRNA del virus dell'influenza A (A/Charlottesville/69/99 (H3N2)) emoagglutinina, cds parziale	mRNA lineare 987 bp	AF297097.1 GI:11228923
11. mRNA del virus dell'influenza A (A/Charlottesville/73/99 (H3N2)) emoagglutinina, cds parziale	mRNA lineare 987 bp	AF297095.1 GI:11228919
12. mRNA del virus dell'influenza A (A/Inghilterra/1/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46393.1 GI:609024
13. mRNA del virus dell'influenza A (A/Inghilterra/247/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46394.1 GI:609025
14. mRNA del virus dell'influenza A (A/Inghilterra/269/93(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46395.1 GI:609027
15. mRNA del virus dell'influenza A (A/Inghilterra/284/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46396.1 GI:609029
16. mRNA del virus dell'influenza A (A/Inghilterra/286/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46397.1 GI:609031
17. mRNA del virus dell'influenza A (A/Inghilterra/289/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46398.1 GI:609033
18. mRNA del virus dell'influenza A (A/Inghilterra/328/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46399.1 GI:609035
19. mRNA del virus dell'influenza A (A/Inghilterra/346/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46400.1 GI:609037
20. mRNA del virus dell'influenza A (A/Inghilterra/347/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46401.1 GI:609039
21. mRNA del virus dell'influenza A (A/Inghilterra/42/72(H3N2)) emoagglutinina, cds parziale	mRNA lineare	AF201875.1 GI:6470274

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
	1.091 bp	
22. mRNA del virus dell'influenza A (A/Inghilterra/471/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46402.1 GI:609041
23. mRNA del virus dell'influenza A (A/Inghilterra/67/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46403.1 GI:609043
24. mRNA del virus dell'influenza A (A/Inghilterra/68/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46404.1 GI:609045
25. mRNA del virus dell'influenza A (A/Inghilterra/7/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46405.1 GI:609047
28. mRNA del virus dell'influenza A (A/Guangdong/25/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46406.1 GI:609049
29. mRNA del virus dell'influenza A (A/Hong Kong/1/68(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.091 bp	AF201874.1 GI:6470272
30. mRNA del virus dell'influenza A (A/Hong Kong/1/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46407.1 GI:609051
31. mRNA del virus dell'influenza A (A/Hong Kong/1143/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382319.1 GI:14487957
32. mRNA del virus dell'influenza A (A/Hong Kong/1143/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382320.1 GI:14487959
33. mRNA del virus dell'influenza A (A/Hong Kong/1143/99(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.466 bp	AF382329.1 GI:14487977
34. mRNA del virus dell'influenza A (A/Hong Kong/1143/99(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.466 bp	AF382330.1 GI:14487979
35. mRNA del virus dell'influenza A (A/Hong Kong/1144/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AY035589.1 GI:14486403
36. mRNA del virus dell'influenza A (A/Hong	mRNA	AF382321.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
Kong/1144/99(H3N2)) emoagglutinina, cds completa	lineare 1.762 bp	GI:14487961
37. mRNA del virus dell'influenza A (A/Hong Kong/1144/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382322.1 GI:14487963
38. mRNA del virus dell'influenza A (A/Hong Kong/1144/99(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.466 bp	AF382331.1 GI:14487981
39. mRNA del virus dell'influenza A (A/Hong Kong/1144/99(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.466 bp	AF382332.1 GI:14487983
40. mRNA del virus dell'influenza A (A/Hong Kong/1179/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AY035590.1 GI:14486405
41. mRNA del virus dell'influenza A (A/Hong Kong/1179/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382323.1 GI:14487965
42. mRNA del virus dell'influenza A (A/Hong Kong/1179/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382324.1 GI:14487967
43. mRNA del virus dell'influenza A (A/Hong Kong/1180/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AY035591.1 GI:14486407
44. mRNA del virus dell'influenza A (A/Hong Kong/1180/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382325.1 GI:14487969
45. mRNA del virus dell'influenza A (A/Hong Kong/1180/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382326.1 GI:14487971
46. mRNA del virus dell'influenza A (A/Hong Kong/1182/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382327.1 GI:14487973
47. mRNA del virus dell'influenza A (A/Hong Kong/1182/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382328.1 GI:14487975
48. mRNA del virus dell'influenza A (A/Hong Kong/2/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46408.1 GI:609055

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
49. mRNA del virus dell'influenza A (A/Hong Kong/23/1992(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46410.1 GI:609053
50. mRNA del virus dell'influenza A (A/Hong Kong/34/1990(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46409.1 GI:609057
51. mRNA del virus dell'influenza A (A/Inghilterra/286/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46397.1 GI:609031
52. mRNA del virus dell'influenza A (A/Inghilterra/289/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46398.1 GI:609033
53. mRNA del virus dell'influenza A (A/Inghilterra/328/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46399.1 GI:609035
54. mRNA del virus dell'influenza A (A/Inghilterra/346/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46400.1 GI:609037
55. mRNA del virus dell'influenza A (A/Inghilterra/347/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46401.1 GI:609039
56. mRNA del virus dell'influenza A (A/Inghilterra/42/72(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.091 bp	AF201875.1 GI:6470274
57. mRNA del virus dell'influenza A (A/Inghilterra/471/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46402.1 GI:609041
58. mRNA del virus dell'influenza A (A/Inghilterra/67/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46403.1 GI:609043
59. mRNA del virus dell'influenza A (A/Inghilterra/68/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46404.1 GI:609045
60. mRNA del virus dell'influenza A (A/Inghilterra/7/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46405.1 GI:609047
63. mRNA del virus dell'influenza A (A/Guandong/28/1994(H3N2)) emoagglutinina, cds parziale	mRNA lineare	U48442.1 GI:1574985

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
	1.032 bp	
64. mRNA del virus dell'influenza A (A/Guangdong/25/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46406.1 GI:609049
65. mRNA del virus dell'influenza A (A/Hebei/19/1995(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.032 bp	U48447.1 GI:1574995
66. mRNA del virus dell'influenza A (A/Hebei/41/1994(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.032 bp	U48441.1 GI:1574983
67. mRNA del virus dell'influenza A (A/Hong Kong/1/68(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.091 bp	AF201874.1 GI:6470272
68. mRNA del virus dell'influenza A (A/Hong Kong/1/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46407.1 GI:609051
69. mRNA del virus dell'influenza A (A/Hong Kong/1143/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AY035588.1 GI:14486401
70. mRNA del virus dell'influenza A (A/Hong Kong/1143/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382319.1 GI:14487957
71. mRNA del virus dell'influenza A (A/Hong Kong/1143/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382320.1 GI:14487959
72. mRNA del virus dell'influenza A (A/Hong Kong/1143/99(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.466 bp	AF382329.1 GI:14487977
73. mRNA del virus dell'influenza A (A/Hong Kong/1143/99(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.466 bp	AF382330.1 GI:14487979
74. mRNA del virus dell'influenza A (A/Hong Kong/1144/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AY035589.1 GI:14486403
75. mRNA del virus dell'influenza A (A/Hong Kong/1144/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382321.1 GI:14487961
76. mRNA del virus dell'influenza A (A/Hong	mRNA	AF382322.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
Kong/1144/99(H3N2)) emoagglutinina, cds completa	lineare 1.762 bp	GI:14487963
77. mRNA del virus dell'influenza A (A/Hong Kong/1144/99(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.466 bp	AF382331.1 GI:14487981
78. mRNA del virus dell'influenza A (A/Hong Kong/1144/99(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.466 bp	AF382332.1 GI:14487983
79. mRNA del virus dell'influenza A (A/Hong Kong/1179/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AY035590.1 GI:14486405
80. mRNA del virus dell'influenza A (A/Hong Kong/1179/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382323.1 GI:14487965
81. mRNA del virus dell'influenza A (A/Hong Kong/1179/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382324.1 GI:14487967
82. mRNA del virus dell'influenza A (A/Hong Kong/1180/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AY035591.1 GI:14486407
83. mRNA del virus dell'influenza A (A/Hong Kong/1180/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382325.1 GI:14487969
84. mRNA del virus dell'influenza A (A/Hong Kong/1180/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382326.1 GI:14487971
85. mRNA del virus dell'influenza A (A/Hong Kong/1182/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AY035592.1 GI:14486409
86. mRNA del virus dell'influenza A (A/Hong Kong/1182/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382327.1 GI:14487973
87. mRNA del virus dell'influenza A (A/Hong Kong/1182/99(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382328.1 GI:14487975
88. mRNA del virus dell'influenza A (A/Hong Kong/2/1994(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46408.1 GI:609055

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
89. mRNA del virus dell'influenza A (A/Hong Kong/23/1992(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46410.1 GI:609053
90. mRNA del virus dell'influenza A (A/Hong Kong/34/1990(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46409.1 GI:609057
91. mRNA del virus dell'influenza A (A/Indiana/28170/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501534.1 GI:21314324
92. mRNA del virus dell'influenza A (A/Kinmen/618/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 529 bp	AY961997.1 GI:68138151
93. mRNA del virus dell'influenza A (A/Kinmen/618/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 383 bp	AY973325.1 GI:70673206
94. mRNA del virus dell'influenza A (A/Kinmen/618/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986986.1 GI:70728099
95. mRNA del virus dell'influenza A (A/Kinmen/621/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 545 bp	AY962017.1 GI:68138191
96. mRNA del virus dell'influenza A (A/Kinmen/621/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 386 bp	AY973326.1 GI:70673208
97. mRNA del virus dell'influenza A (A/Kinmen/621/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986987.1 GI:70728101
98. mRNA del virus dell'influenza A (A/Kinmen/639/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 786 bp	AY962008.1 GI:68138173
99. mRNA del virus dell'influenza A (A/Kinmen/639/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 381 bp	AY973327.1 GI:70673210
100. mRNA del virus dell'influenza A (A/Kinmen/639/04(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986988.1 GI:70728103
101. mRNA del virus dell'influenza A (A/Kinmen/641/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 596	AY962004.1 GI:68138165

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
	bp	
102. mRNA del virus dell'influenza A (A/Kinmen/641/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 785 bp	AY973328.1 GI:70673212
103. mRNA del virus dell'influenza A (A/Kinmen/642/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 576 bp	AY962001.1 GI:68138159
104. mRNA del virus dell'influenza A (A/Kinmen/642/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 580 bp	AY973329.1 GI:70673214
105. mRNA del virus dell'influenza A (A/Kinmen/642/04(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986989.1 GI:70728105
106. mRNA del virus dell'influenza A (A/Kinmen/645/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 789 bp	AY962009.1 GI:68138175
107. mRNA del virus dell'influenza A (A/Kinmen/645/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 581 bp	AY973330.1 GI:70673216
108. mRNA del virus dell'influenza A (A/Kinmen/645/04(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 981 bp	AY986990.1 GI:70728107
109. mRNA del virus dell'influenza A (A/LosAngeles/2/1987(H3N2)) proteina della polimerasi basica 2 (PB2), cds completa	mRNA lineare 2.341 bp	U62543.1 GI:1480737
110. mRNA del virus dell'influenza A (A/Madrid/252/1993(H3N2)) per l'emoagglutinina	mRNA lineare 1.041 bp	Z46411.1 GI:609067
111. mRNA del virus dell'influenza A (A/Michigan/22568/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501531.1 GI:21314318
112. mRNA del virus dell'influenza A (A/Michigan/22692/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501518.1 GI:21314292
113. Virus dell'influenza A (A/Mosca/10/99(H3N2)) gene NS1 parziale per la proteina 1 non strutturale e gene NS2 parziale per la proteina 2 non strutturale, RNA genomico	mRNA lineare 754 bp	AJ519454.1 GI:31096423
114. mRNA del virus dell'influenza A	mRNA	AY138518.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/ningbo/17/2002(H3N2)) emoagglutinina (HA), cds parziale	lineare 987 bp	GI:24895178
115. mRNA del virus dell'influenza A (A/ningbo/25/2002(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AY138517.1 GI:24895169
116. mRNA del virus dell'influenza A (A/NT/60/68/29C(H3N2)) per l'emoagglutinina (geni HA1 e HA2)	mRNA lineare 1.765 bp	V01103.1 GI:60800
117. mRNA del virus dell'influenza A (A/Oklahoma/323/03(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.701 bp	DQ059385.1 GI:66933143
118. mRNA del virus dell'influenza A (A/Oklahoma/323/03(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.410 bp	DQ059384.2 GI:75859981
119. Virus dell'influenza A (A/Panama/2007/99(H3N2)) gene NS1 parziale per la proteina 1 non strutturale e gene NS2 parziale per la proteina 2 non strutturale, RNA genomico	mRNA lineare 766 bp	AJ519458.1 GI:31096435
120. mRNA del virus dell'influenza A (A/Pennsalvanya/20109/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501526.1 GI:21314308
121. mRNA del virus dell'influenza A (A/Philippines/2/82(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.091 bp	AF233691.1 GI:7331124
122. mRNA del virus dell'influenza A (A/Pingtung/303/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 767 bp	AY962000.1 GI:68138157
123. mRNA del virus dell'influenza A (A/Pingtung/303/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 783 bp	AY973331.1 GI:70673218
124. mRNA del virus dell'influenza A (A/Pingtung/303/04(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 928 bp	AY986991.1 GI:70728109
125. mRNA del virus dell'influenza A (A/Pingtung/313/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 788 bp	AY961999.1 GI:68138155
126. mRNA del virus dell'influenza A (A/Pingtung/313/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 787 bp	AY973332.1 GI:70673220

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
127. mRNA del virus dell'influenza A (A/Pingtung/313/04(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986992.1 GI:70728111
128. Virus dell'influenza A (A/ruddy turnstone/Delaware/142/99 (H3N2)) mRNA proteina della matrice non funzionale, sequenza parziale	mRNA lineare 927 bp	AY664458.1 GI:51011862
129. mRNA del virus dell'influenza A (A/Scotland/142/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46413.1 GI:609059
130. mRNA del virus dell'influenza A (A/Scotland/160/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46414.1 GI:609061
131. mRNA del virus dell'influenza A (A/Scotland/173/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46416.1 GI:609063
132. mRNA del virus dell'influenza A (A/Scotland/174/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46415.1 GI:609065
133. mRNA del virus dell'influenza A (A/Scotland/2/1993(H3N2)) per emoagglutinina	mRNA lineare 1.041 bp	Z46412.1 GI:609069
134. mRNA del virus dell'influenza A (A/Sendai/cl82/1994(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.032 bp	U48439.1 GI:1574979
135. mRNA del virus dell'influenza A (A/Sendai/c373/1995(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.032 bp	U48445.1 GI:1574991
136. mRNA del virus dell'influenza A (A/Sendai/c384/1994(H3N2)) emoagglutinina, cds parziale	mRNA lineare 1.032 bp	U48440.1 GI:1574981
137. mRNA del virus dell'influenza A (A/Shangdong/9/1993(H3N2)) per l'emoagglutinina	mRNA lineare 1.041 bp	Z46417.1 GI:609071
138. mRNA del virus dell'influenza A (A/Shanghai/11/1987/X99aE high yield reassortant (H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	L19416.1 GI:348117
139. mRNA del virus dell'influenza A (A/sw/Shizuoka/110/97(H3N2)) polimerasi basica 2 (PB2), cds	mRNA lineare	AF225514.1 GI:27462098

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
completa	2.280 bp	
140. mRNA del virus dell'influenza A (A/sw/Shizuoka/110/97(H3N2)) polimerasi basica 1 (PB1), cds completa	mRNA lineare 2.274 bp	AF225518.1 GI:27462106
141. mRNA del virus dell'influenza A (A/sw/Shizuoka/110/97(H3N2)) polimerasi acida (PA), cds completa	mRNA lineare 2.151 bp	AF225522.1 GI:27462114
142. mRNA del virus dell'influenza A (A/sw/Shizuoka/110/97(H3N2)) nucleoproteina (NP), cds completa	mRNA lineare 1.497 bp	AF225534.1 GI:27462146
143. mRNA del virus dell'influenza A (A/sw/Shizuoka/110/97(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF225538.1 GI:27462154
144. mRNA del virus dell'influenza A (A/sw/Shizuoka/110/97(H3N2)) emoagglutinina (HA1), cds parziale	mRNA lineare 984 bp	AF225542.1 GI:27462162
145. mRNA del virus dell'influenza A (A/sw/Shizuoka/115/97(H3N2)) polimerasi basica 2 (PB2), cds completa	mRNA lineare 2.280 bp	AF225515.1 GI:27462100
146. mRNA del virus dell'influenza A (A/sw/Shizuoka/115/97(H3N2)) polimerasi basica 1 (PB1), cds completa	mRNA lineare 2.274 bp	AF225519.1 GI:27462108
147. mRNA del virus dell'influenza A (A/sw/Shizuoka/115/97(H3N2)) polimerasi acida (PA), cds completa	mRNA lineare 2.151 bp	AF225523.1 GI:27462116
148. mRNA del virus dell'influenza A (A/sw/Shizuoka/115/97(H3N2)) nucleoproteina (NP), cds completa	mRNA lineare 1.497 bp	AF225535.1 GI:27462148
149. mRNA del virus dell'influenza A (A/sw/Shizuoka/115/97(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF225539.1 GI:27462156
150. mRNA del virus dell'influenza A (A/sw/Shizuoka/115/97(H3N2)) emoagglutinina (HA1), cds parziale	mRNA lineare 984 bp	AF225543.1 GI:27462164
151. mRNA del virus dell'influenza A (A/sw/Shizuoka/119/97(H3N2)) polimerasi basica 2 (PB2), cds completa	mRNA lineare 2.280 bp	AF225516.1 GI:27462102
152. mRNA del virus dell'influenza A	mRNA	AF225520.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/sw/Shizuoka/119/97(H3N2)) polimerasi basica 1 (PB1), cds completa	lineare 2.274 bp	GI:27462110
153. mRNA del virus dell'influenza A (A/sw/Shizuoka/119/97(H3N2)) polimerasi acida (PA), cds completa	mRNA lineare 2.151 bp	AF225524.1 GI:27462118
154. mRNA del virus dell'influenza A (A/sw/Shizuoka/119/97(H3N2)) nucleoproteina (NP), cds completa	mRNA lineare 1.497 bp	AF225536.1 GI:27462150
155. mRNA del virus dell'influenza A (A/sw/Shizuoka/119/97(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF225540.1 GI:27462158
156. mRNA del virus dell'influenza A (A/sw/Shizuoka/119/97(H3N2)) emoagglutinina (HA1), cds parziale	mRNA lineare 984 bp	AF225544.1 GI:27462166
159. mRNA del virus dell'influenza A (A/swine/Bakum/IDT1769/2003(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.410 bp	EU163948.1 GI:157679552
163. mRNA del virus dell'influenza A (A/swine/Fujian/668/01(H3N2)) emoagglutinina non funzionale, sequenza completa	mRNA lineare 1.738 bp	AY857957.1 GI:58042507
164. Virus dell'influenza A, gene PB2 per la proteina della polimerasi 2, RNA genomico, ceppo A/Swine/Italy/1523/98	mRNA lineare 2.280 bp	AJ311459.1 GI:13661041
165. Virus dell'influenza A, gene PB1 per la proteina della polimerasi 1, RNA genomico, ceppo A/Swine/Italy/1523/98	mRNA lineare 2.274 bp	AJ311460.1 GI:13661043
166. Virus dell'influenza A (A/swine/Italy/1523/98(H3N2)) Gene NS1 per la proteina 1 non strutturale e gene NS2 per la proteina 2 non strutturale, RNA genomico	mRNA lineare 821 bp	AJ344024.1 GI:20068146
167. mRNA del virus dell'influenza A (A/swine/Re220/92hp(H3N2)) neuraminidasi, cds completa	mRNA lineare 1.465 bp	EU163949.1 GI:157679554
168. mRNA del virus dell'influenza A (A/sw/Shizuoka/120/97(H3N2)) polimerasi basica 2 (PB2), cds completa	mRNA lineare 2.280 bp	AF225517.1 GI:27462104
169. mRNA del virus dell'influenza A (A/sw/Shizuoka/120/97(H3N2)) polimerasi basica 1 (PB1), cds completa	mRNA lineare 2.274 bp	AF225521.1 GI:27462112

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
170. mRNA del virus dell'influenza A (A/sw/Shizuoka/120/97(H3N2)) polimerasi acida (PA), cds completa	mRNA lineare 2.151 bp	AF225525.1 GI:27462120
171. mRNA del virus dell'influenza A (A/sw/Shizuoka/120/97(H3N2)) nucleoproteina (NP), cds completa	mRNA lineare 1.497 bp	AF225537.1 GI:27462152
172. mRNA del virus dell'influenza A (A/sw/Shizuoka/120/97(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	AF225541.1 GI:27462160
173. mRNA del virus dell'influenza A (A/sw/Shizuoka/120/97(H3N2)) emoagglutinina (HA1), cds parziale	mRNA lineare 984 bp	AF225545.1 GI:27462168
174. mRNA del virus dell'influenza A (A/Switzerland/7729/98(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AY032978.1 GI:14161723
175. mRNA del virus dell'influenza A (A/Switzerland/7729/98(H3N2)) emoagglutinina, cds completa	mRNA lineare 1.762 bp	AF382318.1 GI:14487955
176. mRNA del virus dell'influenza A (A/Tainan/704/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 528 bp	AY962011.1 GI:68138179
177. mRNA del virus dell'influenza A (A/Tainan/704/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 384 bp	AY973333.1 GI:70673222
178. mRNA del virus dell'influenza A (A/Tainan/704/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986993.1 GI:70728113
179. mRNA del virus dell'influenza A (A/Tainan/712/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 519 bp	AY962012.1 GI:68138181
180. mRNA del virus dell'influenza A (A/Tainan/712/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 383 bp	AY973334.1 GI:70673224
181. mRNA del virus dell'influenza A (A/Tainan/712/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986994.1 GI:70728115
182. mRNA del virus dell'influenza A (A/Tainan/722/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 784	AY962005.1 GI:68138167

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
	bp	
183. mRNA del virus dell'influenza A (A/Tainan/722/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 592 bp	AY973335.1 GI:70673226
184. mRNA del virus dell'influenza A (A/Tainan/722/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 936 bp	AY986995.1 GI:70728117
185. mRNA del virus dell'influenza A (A/Taipei/407/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 788 bp	AY961998.1 GI:68138153
186. mRNA del virus dell'influenza A (A/Taipei/407/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 787 bp	AY973336.1 GI:70673228
187. mRNA del virus dell'influenza A (A/Taipei/407/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986996.1 GI:70728119
188. mRNA del virus dell'influenza A (A/Taipei/416/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 787 bp	AY962007.1 GI:68138171
189. mRNA del virus dell'influenza A (A/Taipei/416/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 782 bp	AY973337.1 GI:70673230
190. mRNA del virus dell'influenza A (A/Taipei/416/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986997.1 GI:70728121
191. mRNA del virus dell'influenza A (A/Taiwan/0020/98 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303703.1 GI:32330895
192. mRNA del virus dell'influenza A (A/Taiwan/0040/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604817.1 GI:50727514
193. mRNA del virus dell'influenza A (A/Taiwan/0045/98 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303705.1 GI:32330899
194. mRNA del virus dell'influenza A (A/human/Taiwan /0095/96(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362820.1 GI:15055140
195. mRNA del virus dell'influenza A	mRNA	AY604828.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/Taiwan/0097/2003(H3N2)) emoagglutinina, cds parziale	lineare 791 bp	GI:50727536
196. mRNA del virus dell'influenza A (A/Taiwan/0104/2001 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303706.1 GI:32330901
197. mRNA del virus dell'influenza A (A/human/Taiwan /0118/98(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362805.1 GI:15055110
198. mRNA del virus dell'influenza A (A/Taiwan/0122/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604823.1 GI:50727526
199. mRNA del virus dell'influenza A (A/human/Taiwan /0149/00(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362806.1 GI:15055112
200. mRNA del virus dell'influenza A (A/Taiwan/0275/2000 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303712.1 GI:32330913
201. mRNA del virus dell'influenza A (A/Taiwan/0275/2000 (H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AY303713.1 GI:32330915
202. mRNA del virus dell'influenza A (A/human/Taiwan /0293/98(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362807.1 GI:15055114
203. mRNA del virus dell'influenza A (A/Taiwan/0346/98 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303715.1 GI:32330919
204. mRNA del virus dell'influenza A (A/Taiwan/0379/2000 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303716.1 GI:32330921
205. mRNA del virus dell'influenza A (A/Taiwan/0379/2000 (H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AY303717.1 GI:32330923
206. mRNA del virus dell'influenza A (A/Taiwan/0388/2001(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 791 bp	AY625729.1 GI:50604415
207. mRNA del virus dell'influenza A (A/human/Taiwan /0389/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362808.1 GI:15055116

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
208. mRNA del virus dell'influenza A (A/human/Taiwan /0423/98(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362809.1 GI:15055118
209. mRNA del virus dell'influenza A (A/Taiwan/0423/98 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303718.1 GI:32330925
210. mRNA del virus dell'influenza A (A/human/Taiwan /0464/98(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362810.1 GI:15055120
211. mRNA del virus dell'influenza A (A/Taiwan/0464/98 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303719.1 GI:32330927
212. mRNA del virus dell'influenza A (A/Taiwan/0568/2001(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 791 bp	AY625730.1 GI:50604440
213. mRNA del virus dell'influenza A (A/Taiwan/0570/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604822.1 GI:50727524
214. mRNA del virus dell'influenza A (A/Taiwan/0572/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604827.1 GI:50727534
215. mRNA del virus dell'influenza A (A/Taiwan/0578/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604821.1 GI:50727522
216. mRNA del virus dell'influenza A (A/Taiwan/0583/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604820.1 GI:50727520
217. mRNA del virus dell'influenza A (A/Taiwan/0646/2000 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303722.1 GI:32330933
218. mRNA del virus dell'influenza A (A/Taiwan/0646/2000 (H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AY303723.1 GI:32330935
219. mRNA del virus dell'influenza A (A/human/Taiwan /0830/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362811.1 GI:15055122
220. mRNA del virus dell'influenza A (A/Taiwan/0964/2001(H3N2)) emoagglutinina (HA), cds	mRNA lineare 791	AY625731.1 GI:50604469

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
parziale	bp	
221. mRNA del virus dell'influenza A (A/human/Taiwan /1008/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362812.1 GI:15055124
222. mRNA del virus dell'influenza A (A/Taiwan/1008/99 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303725.1 GI:32330939
223. mRNA del virus dell'influenza A (A/Taiwan/1219/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068138.1 GI:158452149
224. mRNA del virus dell'influenza A (A/Taiwan/1315/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068125.1 GI:158452123
225. mRNA del virus dell'influenza A (A/Taiwan/1511/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068153.1 GI:158452179
226. mRNA del virus dell'influenza A (A/Taiwan/1533/2003(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068119.1 GI:158452111
227. mRNA del virus dell'influenza A (A/human/Taiwan /1537/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362813.1 GI:15055126
228. mRNA del virus dell'influenza A (A/Taiwan/1537/99 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303728.1 GI:32330945
229. mRNA del virus dell'influenza A (A/Taiwan/1566/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604826.1 GI:50727532
230. mRNA del virus dell'influenza A (A/Taiwan/1568/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604819.1 GI:50727518
231. mRNA del virus dell'influenza A (A/Taiwan/158/2003(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068116.1 GI:158452105
232. mRNA del virus dell'influenza A (A/Taiwan/1600/96(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 875 bp	AF138709.2 GI:4996869
233. mRNA del virus dell'influenza A	mRNA	EU068117.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/Taiwan/1613/2003(H3N2)) emoagglutinina (HA), cds parziale	lineare 750 bp	GI:158452107
234. mRNA del virus dell'influenza A (A/Taiwan/1651/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068148.1 GI:158452169
235. mRNA del virus dell'influenza A (A/human/Taiwan /1748/97(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362814.1 GI:15055128
236. mRNA del virus dell'influenza A (A/Taiwan/1748/97 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303729.1 GI:32330947
237. mRNA del virus dell'influenza A (A/Taiwan/179/96(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 872 bp	AF138707.2 GI:4996865
238. mRNA del virus dell'influenza A (A/Taiwan/1817/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068139.1 GI:158452151
239. mRNA del virus dell'influenza A (A/Taiwan/1904/2003(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068154.1 GI:158452181
240. mRNA del virus dell'influenza A (A/Taiwan/1921/2003(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068155.1 GI:158452183
241. mRNA del virus dell'influenza A (A/human/Taiwan /1986/96(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362815.1 GI:15055130
242. mRNA del virus dell'influenza A (A/Taiwan/1990/96 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303730.1 GI:32330949
243. mRNA del virus dell'influenza A (A/Taiwan/1990/96 (H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AY303731.1 GI:32330951
244. mRNA del virus dell'influenza A (A/Taiwan/20/98(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139938.1 GI:4972940
245. mRNA del virus dell'influenza A (A/Taiwan/20/98(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140627.1 GI:4972988

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
246. mRNA del virus dell'influenza A (A/Taiwan/20/98(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 875 bp	AF138715.2 GI:4996879
247. mRNA del virus dell'influenza A (A/human/Taiwan /2031/97(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362816.1 GI:15055132
248. mRNA del virus dell'influenza A (A/Taiwan/2034/96(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139937.1 GI:4972938
249. mRNA del virus dell'influenza A (A/Taiwan/2034/96(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140620.1 GI:4972974
250. mRNA del virus dell'influenza A (A/Taiwan/2034/96(H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303732.1 GI:32330953
251. mRNA del virus dell'influenza A (A/Taiwan/2040/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604818.1 GI:50727516
252. mRNA del virus dell'influenza A (A/Taiwan/2072/2006(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068131.1 GI:158452135
253. mRNA del virus dell'influenza A (A/Taiwan/21/98(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139934.1 GI:4972932
254. mRNA del virus dell'influenza A (A/Taiwan/21/98(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140624.1 GI:4972982
255. mRNA del virus dell'influenza A (A/Taiwan/21/98(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 875 bp	AF138716.2 GI:4996881
256. mRNA del virus dell'influenza A (A/Taiwan/2191/96(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139932.1 GI:4972928
257. mRNA del virus dell'influenza A (A/Taiwan/2191/96(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140622.1 GI:4972978
258. mRNA del virus dell'influenza A (A/Taiwan/2191/96(H3N2)) proteina della matrice M1 (M), cds	mRNA lineare 875	AF138711.3 GI:156147502

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
parziale	bp	
259. mRNA del virus dell'influenza A (A/Taiwan/2192/96(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139936.1 GI:4972936
260. mRNA del virus dell'influenza A (A/Taiwan/2192/96(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140626.1 GI:4972986
261. mRNA del virus dell'influenza A (A/Taiwan/2195/96 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303735.1 GI:32330959
262. mRNA del virus dell'influenza A (A/Taiwan/2195/96 (H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AY303736.1 GI:32330961
263. mRNA del virus dell'influenza A (A/Taiwan/224/98(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 875 bp	AF138718.2 GI:4996885
264. mRNA del virus dell'influenza A (A/human/Taiwan /2548/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AF362817.1 GI:15055134
265. mRNA del virus dell'influenza A (A/Taiwan/268/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068120.1 GI:158452113
266. mRNA del virus dell'influenza A (A/Taiwan/3008/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068149.1 GI:158452171
267. mRNA del virus dell'influenza A (A/Taiwan/3075/2003(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068152.1 GI:158452177
268. mRNA del virus dell'influenza A (A/human/Taiwan /3083/00(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 940 bp	AF362818.1 GI:15055136
269. mRNA del virus dell'influenza A (A/Taiwan/3131/2002(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604811.1 GI:50727502
270. mRNA del virus dell'influenza A (A/Taiwan/3154/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068145.1 GI:158452163
271. mRNA del virus dell'influenza A	mRNA	EU068141.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/Taiwan/3187/2004(H3N2)) emoagglutinina (HA), cds parziale	lineare 750 bp	GI:158452155
272. mRNA del virus dell'influenza A (A/Taiwan/3245/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068134.1 GI:158452141
273. mRNA del virus dell'influenza A (A/Taiwan/3294/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068133.1 GI:158452139
274. mRNA del virus dell'influenza A (A/Taiwan/3351/97(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139935.1 GI:4972934
275. mRNA del virus dell'influenza A (A/Taiwan/3351/97(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140625.1 GI:4972984
276. mRNA del virus dell'influenza A (A/Taiwan/3351/97(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 875 bp	AF138713.2 GI:4996875
277. mRNA del virus dell'influenza A (A/Taiwan/3351/97(H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303738.1 GI:32330965
278. mRNA del virus dell'influenza A (A/Taiwan/3387/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068132.1 GI:158452137
279. mRNA del virus dell'influenza A (A/Taiwan/3396/97 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303742.1 GI:32330973
280. mRNA del virus dell'influenza A (A/Taiwan/3396/97 (H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AY303743.1 GI:32330975
281. mRNA del virus dell'influenza A (A/Taiwan/3427/97(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139930.1 GI:4972924
282. mRNA del virus dell'influenza A (A/Taiwan/3427/97(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140619.1 GI:4972972
283. mRNA del virus dell'influenza A (A/Taiwan/346/98(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139940.1 GI:4972944

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
284. mRNA del virus dell'influenza A (A/Taiwan/346/98(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140787.1 GI:4972992
285. mRNA del virus dell'influenza A (A/Taiwan/346/98(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 875 bp	AF138719.2 GI:4996887
286. mRNA del virus dell'influenza A (A/human/Taiwan/3460/00(H3N2)) emoagglutinina (HA) troncata, cds parziale	mRNA lineare 942 bp	AF362819.1 GI:15055138
287. mRNA del virus dell'influenza A (A/Taiwan/3469/97(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139933.1 GI:4972930
288. mRNA del virus dell'influenza A (A/Taiwan/3469/97(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140623.1 GI:4972980
289. mRNA del virus dell'influenza A (A/Taiwan/3469/97(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 875 bp	AF138714.2 GI:4996877
290. mRNA del virus dell'influenza A (A/Taiwan/3503/97 (H3N2)) proteina basica della polimerasi 1 (PB1), cds parziale	mRNA lineare 297 bp	AY303744.1 GI:32330977
291. mRNA del virus dell'influenza A (A/Taiwan/3503/97 (H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 844 bp	AY303745.1 GI:32330979
292. mRNA del virus dell'influenza A (A/Taiwan/3513/96(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 919 bp	AF138712.1 GI:4928900
293. mRNA del virus dell'influenza A (A/Taiwan/3513/97(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139931.1 GI:4972926
294. mRNA del virus dell'influenza A (A/Taiwan/3513/97(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140621.1 GI:4972976
295. mRNA del virus dell'influenza A (A/Taiwan/3744/2002(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604814.1 GI:50727508
296. mRNA del virus dell'influenza A (A/human/Taiwan /3760/00(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 940	AF362804.1 GI:15055108

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
	bp	
297. mRNA del virus dell'influenza A (A/Taiwan/3896/2001 (H1N1)) emoagglutinina (HA), cds parziale	mRNA lineare 561 bp	AY303747.1 GI:32330983
298. mRNA del virus dell'influenza A (A/Taiwan/4050/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604825.1 GI:50727530
299. mRNA del virus dell'influenza A (A/Taiwan/4063/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604824.1 GI:50727528
300. mRNA del virus dell'influenza A (A/Taiwan/41/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068137.1 GI:158452147
301. mRNA del virus dell'influenza A (A/Taiwan/45/98(H3N2)) H3 emoagglutinina (HA), cds parziale	mRNA lineare 861 bp	AF139939.1 GI:4972942
302. mRNA del virus dell'influenza A (A/Taiwan/45/98(H3N2)) N2 neuraminidasi (NA), cds parziale	mRNA lineare 392 bp	AF140628.1 GI:4972990
303. mRNA del virus dell'influenza A (A/Taiwan/45/98(H3N2)) proteina della matrice M1 (M), cds parziale	mRNA lineare 875 bp	AF138717.2 GI:4996883
304. mRNA del virus dell'influenza A (A/Taiwan/4548/2003(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068114.1 GI:158452101
305. mRNA del virus dell'influenza A (A/Taiwan/4673/2002(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604813.1 GI:50727506
306. mRNA del virus dell'influenza A (A/Taiwan/4680/2002(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604812.1 GI:50727504
307. mRNA del virus dell'influenza A (A/Taiwan/4735/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068136.1 GI:158452145
308. mRNA del virus dell'influenza A (A/Taiwan/4829/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068142.1 GI:158452157
309. mRNA del virus dell'influenza A	mRNA	EU068130.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/Taiwan/4836/2005(H3N2)) emoagglutinina (HA), cds parziale	lineare 750 bp	GI:158452133
310. mRNA del virus dell'influenza A (A/Taiwan/4865/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068143.1 GI:158452159
311. mRNA del virus dell'influenza A (A/Taiwan/4883/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068121.1 GI:158452115
312. mRNA del virus dell'influenza A (A/Taiwan/4938/2002(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604809.1 GI:50727498
313. mRNA del virus dell'influenza A (A/Taiwan/4954/2002(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604815.1 GI:50727510
314. mRNA del virus dell'influenza A (A/Taiwan/4963/2002(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604810.1 GI:50727500
315. mRNA del virus dell'influenza A (A/Taiwan/4987/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068122.1 GI:158452117
316. mRNA del virus dell'influenza A (A/Taiwan/4990/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068127.1 GI:158452127
317. mRNA del virus dell'influenza A (A/Taiwan/5/2003(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068118.1 GI:158452109
318. mRNA del virus dell'influenza A (A/Taiwan/5153/2002(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604816.1 GI:50727512
319. mRNA del virus dell'influenza A (A/Taiwan/5267/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068128.1 GI:158452129
320. mRNA del virus dell'influenza A (A/Taiwan/556/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068146.1 GI:158452165
321. mRNA del virus dell'influenza A (A/Taiwan/5694/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068126.1 GI:158452125

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
322. mRNA del virus dell'influenza A (A/Taiwan/587/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068147.1 GI:158452167
323. mRNA del virus dell'influenza A (A/Taiwan/592/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068151.1 GI:158452175
324. mRNA del virus dell'influenza A (A/Taiwan/7099/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604829.1 GI:50727538
325. mRNA del virus dell'influenza A (A/Taiwan/7100/2003(H3N2)) emoagglutinina, cds parziale	mRNA lineare 791 bp	AY604830.1 GI:50727540
326. mRNA del virus dell'influenza A (A/Taiwan/7196/2003(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068150.1 GI:158452173
327. mRNA del virus dell'influenza A (A/Taiwan/7568/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068135.1 GI:158452143
328. mRNA del virus dell'influenza A (A/Taiwan/7601/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068144.1 GI:158452161
329. mRNA del virus dell'influenza A (A/Taiwan/7681/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068124.1 GI:158452121
330. mRNA del virus dell'influenza A (A/Taiwan/7702/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068123.1 GI:158452119
331. mRNA del virus dell'influenza A (A/Taiwan/7873/2005(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068129.1 GI:158452131
332. mRNA del virus dell'influenza A (A/Taiwan/8/2003(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068115.1 GI:158452103
333. mRNA del virus dell'influenza A (A/Taiwan/93/2004(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 750 bp	EU068140.1 GI:158452153
334. mRNA del virus dell'influenza A (A/Taoyuan/108/02(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 528	AY962016.1 GI:68138189

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
	bp	
335. mRNA del virus dell'influenza A (A/Taoyuan/108/02(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 754 bp	AY973338.1 GI:70673232
336. mRNA del virus dell'influenza A (A/Taoyuan/108/02(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986998.1 GI:70728123
337. mRNA del virus dell'influenza A (A/Thailand/CU124/2006(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	EU021285.1 GI:154224724
338. mRNA del virus dell'influenza A (A/Thailand/CU124/2006(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.701 bp	EU021284.1 GI:154224795
339. mRNA del virus dell'influenza A (A/Thailand/CU228/2006(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	EU021275.1 GI:154224714
340. mRNA del virus dell'influenza A (A/Thailand/CU228/2006(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.701 bp	EU021274.1 GI:154224785
341. mRNA del virus dell'influenza A (A/Thailand/CU23/2006(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 1.347 bp	EU021267.1 GI:154224706
342. mRNA del virus dell'influenza A (A/Thailand/CU23/2006(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.701 bp	EU021266.1 GI:154224777
343. mRNA del virus dell'influenza A (A/Thailand/CU231/2006(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	EU021283.1 GI:154224722
344. mRNA del virus dell'influenza A (A/Thailand/CU231/2006(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.701 bp	EU021282.1 GI:154224793
345. mRNA del virus dell'influenza A (A/Thailand/CU259/2006(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	EU021279.1 GI:154224718
346. mRNA del virus dell'influenza A (A/Thailand/CU259/2006(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.701 bp	EU021278.1 GI:154224789
347. mRNA del virus dell'influenza A	mRNA	EU021281.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/Thailand/CU260/2006(H3N2)) neuraminidasi (NA), cds completa	lineare 1.410 bp	GI:154224720
348. mRNA del virus dell'influenza A (A/Thailand/CU260/2006(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 1.129 bp	EU021280.1 GI:154224791
349. mRNA del virus dell'influenza A (A/Thailand/CU272/2007(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	EU021271.1 GI:154224710
350. mRNA del virus dell'influenza A (A/Thailand/CU272/2007(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.701 bp	EU021270.1 GI:154224781
351. mRNA del virus dell'influenza A (A/Thailand/CU280/2007(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	EU021273.1 GI:154224712
352. mRNA del virus dell'influenza A (A/Thailand/CU280/2007(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.701 bp	EU021272.1 GI:154224783
353. mRNA del virus dell'influenza A (A/Thailand/CU282/2007(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	EU021277.1 GI:154224716
354. mRNA del virus dell'influenza A (A/Thailand/CU282/2007(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.701 bp	EU021276.1 GI:154224787
355. mRNA del virus dell'influenza A (A/Thailand/CU32/2006(H1N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.413 bp	EU021265.1 GI:154224704
361. mRNA del virus dell'influenza A (A/Thailand/CU46/2006(H3N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.410 bp	EU021269.1 GI:154224708
362. mRNA del virus dell'influenza A (A/Thailand/CU46/2006(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.701 bp	EU021268.1 GI:154224779
377. mRNA del virus dell'influenza A (A/Tottori/849AM1AL3/1994(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	U77837.1 GI:2992515
378. mRNA del virus dell'influenza A (A/Tottori/849AM2/1994(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	U77833.1 GI:2992507

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
379. mRNA del virus dell'influenza A (A/Tottori/849AM2AL3/1994(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	U77839.1 GI:2992519
380. mRNA del virus dell'influenza A (A/Tottori/849AM4/1994(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	U77835.1 GI:2992511
382. mRNA del virus dell'influenza A (A/Tottori/872AM2/1994(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	U77834.1 GI:2992509
383. mRNA del virus dell'influenza A (A/Tottori/872AM2AL3/1994(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	U77840.1 GI:2992521
384. mRNA del virus dell'influenza A (A/Tottori/872AM4/1994(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	U77836.1 GI:2992513
385. mRNA del virus dell'influenza A (A/Tottori/872K4/1994(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	U77832.1 GI:2992505
386. mRNA del virus dell'influenza A (A/Regno Unito/26554/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501529.1 GI:21314314
387. mRNA del virus dell'influenza A (A/Regno Unito/34300/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501527.1 GI:21314310
388. mRNA del virus dell'influenza A (A/Utah/20997/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501533.1 GI:21314322
389. mRNA del virus dell'influenza A (A/Victoria/3/75) segmento 5 nucleoproteina, cds completa	mRNA lineare 1.565 bp	AF072545.1 GI:4218933
390. mRNA del virus dell'influenza A (A/Vienna/47/96M(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.762 bp	AF017270.2 GI:14286338
391. mRNA del virus dell'influenza A (A/Vienna/47/96V(H3N2)) emoagglutinina (HA), cds completa	mRNA lineare 1.762 bp	AF017272.2 GI:15004991
392. mRNA del virus dell'influenza A (A/Vienna/81/96V(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare	AF017271.1 GI:2407251

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
	1.069 bp	
393. mRNA del virus dell'influenza A (A/Virginia/21712/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501532.1 GI:21314320
394. mRNA del virus dell'influenza A (A/Virginia/21716/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501515.1 GI:21314286
395. mRNA del virus dell'influenza A (A/Virginia/21735/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501530.1 GI:21314316
396. mRNA del virus dell'influenza A (A/Virginia/21743/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501524.1 GI:21314304
397. mRNA del virus dell'influenza A (A/Virginia/21754/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501519.1 GI:21314294
398. mRNA del virus dell'influenza A (A/Virginia/21799/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501523.1 GI:21314302
399. mRNA del virus dell'influenza A (A/Virginia/21817/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501525.1 GI:21314306
400. mRNA del virus dell'influenza A (A/Virginia/21822/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501520.1 GI:21314296
401. mRNA del virus dell'influenza A (A/Virginia/21828/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501528.1 GI:21314312
402. mRNA del virus dell'influenza A (A/Virginia/21833/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501517.1 GI:21314290
403. mRNA del virus dell'influenza A (A/Virginia/21845/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501522.1 GI:21314300
404. mRNA del virus dell'influenza A (A/Virginia/21847/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AF501535.1 GI:21314326
405. mRNA del virus dell'influenza A	mRNA	AF501521.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
(A/Virginia/G1/99(H3N2)) emoagglutinina (HA), cds parziale	lineare 987 bp	GI:21314298
406. mRNA del virus dell'influenza A (A/Yilan/508/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 755 bp	AY973339.1 GI:70673234
407. mRNA del virus dell'influenza A (A/Yilan/508/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY986999.1 GI:70728125
408. mRNA del virus dell'influenza A (A/Yilan/513/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 740 bp	AY962015.1 GI:68138187
409. mRNA del virus dell'influenza A (A/Yilan/513/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 396 bp	AY973340.1 GI:70673236
410. mRNA del virus dell'influenza A (A/Yilan/513/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY987000.1 GI:70728127
411. mRNA del virus dell'influenza A (A/Yilan/515/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 511 bp	AY962010.1 GI:68138177
412. mRNA del virus dell'influenza A (A/Yilan/515/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 394 bp	AY973341.1 GI:70673238
413. mRNA del virus dell'influenza A (A/Yilan/516/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY987001.1 GI:70728129
414. mRNA del virus dell'influenza A (A/Yilan/518/03(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 530 bp	AY962006.1 GI:68138169
415. mRNA del virus dell'influenza A (A/Yilan/518/03(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 397 bp	AY973342.1 GI:70673240
416. mRNA del virus dell'influenza A (A/Yilan/518/03(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY987002.1 GI:70728131
417. mRNA del virus dell'influenza A (A/Yilan/538/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 777 bp	AY962002.1 GI:68138161

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
418. mRNA del virus dell'influenza A (A/Yilan/538/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 783 bp	AY973343.1 GI:70673242
419. mRNA del virus dell'influenza A (A/Yilan/538/04(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY987003.1 GI:70728133
420. mRNA del virus dell'influenza A (A/Yilan/549/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 788 bp	AY962003.1 GI:68138163
421. mRNA del virus dell'influenza A (A/Yilan/549/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 779 bp	AY973344.1 GI:70673244
422. mRNA del virus dell'influenza A (A/Yilan/549/04(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY987004.1 GI:70728135
423. mRNA del virus dell'influenza A (A/Yilan/557/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 776 bp	AY962013.1 GI:68138183
424. mRNA del virus dell'influenza A (A/Yilan/557/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 796 bp	AY973345.1 GI:70673246
425. mRNA del virus dell'influenza A (A/Yilan/557/04(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY987005.1 GI:70728137
426. mRNA del virus dell'influenza A (A/Yilan/566/04(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 753 bp	AY962014.1 GI:68138185
427. mRNA del virus dell'influenza A (A/Yilan/566/04(H3N2)) neuraminidasi (NA), cds parziale	mRNA lineare 808 bp	AY973346.1 GI:70673248
428. mRNA del virus dell'influenza A (A/Yilan/566/04(H3N2)) nucleoproteina (NP), cds parziale	mRNA lineare 882 bp	AY987006.1 GI:70728139
429. mRNA del virus dell'influenza A (A/zhejiang/06/99(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AY138513.1 GI:24895131
430. mRNA del virus dell'influenza A (A/zhejiang/10/98(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987	AY138515.1 GI:24895149

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
	bp	
431. mRNA del virus dell'influenza A (A/zhejiang/11/2002(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AY138516.1 GI:24895159
432. mRNA del virus dell'influenza A (A/zhejiang/12/99(H3N2)) emoagglutinina (HA)-like, sequenza parziale	mRNA lineare 987 bp	AY138514.1 GI:24895141
433. mRNA del virus dell'influenza A (A/zhejiang/8/2002(H3N2)) emoagglutinina (HA), cds parziale	mRNA lineare 987 bp	AY138519.1 GI:24895188
434. mRNA del Virus dell'influenza A H3N2 ceppo A/Akita/1/94 proteina non strutturale 1 e proteina non strutturale 2, cds completa	mRNA lineare 840 bp	U65670.1 GI:3929405
435. mRNA del Virus dell'influenza A H3N2 ceppo A/Akita/1/95 proteina non strutturale 1 e proteina non strutturale 2, cds completa	mRNA lineare 840 bp	U65671.1 GI:3929408
436. mRNA del virus dell'influenza A H3N2 ceppo A/Shiga/20/95 proteina non strutturale 1 e proteina non strutturale 2, cds completa	mRNA lineare 840 bp	U65673.1 GI:3929411
437. mRNA del virus dell'influenza A H3N2 ceppo A/Miyagi/69/95 proteina non strutturale 1 e proteina non strutturale 2, cds completa	mRNA lineare 840 bp	U65674.1 GI:3929414
438. mRNA del virus dell'influenza A H3N2 ceppo A/Hebei/19/95 proteina non strutturale 1 e proteina non strutturale 2, cds completa	mRNA lineare 840 bp	U65672.1 GI:6468319
A/Aichi/69/1994(H3N2) emoagglutinina		U48446.1
A/Bangkok/1/1979 (H3N2) emoagglutinina (HA)		AF201843.1
A/Beijing/353/89(H3) emoagglutinina (HA)		U97740.1
A/Beijing/353/1989(H3N2) emoagglutinina		Z46391.1
A/chicken/Singapore/2002(H3N2) proteina M2		EU014143.1
A/Christ Hospital/231/82(H3N2)) emoagglutinina (HA)		U77830.1
A/duck/Eastern China/36/2002(H3N2) segmento 6 neuraminidasi (NA)		EU429701.1
A/duck/Eastern China/160/2003(H3N2) segmento 6 neuraminidasi (NA)		EU429732.1
A/duck/Eastern China/848/2003(H3N2) segmento 6		EU429721.1

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Ceppo/proteina	Lunghezza	N. di accessione GenBank/GI
neuraminidasi (NA)		
A/duck/Eastern China/770/2003(H3N2) segmento 6 neuraminidasi (NA)		EU429736.1
A/duck/Eastern China/855/2003(H3N2) segmento 6 neuraminidasi (NA)		EU429737.1
A/duck/Eastern China/875/2003(H3N2) segmento 6 neuraminidasi (NA)		EU429738.1
A/duck/Eastern China/901/2003(H3N2) segmento 6 neuraminidasi (NA)		EU429739.1
A/duck/Eastern China/866/2003(H3N2) segmento 6 neuraminidasi (NA)		EU429756.1
A/duck/Eastern China/857/2003(H3N2) segmento 6 neuraminidasi (NA)		EU429761.1
A/duck/Eastern China/852/2003(H3N2) segmento 6 neuraminidasi (NA)		EU429767.1
A/duck/Eastern China/838/2003(H3N2) segmento 6 neuraminidasi (NA)		EU429720.1
A/duck/Eastern China/6/2004(H3N2) segmento 6 neuraminidasi (NA)		EU429745.1
A/duck/Eastern China/03/2005(H3N2) segmento 6 neuraminidasi (NA)		EU429781.1
A/duck/Eastern China/02/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429769.1
A/duck/Eastern China/04/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429770.1
A/duck/Eastern China/21/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429771.1
A/duck/Eastern China/23/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429772.1
A/duck/Eastern China/31/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429773.1
A/duck/Eastern China/35/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429768.1
A/duck/Eastern China/42/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429774.1
A/duck/Eastern China/53/2006(H3N2) segmento 6		EU429775.1

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Ceppo/proteina	**Lunghezza**	**N. di accessione GenBank/GI**
neuraminidasi (NA)		
A/duck/Eastern China/60/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429776.1
A/duck/Eastern China/62/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429784.1
A/duck/Eastern China/63/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429777.1
A/duck/Eastern China/142/2006(H3N2) segmento 6 neuraminidasi (NA)		EU429742.1
A/Dunedin/4/1973 (H3N2) emoagglutinina(HA)		AF201842.1

Tabella 8. Antigeni dell'influenza H5N1

1. mRNA del virus dell'influenza A (A/chicken/Burkina Faso/01.03/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503036.1 GI:147846308
2. Virus dell'influenza A (A/chicken/Burkina Faso/13.1/2006(H5N1)) mRNA parziale per la proteina della matrice 1 (gene m1)	mRNA lineare 990 bp	AM503007.1 GI:147846250
3. mRNA del virus dell'influenza A (A/chicken/Burkina Faso/13.1/2006(H5N1)) per nucleoproteina (gene np)	mRNA lineare 1.529 bp	AM503029.1 GI:147846294
4. mRNA del virus dell'influenza A (A/chicken/Burkina Faso/13.1/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503037.1 GI:147846310
5. Virus dell'influenza A (A/chicken/Burkina Faso/13.1/2006(H5N1)) mRNA parziale per la polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503046.1 GI:147846328
6. Virus dell'influenza A (A/chicken/Burkina Faso/13.1/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 2.259 bp	AM503056.1 GI:147846348
7. Virus dell'influenza A (A/chicken/Burkina Faso/13.1/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 2 (gene pb2)	mRNA lineare 2.315 bp	AM503067.1 GI:147846859
8. mRNA del virus dell'influenza A (A/chicken/China/1/02(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.736 bp	DQ023145.1 GI:66775624
9. mRNA del virus dell'influenza A	mRNA	DQ023146.1

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(A/chicken/China/1/02(H5N1)) nucleoproteina (NP), cds completa	lineare 1.509 bp	GI:66775626
10. mRNA del virus dell'influenza A (A/chicken/China/1/02(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.379 bp	DQ023147.1 GI:66775628
11. mRNA del virus dell'influenza A (A/chicken/Crimea/04/2005(H5N1)) proteina della matrice (M), cds completa	mRNA lineare 999 bp	DQ650660.1 GI:109692767
12. mRNA del virus dell'influenza A (A/chicken/Crimea/04/2005(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 850 bp	DQ650662.1 GI:109692771
13. mRNA del virus dell'influenza A (A/chicken/Crimea/08/2005(H5N1)) proteina della matrice (M), cds completa	mRNA lineare 994 bp	DQ650664.1 GI:109692775
14. mRNA del virus dell'influenza A (A/chicken/Crimea/08/2005(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.532 bp	DQ650666.1 GI:109692779
15. mRNA del virus dell'influenza A (A/chicken/Crimea/08/2005(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 850 bp	DQ650667.1 GI:109692781
16. mRNA del virus dell'influenza A (A/chicken/Crimea/08/2005(H5N1)) proteina acida della polimerasi (PA), cds completa	mRNA lineare 2.208 bp	DQ650668.1 GI:109692783
17. mRNA del virus dell'influenza A (A/chicken/Crimea/08/2005(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.305 bp	DQ650670.1 GI:109692787
18. mRNA del virus dell'influenza A (A/chicken/Dovolnoe/03/2005(H5N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.015 bp	DQ676838.1 GI:108782527
20. mRNA del virus dell'influenza A (A/chicken/Guangxi/12/2004(H5N1)) polimerasi PB2, cds completa	mRNA lineare 2.341 bp	DQ366327.1 GI:86753731
21. mRNA del virus dell'influenza A (A/chicken/Guangxi/12/2004(H5N1)) polimerasi PB1, cds completa	mRNA lineare 2.341 bp	DQ366328.1 GI:86753741
22. mRNA del virus dell'influenza A (A/chicken/Guangxi/12/2004(H5N1)) proteina PA, cds completa	mRNA lineare 2.233 bp	DQ366329.1 GI:86753751
23. mRNA del virus dell'influenza A (A/chicken/Guangxi/12/2004(H5N1)) nucleocapside, cds completa	mRNA lineare 1.565 bp	DQ366331.1 GI:86753771

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24. mRNA del virus dell'influenza A (A/chicken/Guangxi/12/2004(H5N1)) proteina della matrice, cds completa	mRNA lineare 1.027 bp	DQ366333.1 GI:86753791
25. mRNA del virus dell'influenza A (A/chicken/Hong Kong/258/97(H5N1)) emoagglutinina, cds completa	mRNA lineare 1.718 bp	AF057291.1 GI:3068720
26. mRNA del virus dell'influenza A (A/chicken/Hong Kong/258/97(H5N1)) neuraminidasi, cds parziale	mRNA lineare 1.318 bp	AF057292.1 GI:3068722
27. mRNA del virus dell'influenza A (A/chicken/Hong Kong/258/97(H5N1)) nucleoproteina, cds completa	mRNA lineare 1.508 bp	AF057293.1 GI:3068724
28. mRNA del virus dell'influenza A (A/Chicken/Hong Kong/728/97 (H5N1)) emoagglutinina H5, cds completa	mRNA lineare 1.726 bp	AF082034.1 GI:4240435
29. mRNA del virus dell'influenza A (A/Chicken/Hong Kong/786/97 (H5N1)) emoagglutinina H5, cds completa	mRNA lineare 1.726 bp	AF082035.1 GI:4240437
30. mRNA del virus dell'influenza A (A/Chicken/Hong Kong/915/97 (H5N1)) emoagglutinina H5, cds completa	mRNA lineare 1.726 bp	AF082036.1 GI:4240439
31. mRNA del virus dell'influenza A (A/chicken/Hong Kong/990/97 (H5N1)) emoagglutinina H5, cds parziale	mRNA lineare 1.091 bp	AF082037.1 GI:4240441
32. mRNA del virus dell'influenza A (A/chicken/Krasnodar/01/2006(H5N1)) proteina della matrice 1 (M), cds completa	mRNA lineare 1.002 bp	DQ676835.1 GI:108782521
33. mRNA del virus dell'influenza A (A/chicken/Krasnodar/01/2006(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 850 bp	DQ676837.1 GI:108782525
34. mRNA del virus dell'influenza A (A/chicken/Kurgan/05/2005(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.754 bp	DQ449632.1 GI:90289625
35. mRNA del virus dell'influenza A (A/chicken/Kurgan/05/2005(H5N1)) proteina della matrice 1 (M), cds completa	mRNA lineare 1.002 bp	DQ449633.1 GI:90289627
36. mRNA del virus dell'influenza A (A/chicken/Kurgan/05/2005(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.373 bp	DQ449634.1 GI:90289629
37. mRNA del virus dell'influenza A (A/chicken/Kurgan/05/2005(H5N1)) nucleoproteina (NP), cds	mRNA lineare	DQ449635.1 GI:90289631

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completa	1.540 bp	
38. mRNA del virus dell'influenza A (A/chicken/Kurgan/05/2005(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 850 bp	DQ449636.1 GI:90289633
39. mRNA del virus dell'influenza A (A/chicken/Kurgan/05/2005(H5N1)) proteina acida della polimerasi (PA), cds completa	mRNA lineare 2.208 bp	DQ449637.1 GI:90289635
40. mRNA del virus dell'influenza A (A/chicken/Kurgan/05/2005(H5N1)) proteina basica della polimerasi 1 (PB1), cds completa	mRNA lineare 2.316 bp	DQ449638.1 GI:90289637
41. mRNA del virus dell'influenza A (A/chicken/Kurgan/05/2005(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.316 bp	DQ449639.1 GI:90289646
42. mRNA del virus dell'influenza A (A/chicken/Lobzenko/01/2008(H5N1)) emoagglutinina (HA), cds parziale	mRNA lineare 184 bp	EU447276.1 GI:168998217
43. mRNA del virus dell'influenza A (A/chicken/Mahachkala/05/2006(H5N1)) proteina della matrice 1 (M), cds completa	mRNA lineare 1.002 bp	DQ676831.1 GI:108782513
44. mRNA del virus dell'influenza A (A/chicken/Mahachkala/05/2006(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 850 bp	DQ676833.1 GI:108782517
45. mRNA del virus dell'influenza A (A/chicken/Nigeria/AB13/2006(H5N1)) per nucleoproteina (gene np)	mRNA lineare 1.531 bp	AM503030.1 GI:147846296
46. mRNA del virus dell'influenza A (A/chicken/Nigeria/AB13/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503040.1 GI:147846316
47. Virus dell'influenza A (A/chicken/Nigeria/AB13/2006(H5N1)) mRNA parziale per la polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503051.1 GI:147846338
48. Virus dell'influenza A (A/chicken/Nigeria/AB13/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 2.259 bp	AM503060.1 GI:147846845
49. Virus dell'influenza A (A/chicken/Nigeria/AB13/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 2 (gene pb2)	mRNA lineare 2.315 bp	AM503071.1 GI:147846867
70. mRNA del virus dell'influenza A (A/chicken/Hong Kong/3123,1/2002(H5N1)) neuraminidasi (NA), cds parziale	mRNA lineare 1.055 bp	DQ250158.1 GI:82412012
75. mRNA del virus dell'influenza A	mRNA	DQ676834.1

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(A/chicken/Krasnodar/01/2006(H5N1)) emoagglutinina (HA), cds completa	lineare 1.754 bp	GI:108782519
78. mRNA del virus dell'influenza A (A/chicken/Krasnodar/01/2006(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.373 bp	DQ676836.2 GI:115520953
91. mRNA del virus dell'influenza A (A/chicken/Lobzenko/01/2008(H5N1)) emoagglutinina (HA), cds parziale	mRNA lineare 184 bp	EU447276.1 GI:168998217
92. mRNA del virus dell'influenza A (A/chicken/Mahachkala/05/2006(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.683 bp	DQ676830.1 GI:108782511
94. mRNA del virus dell'influenza A (A/chicken/Mahachkala/05/2006(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.373 bp	DQ676832.1 GI:108782515
96. mRNA del virus dell'influenza A (A/chicken/Malaysia/01/2004(H5N1)) neuramidasi (NA), cds parziale	mRNA lineare 433 bp	00096567.1 GI:69145364
97. Virus dell'influenza A (A/chicken/Nigeria/AB13/2006(H5N1)) mRNA parziale per l'emoagglutinina (gene ha)	mRNA lineare 1.722 bp	AM503002.1 GI:147846240
98. Virus dell'influenza A (A/chicken/Nigeria/AB13/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.329 bp	AM503020.1 GI:147846276
105. Virus dell'influenza A (A/chicken/Nigeria/AB14/2006(H5N1)) mRNA parziale per l'emoagglutinina (gene ha)	mRNA lineare 1.719 bp	AM503003.1 GI:147846242
106. Virus dell'influenza A (A/chicken/Nigeria/AB14/2006(H5N1)) mRNA parziale per la proteina della matrice 1 (gene m1)	mRNA lineare 953 bp	AM503011.1 GI:147846258
107. Virus dell'influenza A (A/chicken/Nigeria/AB14/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.343 bp	AM503025.1 GI:147846286
108. mRNA del virus dell'influenza A (A/chicken/Nigeria/AB14/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503041.1 GI:147846318
109. Virus dell'influenza A (A/chicken/Nigeria/AB14/2006(H5N1)) mRNA parziale per la polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503054.1 GI:147846344
110. Virus dell'influenza A (A/chicken/Nigeria/AB14/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 2.259 bp	AM503061.1 GI:147846847

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111. Virus dell'influenza A (A/chicken/Nigeria/AB14/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 2 (gene pb2)	mRNA lineare 2.315 bp	AM503072.1 GI:147846869
112. mRNA del virus dell'influenza A (A/chicken/Nigeria/AB14/2006(H5N1)) per nucleoproteina (gene np)	mRNA lineare 1.548 bp	AM503034.2 GI:149773117
113. Virus dell'influenza A (A/chicken/Nigeria/BA210/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.342 bp	AM503022.1 GI:147846280
114. Virus dell'influenza A (A/chicken/Nigeria/BA211/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.321 bp	AM503021.1 GI:147846278
115. Virus dell'influenza A (A/chicken/Nigeria/BA211/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 2 (gene pb2)	mRNA lineare 2.315 bp	AM503073.1 GI:147846871
116. Virus dell'influenza A (A/chicken/Nigeria/FA4/2006(H5N1)) mRNA parziale per l'emoagglutinina (gene ha)	mRNA lineare 1.717 bp	AM503004.1 GI:147846244
117. Virus dell'influenza A (A/chicken/Nigeria/FA4/2006(H5N1)) mRNA parziale per la proteina della matrice 1 (gene m1)	mRNA lineare 989 bp	AM503013.1 GI:147846262
118. Virus dell'influenza A (A/chicken/Nigeria/FA4/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.321 bp	AM503026.1 GI:147846288
119. mRNA del virus dell'influenza A (A/chicken/Nigeria/FA4/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503045.1 GI:147846326
120. Virus dell'influenza A (A/chicken/Nigeria/FA4/2006(H5N1)) mRNA parziale per la polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503055.1 GI:147846346
121. Virus dell'influenza A (A/chicken/Nigeria/FA4/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 2.259 bp	AM503064.1 GI:147846853
122. Virus dell'influenza A (A/chicken/Nigeria/FA4/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 2 (gene pb2)	mRNA lineare 2.224 bp	AM503074.1 GI:147846873
123. Virus dell'influenza A (A/chicken/Nigeria/FA6/2006(H5N1)) mRNA parziale per l'emoagglutinina (gene ha)	mRNA lineare 1.717 bp	AM502998.1 GI:147846232
124. Virus dell'influenza A (A/chicken/Nigeria/FA6/2006(H5N1)) mRNA parziale per la proteina della matrice 1 (gene m1)	mRNA lineare	AM503012.1 GI:147846260

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	965 bp	
125. Virus dell'influenza A (A/chicken/Nigeria/FA6/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.327 bp	AM503023.1 GI:147846282
126. mRNA del virus dell'influenza A (A/chicken/Nigeria/FA6/2006(H5N1)) per nucleoproteina (gene np)	mRNA lineare 1.543 bp	AM503031.1 GI:147846298
127. Virus dell'influenza A (A/chicken/Nigeria/FA6/2006(H5N1)) mRNA parziale per la polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503052.1 GI:147846340
128. Virus dell'influenza A (A/chicken/Nigeria/FA6/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 2.259 bp	AM503063.1 GI:147846851
129. Virus dell'influenza A (A/chicken/Nigeria/FA7/2006(H5N1)) mRNA parziale per l'emoagglutinina (gene ha)	mRNA lineare 1.710 bp	AM502999.1 GI:147846234
130. Virus dell'influenza A (A/chicken/Nigeria/FA7/2006(H5N1)) mRNA parziale per la proteina della matrice 1 (gene m1)	mRNA lineare 1.001 bp	AM503009.1 GI:147846254
131. Virus dell'influenza A (A/chicken/Nigeria/FA7/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.331 bp	AM503018.1 GI:147846272
132. mRNA del virus dell'influenza A (A/chicken/Nigeria/FA7/2006(H5N1)) per nucleoproteina (gene np)	mRNA lineare 1.531 bp	AM503035.1 GI:147846306
133. mRNA del virus dell'influenza A (A/chicken/Nigeria/FA7/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503042.1 GI:147846320
134. Virus dell'influenza A (A/chicken/Nigeria/FA7/2006(H5N1)) mRNA parziale per la polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503049.1 GI:147846334
135. Virus dell'influenza A (A/chicken/Nigeria/FA7/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 2.259 bp	AM503057.1 GI:147846350
136. Virus dell'influenza A (A/chicken/Nigeria/FA7/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 2 (gene pb2)	mRNA lineare 2.315 bp	AM503068.1 GI:147846861
137. Virus dell'influenza A (A/chicken/Nigeria/IF10/2006(H5N1)) mRNA parziale per l'emoagglutinina (gene ha)	mRNA lineare 1.714 bp	AM503001.1 GI:147846238
138. Virus dell'influenza A (A/chicken/Nigeria/IF10/2006(H5N1))	mRNA	AM503010.1

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mRNA parziale per la proteina della matrice 1 (gene m1)	lineare 990 bp	GI:147846256
139. Virus dell'influenza A (A/chicken/Nigeria/IF10/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.332 bp	AM503024.1 GI:147846284
140. mRNA del virus dell'influenza A (A/chicken/Nigeria/IF10/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503044.1 GI:147846324
141. Virus dell'influenza A (A/chicken/Nigeria/IF10/2006(H5N1)) mRNA parziale per la polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503053.1 GI:147846342
142. Virus dell'influenza A (A/chicken/Nigeria/IF10/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 2.259 bp	AM503059.1 GI:147846843
143. Virus dell'influenza A (A/chicken/Nigeria/IF10/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 2 (gene pb2)	mRNA lineare 2.315 bp	AM503069.1 GI:147846863
144. mRNA del virus dell'influenza A (A/chicken/Nigeria/IF10/2006(H5N1)) per nucleoproteina (gene np)	mRNA lineare 1.550 bp	AM503033.2 GI:149773115
145. Virus dell'influenza A (A/chicken/Nigeria/OD8/2006(H5N1)) mRNA parziale per l'emoagglutinina (gene ha)	mRNA lineare 1.719 bp	AM503005.1 GI:147846246
146. Virus dell'influenza A (A/chicken/Nigeria/OD8/2006(H5N1)) mRNA parziale per la proteina della matrice 1 (gene m1)	mRNA lineare 989 bp	AM503014.1 GI:147846264
147. Virus dell'influenza A (A/chicken/Nigeria/OD9/2006(H5N1)) mRNA parziale per l'emoagglutinina (gene ha)	mRNA lineare 1.720 bp	AM503000.1 GI:147846236
148. Virus dell'influenza A (A/chicken/Nigeria/OD9/2006(H5N1)) mRNA parziale per la proteina della matrice 1 (gene m1)	mRNA lineare 988 bp	AM503015.1 GI:147846266
149. Virus dell'influenza A (A/chicken/Nigeria/OD9/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.330 bp	AM503019.1 GI:147846274
150. mRNA del virus dell'influenza A (A/chicken/Nigeria/OD9/2006(H5N1)) per nucleoproteina (gene np)	mRNA lineare 1.531 bp	AM503032.1 GI:147846300
151. mRNA del virus dell'influenza A (A/chicken/Nigeria/OD9/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503043.1 GI:147846322

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152. Virus dell'influenza A (A/chicken/Nigeria/009/2006(H5N1)) mRNA parziale per la polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503050.1 GI:147846336
153. Virus dell'influenza A (A/chicken/Nigeria/009/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 2.259 bp	AM503058.1 GI:147846841
154. Virus dell'influenza A (A/chicken/Nigeria/009/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 2 (gene pb2)	mRNA lineare 2.315 bp	AM503070.1 GI:147846865
155. mRNA del virus dell'influenza A (A/chicken/Scotland/59(H5N1)) per precursore dell'emoagglutinina	mRNA lineare 1.768 bp	X07869.1 GI:60482
156. Virus dell'influenza A (A/chicken/Scotland/59(H5N1)) Gene N1 per neuraminidasi, RNA genomico	mRNA lineare 1.445 bp	AJ416625.1 GI:39840717
161. mRNA del virus dell'influenza A (A/chicken/zz/02/2004(H5N1)) nucleoproteina, cds completa	mRNA lineare 1.497 bp	DQ208502.1 GI:77158587
162. Virus dell'influenza A (A/common coot/Switzerland/V544/2006(H5N1)) gene dell'emoagglutinina (HA), cds completa	mRNA lineare 1.707 bp	EF110519.1 GI:119394676
163. mRNA del virus dell'influenza A (A/domesticgoose/Pavlodar/1/2005(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.735 bp	EU190482.1 GI:158516739
164. mRNA del virus dell'influenza A (A/duck/Eastern China/145/2003(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.401 bp	EU429750.1 GI:167859465
165. mRNA del virus dell'influenza A (A/duck/Eastern China/150/2003(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.407 bp	EU429731.1 GI:167859427
166. mRNA del virus dell'influenza A (A/duck/Eastern China/22/2005(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429783.1 GI:167859531
167. mRNA del virus dell'influenza A (A/duck/Eastern China/304/2002(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429747.1 GI:167859459
168. mRNA del virus dell'influenza A (A/duck/Eastern China/318/2002(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.401 bp	EU429727.1 GI:167859419
169. mRNA del virus dell'influenza A (A/duck/Eastern China/37/2006(H5N1)) segmento 6 neuraminidasi (NA), cds	mRNA lineare	EU429778.1 GI:167859521

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completa	1.399 bp	
170. mRNA del virus dell'influenza A (A/duck/Eastern China/40/2005(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429757.1 GI:167859479
171. mRNA del virus dell'influenza A (A/duck/Eastern China/48/2006(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429779.1 GI:167859523
172. mRNA del virus dell'influenza A (A/duck/Eastern China/51/2005(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429763.1 GI:167859491
173. mRNA del virus dell'influenza A (A/duck/Eastern China/54/2005(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429758.1 GI:167859481
174. mRNA del virus dell'influenza A (A/duck/Eastern China/58/2005(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429764.1 GI:167859493
175. mRNA del virus dell'influenza A (A/duck/Eastern China/59/2005(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429759.1 GI:167859483
176. mRNA del virus dell'influenza A (A/duck/Eastern China/89/2005(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429765.1 GI:167859495
177. mRNA del virus dell'influenza A (A/duck/Eastern China/89/2006(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.399 bp	EU429785.1 GI:167859535
178. mRNA del virus dell'influenza A (A/duck/Eastern China/97/2001(H5N1)) segmento 6 neuraminidasi (NA), cds completa	mRNA lineare 1.398 bp	EU429717.1 GI:167859399
179. mRNA del virus dell'influenza A (A/duck/Fujian/01/2002(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585504.1 GI:47156226
180. mRNA del virus dell'influenza A (A/duck/Fujian/01/2002(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585378.1 GI:47156310
181. mRNA del virus dell'influenza A (A/duck/Fujian/01/2002(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.357 bp	AY585399.1 GI:47156352
182. mRNA del virus dell'influenza A (A/duck/Fujian/01/2002(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.497 bp	AY585420.1 GI:47156394
183. mRNA del virus dell'influenza A	mRNA	AY585441.1

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(A/duck/Fujian/01/2002(H5N1)) proteina non strutturale 1 (NS1), cds parziale	lineare 686 bp	GI:47156436
184. mRNA del virus dell'influenza A (A/duck/Fujian/13/2002(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585505.1 GI:47156228
185. mRNA del virus dell'influenza A (A/duck/Fujian/13/2002(H5N1)) proteina della matrice, cds completa	mRNA lineare 761 bp	AY585379.1 GI:47156312
186. mRNA del virus dell'influenza A (A/duck/Fujian/13/2002(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.357 bp	AY585400.1 GI:47156354
187. mRNA del virus dell'influenza A (A/duck/Fujian/13/2002(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.499 bp	AY585421.1 GI:47156396
188. mRNA del virus dell'influenza A (A/duck/Fujian/13/2002(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 685 bp	AY585442.1 GI:47156438
189. mRNA del virus dell'influenza A (A/duck/Fujian/17/2001(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585506.1 GI:47156230
190. mRNA del virus dell'influenza A (A/duck/Fujian/17/2001(H5N1)) proteina della matrice, cds completa	mRNA lineare 759 bp	AY585380.1 GI:47156314
191. mRNA del virus dell'influenza A (A/duck/Fujian/17/2001(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.418 bp	AY585401.1 GI:47156356
192. mRNA del virus dell'influenza A (A/duck/Fujian/17/2001(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585422.1 GI:47156398
193. mRNA del virus dell'influenza A (A/duck/Fujian/17/2001(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 686 bp	AY585443.1 GI:47156440
194. mRNA del virus dell'influenza A (A/duck/Fujian/19/2000(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585507.1 GI:47156232
195. mRNA del virus dell'influenza A (A/duck/Fujian/19/2000(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585381.1 GI:47156316
196. mRNA del virus dell'influenza A (A/duck/Fujian/19/2000(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.355 bp	AY585402.1 GI:47156358

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197. mRNA del virus dell'influenza A (A/duck/Fujian/19/2000(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585423.1 GI:47156400
198. mRNA del virus dell'influenza A (A/duck/Fujian/19/2000(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 687 bp	AY585444.1 GI:47156442
199. mRNA del virus dell'influenza A (A/duck/Guangdong/01/2001(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585508.1 GI:47156234
200. mRNA del virus dell'influenza A (A/duck/Guangdong/01/2001(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585382.1 GI:47156318
201. mRNA del virus dell'influenza A (A/duck/Guangdong/01/2001(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.414 bp	AY585403.1 GI:47156360
202. mRNA del virus dell'influenza A (A/duck/Guangdong/01/2001(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.497 bp	AY585424.1 GI:47156402
203. mRNA del virus dell'influenza A (A/duck/Guangdong/01/2001(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 687 bp	AY585445.1 GI:47156444
204. mRNA del virus dell'influenza A (A/duck/Guangdong/07/2000(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.280 bp	AY585509.1 GI:47156236
205. mRNA del virus dell'influenza A (A/duck/Guangdong/07/2000(H5N1)) proteina della matrice, cds completa	mRNA lineare 759 bp	AY585383.1 GI:47156320
206. mRNA del virus dell'influenza A (A/duck/Guangdong/07/2000(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.417 bp	AY585404.1 GI:47156362
207. mRNA del virus dell'influenza A (A/duck/Guangdong/07/2000(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.497 bp	AY585425.1 GI:47156404
208. mRNA del virus dell'influenza A (A/duck/Guangdong/07/2000(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 690 bp	AY585446.1 GI:47156446
209. mRNA del virus dell'influenza A (A/duck/Guangdong/12/2000(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585510.1 GI:47156238
210. mRNA del virus dell'influenza A (A/duck/Guangdong/12/2000(H5N1)) proteina della matrice, cds	mRNA lineare	AY585384.1 GI:47156322

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completa	760 bp	
211. mRNA del virus dell'influenza A (A/duck/Guangdong/12/2000(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.359 bp	AY585405.1 GI:47156364
212. mRNA del virus dell'influenza A (A/duck/Guangdong/12/2000(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585426.1 GI:47156406
213. mRNA del virus dell'influenza A (A/duck/Guangdong/12/2000(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 685 bp	AY585447.1 GI:47156448
214. mRNA del virus dell'influenza A (A/duck/Guangdong/22/2002(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585511.1 GI:47156240
215. mRNA del virus dell'influenza A (A/duck/Guangdong/22/2002(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585385.1 GI:47156324
216. mRNA del virus dell'influenza A (A/duck/Guangdong/22/2002(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.412 bp	AY585406.1 GI:47156366
217. mRNA del virus dell'influenza A (A/duck/Guangdong/22/2002(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.499 bp	AY585427.1 GI:47156408
218. mRNA del virus dell'influenza A (A/duck/Guangdong/22/2002(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 682 bp	AY585448.1 GI:47156450
219. mRNA del virus dell'influenza A (A/duck/Guangdong/40/2000(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585512.1 GI:47156242
220. mRNA del virus dell'influenza A (A/duck/Guangdong/40/2000(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585386.1 GI:47156326
221. mRNA del virus dell'influenza A (A/duck/Guangdong/40/2000(H5N1)) neuraminidasi (NA), cds parziale	mRNA lineare 1.401 bp	AY585407.1 GI:47156368
222. mRNA del virus dell'influenza A (A/duck/Guangdong/40/2000(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.499 bp	AY585428.1 GI:47156410
223. mRNA del virus dell'influenza A (A/duck/Guangdong/40/2000(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 689 bp	AY585449.1 GI:47156452
224. mRNA del virus dell'influenza A	mRNA	AY585513.1

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(A/duck/Guangxi/07/1999(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	lineare 2.281 bp	GI:47156244
225. mRNA del virus dell'influenza A (A/duck/Guangxi/07/1999(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585387.1 GI:47156328
226. mRNA del virus dell'influenza A (A/duck/Guangxi/07/1999(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.421 bp	AY585408.1 GI:47156370
227. mRNA del virus dell'influenza A (A/duck/Guangxi/07/1999(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.501 bp	AY585429.1 GI:47156412
228. mRNA del virus dell'influenza A (A/duck/Guangxi/07/1999(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 687 bp	AY585450.1 GI:47156454
229. mRNA del virus dell'influenza A (A/duck/Guangxi/13/2004(H5N1)) proteina non strutturale 1, cds completa	mRNA lineare 875 bp	DQ366342.1 GI:86753723
230. mRNA del virus dell'influenza A (A/duck/Guangxi/13/2004(H5N1)) polimerasi PB2, cds completa	mRNA lineare 2.341 bp	DQ366335.1 GI:86753733
231. mRNA del virus dell'influenza A (A/duck/Guangxi/13/2004(H5N1)) polimerasi PB1, cds completa	mRNA lineare 2.341 bp	DQ366336.1 GI:86753743
232. mRNA del virus dell'influenza A (A/duck/Guangxi/13/2004(H5N1)) proteina PA, cds completa	mRNA lineare 2.233 bp	DQ366337.1 GI:86753753
233. mRNA del virus dell'influenza A (A/duck/Guangxi/13/2004(H5N1)) emoagglutinina, cds completa	mRNA lineare 1.776 bp	DQ366338.1 GI:86753763
234. mRNA del virus dell'influenza A (A/duck/Guangxi/13/2004(H5N1)) nucleocapside, cds completa	mRNA lineare 1.565 bp	DQ366339.1 GI:86753773
235. mRNA del virus dell'influenza A (A/duck/Guangxi/13/2004(H5N1)) neuraminidasi, cds completa	mRNA lineare 1.378 bp	DQ366340.1 GI:86753783
236. mRNA del virus dell'influenza A (A/duck/Guangxi/13/2004(H5N1)) proteina della matrice, cds completa	mRNA lineare 1.027 bp	DQ366341.1 GI:86753793
237. mRNA del virus dell'influenza A (A/duck/Guangxi/22/2001(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585514.1 GI:47156246

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238. mRNA del virus dell'influenza A (A/duck/Guangxi/22/2001(H5N1)) proteina della matrice, cds parziale	mRNA lineare 757 bp	AY585388.1 GI:47156330
239. mRNA del virus dell'influenza A (A/duck/Guangxi/22/2001(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.414 bp	AY585409.1 GI:47156372
240. mRNA del virus dell'influenza A (A/duck/Guangxi/22/2001(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585430.1 GI:47156414
241. mRNA del virus dell'influenza A (A/duck/Guangxi/22/2001(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 687 bp	AY585451.1 GI:47156456
242. mRNA del virus dell'influenza A (A/duck/Guangxi/35/2001(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585515.1 GI:47156248
243. mRNA del virus dell'influenza A (A/duck/Guangxi/35/2001(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585389.1 GI:47156332
244. mRNA del virus dell'influenza A (A/duck/Guangxi/35/2001(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.414 bp	AY585410.1 GI:47156374
245. mRNA del virus dell'influenza A (A/duck/Guangxi/35/2001(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585431.1 GI:47156416
246. mRNA del virus dell'influenza A (A/duck/Guangxi/35/2001(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 685 bp	AY585452.1 GI:47156458
247. mRNA del virus dell'influenza A (A/duck/Guangxi/50/2001(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585516.1 GI:47156250
248. mRNA del virus dell'influenza A (A/duck/Guangxi/50/2001(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585398.1 GI:47156350
249. mRNA del virus dell'influenza A (A/duck/Guangxi/50/2001(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.354 bp	AY585411.1 GI:47156376
250. mRNA del virus dell'influenza A (A/duck/Guangxi/50/2001(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585432.1 GI:47156418
251. mRNA del virus dell'influenza A (A/duck/Guangxi/50/2001(H5N1)) proteina non strutturale 1	mRNA lineare	AY585453.1 GI:47156460

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(NS1), cds completa	686 bp	
252. mRNA del virus dell'influenza A (A/duck/Guangxi/53/2002(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585517.1 GI:47156252
253. mRNA del virus dell'influenza A (A/duck/Guangxi/53/2002(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585390.1 GI:47156334
254. mRNA del virus dell'influenza A (A/duck/Guangxi/53/2002(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.361 bp	AY585412.1 GI:47156378
255. mRNA del virus dell'influenza A (A/duck/Guangxi/53/2002(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585433.1 GI:47156420
256. mRNA del virus dell'influenza A (A/duck/Guangxi/53/2002(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 687 bp	AY585454.1 GI:47156462
257. mRNA del virus dell'influenza A (A/duck/Kurgan/08/2005(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.754 bp	DQ449640.1 GI:90289674
258. mRNA del virus dell'influenza A (A/duck/Kurgan/08/2005(H5N1)) proteina della matrice 1 (M), cds completa	mRNA lineare 1.002 bp	DQ449641.1 GI:90289689
259. mRNA del virus dell'influenza A (A/duck/Kurgan/08/2005(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.373 bp	DQ449642.1 GI:90289708
260. mRNA del virus dell'influenza A (A/duck/Kurgan/08/2005(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.540 bp	DQ449643.1 GI:90289731
261. mRNA del virus dell'influenza A (A/duck/Kurgan/08/2005(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 850 bp	DQ449644.1 GI:90289739
262. mRNA del virus dell'influenza A (A/duck/Kurgan/08/2005(H5N1)) proteina acida della polimerasi (PA), cds completa	mRNA lineare 2.208 bp	DQ449645.1 GI:90289756
263. mRNA del virus dell'influenza A (A/duck/Kurgan/08/2005(H5N1)) proteina basica della polimerasi 1 (PB1), cds completa	mRNA lineare 2.316 bp	DQ449646.1 GI:90289774
264. mRNA del virus dell'influenza A (A/duck/Kurgan/08/2005(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.316 bp	DQ449647.1 GI:90289783
266. mRNA del virus dell'influenza A	mRNA	AY585518.1

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(A/duck/Shanghai/08/2001(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	lineare 2.281 bp	GI:47156254
267. mRNA del virus dell'influenza A (A/duck/Shanghai/08/2001(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585391.1 GI:47156336
268. mRNA del virus dell'influenza A (A/duck/Shanghai/08/2001(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.357 bp	AY585413.1 GI:47156380
269. mRNA del virus dell'influenza A (A/duck/Shanghai/08/2001(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585434.1 GI:47156422
270. mRNA del virus dell'influenza A (A/duck/Shanghai/08/2001(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 685 bp	AY585455.1 GI:47156464
271. mRNA del virus dell'influenza A (A/duck/Shanghai/13/2001(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585519.1 GI:47156256
272. mRNA del virus dell'influenza A (A/duck/Shanghai/13/2001(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585392.1 GI:47156338
273. mRNA del virus dell'influenza A (A/duck/Shanghai/13/2001(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.417 bp	AY585414.1 GI:47156382
274. mRNA del virus dell'influenza A (A/duck/Shanghai/13/2001(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.499 bp	AY585435.1 GI:47156424
275. mRNA del virus dell'influenza A (A/duck/Shanghai/13/2001(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 685 bp	AY585456.1 GI:47156466
276. mRNA del virus dell'influenza A (A/duck/Shanghai/35/2002(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585520.1 GI:47156258
277. mRNA del virus dell'influenza A (A/duck/Shanghai/35/2002(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585393.1 GI:47156340
278. mRNA del virus dell'influenza A (A/duck/Shanghai/35/2002(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.363 bp	AY585415.1 GI:47156384
279. mRNA del virus dell'influenza A (A/duck/Shanghai/35/2002(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585436.1 GI:47156426

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280. mRNA del virus dell'influenza A (A/duck/Shanghai/35/2002(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 685 bp	AY585457.1 GI:47156468
281. mRNA del virus dell'influenza A (A/duck/Shanghai/37/2002(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585521.1 GI:47156260
282. mRNA del virus dell'influenza A (A/duck/Shanghai/37/2002(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585394.1 GI:47156342
283. mRNA del virus dell'influenza A (A/duck/Shanghai/37/2002(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.361 bp	AY585416.1 GI:47156386
284. mRNA del virus dell'influenza A (A/duck/Shanghai/37/2002(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.497 bp	AY585437.1 GI:47156428
285. mRNA del virus dell'influenza A (A/duck/Shanghai/37/2002(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 685 bp	AY585458.1 GI:47156470
286. mRNA del virus dell'influenza A (A/duck/Shanghai/38/2001(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.282 bp	AY585522.1 GI:47156262
287. mRNA del virus dell'influenza A (A/duck/Shanghai/38/2001(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585395.1 GI:47156344
288. mRNA del virus dell'influenza A (A/duck/Shanghai/38/2001(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.355 bp	AY585417.1 GI:47156388
289. mRNA del virus dell'influenza A (A/duck/Shanghai/38/2001(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.499 bp	AY585438.1 GI:47156430
290. mRNA del virus dell'influenza A (A/duck/Shanghai/38/2001(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 692 bp	AY585459.1 GI:47156472
291. mRNA del virus dell'influenza A (A/duck/Sheyang/1/2005(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 875 bp	DQ354059.1 GI:87128643
292. mRNA del virus dell'influenza A (A/duck/Tuva/01/2006(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.748 bp	DQ861291.1 GI:112820195
293. mRNA del virus dell'influenza A (A/duck/Tuva/01/2006(H5N1)) proteina della matrice 1 (M1), cds	mRNA lineare	DQ861292.1 GI:112820197

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completa	991 bp	
294. mRNA del virus dell'influenza A (A/duck/Tuva/01/2006(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.364 bp	DQ861293.1 GI:112820199
295. mRNA del virus dell'influenza A (A/duck/Tuva/01/2006(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.531 bp	DQ861294.1 GI:112820201
296. mRNA del virus dell'influenza A (A/duck/Tuva/01/2006(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 842 bp	DQ861295.1 GI:112820203
297. mRNA del virus dell'influenza A (A/duck/Vietnam/1/2005(H5N1)) proteina non strutturale 1, cds completa	mRNA lineare 890 bp	DQ366310.1 GI:86753715
298. mRNA del virus dell'influenza A (A/duck/Vietnam/1/2005(H5N1)) polimerasi PB2, cds completa	mRNA lineare 2.341 bp	DQ366303.1 GI:86753725
299. mRNA del virus dell'influenza A (A/duck/Vietnam/1/2005(H5N1)) polimerasi PB1, cds completa	mRNA lineare 2.341 bp	DQ366304.1 GI:86753735
300. mRNA del virus dell'influenza A (A/duck/Vietnam/1/2005(H5N1)) proteina PA, cds completa	mRNA lineare 2.233 bp	DQ366305.1 GI:86753745
301. mRNA del virus dell'influenza A (A/duck/Vietnam/1/2005(H5N1)) emoagglutinina, cds completa	mRNA lineare 1.779 bp	DQ366306.1 GI:86753755
302. mRNA del virus dell'influenza A (A/duck/Vietnam/1/2005(H5N1)) nucleocapside, cds completa	mRNA lineare 1.565 bp	DQ366307.1 GI:86753765
303. mRNA del virus dell'influenza A (A/duck/Vietnam/1/2005(H5N1)) neuraminidasi, cds completa	mRNA lineare 1.401 bp	DQ366308.1 GI:86753775
304. mRNA del virus dell'influenza A (A/duck/Vietnam/1/2005(H5N1)) proteina della matrice, cds completa	mRNA lineare 1.027 bp	DQ366309.1 GI:86753785
305. mRNA del virus dell'influenza A (A/duck/Vietnam/8/05(H5N1)) proteina non strutturale 1, cds completa	mRNA lineare 890 bp	DQ366326.1 GI:86753719
306. mRNA del virus dell'influenza A (A/duck/Vietnam/8/05(H5N1)) polimerasi PB2, cds completa	mRNA lineare 2.341 bp	DQ366319.1 GI:86753729
307. mRNA del virus dell'influenza A	mRNA	DQ366320.1

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(A/duck/Vietnam/8/05(H5N1)) polimerasi PB1, cds completa	lineare 2.341 bp	GI:86753739
308. mRNA del virus dell'influenza A (A/duck/Vietnam/8/05(H5N1)) proteina PA, cds completa	mRNA lineare 2.233 bp	DQ366321.1 GI:86753749
309. mRNA del virus dell'influenza A (A/duck/Vietnam/8/05(H5N1)) emoagglutinina, cds completa	mRNA lineare 1.779 bp	DQ366322.1 GI:86753759
310. mRNA del virus dell'influenza A (A/duck/Vietnam/8/05(H5N1)) nucleocapside, cds completa	mRNA lineare 1.565 bp	DQ366323.1 GI:86753769
311. mRNA del virus dell'influenza A (A/duck/Vietnam/8/05(H5N1)) neuraminidasi, cds completa	mRNA lineare 1.401 bp	DQ366324.1 GI:86753779
312. mRNA del virus dell'influenza A (A/duck/Vietnam/8/05(H5N1)) proteina della matrice, cds completa	mRNA lineare 1.027 bp	DQ366325.1 GI:86753789
313. mRNA del virus dell'influenza A (A/duck/Yangzhou/232/2004(H5N1)) proteina non strutturale (NS) non funzionale, sequenza completa	mRNA lineare 876 bp	DQ354060.1 GI:87128645
314. mRNA del virus dell'influenza A (A/duck/Zhejiang/11/2000(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585523.1 GI:47156264
315. mRNA del virus dell'influenza A (A/duck/Zhejiang/11/2000(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585396.1 GI:47156346
316. mRNA del virus dell'influenza A (A/duck/Zhejiang/11/2000(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.352 bp	AY585418.1 GI:47156390
317. mRNA del virus dell'influenza A (A/duck/Zhejiang/11/2000(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.498 bp	AY585439.1 GI:47156432
318. mRNA del virus dell'influenza A (A/duck/Zhejiang/11/2000(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 687 bp	AY585460.1 GI:47156474
319. mRNA del virus dell'influenza A (A/duck/Zhejiang/52/2000(H5N1)) proteina basica della polimerasi 2 (PB2), cds completa	mRNA lineare 2.281 bp	AY585524.1 GI:47156266
320. mRNA del virus dell'influenza A (A/duck/Zhejiang/52/2000(H5N1)) proteina della matrice, cds completa	mRNA lineare 760 bp	AY585397.1 GI:47156348

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321. mRNA del virus dell'influenza A (A/duck/Zhejiang/52/2000(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.423 bp	AY585419.1 GI:47156392
322. mRNA del virus dell'influenza A (A/duck/Zhejiang/52/2000(H5N1)) nucleoproteina (NP), cds completa	mRNA lineare 1.499 bp	AY585440.1 GI:47156434
323. mRNA del virus dell'influenza A (A/duck/Zhejiang/52/2000(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 686 bp	AY585461.1 GI:47156476
324. mRNA del virus dell'influenza A (A/Egypt/0636-NAMRU3/2007(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.749 bp	EF382359.1 GI:124244205
325. Virus dell'influenza A (A/goosander/Switzerland/V82/06(H5N1)) gene dell'emoagglutinina (HA), cds completa	mRNA lineare 1.707 bp	EF110518.1 GI:119394674
326. mRNA del virus dell'influenza A (A/goose/Guangdong/1/96(H5N1)) emoagglutinina, cds completa	mRNA lineare 1.707 bp	AF148678.1 GI:5007022
327. mRNA del virus dell'influenza A (A/Goose/Huadong/1/2000(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.779 bp	DQ201829.1 GI:76786306
328. mRNA del virus dell'influenza A (A/Goose/Huadong/1/2000(H5N1)) neuraminidasi (NA), cds completa	mRNA lineare 1.458 bp	DQ201830.1 GI:76786308
329. mRNA del virus dell'influenza A (A/goose/Hungary/2823/2/2007(H5N1)) polimerasi PB1 (PB1), cds parziale	mRNA lineare 2.287 bp	EF446768.1 GI:126428373
330. mRNA del virus dell'influenza A (A/goose/Hungary/2823/2/2007(H5N1)) polimerasi PB2 (PB2), cds parziale	mRNA lineare 2.274 bp	EF446769.1 GI:126428375
331. mRNA del virus dell'influenza A (A/goose/Hungary/2823/2/2007(H5N1)) polimerasi PA (PA), cds completa	mRNA lineare 2.175 bp	EF446770.1 GI:126428377
332. mRNA del virus dell'influenza A (A/goose/Hungary/2823/2/2007(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.735 bp	EF446771.1 GI:126428379
333. mRNA del virus dell'influenza A (A/goose/Hungary/2823/2/2007(H5N1)) proteina nucleocapside (NP), cds parziale	mRNA lineare 1.473 bp	EF446772.1 GI:126428381
334. mRNA del virus dell'influenza A (A/goose/Hungary/2823/2/2007(H5N1)) neuraminidasi (NA), cds	mRNA lineare	EF446773.1 GI:126428383

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parziale	1.311 bp	
335. mRNA del virus dell'influenza A (A/goose/Hungary/2823/2/2007(H5N1)) proteina della matrice 1 (M1), cds parziale	mRNA lineare 971 bp	EF446774.1 GI:126428385
336. mRNA del virus dell'influenza A (A/goose/Hungary/2823/2/2007(H5N1)) proteina non strutturale 1 (NS1), cds parziale	mRNA lineare 795 bp	EF446775.1 GI:126428387
337. mRNA del virus dell'influenza A (A/goose/Hungary/3413/2007(H5N1)) polimerasi PB1 (PB1), cds parziale	mRNA lineare 2.277 bp	EF446776.1 GI:126428389
338. mRNA del virus dell'influenza A (A/goose/Hungary/3413/2007(H5N1)) polimerasi PB2 (PB2), cds parziale	mRNA lineare 2.274 bp	EF446777.1 GI:126428391
339. mRNA del virus dell'influenza A (A/goose/Hungary/3413/2007(H5N1)) polimerasi PA (PA), cds parziale	mRNA lineare 2.163 bp	EF446778.1 GI:126428393
340. mRNA del virus dell'influenza A (A/goose/Hungary/3413/2007(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.722 bp	EF446779.1 GI:126428395
341. mRNA del virus dell'influenza A (A/goose/Hungary/3413/2007(H5N1)) proteina nucleocapside (NP), cds parziale	mRNA lineare 1.463 bp	EF446780.1 GI:126428397
342. mRNA del virus dell'influenza A (A/goose/Hungary/3413/2007(H5N1)) neuraminidasi (NA), cds parziale	mRNA lineare 1.289 bp	EF446781.1 GI:126428399
343. mRNA del virus dell'influenza A (A/goose/Hungary/3413/2007(H5N1)) proteina della matrice 1 (M1), cds parziale	mRNA lineare 955 bp	EF446782.1 GI:126428401
344. mRNA del virus dell'influenza A (A/goose/Hungary/3413/2007(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 805 bp	EF446783.1 GI:126428403
345. mRNA del virus dell'influenza A (A/goose/jiangsu/131/2002(H5N1)) proteina non strutturale (NS) non funzionale, sequenza completa	mRNA lineare 877 bp	DQ354061.1 GI:87128646
346. mRNA del virus dell'influenza A (A/goose/Jiangsu/220/2003(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 875 bp	DQ354062.1 GI:87128647
347. mRNA del virus dell'influenza A (A/goose/Krasnoozerka/627/2005(H5N1)) emoagglutinina (HA), cds completa	mRNA lineare 1.754 bp	DQ676840.1 GI:108782531
348. mRNA del virus dell'influenza A	mRNA	DQ676841.1

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(A/goose/Krasnoozerka/627/2005(H5N1)) nucleoproteina (NP), cds completa	lineare 1.530 bp	GI:108782533
349. mRNA del virus dell'influenza A (A/goose/Krasnoozerka/627/2005(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 850 bp	DQ676842.1 GI:108782535
350. mRNA del virus dell'influenza A (A/goose/Vietnam/3/05(H5N1)) proteina non strutturale 1, cds completa	mRNA lineare 890 bp	DQ366318.1 GI:86753717
351. mRNA del virus dell'influenza A (A/goose/Vietnam/3/05(H5N1)) polimerasi PB2, cds completa	mRNA lineare 2.341 bp	DQ366311.1 GI:86753727
352. mRNA del virus dell'influenza A (A/goose/Vietnam/3/05(H5N1)) polimerasi PB1, cds completa	mRNA lineare 2.341 bp	DQ366312.1 GI:86753737
353. mRNA del virus dell'influenza A (A/goose/Vietnam/3/05(H5N1)) proteina PA, cds completa	mRNA lineare 2.233 bp	DQ366313.1 GI:86753747
354. mRNA del virus dell'influenza A (A/goose/Vietnam/3/05(H5N1)) emoagglutinina, cds completa	mRNA lineare 1.779 bp	DQ366314.1 GI:86753757
355. mRNA del virus dell'influenza A (A/goose/Vietnam/3/05(H5N1)) nucleocapside, cds completa	mRNA lineare 1.565 bp	DQ366315.1 GI:86753767
356. mRNA del virus dell'influenza A (A/goose/Vietnam/3/05(H5N1)) neuraminidasi, cds completa	mRNA lineare 1.401 bp	DQ366316.1 GI:86753777
357. mRNA del virus dell'influenza A (A/goose/Vietnam/3/05(H5N1)) proteina della matrice, cds completa	mRNA lineare 1.027 bp	DQ366317.1 GI:86753787
358. mRNA del virus dell'influenza A (A/gull/Pennsylvania/4175/83(H5N1)) emoagglutinina H5, cds parziale	mRNA lineare 1.700 bp	AF082043.1 GI:4240453
360. mRNA del virus dell'influenza A (A/HongKong/156/97(H5N1)) neuraminidasi, cds completa	mRNA lineare 1.388 bp	AF028708.1 GI:2865377
361. mRNA del virus dell'influenza A (A/HongKong/156/97(H5N1)) emoagglutinina, cds completa	mRNA lineare 1.741 bp	AF028709.1 GI:2865379
362. mRNA del virus dell'influenza A (A/HongKong/156/97(H5N1)) nucleoproteina, cds completa	mRNA lineare 1.549 bp	AF028710.1 GI:2865381

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363. Virus dell'influenza A (A/hooded vulture/Burkina Faso/1/2006(H5N1)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 1.451 bp	AM503028.1 GI:147846292
364. mRNA del virus dell'influenza A (A/hooded vulture/Burkina Faso/1/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503038.1 GI:147846312
365. Virus dell'influenza A (A/hooded vulture/Burkina Faso/1/2006(H5N1)) mRNA parziale per polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503047.1 GI:147846330
366. Virus dell'influenza A (A/hooded vulture/Burkina Faso/1/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 1.686 bp	AM503065.1 GI:147846855
367. Virus dell'influenza A (A/hooded vulture/Burkina Faso/2/2006(H5N1)) mRNA parziale per la proteina della matrice 1 (gene m1)	mRNA lineare 977 bp	AM503006.1 GI:147846248
368. Virus dell'influenza A (A/hooded vulture/Burkina Faso/2/2006(H5N1)) mRNA parziale per neuraminidasi (gene na)	mRNA lineare 1.336 bp	AM503017.1 GI:147846270
369. Virus dell'influenza A (A/hooded vulture/Burkina Faso/2/2006(H5N1)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 1.499 bp	AM503027.1 GI:147846290
370. mRNA del virus dell'influenza A (A/hooded vulture/Burkina Faso/2/2006(H5N1)) per la proteina non strutturale (gene ns)	mRNA lineare 827 bp	AM503039.1 GI:147846314
371. Virus dell'influenza A (A/hooded vulture/Burkina Faso/2/2006(H5N1)) mRNA parziale per polimerasi (gene pa)	mRNA lineare 2.169 bp	AM503048.1 GI:147846332
372. Virus dell'influenza A (A/hooded vulture/Burkina Faso/2/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 1 (gene pb1)	mRNA lineare 2.259 bp	AM503062.1 GI:147846849
373. Virus dell'influenza A (A/hooded vulture/Burkina Faso/2/2006(H5N1)) mRNA parziale per la proteina basica polimerasi 2 (gene pb2)	mRNA lineare 2.315 bp	AM503066.1 GI:147846857
374. mRNA del virus dell'influenza A (A/Indonesia/COC177/2005(H5N1)) proteina M2, cds completa	mRNA lineare 294 bp	EU014135.1 GI:151336850
375. mRNA del virus dell'influenza A (A/Indonesia/COC298/2005(H5N1)) proteina M2, cds completa	mRNA lineare 294 bp	EU014138.1 GI:151336856
376. mRNA del virus dell'influenza A (A/Indonesia/CDC485/2006(H5N1)) proteina M2, cds completa	mRNA lineare	EU014136.1 GI:151336852

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	294 bp	
377. mRNA del virus dell'influenza A (A/Indonesia/CDC530/2006(H5N1)) proteina M2, cds completa	mRNA lineare 294 bp	EU014134.1 GI:151336848
378. mRNA del virus dell'influenza A (A/Indonesia/COC535/2006(H5N1)) proteina M2, cds completa	mRNA lineare 294 bp	EU014133.1 GI:151336846
379. mRNA del virus dell'influenza A (A/Indonesia/CDC540/2006(H5N1)) proteina M2, cds completa	mRNA lineare 294 bp	EU014132.1 GI:151336844
380. mRNA del virus dell'influenza A (A/Indonesia/CDC561/2006(H5N1)) proteina M2, cds completa	mRNA lineare 294 bp	EU014137.1 GI:151336854
381. mRNA del virus dell'influenza A (A/Indonesia/CDC60/2005(H5N1)) proteina M2, cds completa	mRNA lineare 294 bp	EU014139.1 GI:151336858
382. mRNA del virus dell'influenza A (A/mallard/Wisconsin/428/75(H5N1)) emoagglutinina, cds parziale	mRNA lineare 996 bp	U79453.1 GI:1840071
383. mRNA del virus dell'influenza A (A/ostrich/VRLCU/Egypt/2011(H5N1)) segmento 4 emoagglutinina (HA), cds parziale	mRNA lineare 441 bp	JN157759.1 GI:338223304
384. mRNA del virus dell'influenza A (A/quail/yunnan/092/2002(H5N1)) proteina non strutturale (NS), cds completa	mRNA lineare 875 bp	DQ354063.1 GI:87128649
385. mRNA del virus dell'influenza A (A/R(Turkey/Ontario/7732/66-Bellamy/42)(H5N1)) HA per emoagglutinina, cds parziale	mRNA lineare 1.472 bp	AB241613.1 GI:82581222
386. mRNA del virus dell'influenza A (A/Thailand/LFPN-2004/2004(H5N1)) neuraminidasi, cds completa	mRNA lineare 1.350 bp	AY679513.1 GI:50843945
387. mRNA del virus dell'influenza A (A/Thailand/LFPN-2004/2004(H5N1)) emoagglutinina, cds completa	mRNA lineare 1.704 bp	AY679514.1 GI:50843949
388. mRNA del virus dell'influenza A (A/tiger/Thailand/CU-T4/04(H5N1)) proteina basica della polimerasi 2 (PB2), cds parziale	mRNA lineare 534 bp	DQ017251.1 GI:65329524
389. mRNA del virus dell'influenza A (A/tiger/Thailand/CU-T5/04(H5N1)) proteina basica della polimerasi 2 (PB2), cds parziale	mRNA lineare 582 bp	DQ017252.1 GI:65329536
390. mRNA del virus dell'influenza A (A/tiger/Thailand/CU-	mRNA	00017253.1

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T6/04(H5N1)) proteina basica della polimerasi 2 (PB2), cds parziale	lineare 564 bp	GI:65329553
391. mRNA del virus dell'influenza A (A/tiger/Thailand/CU-T8/04(H5N1)) proteina basica della polimerasi 2 (PB2), cds parziale	mRNA lineare 582 bp	DQ017254.1 GI:65329568
392. mRNA del virus dell'influenza A (A/turkey/England/250/2007(H5N1)) emoagglutinina (HA), cds parziale	mRNA lineare 1.695 bp	EF441263.1 GI:129307104
393. mRNA del virus dell'influenza A (A/turkey/England/250/2007(H5N1)) proteina della matrice (M), cds parziale	mRNA lineare 943 bp	EF441264.1 GI:129307106
394. mRNA del virus dell'influenza A (A/turkey/England/250/2007(H5N1)) proteina non strutturale 1 (NS1), cds completa	mRNA lineare 812 bp	EF441265.1 GI:129307109
395. mRNA del virus dell'influenza A (A/turkey/England/250/2007(H5N1)) polimerasi PA (PA), cds completa	mRNA lineare 2.185 bp	EF441266.1 GI:129307111
396. mRNA del virus dell'influenza A (A/turkey/England/250/2007(H5N1)) polimerasi PB2 (PB2), cds parziale	mRNA lineare 2.272 bp	EF441267.1 GI:129307113
397. mRNA del virus dell'influenza A (A/turkey/England/250/2007(H5N1)) nucleocapside (NP), cds parziale	mRNA lineare 1.396 bp	EF441268.1 GI:129307115
398. mRNA del virus dell'influenza A (A/turkey/England/250/2007(H5N1)) polimerasi PB1 (PB1), cds parziale	mRNA lineare 2.288 bp	EF441269.1 GI:129307117
399. mRNA del virus dell'influenza A (A/turkey/England/250/2007(H5N1)) neuraminidasi (NA), cds parziale	mRNA lineare 1.276 bp	EF441270.1 GI:129307119
A/chicken/Burkina Faso/13.1/2006(H5N1) neuraminidasi (NA)		AM503016.1
A/chicken/Crimea/04/2005(H5N1) neuraminidasi (NA)		00650661.1
A/chicken/Crimea/04/2005(H5N1) emoagglutinina		DQ650659.1
A/chicken/Crimea/08/2005(H5N1) proteina basica della polimerasi 1 (PB1)		DQ650669.1
A/chicken/Crimea/08/2005(H5N1) neuraminidasi (NA)		DQ650665.1
A/chicken/Crimea/08/2005(H5N1) emoagglutinina (HA)		DQ650663.1
A/chicken/Guangxi/12/2004(H5N1) proteina non strutturale 1		00366334.1
A/chicken/Guangxi/12/2004(H5N1) neuraminidasi		DQ366332.1
A/chicken/Guangxi/12/2004(H5N1) emoagglutinina		DQ366330.1

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A/duck/Kurgan/08/2005(H5N1) nucleoproteina(NP)		DQ449643.1

Tabella 9. Altri antigeni dell'influenza A (H1N*, H2N*, H3N*)

Ceppo/proteina	**Lunghezza**	**Nn. di accessione GenBank/GI**
H1N*		
mRNA del virus dell'influenza A (A/duck/Hong Kong/193/1977(H1N2)) nucleoproteina (NP), cds parziale	mRNA lineare 1.402 bp	U49097.1 GI:1912392
mRNA del virus dell'influenza A (A/duck/Hong Kong/193/1977(H1N2)) polimerasi (PB1), cds parziale	mRNA lineare 258 bp	U48285.1 GI:1912374
Virus dell'influenza A (A/England/2/2002(H1N2)) gene NS1 parziale per la proteina 1 non strutturale e gene NS2 parziale per la proteina 2 non strutturale, RNA genomico	mRNA lineare 795 bp	AJ519455.1 GI:31096426
Virus dell'influenza A (A/England/3/02(H1N2)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 384 bp	AJ489497.1 GI:27526856
Virus dell'influenza A (A/England/3/02(H1N2)) mRNA parziale per la subunità 2 della polimerasi (gene pb2)	mRNA lineare 442 bp	AJ489488.1 GI:27526838
Virus dell'influenza A (A/England/5/02(H1N2)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 384 bp	AJ489498.1 GI:27526858
Virus dell'influenza A (A/England/5/02(H1N2)) mRNA parziale per la subunità 2 della polimerasi (gene pb2)	mRNA lineare 442 bp	AJ489489.1 GI:27526840
Virus dell'influenza A (A/England/57/02(H1N2)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 384 bp	AJ489499.1 GI:27526860
Virus dell'influenza A (A/England/57/02(H1N2)) mRNA parziale per la subunità 2 della polimerasi (gene pb2)	mRNA lineare 442 bp	AJ489492.1 GI:27526846
Virus dell'influenza A (A/England/691/01(H1N2)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 384 bp	AJ489496.1 GI:27526854
Virus dell'influenza A (A/England/73/02(H1N2)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 384 bp	AJ489500.1 GI:27526862
Virus dell'influenza A (A/England/73/02(H1N2)) mRNA	mRNA	AJ489493.1

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Ceppo/proteina	Lunghezza	Nn. di accessione GenBank/GI
H1N*		
parziale per la subunità 2 della polimerasi (gene pb2)	lineare 442 bp	GI:27526848
Virus dell'influenza A (A/England/90/02(H1N2)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 384 bp	AJ489501.1 GI:27526864
Virus dell'influenza A (A/England/90/02(H1N2)) mRNA parziale per la subunità 2 della polimerasi (gene pb2)	mRNA lineare 442 bp	AJ489490.1 GI:27526842
Virus dell'influenza A (A/England/97/02(H1N2)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 384 bp	AJ489502.1 GI:27526866
Virus dell'influenza A (A/England/97/02(H1N2)) mRNA parziale per la subunità 2 della polimerasi (gene pb2)	mRNA lineare 442 bp	AJ489491.1 GI:27526844
Virus dell'influenza A (A/England/627/01(H1N2)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 384 bp	AJ489494.1 GI:27526850
Virus dell'influenza A (A/England/627/01(H1N2)) mRNA parziale per la subunità 2 della polimerasi (gene pb2)	mRNA lineare 442 bp	AJ489485.1 GI:27526832
Virus dell'influenza A (A/England/691/01(H1N2)) mRNA parziale per la subunità 2 della polimerasi (gene pb2)	mRNA lineare 442 bp	AJ489487.1 GI:27526836
Virus dell'influenza A (A/Egypt/96/2002(H1N2)) gene NS1 parziale per la proteina 1 non strutturale e gene NS2 parziale per la proteina 2 non strutturale, RNA genomico	mRNA lineare 747 bp	AJ519457.1 GI:31096432
Virus dell'influenza A (A/Israel/6/2002(H1N2)) gene NS1 parziale per la proteina 1 non strutturale e gene NS2 parziale per la proteina 2 non strutturale, RNA genomico	mRNA lineare 773 bp	AJ519456.1 GI:31096429
Virus dell'influenza A (A/Arabia Saudita/2231/2001(H1N2)) gene NS1 parziale per la proteina 1 non strutturale e gene NS2 parziale per la proteina 2 non strutturale, RNA genomico	mRNA lineare 772 bp	AJ519453.1 GI:31096420
Virus dell'influenza A (A/Scotland/122/01(H1N2)) mRNA parziale per nucleoproteina (gene np)	mRNA lineare 384 bp	AJ489495.1 GI:27526852
Virus dell'influenza A (A/Scotland/122/01(H1N2)) mRNA parziale per la subunità 2 della polimerasi (gene pb2)	mRNA lineare 442	AJ489486.1 GI:27526834

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Ceppo/proteina	**Lunghezza**	**Nn. di accessione GenBank/GI**
H1N*		
	bp	
mRNA del virus dell'influenza A (A/swine/Bakum/1832/2000(H1N2)) emoagglutinina (HA), cds parziale	mRNA lineare 832 bp	AY861443.1 GI:57791765
mRNA del virus dell'influenza A (A/swine/Bakum/1832/2000(H1N2)) neuraminidasi, cds parziale	mRNA lineare 467 bp	AY870645.1 GI:58042754
Virus dell'influenza A (A/swine/Cotes d'Armor/0040/2007(H1N2)) segmento 4 mRNA parziale	mRNA lineare 1.039 bp	AM503547.1 GI:225578611
Virus dell'influenza A (A/swine/Cotes d'Armor/0136_17/2006(H1N2)) mRNA parziale per precursore dell'emoagglutinina (gene HA1)	mRNA lineare 1.136 bp	AM490224.3 GI:222062921
Virus dell'influenza A (A/swine/England/72685/96(H1N2)) precursore dell'emoagglutinina, mRNA, cds completa	mRNA lineare 1.778 bp	AF085417.1 GI:3831770
Virus dell'influenza A (A/swine/England/17394/96(H1N2)) precursore dell'emoagglutinina, mRNA, cds completa	mRNA lineare 1.778 bp	AF085416.1 GI:3831768
Virus dell'influenza A (A/swine/England/690421/95(H1N2)) precursore dell'emoagglutinina, mRNA, cds completa	mRNA lineare 1.778 bp	AF085415.1 GI:3831766
Virus dell'influenza A (A/swine/England/438207/94(H1N2)) precursore dell'emoagglutinina, mRNA, cds completa	mRNA lineare 1.778 bp	AF085414.1 GI:3831764
mRNA del virus dell'influenza A (A/Swine/Korea/CY02/02(H1N2)) neuraminidasi (NA), cds completa	mRNA lineare 1.427 bp	AY129157.1 GI:24286064
mRNA del virus dell'influenza A (A/Swine/Korea/CY02/02(H1N2)) proteina di matrice (M), cds completa	mRNA lineare 952 bp	AY129158.1 GI:24286066
mRNA del virus dell'influenza A (A/Swine/Korea/CY02/02(H1N2)) nucleoproteina (NP), cds completa	mRNA lineare 1.542 bp	AY129159.1 GI:24286069
mRNA del virus dell'influenza A (A/Swine/Korea/CY02/02(H1N2)) proteina non strutturale (NS), cds completa	mRNA lineare 842 bp	AY129160.1 GI:24286081

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Ceppo/proteina	Lunghezza	Nn. di accessione GenBank/GI
H1N*		
mRNA del virus dell'influenza A (A/Swine/Korea/CY02/02(H1N2)) proteina acida della polimerasi 2 (PA), cds completa	mRNA lineare 2.165 bp	AY129161.1 GI:24286087
mRNA del virus dell'influenza A (A/Swine/Korea/CY02/02(H1N2)) subunità 1 della polimerasi (PB1), cds completa	mRNA lineare 2.274 bp	AY129162.1 GI:24286096
mRNA del virus dell'influenza A (A/Swine/Korea/CY02/02(H1N2)) subunità 2 della polimerasi (PB2), cds completa	mRNA lineare 2.334 bp	AY129163.1 GI:24286100
Virus dell'influenza A (A/swine/Scotland/410440/94(H1N2)) precursore dell'emoagglutinina, mRNA, cds completa	mRNA lineare 1.778 bp	AF085413.1 GI:3831762
mRNA del virus dell'influenza A (A/swine/Spain/80598-LP4/2007(H1N2)) proteina della matrice 2 (M2), cds parziale	mRNA lineare 291 bp	EU305436.1 GI:168830657
Virus dell'influenza A (A/Switzerland/3100/2002(H1N2)) gene HA parziale per emoagglutinina, RNA genomico	mRNA lineare 975 bp	AJ517813.1 GI:38422519
mRNA del virus dell'influenza A (A/duck/Hong Kong/717/1979(H1N3)) nucleoproteina (NP), cds parziale	mRNA lineare 1.387 bp	U49095.1 GI:1912388
mRNA del virus dell'influenza A (A/duck/Hong Kong/717/1979(H1N3)) polimerasi (PB1), cds parziale	mRNA lineare 265 bp	U48281.1 GI:1912366
mRNA del virus dell'influenza A (A/herringgull/New Jersey/780/86 (H1N3)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 971 bp	AY664422.1 GI:51011826
mRNA del virus dell'influenza A (A/mallard/Alberta/42/77(H1N6)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 997 bp	AY664426.1 GI:51011830
mRNA del virus dell'influenza A (A/swine/England/191973/92(H1N7)) proteina della matrice M1, cds completa	mRNA lineare 1.020 bp	U85985.1 GI:1835733
mRNA del virus dell'influenza A (A/swine/England/191973/92(H1N7)) nucleoproteina, cds completa	mRNA lineare 1.524 bp	U85987.1 GI:1835737
mRNA del virus dell'influenza A	mRNA	U85988.1

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Ceppo/proteina	**Lunghezza**	**Nn. di accessione GenBank/GI**
H1N*		
(A/swine/England/191973/92(H1N7)) neuraminidasi, cds completa	lineare 1.458 bp	GI:1835739
mRNA del virus dell'influenza A (A/swine/England/191973/92(H1N7)) emoagglutinina HA, cds parziale	mRNA lineare 1.698 bp	U85986.1 GI:1835735
H2N*		
Virus dell'influenza A (A/ruddy turnstone/Delaware/81/93 (H2N1)) mRNA proteina della matrice non funzionale, sequenza parziale	mRNA lineare 917 bp	AY664465.1 GI:51011869
Virus dell'influenza A (A/ruddy turnstone/Delaware/34/93 (H2N1)) mRNA proteina della matrice non funzionale, sequenza parziale	mRNA lineare 968 bp	AY664429.1 GI:51011833
mRNA del virus dell'influenza A (A/Shorebird/Delaware/122/97(H2N1)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 925 bp	AY664466.1 GI:51011870
mRNA del virus dell'influenza A (A/shorebird/Delaware/138/97 (H2N1)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 958 bp	AY664454.1 GI:51011858
mRNA del virus dell'influenza A (A/shorebird/Delaware/111/97 (H2N1)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 958 bp	AY664457.1 GI:51011861
mRNA del virus dell'influenza A (A/shorebird/Delaware/24/98 (H2N1)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 979 bp	AY664442.1 GI:51011846
RNA del virus dell'influenza tipo A/Leningrad/134/17/57 (H2N2) PA, cds completa	mRNA lineare 2.233 bp	M81579.1 GI:324935
Virus dell'influenza A (STRAIN A/MALLARD/NEW YORK/6750/78) mRNA parziale per la proteina PA	mRNA lineare 2.151 bp	AJ243994.1 GI:5918195
mRNA del virus dell'influenza A (A/X-7(F1)/(H2N2)) neuraminidasi, cds completa	mRNA lineare 1.467 bp	M11205.1 GI:323969
mRNA del virus dell'influenza A (A/mallard/Alberta/77/77 (H2N3)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 1.009 bp	AY664425.1 GI:51011829

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Ceppo/proteina	Lunghezza	Nn. di accessione GenBank/GI
H1N*		
mRNA del virus dell'influenza A (A/mallard/Alberta/226/98(H2N3)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 968 bp	AY664447.1 GI:51011851
mRNA del virus dell'influenza A (A/sanderling/New Jersey/766/86 (H2N7)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 846 bp	AY664477.1 GI:51011881
mRNA del virus dell'influenza A (A/laughinggull/New Jersey/798/86 (H2N7)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 907 bp	AY664471.1 GI:51011875
mRNA del virus dell'influenza A (A/herringgull/Delaware/471/1986(H2N7)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 960 bp	AY664440.1 GI:51011844
Virus dell'influenza A (A/ruddy turnstone/Delaware/142/98 (H2N8)) mRNA proteina della matrice non funzionale, sequenza parziale	mRNA lineare 1.011 bp	AY664423.1 GI:51011827
mRNA del virus dell'influenza A (A/pintail/Alberta/293/77(H2N9)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 906 bp	AY664473.1 GI:51011877
mRNA del virus dell'influenza A (A/blue-wingedteal/Alberta/16/97 (H2N9)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 961 bp	AY664449.1 GI:51011853
mRNA del virus dell'influenza A (A/Laughinggull/New Jersey/75/85 (H2N9)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 952 bp	AY664437.1 GI:51011841
mRNA del virus dell'influenza A (A/mallard/Alberta/205/98 (H2N9)) proteina della matrice non funzionale, sequenza parziale	mRNA lineare 959 bp	AY664450.1 GI:51011854

H3N*		
mRNA del virus dell'influenza A (A/duck/Eastern China/267/2003(H3N1)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.458 bp	EU4297 55.1 GI:167859475
mRNA del virus dell'influenza A (A/duck/Eastern China/253/2003(H3N1)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare	EU4297 54.1 GI:167859473

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H3N*		
	1.458 bp	
mRNA del virus dell'influenza A (A/duck/Eastern China/252/2003(H3N1)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.458 bp	EU4297 53.1 GI:167859471
mRNA del virus dell'influenza A (A/duck/Eastern China/243/2003(H3N1)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.458 bp	EU4297 52.1 GI:167859469
mRNA del virus dell'influenza A (A/duck/Eastern China/262/2003(H3N1)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.458 bp	EU4297 34.1 GI:167859433
mRNA del virus dell'influenza A (A/duck/Eastern China/233/2003(H3N1)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.459 bp	EU4297 33.1 GI:167859431
mRNA del virus dell'influenza A (A/duck/Eastern China/213/2003(H3N1)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.458 bp	EU4297 23.1 GI:167859411
mRNA del virus dell'influenza A (A/duck/Eastern China/341/2003(H3N1)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.458 bp	EU4297 19.1 GI:167859403
mRNA del virus dell'influenza A (A/duck/Eastern China/01/2002(H3N1)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.458 bp	EU4297 18.1 GI:167859401
mRNA del virus dell'influenza A (A/mallard/Alberta/22/76 (H3N6)) proteina della matrice non funzionale, sequenza parziale	m RNA lineare 1.013 bp	AY6644 34.1 GI:51011838
mRNA del virus dell'influenza A (A/mallard/Alberta/199/99(H3N6)) proteina della matrice non funzionale, sequenza parziale	m RNA lineare 970 bp	AY6644 43.1 GI:51011847
mRNA del virus dell'influenza A (A/shorebird/Delaware/222/97 (H3N6)) proteina della matrice non funzionale, sequenza parziale	m RNA lineare 922 bp	AY6644 61.1 GI:51011865

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H3N*		
Virus dell'influenza A (A/Duck/Hokkaido/8/80 (H3N8)) precursore dell'emoagglutinina, mRNA, cds parziale	m RNA lineare 984 bp	AF0795 70.1 GI:3414978
mRNA del virus dell'influenza A (A/Duck/Hokkaido/8/80 (H3N8)) nucleoproteina, cds completa	m RNA lineare 1.497 bp	AF0795 71.1 GI:3414980
mRNA del virus dell'influenza A (A/duck/Ucraina/1/1963(H3N8)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.461 bp	EU4297 97.1 GI:167859559
mRNA del virus dell'influenza A (A/duck/Eastern China/19/2004(H3N8)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.460 bp	EU4296 98.1 GI:167859361
mRNA del virus dell'influenza A (A/duck/Eastern China/90/2004(H3N8)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.460 bp	EU4297 00.1 GI:167859365
mRNA del virus dell'influenza A (A/duck/Eastern China/18/2005(H3N8)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.460 bp	EU4297 87.1 GI:167859539
mRNA del virus dell'influenza A (A/duck/Eastern China/119/2005(H3N8)) segmento 6 neuraminidasi (NA), cds completa	m RNA lineare 1.460 bp	EU4297 88.1 GI:167859541
mRNA del virus dell'influenza A (A/equine/Argentina/1/96(H3N8)) precursore dell'emoagglutinina (HA1), cds parziale	m RNA lineare 1.061 bp	AF1972 46.1 GI:6651512
mRNA del virus dell'influenza A (A/equine/Argentina/2/94(H3N8)) precursore dell'emoagglutinina (HA1), cds parziale	m RNA lineare 1.061 bp	AF1972 45.1 GI:6651510
mRNA del virus dell'influenza A (A/equine/Argentina/1/95(H3N8)) precursore dell'emoagglutinina (HA1), cds parziale	m RNA lineare 1.061 bp	AF1972 44.1 GI:6651508
Virus dell'influenza A gene HA parziale per	m	AJ22319

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H3N*		
emoagglutinina, RNA genomico, ceppo A/equine/Berlin/3/89(H3N8)	RNA lineare 1.026 bp	4.1 GI:2780201
Virus dell'influenza A gene HA parziale per emoagglutinina, RNA genomico, ceppo A/equine/Berlin/4/89(H3N8)	m RNA lineare 1.006 bp	AJ22319 5.1 GI:2780203
mRNA del virus dell'influenza A (A/equine/Florida/1/94(H3N8)) precursore dell'emoagglutinina (HA1), cds parziale	m RNA lineare 1.061 bp	AF1972 42.1 GI:6651504
mRNA del virus dell'influenza A (A/equine/Grobois/1/98(H3N8)) proteina non strutturale NS1, cds completa	m RNA lineare 695 bp	AY3284 71.1 GI:32966577
mRNA del virus dell'influenza A (A/equi 2/Gotland/01(H3N8)) subunità emoagglutinina HA1, cds parziale	m RNA lineare 473 bp	AY9193 14.1 GI:60250543
mRNA del virus dell'influenza A (A/eq/Kentucky/81(H3N8)) emoagglutinina, cds completa	m RNA lineare 1.763 bp	U58195. 1 GI:1377873
mRNA del virus dell'influenza A (A/equine/Kentucky/9/95(H3N8)) precursore dell'emoagglutinina (HA1), cds parziale	m RNA lineare 1.061 bp	AF1972 47.1 GI:6651514
mRNA del virus dell'influenza A (A/equine/Kentucky/1/96(H3N8)) precursore dell'emoagglutinina (HA1), cds parziale	m RNA lineare 1.061 bp	AF1972 48.1 GI:6651516
mRNA del virus dell'influenza A (A/equine/Kentucky/1/97(H3N8)) precursore dell'emoagglutinina (HA1), cds parziale	m RNA lineare 1.061 bp	AF1972 49.1 GI:6651518
mRNA del virus dell'influenza A (A/equine/Kentucky/1/98(H3N8)) precursore dell'emoagglutinina (HA1), cds parziale	m RNA lineare 1.061 bp	AF1972 41.1 GI:6651502
mRNA del virus dell'influenza A (A/equine/Santiago/85(H3N8)) nucleoproteina, cds completa	m RNA	AY3837 53.1

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H3N*		
	lineare 1.497 bp	GI:37223511
mRNA del virus dell'influenza A (A/equine/Santiago/85(H3N8)) emoagglutinina, cds completa	m RNA lineare 1.698 bp	AY383755.1 GI:37223515
mRNA del virus dell'influenza A (A/equine/Santiago/85(H3N8)) neuraminidasi, cds completa	m RNA lineare 1.413 bp	AY383754.1 GI:37223513
mRNA del virus dell'influenza A (A/equine/Saskatoon/1/90(H3N8)) precursore dell'emoagglutinina (HA1), cds parziale	m RNA lineare 1.061 bp	AF197243.1 GI:6651506
mRNA del virus dell'influenza A (A/mallard/Alberta/l14/97 (H3N8)) proteina della matrice non funzionale, sequenza parziale	m RNA lineare 1.010 bp	AY664432.1 GI:51011836
mRNA del virus dell'influenza A (A/mallard/Alberta/167/98 (H3N8)) proteina della matrice non funzionale, sequenza parziale	m RNA lineare 961 bp	AY664489.1 GI:51011893
mRNA del virus dell'influenza A (A/pintail/Alberta/37/99(H3N8)) proteina della matrice non funzionale, sequenza parziale	m RNA lineare 970 bp	AY664445.1 GI:51011849
mRNA del virus dell'influenza A (A/sanderling/Delaware/65/99 (H3N8)) proteina della matrice non funzionale, sequenza parziale	m RNA lineare 922 bp	AY664455.1 GI:51011859

Tabella 10. Altri antigeni dell'influenza A (H4N*-H13N*)

SEQ ID NO	Ceppo/proteina	N. di accessione GenBank
H4N*		
1215	A/chicken/Singapore/1992(H4N1) proteina M2	EU014144.1
1216	A/mallard/Alberta/47/98(H4N1) proteina della matrice non funzionale	AY664488.1
1217	A/duck/Hong Kong/412/1978(H4N2) polimerasi (PB1)	U48279.1

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SEQ ID NO	Ceppo/proteina	N. di accessione GenBank
H4N*		
1218	A/mallard/Alberta/300/77 (H4N3) proteina della matrice non funzionale	AY664480.1
1219	A/Duck/Cecoslovacchia/56(H4N6) segmento 4 emoagglutinina	AF290436.1
1220	A/duck/Eastern China/376/2004(H4N6) segmento 6neuraminidasi (NA)	EU429792.1
1221	A/duck/Eastern China/01/2007(H4N6) segmento 6 neuraminidasi (NA)	EU429790.1
1222	A/duck/Eastern China/216/2007(H4N6) segmento 6 neuraminidasi (NA)	EU429789.1
1223	A/duck/Eastern China/166/2004(H4N6) segmento 6 neuraminidasi (NA)	EU429746.1
1224	A/duck/Eastern China/02/2003(H4N6) segmento 6 neuraminidasi (NA)	EU429713.1
1225	A/duck/Eastern China/160/2002(H4N6) segmento 6 neuraminidasi (NA)	EU429706.1
1226	A/mallard/Alberta/111/99(H4N6) proteina della matrice non funzionale	AY664482.1
1227	A/mallard/Alberta/213/99 (H4N6) proteina della matrice non funzionale	AY664460.1
1228	A/mallard/Alberta/30/98 (H4N6) proteina della matrice non funzionale	AY664484.1
1229	A/blue-wingedteal/Alberta/96/76 (H4N8) proteina della matrice non funzionale	AY664420.1
H5N*		
1230	A/chicken/Florida/25717/1993(H5N2) emoagglutinina	U05332.1
1231	A/chicken/Hidalgo/26654-1368/1994(H5N2) emoagglutinina (HA)	U37172.1
1232	A/chicken/Jalisco/14585-660/1994(H5N2) emoagglutinina (HA)	U37181.1
1233	A/chicken/Mexico/26654-1374/1994(H5N2) emoagglutinina (HA)	U37173.1
1234	A/chicken/Mexico/31381-3/1994(H5N2) emoagglutinina	U37176.1

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SEQ ID NO	Ceppo/proteina	N. di accessione GenBank
H4N*		
	(HA)	
1235	A/chicken/Mexico/31381-6/1994(H5N2) emoagglutinina (HA)	U37175.1
1236	A/chicken/Mexico/31381-4/1994(H5N2) emoagglutinina (HA)	U37174.1
1237	A/chicken/Mexico/31381-5/1994(H5N2) emoagglutinina (HA)	U37169.1
1238	A/chicken/Mexico/31381-8/1994(H5N2) emoagglutinina (HA)	U37170.1
1239	A/Chicken/Mexico/31381-Avilab/94(H5N2) emoagglutinina (HA)	L46585.1
1240	A/chicken/Mexico/31382-1/1994(H5N2) emoagglutinina (HA)	U37168.1
1241	A/chicken/Mexico/31381-2/1994(H5N2) emoagglutinina (HA)	U37167.1
1242	A/chicken/Mexico/31381-1/1994(H5N2) emoagglutinina (HA)	U37166.1
1243	A/chicken/Mexico/31381-7/1994(H5N2) emoagglutinina (HA)	U37165.1
1244	A/chicken/Pennsylvania/13609/1993(H5N2) emoagglutinina	U05331.1
1245	A/chicken/Pennsylvania/1/1983(H5N2) precursore dell'emoagglutinina esterasi	M18001.1
1246	A/chicken/Pennsylvania/1370/1983(H5N2) precursore dell'emoagglutinina esterasi	M10243.1
1247	A/Chicken/Puebla/8623-607/94(H5N2) emoagglutinina (HA)	L46586.1
1248	A/chicken/Puebla/14586-654/1994(H5N2) emoagglutinina (HA)	U37180.1
1249	A/chicken/Puebla/14585-622/1994(H5N2) emoagglutinina (HA)	U37179.1
1250	A/chicken/Puebla/8623-607/1994(H5N2) emoagglutinina (HA)	U37178.1
1251	A/chicken/Puebla/8624-604/1994(H5N2) emoagglutinina (HA)	U37177.1

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SEQ ID NO	Ceppo/proteina	N. di accessione GenBank
H4N*		
1252	A/Chicken/Queretaro/14588-19/95(H5N2) emoagglutinina (HA)	L46587.1
1253	A/chicken/Queretaro/7653-20/95(H5N2) emoagglutinina (HA)	U79448.1
1254	A/chicken/Queretaro/26654-1373/1994(H5N2) emoagglutinina (HA)	U37171.1
1255	A/chicken/Queretaro/14588-19/1994(H5N2) emoagglutinina (HA)	U37182.1
1256	A/chicken/Singapore/98(H5N2) proteina della matrice 2 (M2)	EF682127.1
1257	A/chicken/Taiwan/1209/03(H5N2) proteinaemoagglutinina (HA)	AY573917.1
1258	A/chicken/Taiwan/1209/03(H5N2) neuraminidasi	AY573918.1
1259	A/duck/Eastern China/64/2004(H5N2) segmento 6 neuraminidasi (NA)	EU429791.1
1260	A/duck/Eastern China/264/2002(H5N2) segmento 6 neuraminidasi (NA)	EU429744.1
1261	A/duck/Eastern China/01/2001(H5N2) segmento 6 neuraminidasi (NA)	EU429728.1
1262	A/duck/Eastern China/06/2000(H5N2) segmento 6 neuraminidasi (NA)	EU429722.1
1263	A/duck/Hong Kong/342/78(H5N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107452.1
1264	A/duck/Hong Kong/342/78(H5N2) precursore dell'emoagglutinina	U20475.1
1265	A/duck/Michigan/80(H5N2) catena di emoagglutinina 1	U20474.1
1266	A/duck/Michigan/80(H5N2) emoagglutinina	U79449.1
1267	A/duck/MN/1564/81(H5N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107467.1
1268	A/duck/Mongolia/54/2001(H5N2) emoagglutinina (HA)	AB241614.2
1269	A/duck/Primorie/2621/01(H5N2) emoagglutinina (HA)	AJ621811.3
1270	A/duck/Primorie/2621/01(H5N2)nucleoproteina (NP)	AJ621812.1
1271	A/duck/Primorie/2621/01(H5N2) proteina non strutturale (NS)	AJ621813.1

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SEQ ID NO	Ceppo/proteina	N. di accessione GenBank
H4N*		
1272	A/duck/Pennsylvania/84(H5N2) catena di emoagglutinina1	U20473.1
1273	A/duck/Potsdam/1402-6/86(H5N2) emoagglutinina H5	AF082042.1
1274	A/emu/Texas/39442/93(H5N2) emoagglutinina	U28920.1
1275	A/emu/Texas/39442/93(H5N2) emoagglutinina	U28919.1
1276	A/mallard/Alberta/645/80(H5N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107471.1
1277	A/mallard/AR/1C/2001(H5N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107463.1
1278	A/mallard/NY/189/82(H5N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ 107465,1
1279	A/mallard/MN/25/80(H5N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107473.1
1280	A/mallard/MI/18/80(H5N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107470.1
1281	A/mallard/Ohio/345/88(H5N2) emoagglutinina	U79450.1
1282	A/parrot/CA/6032/04(H5N2) proteina basica della polimerasi 2 (PB2)	DQ256390.1
1283	A/parrot/CA/6032/04(H5N2) proteina basica della polimerasi 1 (PB1)	DQ256389.1
1284	A/parrot/CA/6032/04(H5N2) proteinadellamatrice (M)	DQ256384.2
1285	A/parrot/CA/6032/04(H5N2) emoagglutinina (HA)	DQ256383.1
1286	A/parrot/CA/6032/04(H5N2) neuraminidasi (NA)	DQ256385.1
1287	A/parrot/CA/6032/04(H5N2) proteina basica della polimerasi 2 (PB2)	DQ256390.1
1288	A/parrot/CA/6032/04(H5N2) nucleoproteina (NP)	DQ256386.1
1289	A/parrot/CA/6032/04(H5N2)) polimerasi (PA)	DQ256388.1
1290	A/ruddy turnstone/Delaware/244/91 (H5N2) proteina della matrice non funzionale	AY664474.1
1291	A/ruddy turnstone/Delaware/244/91 (H5N2)	U05330.1
1292	A/turkey/Colorado/72(H5N2) catena di emoagglutinina 1 (HA)	U20472.1
1293	A/turkey/England/N28/73 (H5N2) emoagglutinina	AY500365.1

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SEQ ID NO	Ceppo/proteina	N. di accessione GenBank
H4N*		
1294	A/turkey/TX/14082/81(H5N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107464.1
1295	A/turkey/MN/1704/82(H5N2)) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107472.1
1296	A/turkey/Minnesota/10734/95(H5N2)) emoagglutinina	U79455.1
1297	A/turkey/Minnesota/3689-1551/81(H5N2) emoagglutinina	U79454.1
1298	A/chicken/Singapore/1997(H5N3) proteina M2	EU014141.1
1299	A/duck/Hokkaido/299/04(H5N3) emoagglutinina(HA)	AB241626.1
1300	A/duck/Hokkaido/193/04(H5N3) emoagglutinina (HA)	AB241625.1
1301	A/duck/Hokkaido/101/04(H5N3) emoagglutinina (HA)	AB241624.1
1302	A/duck/Hokkaido/447/00(H5N3) emoagglutinina (HA)	AB241620.1
1303	A/duck/Hokkaido/69/00(H5N3) emoagglutinina (HA)	AB241619.1
1304	A/duck/Hong Kong/205/77(H5N3) emoagglutinina H5	AF082038.1
1305	A/duck/Hong Kong/698/79(H5N3) emoagglutinina H5	AF082039.1
1306	A/duck/Hong Kong/308/78(H5N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107457.1
1307	A/duck/Hong Kong/825/80(H5N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107455.1
1308	A/duck/Hong Kong/820/80(H5N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107453.1
1309	A/duck/Hong Kong/205/77(H5N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107456.1
1310	A/Duck/Ho Chi Minh/014/78(H5N3) segmento 4 emoagglutinina	AF290443.1
1311	A/duck/Jiangxi/6151/2003(H5N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107451.1
1312	A/duck/Malaysia/F119-3/97(H5N3) emoagglutinina	AF303057.1
1313	A/duck/Miyagi/54/76(H5N3)emoagglutinina (HA)	AB241615.1
1314	A/duck/Mongolia/596/01(H5N3) emoagglutinina HA)	AB241622.1
1315	A/duck/Mongolia/500/01(H5N3)emoagglutinina (HA)	AB241621.1
1316	A/duck/Primorie/2633/01(H5N3) proteina della matrice	AJ621810.1

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SEQ ID NO	Ceppo/proteina	N. di accessione GenBank
H4N*		
	(M1)	
1317	A/duck/Primorie/2633/01(H5N3)nucleoproteina (NP)	AJ621808.1
1318	A/duck/Primorie/2633/01(H5N3)emoagglutinina (HA)	AJ621807.1
1319	A/duck/Primorie/2633/01(H5N3)nucleoproteina (NP)	AJ621809.1
1320	A/goose/Hong Kong/23/78(H5N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107454.1
1321	A/mallard/Wisconsin/169/75(H5N3) emoagglutinina	U79452.1
1322	A/swan/Hokkaido/51/96(H5N3)emoagglutinina (HA)	AB241617.1
1323	A/swan/Hokkaido/4/96(H5N3) emoagglutinina (HA)	AB241616.1
1324	A/turkey/CA/6878/79(H5N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107469.1
1325	A/tern/South Africa/61(H5N3) precursoredell'emoagglutinina (HA)	U20460.1
1326	A/gull/Delaware/5/2000(H5N4) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107459.1
1327	A/gull/Delaware/4/2000(H5N4) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107458.1
1328	A/shorebird/Delaware/109/2000(H5N4) proteina della matrice 1 (M)	DQ107460.1
1329	A/shorebird/Delaware/243/2000(H5N4) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107462.1
1330	A/shorebird/Delaware/230/2000(H5N4) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107461.1
1331	A/mallard/Wisconsin/34/75(H5N6) emoagglutinina	U79451.1
1332	A/duck/Potsdam/2216-4/1984(H5N6) emoagglutinina H5	AF082041.1
1333	A/shorebird/Delaware/207/98(H5N8) proteina della matrice non funzionale	AY664456.1
1334	A/shorebird/Delaware/27/98(H5N8) proteina della matrice non funzionale	AY664453.1
1335	A/herringgull/Delaware/281/98 (H5N8) proteina della matrice non funzionale	AY664452.1
1336	A/mallard/Ohio/556/1987(H5N9) emoagglutinina (HA)	U67783.2

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SEQ ID NO	Ceppo/proteina	N. di accessione GenBank
H4N*		
1337	A/turkey/Wisconsin/68(H5N9) emoagglutinina	U79456.1

H6N*		
1338	A/blue-wingedteal/Alberta/685/82(H6N1) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107448.1
1339	A/chicken/Taiwan/7-5/99(H6N1) proteina nucleocapside (NP)	AF261750.1
1340	A/chicken/Taiwan/7-5/99(H6N1) proteina della matrice	AF262213.1
1341	A/chicken/Taiwan/7-5/99(H6N1) proteina non strutturale	AF262212.1
1342	A/chicken/Taiwan/7-5/99(H6N1) polimerasi (PA)	AF262211.1
1343	A/chicken/Taiwan/7-5/99(H6N1) subinità di polimerasi PB1	AF262210.1
1344	A/chicken/Taiwan/7-5/99(H6N1) proteina nucleocapside (NP)	AF261750.1
1345	A/chicken/Taiwan/ns2/99(H6N1) segmento 4 emoagglutinina (HA1)	AF310985.1
1346	A/chicken/Taiwan/na3/98(H6N1) segmento 4 emoagglutinina (HA1)	AF310984.1
1347	A/chicken/Taiwan/7-5/99(H6N1) segmento 4 emoagglutinina (HA1)	AF310983.1
1348	A/duck/Hong Kong/D73/76(H6N1) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107432.1
1349	A/duck/Taiwan/9/23-3/2000(H6N1) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107407.1
1350	A/pheasant/Hong Kong/FY479/2000(H6N1) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107409.1
1351	A/pheasant/Hong Kong/SSP44/2002(H6N1) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107412.1
1352	A/quail/Hong Kong/YU421/2002(H6N1) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107414.1
1353	A/avian/NY/17150-7/2000(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107423.1
1354	A/chicken/CA/285/2003(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107429.1

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H6N*		
1355	A/chicken/CA/375TR/2002(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107428.1
1356	A/chicken/CA/203/2003(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107426.1
1357	A/chicken/NY/101250-7/2001(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107419.1
1358	A/chicken/CA/625/2002(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107418.1
1359	A/Chicken/California/0139/2001(H6N2)nucleoproteina (NP)	AF474070.1
1360	A/Chicken/California/650/2000(H6N2) nucleoproteina (NP)	AF474069.1
1361	A/Chicken/California/9420/2001(H6N2) neuraminidasi N2 (N2)	AF474048.1
1362	A/Chicken/California/9174/2001(H6N2) neuraminidasi N2 (N2)	AF474047.1
1363	A/Chicken/California/8892/2001(H6N2)neuraminidasi N2 (N2)	AF474046.1
1364	A/Chicken/California/6643/2001(H6N2) neuraminidasi N2 (N2)	AF474045.1
1365	A/Chicken/California/1316/2001(H6N2)neuraminidasi N2 (N2)	AF474044.1
1366	A/Chicken/California/0139/2001(H6N2) neuraminidasi N2 (N2)	AF474043.1
1367	A/Chicken/California/1002/2000(H6N2) neuraminidasi N2 (N2)	AF474042.1
1368	A/Chicken/California/650/2000(H6N2) neuraminidasi N2 (N2)	AF474041.1
1369	A/Chicken/California/465/2000(H6N2) neuraminidasi N2 (N2)	AF474040.1
1370	A/Chicken/California/431/2000(H6N2) neuraminidasi N2 (N2)	AF474039.1
1371	A/chicken/California/6643/2001(H6N2) emoagglutinina H6 (H6)	AF474035.1
1372	A/chicken/California/431/2000(H6N2) emoagglutinina H6 (H6)	AF474029.1
1373	A/chicken/California/9420/2001(H6N2) emoagglutinina H6 (H6)	AF474038.1
1374	A/chicken/California/9174/2001(H6N2) emoagglutinina H6 (H6)	AF474037.1
1375	A/chicken/California/8892/2001(H6N2) emoagglutinina H6 (H6)	AF474036.1
1376	A/chicken/California/1316/2001(H6N2) emoagglutinina H6 (H6)	AF474034.1
1377	A/chicken/California/0139/2001(H6N2) emoagglutinina H6 (H6)	AF474033.1
1378	A/chicken/California/1002/2000(H6N2) emoagglutinina H6 (H6)	AF474032.1
1379	A/chicken/California/650/2000(H6N2) emoagglutinina H6 (H6)	AF474031.1
1380	A/chicken/California/465/2000(H6N2) emoagglutinina H6 (H6)	AF474030.1
1381	A/cornish cross/CA/139/2001(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107424.1
1382	A/duck/Eastern China/164/2002(H6N2) segmento 6 neuraminidasi	EU429762.1

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H6N*		
	(NA)	
1383	A/duck/Eastern China/729/2003(H6N2) segmento 6 neuraminidasi (NA)	EU429760.1
1384	A/duck/Eastern China/262/2002(H6N2) segmento 6 neuraminidasi (NA)	EU429743.1
1385	A/duck/Eastern China/74/2006(H6N2) segmento 6 neuraminidasi (NA)	EU429741.1
1386	A/duck/Eastern China/161/2002(H6N2) segmento 6 neuraminidasi (NA)	EU429740.1
1387	A/duck/Hong Kong/960/80(H6N2)) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107435.1
1388	A/duck/Hong Kong/D134/77(H6N2)) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107433.1
1389	A/duck/CA/10221/2002(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107421.1
1390	A/duck/Shantou/5540/2001(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107431.1
1391	A/guineafowl/Hong Kong/SSP99/2002(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107413.1
1392	A/mallard/NY/016/83(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107449.1
1393	A/mallard/NY/046/83(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107450.1
1394	A/pintail/Alberta/644/81(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107445.1
1395	A/quail/Hong Kong/SF792/2000(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107410.1
1396	A/ruddy turnstone/Delaware/106/98 (H6N2) proteina della matrice non funzionale	AY664439.1
1397	A/Shorebird/Delaware/127/97(H6N2) proteina della matrice non funzionale	AY664467.1
1398	A/shorebird/Delaware/124/2001(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107417.1
1399	A/shorebird/Delaware/208/2001(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107427.1
1400	A/turkey/CA/527/2002(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107420.1

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H6N*		
1401	A/turkey/CA/1623CT/2002(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107425.1
1402	A/turkey/MN/836/80(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107440.1
1403	A/turkey/MN/735/79(H6N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107437.1
1404	A/chicken/Hong Kong/17/77(H6N4)) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107436.1
1405	A/chicken/Hong Kong/CSW106/2001(H6N4) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107406.1
1406	A/gull/Delaware/18/2000(H6N4) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107415.1
1407	A/pheasant/Hong Kong/CSW2573/2001(H6N4) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107411.1
1408	A/quail/Hong Kong/CSW106/2001(H6N4) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107430.1
1409	A/Shorebird/Delaware/194/98(H6N4) proteina della matrice non funzionale	AY664424.1
1410	A/shorebird/Delaware/259/2000(H6N4) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107416.1
1411	A/shearwater/Australia/1/1972(H6N5) segmento 6 neuraminidasi (NA)	EU429794.1
1412	A/shearwater/Australia/1/1972(H6N5) polimerasi A (PA)	L25832.1
1413	A/pintail/Alberta/1040/79(H6N5) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107439.1
1414	A/blue-wingedteal/MN/993/80(H6N6)) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107441.1
1415	A/duck/NY/83779/2002(H6N6) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107422.1
1416	A/duck/MN/1414/81(H6N6) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107444.1
1417	A/mallard/Alberta/289/82(H6N6) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107447.1
1418	A/mallard duck/MN/1041/80(H6N6) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107442.1
1419	A/pintail/Alberta/189/82(H6N6) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107446.1

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H6N*		
1420	A/sanderling/Delaware/1258/86(H6N6) proteina della matrice non funzionale	AY664436.1
1421	A/blue-wingedteal/Alberta/368/78(H6N8)) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107438.1
1422	A/ruddy turnstone/Delaware/105/98 (H6N8) proteina della matrice non funzionale	AY664428.1
1423	A/domesticduck/NY/81(H6N8)) proteina della matrice (M)	DQ107443.1
1424	A/duck/Eastern China/163/2002(H6N8) segmento 6 neuraminidasi (NA)	EU429786.1
1425	A/duck/Hong Kong/D182/77(H6N9) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107434.1
1426	A/chicken/Hong Kong/SF3/2001(H6) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107408.1
H7N*		
1427	A/African starling/England/983/79(H7N1) neuraminidasi (N1)	AJ416629.1
1428	A/Afri.Star./Eng-Q/938/79(H7N1) precursoredell'emoagglutinina	AF149295.1
1429	A/chicken/Italy/1067/99(H7N1) proteina della matrice 1 (M1)	AJ416630.1
1430	A/chicken/Italy/1067/99(H7N1) neuraminidasi (N1)	AJ416627.1
1431	A/chicken/Italy/4575/99(H7N1) emoagglutinina (HA)	AJ493469.1
1432	A/chicken/Italy/13474/99(H7N1) emoagglutinina (HA)	AJ491720.1
1433	A/chicken/Italy/445/1999(H7N1)	AX537385.1
1434	A/Chicken/Italy/267/00(H7N1) emoagglutinina (HA)	AJ493215.1
1435	A/Chicken/Italy/13489/99(H7N1) emoagglutinina (HA)	AJ493214.1
1436	A/Chicken/Italy/13307/99(H7N1) emoagglutinina (HA)	AJ493212.1
1437	A/chicken/Singapore/1994(H7N1) proteina M2	EU014140.1
1438	A/duck/Hong Kong/301/78(H7N1) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107475.1
1439	A/Hong Kong/301/78(H7N1) emoagglutinina (HA)	AY672090.1
1440	A/fowl plaguq virus/Rostock/34 (H7N1) proteina NP	AJ243993.1
1441	A/fowl plaguq virus/Rostock/34 (H7N1) proteina PA	AJ243992.1
1442	A/fowlplaguqvirus/Rostock/34 (H7N1) proteina PB2	AJ243991.1
1443	A/fowlplaguqvirus/Rostock/34 (H7N1) proteina PB1	AJ243990.1
1444	A/ostrich/South Africa/5352/92(H7N1) precursore	U20458.1

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H6N*		
	dell'emoagglutinina (HA)	
1445	A/rhea/North Carolina/39482/93(H7N1) precursore dell'emoagglutinina (HA)	U20468.1
1446	A/turkey/Italy/3775/99 (H7N1) emoagglutinina (HA)	AJ493472.1
1447	A/turkey/Italy/4603/99 (H7N1) emoagglutinina (HA)	AJ493471.1
1448	A/turkey/Italy/4602/99 (H7N1) emoagglutinina (HA)	AJ493470.1
1449	A/turkey/Italy/4169/99 (H7N1) emoagglutinina (HA)	AJ493468.1
1450	A/turkey/Italy/4073/99 (H7N1) emoagglutinina (HA)	AJ493467.1
1451	A/turkey/Italy/3889/99 (H7N1) emoagglutinina (HA)	AJ493466.1
1452	A/turkey/Italy/12598/99(H7N1) emoagglutinina (HA)	AJ489520.1
1453	A/turkey/Italy/4580/99(H7N1) emoagglutinina (HA)	AJ416628.1
1454	A/Turkey/Italy/335/00(H7N1) emoagglutinina (HA)	AJ493217.1
1455	A/Turkey/Italy/13468/99(H7N1) emoagglutinina (HA)	AJ493216.1
1456	A/Turkey/Italy/13467/99(H7N1) emoagglutinina (HA)	AJ493213.1
1457	A/chicken/CT/9407/2003(H7N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107478.1
1458	A/chicken/NY/116124/2003(H7N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107479.1
1459	A/chicken/PA/143586/2002(H7N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107477.1
1460	A/duck/Hong Kong/293/78(H7N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107474.1
1461	A/duck/Hong Kong/293/78(H7N2) precursore dell'emoagglutinina (HA)	U20461.1
1462	A/laughinggull/Delaware/2838/87 (H7N2) proteina della matrice non funzionale	AY664427.1
1463	A/pheasant/NJ/30739-9/2000(H7N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107481.1
1464	Aruddy turnstone/Delaware/130/99 (H7N2) proteina della matrice non funzionale	AY664451.1
1465	A/unknown/149717-12/2002(H7N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107480.1
1466	A/unknown/NY/74211-5/2001(H7N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107476.1
1467	A/unknown/149717-12/2002(H7N2) proteina della matrice 1 (M)	DQ107480.1

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H6N*		
	e proteina della matrice 2(M)	
1468	A/unknown/NY/74211-5/2001(H7N2) proteina della matrice 1(M) e proteina della matrice 2 (M)	DQ107476.1
1469	A/chicken/British Columbia/CN7-3/04 (H7N3) emoagglutinina (HA)	AY644402.1
1470	A/chicken/British Columbia/CN7-3/04 (H7N3) proteina della matrice (M1)	AY677732.1
1471	A/chicken/Italy/270638/02(H7N3) emoagglutinina (HA)	EU158111.1
1472	A/gadwall/MD/3495/83(H7N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107488.1
1473	A/mallard/Alberta/22/2001(H7N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107482.1
1474	A/mallard/Alberta/699/81(H7N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107487.1
1475	A/pintail/Alberta/25/2001(H7N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107483.1
1476	A/Quail/Arkansas/16309-7/94 (H7N3) precursore della proteina emoagglutinina subunità 1 (HA1)	AF072401.1
1477	A/ruddy turnstone/New Jersey/65/85(H7N3) proteina della matrice non funzionale	AY664433.1
1478	A/turkey/England/63(H7N3) precursoredell'emoagglutinina (HA)	U20462.1
1479	A/Turkey/Colorado/13356/91 (H7N3) precursore della proteina emoagglutinina subunità 1 (HA1)	AF072400.1
1480	A/turkey/MN/1200/80(H7N3)) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107486.1
1481	A/turkey/MN/1818/82(H7N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107489.1
1482	A/turkey/Minnesota/1237/80(H7N3) precursore dell'emoagglutinina (HA)	U20466.1
1483	A/turkey/TX/1/79(H7N3) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107484.1
1484	A/Turkey/Oregon/71(H7N3) emoagglutinina	AF497557.1
1485	A/Turkey/Utah/24721-10/95 (H7N3) precursore della proteina emoagglutinina subunità 1 (HA1)	AF072402.1
1486	A/softbill/South Africa/142/92(H7N4) precursoredell'emoagglutinina (HA)	U20464.1
1487	A/ruddy turnstone/Delaware/2770/87 (H7N5) proteina della	AY664476.1

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H6N*		
	matrice non funzionale	
1488	A/chicken/Brescia/1902(H7N7) catena di emoagglutinina 1 (HA)	U20471.1
1489	A/chicken/Jena/1816/87(H7N7) precursore dell'emoagglutinina (HA)	U20469.1
1490	A/chicken/Leipzig/79(H7N7) precursore dell'emoagglutinina (HA)	U20459.1
1491	A/duck/Heinersdorf/S495/6/86(H7N7) precursoredell'emoagglutinina (HA)	U20465.1
1492	A/equine/Prague/1/56 (H7N7) neuraminidasi	U85989.1
1493	A/equine/Santiago/77(H7N7) nucleoproteina	AY383752.1
1494	A/equine/Santiago/77(H7N7) neuraminidasi	AY383757.1
1495	A/equine/Santiago/77(H7N7) emoagglutinina	AY383756.1
1496	A/FPV/Weybridge(H7N7) proteinadellamatrice	M38299.1
1497	A/goose/Leipzig/187/7/1979(H7N7) emoagglutinina	L43914.1
1498	A/goose/Leipzig/192/7/1979(H7N7) emoagglutinina	L43915.1
1499	A/goose/Leipzig/137/8/1979(H7N7) emoagglutinina	L43913.1
1500	A/Iruddy turnstone/Delaware/134/99 (H7N7) proteina della matrice non funzionale	AY664468.1
1501	A/seal/Mass/1/80 H7N7 ricombinante	S73497.1
1502	A/swan/Potsdam/63/6/81(H7N7) precursore dell'emoagglutinina (HA)	U20467.1
1503	A/tern/Potsdam/342/6/79(H7N7) precursore dell'emoagglutinina (HA)	U20470.1
1504	A/pintail/Alberta/121/79(H7N8) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107485.1
1505	A/Turkey/Minnesota/38429/88(H7N9) emoagglutinina	AF497551.1
H8N*		
1506	A/turkey/Ontario/6118/1968(H8N4) segmento 6 neuraminidasi (NA)	EU429793.1
1507	A/Mallard Duck/Alberta/357/84(H8N4) segmento 4 emoagglutinina (HA1)	AF310988.1
1508	A/PintailDuck/Alberta/114/79(H8N4) segmento 4 emoagglutinina (HA1)	AF310987.1
1509	A/duck/Eastern China/01/2005(H8N4) segmento 6 neuraminidasi	EU429780.1

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H6N*		
	(NA)	
1510	A/RedKont/Delaware/254/94(H8N4) segmento 4 emoagglutinina (HA1)	AF310989.1
H9N*		
1511	A/chicken/Amioz/1527/03(H9N2) nucleoproteina	DQ116511.1
1512	A/chicken/Amioz/1527/03(H9N2) neuraminidasi	DQ116081.1
1513	A/chicken/Amioz/1527/03(H9N2) emoagglutinina	DQ108911.1
1514	A/chicken/Alonim/1953/104(H9N2) emoagglutinina	DQ108928.1
1515	A/chicken/Alonim/1552/03(H9N2) emoagglutinina	DQ108914.1
1516	A/chicken/Alonim/1552/03(H9N2) nucleoproteina	DQ116514.1
1517	A/chicken/Alonim/1965/04(H9N2) emoagglutinina	DQ108929.1
1518	A/Chicken/Anhui/1/98(H9N2) emoagglutinina (HA)	AF461511.1
1519	A/Chicken/Beijing/1/95(H9N2) proteina della matrice non funzionale	AF536719.1
1520	A/Chicken/Beijing/1/95(H9N2) nucleoproteina (NP)	AF536699.1
1521	A/Chicken/Beijing/1/95(H9N2) proteina non strutturale non funzionale	AF536729.1
1522	A/Chicken/Beijing/1/95(H9N2) segmento 6 neuraminidasi (NA)	AF536709.1
1523	A/Chicken/Beijing/2/97(H9N2) nucleoproteina (NP)	AF536700.1
1524	A/Chicken/Beijing/2/97(H9N2) proteina della matrice non funzionale	AF536720.1
1525	A/Chicken/Beijing/2/97(H9N2) proteina non strutturale non funzionale	AF536730.1
1526	A/Chicken/Beijing/2/97(H9N2) segmento 6 neuraminidasi (NA)	AF536710.1
1527	A/Chicken/Beijing/1/97(H9N2) emoagglutinina (HA)	AF461530.1
1528	A/Chicken/Beijing/3/99(H9N2) proteina della matrice non funzionale	AF536721.1
1529	A/Chicken/Beijing/3/99(H9N2) nucleoproteina (NP)	AF536701.1
1530	A/Chicken/Beijing/3/99(H9N2) proteina non strutturale non funzionale	AF536731.1
1531	A/Chicken/Beijing/3/99(H9N2) segmento 6 neuraminidasi (NA)	AF536711.1
1532	A/chicken/Beit Alfa/1282/03(H9N2)emoagglutinina	DQ104476.1
1533	A/chicken/Beit-Aran/29/05(H9N2) emoagglutinina	DQ108931.1

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H6N*		
1534	A/chicken/BneiDarom/1557/03(H9N2) emoagglutinina	DQ108915.1
1535	A/chicken/Ein Habsor/1808/04(H9N2) emoagglutinina	DQ108925.1
1536	A/Chicken/Gangxi/2/00(H9N2) emoagglutinina (HA)	AF461514.1
1537	A/Chicken/Gangxi/1/00(H9N2) emoagglutinina (HA)	AF461513.1
1538	A/chicken/Gan Shomron/1465/03(H9N2) emoagglutinina	DQ104480.1
1539	A/chicken/Gan Shomron/1292/03(H9N2) emoagglutinina	DQ104478.1
1540	A/chicken/Gan_Shomron/1465/03(H9N2) nucleoproteina	DQ116506.1
1541	A/chicken/Gan_Shomron/1465/03(H9N2) neuraminidasi	DQ116077.1
1542	A/chicken/Gan Shomron/1543/04(H9N2) nucleoproteina	DQ116512.1
1543	A/chicken/Gan Shomron/1543/04(H9N2) emoagglutinina	DQ108912.1
1544	A/Chicken/Guangdong/97(H9N2) proteina della matrice non funzionale	AF536722.1
1545	A/Chicken/Guangdong/97(H9N2) nucleoproteina (NP)	AF536702.1
1546	A/Chicken/Guangdong/97(H9N2) proteina non strutturale non funzionale	AF536732.1
1547	A/Chicken/Guangdong/97(H9N2) segmento 6 neuraminidasi (NA)	AF536712.1
1548	A/Chicken/Gansu/1/99(H9N2) emoagglutinina (HA)	AF461512.1
1549	A/chicken/Gujrat/India/3697/2004(H9N2) polimerasi basica 2 (PB2)	DQ979865.1
1550	A/chicken/Haryana/India/2424/2004(H9N2) polimerasi basica 2 (PB2)	DQ979862.1
1551	A/Chicken/Henan/98(H9N2) proteina della matrice non funzionale	AF536726.1
1552	A/Chicken/Henan/98(H9N2) nucleoproteina (NP)	AF536706.1
1553	A/Chicken/Henan/98(H9N2) proteina non strutturale non funzionale	AF536736.1
1554	A/Chicken/Henan/2/98(H9N2) emoagglutinina (HA)	AF461517.1
1555	A/Chicken/Henan/1/99(H9N2) emoagglutinina (HA)	AF461516.1
1556	A/Chicken/Henan/98(H9N2) segmento 6 neuraminidasi (NA)	AF536716.1
1557	A/Chicken/Hebei/1/96(H9N2) proteina della matrice non funzionale	AF536723.1
1558	A/Chicken/Hebei/1/96(H9N2) segmento 6 proteina neuraminidasi non funzionale	AF536713.1
1559	A/Chicken/Hebei/1/96(H9N2) nucleoproteina (NP)	AF536703.1
1560	A/Chicken/Hebei/1/96(H9N2) proteina non strutturale non	AF536733.1

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H6N*		
	funzionale	
1561	A/Chicken/Hebei/1/96(H9N2) segmento 6 proteina neuraminidasi non funzionale	AF536713.1
1562	A/Chicken/Hebei/2/00(H9N2) emoagglutinina (HA)	AF461531.1
1563	A/Chicken/Hebei/2/98(H9N2) proteina della matrice non funzionale	AF536724.1
1564	A/Chicken/Hebei/2/98(H9N2) nucleoproteina (NP)	AF536704.1
1565	A/Chicken/Hebei/2/98(H9N2) proteina non strutturale non funzionale	AF536734.1
1566	A/Chicken/Hebei/2/98(H9N2) segmento 6 neuraminidasi (NA)	AF536714.1
1567	A/Chicken/Hebei/1/00(H9N2) emoagglutinina (HA)	AF461515.1
1568	A/Chicken/Hebei/3/98(H9N2) nucleoproteina (NP)	AF536705.1
1569	A/Chicken/Hebei/3/98(H9N2) proteina della matrice non funzionale	AF536725.1
1570	A/Chicken/Hebei/3/98(H9N2) proteina non strutturale non funzionale	AF536735.1
1571	A/Chicken/Hebei/3/98(H9N)) segmento 6 neuraminidasi (NA)	AF536715.1
1572	A/chicken/Hong Kong/FY313/2000(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107508.1
1573	A/chicken/Hong Kong/WF208/2001(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107513.1
1574	A/chicken/Hong Kong/NT471/2002(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107514.1
1575	A/chicken/Hong Kong/WF2/99(H9N2) emoagglutinina	AY206677.1
1576	A/chicken/Iarah/1376/03(H9N2) nucleoproteina	DQ116504.1
1577	A/chicken/Iarah/1376/03(H9N2) neuraminidasi	DQ116075.1
1578	A/chicken/Iarah/1376/03(H9N2) emoagglutinina	DQ108910.1
1579	A/chicken/India/2793/2003(H9N2) emoagglutinina (HA)	AY336597.1
1580	A/chicken/Iran/101/1998(H9N2) proteina della matrice 2 (M2)	EU477375.1
1581	A/Chicken/Jiangsu/1/99(H9N)) emoagglutinina (HA)	AF461509.1
1582	A/Chicken/Jiangsu/2/98(H9N2) emoagglutinina (HA)	AF461510.1
1583	A/chicken/KfarMonash/636/02(H9N2) emoagglutinina	DQ104464.1
1584	A/chicken/Kalanit/1966/06.12.04(H9N2) emoagglutinina	DQ108930.1
1585	A/chicken/Kalanit/1946/04(H9N2) emoagglutinina	DQ108927.1

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1586	A/chicken/Korea/S4/2003(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107517.1
1587	A/Chicken/Korea/MS96/96(H9N2) proteina della matrice 1 e 2 (M)	AF203788.1
1588	A/Chicken/Korea/MS96/96(H9N2) neuraminidasi sottotipo 2	AF203786.1
1589	A/Chicken/Korea/MS96/96(H9N2) nucleoproteina	AF203787.1
1590	A/Chicken/Liaoning/99(H9N2) proteina della matrice non funzionale	AF536727.1
1591	A/Chicken/Liaoning/1/00(H9N2) emoagglutinina (HA)	AF461518.1
1592	A/Chicken/Liaoning/99(H9N2) nucleoproteina (NP)	AF536707.1
1593	A/Chicken/Liaoning/99(H9N2) proteina della matrice non funzionale	AF536727.1
1594	A/Chicken/Liaoning/99(H9N2) proteina non strutturale non funzionale	AF536737.1
1595	A/Chicken/Liaoning/2/00(H9N2) emoagglutinina (HA)	AF461519.1
1596	A/chicken/Liaoning/99(H9N2) segmento 6 neuraminidasi (NA)	AF536717.1
1597	A/chicken/Mudanjiang/0823/2000(H9N2) nucleoproteina (NP)	AY496851.1
1598	A/Chicken/Mudanjiang/0823/2000 (H9N2) proteina non strutturale	AY631868.1
1599	A/Chicken/Mudanjiang/0823/00 (H9N2) emoagglutinina (HA)	AY513715.1
1600	A/chicken/Mudanjiang/0823/2000(H9N2) proteinadellamatrice (M1)	AY496852.1
1601	A/chicken/Mudanjiang/0823/2000(H9N2) nucleoproteina (np)	AY496851.1
1602	A/chicken/MaaleHaHamisha/90658/00(H9N2) emoagglutinana	DQ104472.1
1603	A/chicken/Maanit/1477/03(H9N2) emoagglutinina	DQ104483.1
1604	A/chicken/Maanit/1291/03(H9N2) emoagglutinina	DQ104477.1
1605	A/chicken/Maanit/1275/03(H9N2) emoagglutinina	DQ104457.1
1606	A/chicken/Maanit/1477/03(H9N2) nucleoproteina	DQ116508.1
1607	A/chicken/Netohah/1373/03 (H9N2) nucleoproteina	DQ116503.1
1608	A/chicken/Netohah/1373/03 (H9N2) neuraminidasi	DQ116074.1
1609	A/chicken/Netohah/1373/03 (H9N2) emoagglutinina	DQ108909.1
1610	A/chicken/Neve Ilan/1504/03(H9N2) emoagglutinina	DQ104484.1
1611	A/chicken/Neve_Ilan/1504/03(H9N2) nucleoproteina	DQ116509.1
1612	A/chicken/Neve_Ilan/1504/03(H9N2) neuraminidasi	DQ116079.1

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H6N*		
1613	A/chicken/Orissa/India/2317/2004(H9N2) polimerasi basica 2 (PB2)	DQ979861.1
1614	A/chicken/Pardes-Hana-Carcur/1475/03(H9N2) emoagglutinina	DQ104482.1
1615	A/chicken/Pardes-Hana-Carcur/1475/03(H9N2) neuraminidasi	DQ116078.1
1616	A/chicken/Saar/1456/03(H9N2) emoagglutinina	DQ104479.1
1617	A/chicken/Sde_Uziahu/1747/04(H9N2) neuraminidasi	DQ116068.1
1618	A/chicken/Sede Uzziyyahu/1651/04(H9N2) emoagglutinina	DQ108923.1
1619	A/chicken/SdeUziahu/1747/04(H9N2)	DQ108905.1
1620	A/chicken/Singapore/1998(H9N2) proteina M2	EU014142.1
1621	A/chicken/Singapore/1998(H9N2) proteina M2	EU014142.1
1622	A/Chicken/Shandong/98(H9N2) proteina della matrice non funzionale	AF536728.1
1623	A/Chicken/Shandong/1/98(H9N2) emoagglutinina (HA)	AF461520.1
1624	A/Chicken/Shandong/98(H9N2) nucleoproteina (NP)	AF536708.1
1625	A/Chicken/Shandong/98(H9N2) proteina non strutturale non funzionale	AF536738.1
1626	A/Chicken/Shandong/98(H9N2) segmento 6 neuraminidasi (NA)	AF536718.1
1627	A/Chicken/Shandong/2/99(H9N2) emoagglutinina (HA)	AF461521.1
1628	A/chicken/Shandong/1/02(H9N2) neuraminidasi (NA)	AY295761.1
1629	A/Chicken/Shanghai/F/98(H9N2) emoagglutinina	AF461532.1
1630	A/Chicken/Shanghai/1/02(H9N2) emoagglutinina	AY281745.1
1631	A/Chicken/Shanghai/2/99(H9N2)) emoagglutinina (HA)	AF461522.1
1632	A/Chicken/Shanghai/3/00(H9N2)) emoagglutinina (HA)	AF461523.1
1633	A/Chicken/Shanghai/F/98(H9N2) emoagglutinina (HA)	AY743216.1
1634	A/Chicken/Shanghai/4-2/01(H9N2) emoagglutinina (HA)	AF461525.1
1635	A/Chicken/Shanghai/4-1/01(H9N2) emoagglutinina (HA)	AF461524.1
1636	A/Chicken/Shanghai/4/01(H9N2) emoagglutinina (HA)	AY083841.1
1637	A/Chicken/Shanghai/3/01(H9N2) emagglutinina HA)	AY083840.1
1638	A/chicken/Talmei_Elazar/1304/03(H9N2)nucleoproteina	DQ116530.1
1639	A/chicken/Talmei_Elazar/1304/03(H9N2) neuraminidasi	DQ116072.1
1640	A/Chicken/Tianjing/2/96(H9N2) emoagglutinina	AF461527.1
1641	A/Chicken/Tianjing/1/96(H9N2) emoagglutinina (HA)	AF461526.1

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1642	A/chicken/Tel Adashim/811/01 (H9N2) emoagglutinina	DQ104467.1
1643	A/chicken/Tel Adashim/811/01 (H9N2) nucleoproteina	DQ116527.1
1644	A/ck/Tel_Adashim/811/01(H9N2) neuraminidasi	DQ116064.1
1645	A/chicken/Tel Adashim/812/01 (H9N2) nucleoproteina	DQ116528.1
1646	A/chicken/Tel Adashim/812/01 (H9N2) emoagglutinina	DQ104468.1
1647	A/ck/Tel_Adashim/812/01(H9N2) neuraminidasi	DQ116065.1
1648	A/chicken/Tel Adashim/786/01 (H9N2) nucleoproteina	DQ116524.1
1649	A/chicken/Tel Adashim/809/01 (H9N2) emoagglutinina	DQ104465.1
1650	A/chicken/Tel Adashim/809/01 (H9N2) nucleoproteina	DQ116525.1
1651	A/chicken/Tel Adashim/1469/03 (H9N2) nucleoproteina	DQ116507.1
1652	A/chicken/Tel Adashim/1469/303(H9N2) emoagglutinina	DQ104481.1
1653	A/chicken/TelAdashim/1506/03 (H9N2) neuraminidasi	DQ116080.1
1654	A/chicken/Tel Adashim/1506/03(H9N2) emoagglutinina	DQ104474.1
1655	A/chicken/Tel Adashim/1506/03 (H9N2) nucleoproteina	DQ116510.1
1656	A/chicken/Tel Adashim/1332/03(H9N2) nucleoproteina	DQ116501.1
1657	A/chicken/Tel Adashim/1321/03(H9N2) nucleoproteina	DQ116500.1
1658	A/chicken/Tel Adashim/1332/03(H9N2) emoagglutinina	DQ108907.1
1659	A/chicken/Tel Adashim/1321/03(H9N2) emoagglutinina	DQ108906.1
1660	A/chicken/Telmond/1308/03(H9N2) nucleoproteina	DQ116499.1
1661	A/chicken/Telmond/1308/03(H9N2) neuraminidasi	DQ116073.1
1662	A/chicken/Telmond/1308/03(H9N2) emoagglutinina	DQ108921.1
1663	A/chicken/Tzrofa/1568/04(H9N2) nucleoproteina	DQ116519.1
1664	A/chicken/Tzrofa/1568/04(H9N2) emoagglutinina	DQ108919.1
1665	A/chicken/UP/India/2544/2004(H9N2) polimerasi basica 2 (PB2)	DQ979864.1
1666	A/chicken/UP/India/2543/2004(H9N2) polimerasi basica 2 (PB2)	DQ979863.1
1667	A/chicken/Wangcheng/4/2001 (H9N2) nucleoproteina	AY268949.1
1668	A/chicken/Ysodot/1362/03(H9N2) nucleoproteina	DQ116502.1
1669	A/chicken/Ysodot/1362/03(H9N2) emoagglutinina	DQ108908.1
1670	A/Chicken/Yunnan/2/00(H9N2) emoagglutinina (HA)	AF461529.1
1671	A/Chicken/Yunnan/1/99(H9N2) emoagglutinina (HA)	AF461528.1
1672	A/duck/Eastern China/01/2000(H9N2) segmento 6 neuraminidasi (NA)	EU429725.1

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H6N*		
1673	A/duck/Eastern China/48/2001(H9N2) segmento 6 neuraminidasi (NA)	EU429707.1
1674	A/duck/Eastern China/66/2003(H9N2) segmento 6 neuraminidasi (NA)	EU429699.1
1675	A/duck/Eastern China/80/2004(H9N2) segmento 6 neuraminidasi (NA)	EU429726.1
1676	A/duck/Hong Kong/448/78(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107494.1
1677	A/duck/Hong Kong/448/78(H9N2) precursore dell'emoagglutinina	AY206673.1
1678	A/duck/Hong Kong/366/78(H9N2) precursore dell'emoagglutinina	AY206674.1
1679	A/duck/Hong Kong/784/79(H9N2)) proteina della matrice 1(M) e proteina della matrice 2 (M)	DQ107496.1
1680	A/duck/Hong Kong/702/79(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107495.1
1681	/duck/Hong Kong/702/79(H9N2) precursore dell'emoagglutinina	AY206672.1
1682	A/duck/Hong Kong/610/79(H9N2) precursore dell'emoagglutinina	AY206680.1
1683	A/duck/Hong Kong/552/79(H9N2) precursore dell'emoagglutinina	AY206679.1
1684	A/duck/Hong Kong/644/79(H9N2) precursore dell'emoagglutinina	AY206678.1
1685	A/duck/Korea/S 13/2003 (H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107518.1
1686	A/duck/Nanchang/4-361/2001(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107511.1
1687	A/duck/NY/83793/2002(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107499.1
1688	A/goose/MN/5733-1243/80(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107492.1
1689	A/geese/TelAdashim/829/01(H9N2) emoagglutinina	DQ104469.1
1690	A/geese/TelAdashim/830/01(H9N2 emoagglutinina	DQ104470.1
1691	A/ostrich/Eshkol/1436/03(H9N2) neuraminidasi	DQ116076.1
1692	A/ostrich/Eshkol/1436/03(H9N2) nucleoproteina	DQ116505.1
1693	A/pigeon/Hong Kong/WF286/2000(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107509.1
1694	A/quail/Hong Kong/YU415/2002(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107516.1
1695	A/quail/Hong Kong/SSP225/2001(H9) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107512.1

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1696	A/quail/Hong Kong/YU1495/2000(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107510.1
1697	A/quail/Hong Kong/A28945/88(H9N2) precursoredell'emoagglutinina	AY206675.1
1698	A/shorebird/Delaware/276/99(H9N2) proteina della matrice non funzionale	AY664464.1
1699	A/shorebird/Delaware/113/2001(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107505.1
1700	A/silky chicken/Hong Kong/WF266/2002(H9N2) proteina della matrice 2 (M) e proteina della matrice 1 (M)	DQ107515.1
1701	A/shorebird/Delaware/77/2001(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107497.1
1702	A/guineafowl/Hong Kong/WF10/99(H9N2) precursore dell'emoagglutinina	AY206676.1
1703	A/swine/Hangzhou/1/2006(H9N2) proteinanucleocapside (NP)	DQ907704.1
1704	A/swine/Hangzhou/1/2006(H9N2)) proteina della matrice 1 (M1)	EF055887.1
1705	A/swine/Hangzhou/1/2006(H9N2)) proteina non strutturale 1 (NS1)	DQ823385.1
1706	A/Sw/ShanDong/1/2003(H9N2) emoagglutinina (HA)	AY294658.1
1707	A/turkey/CA/6889/80(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107491.1
1708	A/turkey/TX/28737/81(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ 107493,1
1709	A/turkey/MN/511/78(H9N2) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107490.1
1710	A/turkey/Beit Herut/1267/03(H9N2) emoagglutinina	DQ104485.1
1711	A/turkey/Beit HaLevi/1009/02(H9N2) emoagglutinina	DQ104473.1
1712	A/turkey/Beit Herut/1265/03(H9N2) emoagglutinina	DQ104456.1
1713	A/turkey/Beit_HaLevi/1562/03(H9N2) nucleoproteina	DQ116515.1
1714	A/turkey/Beit_HaLevi/1566/04(H9N2) nucleoproteina	DQ116517.1
1715	A/turkey/Beit_HaLevi/1562/03(H9N2) neuraminidasi	DQ116083.1
1716	A/turkey/Beit_HaLevi/1566/04(H9N2) neuraminidasi	DQ116084.1
1717	A/turkey/Beit_Herut/1267/03(H9N2) neuraminidasi	DQ116070.1
1718	A/turkey/Beit_Herut/1265/03(H9N2) neuraminidasi	DQ116069.1
1719	A/turkey/Beit HaLevi/1566/04(H9N2) emoagglutinina	DQ108917.1

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H6N*		
1720	A/turkey/Bezat/89/05(H9N2) emoagglutinina	DQ108922.1
1721	A/turkey/Brosh/1276/03(H9N2) emoagglutinina	DQ104458.1
1722	A/turkey/Brosh/1276/03(H9N2) neuraminidasi	DQ116071.1
1723	A/turkey/EmekHefer/1272/03(H9N2) emoagglutinina	DQ104475.1
1724	A/turkey/EinHabsor/1804/04(H9N2) emoagglutinina	DQ108924.1
1725	A/turkey/EinTzurim/1172/02(H9N2) emoagglutinina	DQ104451.1
1726	A/turkey/EinTzurim/1738/04(H9N2) emoagglutinina	DQ108920.1
1727	A/turkey/Ein_Tzurim/1738/04(H9N2) neuraminidasi	DQ116085.1
1728	A/turkey/Gyvat Haim Ehud/1544/03(H9N2)emoagglutinina	DQ108913.1
1729	A/turkey/Givat Haim/810/01 (H9N2) emoagglutinina	DQ104466.1
1730	A/turkey/Givat Haim/810/01 (H9N2) nucleoproteina	DQ116526.1
1731	A/turkey/Givat Haim/868/02(H9N2) emoagglutinina	DQ104471.1
1732	A/turkey/Givat Haim/622/02(H9N2) emoagglutinina	DQ104462.1
1733	A/turkey/Givat_Haim/965/02(H9N2) nucleoproteina	DQ116498.1
1734	A/turkey/Gyvat_Haim_Ehud/1544/03(H9N2) nucleoproteina	DQ116513.1
1735	A/turkey/Gyvat_Haim_Ehud/1544/03(H9N2) neuraminidasi	DQ116082.1
1736	A/tk/Givat_Haim/810/25.12.01 (H9N2) neuraminidasi	DQ116063.1
1737	A/turkey/Givat_Haim/622/02(H9N2)) neuraminidasi	DQ116060.1
1738	A/turkey/Givat_Haim/965/02(H9N2) neuraminidasi	DQ116057.1
1739	A/turkey/Hod_Ezyon/699/02(H9N2) neuraminidasi	DQ 116062,1
1740	A/turkey/Mishmar Hasharon/619/02 (H9N2) emoagglutinina	DQ104461.1
1741	A/turkey/Mishmar_Hasharon/619/02(H9N2) neuraminidasi	DQ116059.1
1742	A/turkey/Kfar_Vitkin/616/02(H9N2) neuraminidasi	DQ116058.1
1743	A/turkey/KfarVitkin/616/02 (H9N2) emoagglutinina	DQ104460.1
1744	A/turkey/KfarVitkin/615/02 (H9N2)emoagglutinina	DQ104459.1
1745	A/turkey/KfarVitkin/615/02 (H9N2) nucleoproteina	DQ116520.1
1746	A/turkey/Kfar_Vitkin/616/02(H9N2)) nucleoproteina	DQ116521.1
1747	A/turkey/Kfar Warburg/1224/03(H9N2) emoagglutinina	DQ104455.1
1748	A/tk/Kfar_Vitkin/615/02(H9N)) neuraminidasi	DQ116067.1
1749	A/turkey/Mishmar_Hasharon/619/02(H9N2) nucleoproteina	DQ116522.1
1750	A/turkey/Naharia/1013/02(H9N2) emoagglutinina	DQ104449.1

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H6N*		
1751	A/turkey/Nahalal/1547/04(H9N2) emoagglutinina	DQ108932.1
1752	A/turkey/Neve Ilan/90710/00 (H9N2) nucleoproteina	DQ116529.1
1753	A/tk/Neve_Ilan/90710/00(H9N2) neuraminidasi	DQ116066.1
1754	A/turkey/Qevuzat_Yavne/1242/03(H9N2) neuraminidasi	DQ116086.1
1755	A/turkey/Sapir/1199/02(H9N2) emoagglutinina	DQ104452.1
1756	A/turkey/ShadmotDvorah/1567/04(H9N2) nucleoproteina	DQ116518.1
1757	A/turkey/ShadmotDvorah/1567/04(H9N2) emoagglutinina	DQ108918.1
1758	A/turkey/Tzur Moshe/1565/04(H9N2) nucleoproteina	DQ116516.1
1759	A/turkey/Tzur Moshe/1565/04(H9N2) emogglutinina	DQ108916.1
1760	A/turkey/Yedidia/625/02 (H9N2) emogglutinina	DQ104463.1
1761	A/turkey/Yedidia/625/02 (H9N2) nucleoproteina	DQ116523.1
1762	A/turkey/Yedidia/625/02 (H9N2) neuraminidasi	DQ116061.1
1763	A/turkey/Yedidia/911/02(H9N2) emogglutinina	DQ104448.1
1764	A/turkey/Avigdor/1215/03(H9N2) emoagglutinina	DQ104454.1
1765	A/turkey/Avigdor/1209/03(H9N2) emoagglutinina	DQ104453.1
1766	A/turkey/Avichail/1075/02(H9N2) emoagglutinina	DQ104450.1
1767	A/turkey/Avigdor/1920/04(H9N2) emoagglutinina	DQ108926.1
1768	A/pintail/Alberta/49/2003(H9N5) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107498.1
1769	A/red knot/Delaware/2552/87 (H9N5) proteina della matrice non funzionale	AY664472.1
1770	A/duck/Hong Kong/147/77(H9N6) precursore dell'emoagglutinina	AY206671.1
1771	A/shorebird/Delaware/270/2001(H9N7) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107504.1
1772	A/shorebird/Delaware/277/2000(H9N7) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107507.1
1773	A/shorebird/Delaware/275/2001(H9N7)) proteina della matrice 2 (M) e proteina della matrice 1 (M)	DQ107506.1
1774	A/ruddy turnstone/Delaware/116/98 (H9N8) proteina della matrice non funzionale	AY664435.1
1775	A/shorebird/Delaware/141/2002(H9N9) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107503.1
1776	A/ruddy turnstone/Delaware/103/2002(H9N9) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107502.1

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H6N*		
1777	A/shorebird/Delaware/29/2002(H9N9) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107501.1
1778	A/shorebird/Delaware/18/2002(H9N9) proteina della matrice 1 (M) e proteina della matrice 2 (M)	DQ107500.1
1779	A/ruddy turnstone/Delaware/259/98 (H9N9) proteina della matrice non funzionale	AY664469.1

H10N*		
1780	A/duck/Eastern China/527/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429716.1
1781	A/duck/Eastern China/495/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429715.1
1782	A/duck/Eastern China/372/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429714.1
1783	A/duck/Eastern China/488/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429712.1
1784	A/duck/Eastern China/453/2002(H10N3) segmento 6 neuraminidasi (NA)	EU429711.1
1785	A/duck/Eastern China/412/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429710.1
1786	A/duck/Eastern China/404/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429709.1
1787	A/duck/Eastern China/397/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429708.1
1788	A/duck/Eastern China/502/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429705.1
1789	A/duck/Eastern China/395/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429704.1
1790	A/duck/Eastern China/356/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429703.1
1791	A/duck/Eastern China/368/2003(H10N3) segmento 6 neuraminidasi (NA)	EU429702.1
1792	A/chicken/Singapore/1993(H10N5) proteina M2	EU014145.1
1793	A/red knot/Delaware/2561/87 (H10N5) proteina della matrice non funzionale	AY664441.1

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H10N*		
1794	A/chicken/Germany/N/1949(H10N7) segmento 6 neuraminidasi (NA)	EU429796.1
1795	A/ruddy turnstone/Delaware/2764/87 (H10N7) proteina della matrice non funzionale	AY664462.1
1796	A/mallard/Alberta/71/98 (H10N7) proteina della matrice non funzionale	AY664485.1
1797	A/mallard/Alberta/90/97 (H10N7) proteina della matrice non funzionale	AY664446.1
1798	A/mallard/Alberta/110/99(H10N7) proteina della matrice non funzionale	AY664481.1
1799	A/mallard/Alberta/297/77 (H10N7) proteina della matrice non funzionale	AY664430.1
1800	A/mallard/Alberta/223/98 (H10N8) proteina della matrice non funzionale	AY664486.1
H11N*		
1801	A/ruddy turnstone/New Jersey/51/85 (H11N1) proteina della matrice non funzionale	AY664479.1
1802	A/duck/Nanchang/1749/1992(H11N2) nucleoproteina (NP)	U49094.1
1803	A/duck/Hong Kong/62/1976(H11N2) polimerasi (PB1)	U48280.1
1804	A/duck/Yangzhou/906/2002(H11N2) emoagglutinina	DQ080993.1
1805	A/shorebird/Delaware/86/99(H11N2) proteina della matrice non funzionale	AY664463.1
1806	A/ruddy_turnstone/Delaware Bay/2762/1987(H11N2)polimerasi PB2 (PB2)	CY126279.1
1807	A/ruddy turnstone/Delaware/2762/87 (H11N2) proteina della matrice non funzionale	AY664459.1
1808	A/ruddy_turnstone/Delaware Bay/2762/1987(H11N2) polimerasi PB1 (PB1) e proteina PB1-F2 (PB1-F2)	CY126278.1
1809	A/ruddy turnstone/Delaware/2589/87 (H11N4) proteina della matrice non funzionale	AY664478.1
1810	A/duck/England/1/1956(H11N6) segmento 6 neuraminidasi (NA)	EU429795.1
1811	A/mallard/Alberta/125/99 (H11N6) proteina della matrice non funzionale	AY664483.1
1812	A/duck/Memphis/546/1974(H11N9) segmento 6 neuraminidasi (NA)	EU429798.1

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H10N*		
1813	A/mallard/Alberta/122/99 (H11N9) proteina della matrice non funzionale	AY664444.1

H12N*		
1814	A/Mallard Duck/Alberta/342/83(H12N1) segmento 4 emoagglutinina (HA1)	AF310991.1
1815	A/ruddy turnstone/Delaware/67/98(H12N4) proteina della matrice non funzionale	AY664470.1
1816	A/ruddy Turnstone/Delaware/67/98(H12N4) segmento 4 emoagglutinina (HA1)	AF310990.1
1817	A/mallard/Alberta/52/97 (H12N5) proteina della matrice non funzionale	AY664448.1
1818	A/mallard/Alberta/223/77 (H12N5) proteina della matrice non funzionale	AY664431.1
1819	A/Laughing Gull/New Jersey/171/92(H12N5) segmento 4 emoagglutinina (HA1)	AF310992.1
1820	A/ruddy turnstone/Delaware/265/98 (H12N8) proteina della matrice non funzionale	AY664438.1
H13N*		
1821	A/herringgull/New Jersey/782/86 (H13N2) proteina della matrice non funzionale	AY664475.1
1822	A/shorebird/Delaware/224/97(H13N6) proteina della matrice non funzionale	AY664421.1
altro		
1823	A/PR/8/34 (H1N1) x A/England/939/69 (H3N2) proteina PB1	AJ564806.1
1824	A/PR/8/34 (H1N1) x A/England/939/69 (H3N2) proteina PB2	AJ564804.1
1825	A/duck/Czechslovakia/56(H4N6) x A/USSR/90/77(H1N1)) neuraminidasi (NA)	EU643639.1
1826	A/duck/Czechslovakia/56(H4N6) x A/USSR/90/77(H1N1)) neuraminidasi (NA)	EU643638.1
1827	A/duck/Ukraine/63(H3N8) x A/USSR/90/77(H1N1)) neuraminidasi (NA)	EU643637.1
1828	A/duck/Ukraine/63(H3N8) x A/USSR/90/77(H1N1)) neuraminidasi (NA)	EU643636.1

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H12N*		
1829	RCB1-XXI: A/USSR/90/77(H1N1)xA/Duck/Czechoslov 56 (H4N6) segmento 4 emoagglutinina	AF290438.1
1830	RCB1: A/USSR/90/77(H1N1)xA/Duck/Czechoslov 56 (H4N6) emoagglutinina	AF290437.1
1831	PX14-XIII (A/USSR/90/77(H1N1)xA/PintailDuck/Primorie/695/76(H2N3)) segmento 4 emoagglutinina	AF290442.1
1832	PX14(A/USSR/90/77(H1N1)xA/PintailDuck/Primorie/695/76(H2N3)) segmento 4 emoagglutinina	AF290441.1
1833	PX8-XIII(A/USSR/90/77(H1N1)xA/PintailDuck/Primorie/695/76(H2N3)) segmento 4 emoagglutinina	
1834	PX8(A/USSR/90/77(H1N1)xA/PintailDuck/Primorie/695/76(H2N3)) segmento 4 emoagglutinina	AF290439.1
1835	A/swine/Schleswig-Holstein/1/93 emoagglutinina (HA)	U72669.1
1836	A/swine/England/283902/93 emoagglutinina (HA)	U72668.1
1837	A/swine/England/195852/92 emoagglutinina (HA)	U72667.1
1838	A/swine/England/117316/86 emoagglutinina (HA)	U72666.1
1839	A/turkey/Germany/2482/90) emoagglutinina (HA)	U96766.1

Tabella 11. Antigeni dell'influenza B

Ceppo/proteina	**N. di accessione GenBank**
B/Daeku/47/97 emoagglutinina	AF521237.1
B/Daeku/45/97 emoagglutinina	AF521236.1
B/Daeku/10/97 emoagglutinina	AF521221.1
B/Daeku/9/97 emoagglutinina	AF521220.1
B/Gyeonggi/592/2005 neuraminidasi	DQ231543.1
B/Gyeonggi/592/2005 emoagglutinina	DQ231538.1
B/Hong Kong/5/72 neuraminidasi	AF305220.1
B/Hong Kong/5/72 emoagglutinina	AF305219.1
B/Hong Kong/157/99 emoagglutinina	AF387503.1
B/Hong Kong/157/99 emoagglutinina	AF387502.1
B/Hong Kong/156/99 emoagglutinina	AF387501.1
B/Hong Kong/156/99 emoagglutinina	AF387500.1

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Ceppo/proteina	**N. di accessione GenBank**
B/Hong Kong/147/99 emoagglutinina	AF387499.1
B/Hong Kong/147/99 emoagglutinina	AF387498.1
B/Hong Kong/110/99 emoagglutinina	AF387497.1
B/Hong Kong/110/99 emoagglutinina	AF387496.1
B/Incheon/297/2005 emoagglutinina	DQ231539.1
B/Incheon/297/2005 neuroaminidasi	DQ231542.1
B/Lee/40 proteina polimerasi (PB1)	D00004.1
B/Michigan/22572/99 emoagglutinina	AY129961.1
B/Michigan/22723/99 emoagglutinina (HA)	AY112992.1
B/Michigan/22631/99 emoagglutinina (HA)	AY112991.1
B/Michigan/22587/99 emoagglutinina (HA)	AY112990.1
B/New York/20139/99 emoagglutinina	AY129960.1
B/Panama/45/90 nucleoproteina	AF005739.1
B/Panama/45/90 polimerasi (PA)	AF005738.1
B/Panama/45/90 polimerasi (PB2)	AF005737.1
B/Panama/45/90 polimerasi (PB1)	AF005736.1
B/Pusan/250/99 emoagglutinina	AF521218.1
B/Pusan/255/99 emoagglutinina	AF521226.1
B/Pusan/270/99 emoagglutinina	AF521219.1
B/Pusan/285/99 emoagglutinina	AF521217.1
B/Riyadh/01/2007 segmento 8 proteina di esportazione nucleare (NEP) e proteina non strutturale 1 (NS1)	GU135839.1
B/Seoul/6/88 emoagglutinina	AF521238.1
B/Seoul/12/88 emoagglutinina	AF521239.1
B/Seoul/1/89 emoagglutinina	AF521230.1
B/Seoul/37/91 emoagglutinina	AF521229.1
B/Seoul/38/91 emoagglutinina	AF521227.1
B/Seoul/40/91 emoagglutinina	AF521235.1
B/Seoul/41/91 emoagglutinina	AF521228.1
B/Seoul/13/95 emoagglutinina	AF521225.1
B/Seoul/12/95 emoagglutinina	AF521223.1

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Ceppo/proteina	**N. di accessione GenBank**
B/Seoul/17/95 emoagglutinina	AF521222.1
B/Seoul/21/95 emoagglutinina	AF521224.1
B/Seoul/16/97 emoagglutinina	AF521233.1
B/Seoul/19/97 emoagglutinina	AF521231.1
B/Seoul/28/97 emoagglutinina	AF521234.1
B/Seoul/31/97 emoagglutinina	AF521232.1
B/Seoul/232/2004 neuraminidasi	DQ231541.1
B/Seoul/1163/2004 neuraminidasi	DQ231540.1
B/Seoul/1163/2004 emoagglutinina	DQ231537.1
B/Sichuan/379/99 emoagglutinina (HA)	AF319590.1
B/Sichuan/38/2000 emoagglutinina (HA)	AF319589.1
B/South Carolina/25723/99 emoagglutinina	AY129962.1
B/Switzerland/4291/97 emoagglutinina	AF387505.1
B/Switzerland/4291/97 emoagglutinina	AF387504.1
B/Taiwan/21706/97 proteina non strutturale 1 (NS1)	AF492479.1
B/Taiwan/21706/97 emoagglutinina (HA)	AF026162.1
B/Taiwan/3143/97 proteina non strutturale 1 (NS1)	AF492478.1
B/Taiwan/3143/97 emoagglutinina (HA)	AF026161.1
B/Taiwan/2026/99 proteina non strutturale 1 (NS1)	AF492481.1
B/Taiwan/2026/99 emoagglutinina	AY604741.1
B/Taiwan/2027/99 proteina non strutturale 1 (NS1)	AF492480.1
B/Taiwan/2027/99 emoagglutinina	AY604742.1
B/Taiwan/1243/99 proteina non strutturale NS1(NS1)	AF380504.1
B/Taiwan/1243/99 emoagglutinina	AY604740.1
B/Taiwan/2195/99 emoagglutinina	AY604743.1
B/Taiwan/2195/99 proteina non strutturale 1 (NS1)	AF492482.1
B/Taiwan/1293/2000 proteina non strutturale NS1(NS1)	AF380509.1
B/Taiwan/1293/00 emoagglutinina	AY604746.1
B/Taiwan/1293/2000 emoagglutinina (HA)	AF492477.1
B/Taiwan/1265/2000 proteina non strutturale NS1 (NS1)	AF380508.1
B/Taiwan/1265/00 emoagglutinina	AY604745.1

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Ceppo/proteina	**N. di accessione GenBank**
B/Taiwan/4184/2000 proteina non strutturale NS1 (NS1)	AF380507.1
B/Taiwan/4184/00 emoagglutinina (HA)	AY604750.1
B/Taiwan/31511/2000 proteina non strutturale NS1 (NS1)	AF380505.1
B/Taiwan/31511/00 emoagglutinina (HA)	AY604748.1
B/Taiwan/12192/2000 emoagglutinina	AY604747.1
B/Taiwan/41010/00 emoagglutinina (HA)	AY604749.1
B/Taiwan/41010/2000 proteina non strutturale NS1 (NS1)	AF380506.1
B/Taiwan/0409/00 emoagglutinina (HA)	AY604744.1
B/Taiwan/202/2001 proteina non strutturale 1 (NS1)	AF380512.1
B/Taiwan/202/2001 emoagglutinina (HA)	AF366076.1
B/Taiwan/11515/2001 proteina non strutturale 1 (NS1)	AF380511.1
B/Taiwan/11515/01 emoagglutinina	AY604754.1
B/Taiwan/11515/2001 emoagglutinina (HA)	AF366075.1
B/Taiwan/1103/2001 proteina non strutturale NS1 (NS1)	AF380510.1
B/Taiwan/1103/01 emoagglutinina	AY604755.1
B/Taiwan/114/2001 emoagglutinina (HA), allele HA-4	AF492476.1
B/Taiwan/2805/2001 emoagglutinina (HA)	AF400581.1
B/Taiwan/2805/01 emoagglutinina (HA)	AY604752.1
B/Taiwan/0114/01 emoagglutinina (HA)	AY604753.1
B/Taiwan/0202/01 emoagglutinina (HA)	AY604751.1
B/Taiwan/4119/02 emoagglutinina (HA)	AY604778.1
B/Taiwan/4602/02 emoagglutinina (HA)	AY604777.1
B/Taiwan/1950/02 emoagglutinina (HA)	AY604776.1
B/Taiwan/1949/02 emoagglutinina (HA)	AY604775.1
B/Taiwan/1584/02 emoagglutinina (HA)	AY604774.1
B/Taiwan/1561/02 emoagglutinina (HA)	AY604773.1
B/Taiwan/ 1536/02 emoagglutinina (HA)	AY604772.1
B/Taiwan/1534/02 emoagglutinina (HA)	AY604771.1
B/Taiwan/1503/02 emoagglutinina (HA)	AY604770.1
B/Taiwan/1502/02 emoagglutinina (HA)	AY604769.1
B/Taiwan/1013/02 emoagglutinina (HA)	AY604768.1

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Ceppo/proteina	**N. di accessione GenBank**
B/Taiwan/0993/02 emoagglutinina (HA)	AY604766.1
B/Taiwan/0932/02 emoagglutinina (HA)	AY604765.1
B/Taiwan/0927/02 emoagglutinina (HA)	AY604764.1
B/Taiwan/0880/02 emoagglutinina (HA)	AY604763.1
B/Taiwan/0874/02 emoagglutinina (HA)	AY604762.1
B/Taiwan/0730/02 emoagglutinina (HA)	AY604761.1
B/Taiwan/0722/02 emoagglutinina (HA)	AY604760.1
B/Taiwan/0702/02 emoagglutinina (HA)	AY604759.1
B/Taiwan/0654/02 emoagglutinina (HA)	AY604758.1
B/Taiwan/0600/02 emoagglutinina (HA)	AY604757.1
B/Taiwan/0409/02 emoagglutinina (HA)	AY604756.1
B/Taiwan/0879/02 emoagglutinina non funzionale	AY604767.1
B/Taiwan/ 3532/03 emoagglutinina (HA)	AY604794.1
B/Taiwan/2551/03 emoagglutinina (HA)	AY604793.1
B/Taiwan/ 1618/03 emoagglutinina (HA)	AY604792.1
B/Taiwan/ 1574/03 emoagglutinina (HA)	AY604791.1
B/Taiwan/1013/03 emoagglutinina (HA)	AY604790.1
B/Taiwan/0833/03 emoagglutinina (HA)	AY604789.1
B/Taiwan/0735/03 emoagglutinina (HA)	AY604788.1
B/Taiwan/0699/03 emoagglutinina (HA)	AY604787.1
B/Taiwan/0684/03 emoagglutinina (HA)	AY604786.1
B/Taiwan/0616/03 emoagglutinina (HA)	AY604785.1
B/Taiwan/0615/03 emoagglutinina (HA)	AY604784.1
B/Taiwan/0610/03 emoagglutinina (HA)	AY604783.1
B/Taiwan/0576/03 emoagglutinina (HA)	AY604782.1
B/Taiwan/0569/03 emoagglutinina (HA)	AY604781.1
B/Taiwan/0562/03 emoagglutinina (HA)	AY604780.1
B/Taiwan/0002/03 emoagglutinina (HA)	AY604779.1
B/Taiwan/773/2004 emoagglutinina (HA)	EU068195.1
B/Taiwan/187/2004 emoagglutinina (HA)	EU068194.1
B/Taiwan/3892/2004 emoagglutinina (HA)	EU068193.1

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Ceppo/proteina	N. di accessione GenBank
B/Taiwan/562/2004 emoagglutinina (HA)	EU068191.1
B/Taiwan/234/2004 emoagglutinina (HA)	EU068188.1
B/Taiwan/4897/2004 emoagglutinina (HA)	EU068186.1
B/Taiwan/8579/2004 emoagglutinina (HA)	EU068184.1
B/Taiwan/184/2004 emoagglutinina (HA)	EU068183.1
B/Taiwan/647/2005 emoagglutinina (HA)	EU068196.1
B/Taiwan/877/2005 emoagglutinina (HA)	EU068198.1
B/Taiwan/521/2005 emoagglutinina (HA)	EU068189.1
B/Taiwan/1064/2005 emoagglutinina (HA)	EU068192.1
B/Taiwan/3722/2005 emoagglutinina (HA)	EU068197.1
B/Taiwan/5049/2005 emoagglutinina (HA)	EU068190.1
B/Taiwan/5011/2005 emoagglutinina (HA)	EU068187.1
B/Taiwan/4659/2005 emoagglutinina (HA)	EU068185.1
B/Taiwan/25/2005 emoagglutinina (HA)	EU068182.1
B/Taiwan/1037/2005 emoagglutinina (HA)	EU068181.1
B/Taiwan/62/2005 emoagglutinina (HA)	EU068180.1
B/Taiwan/591/2005 emoagglutinina (HA)	EU068179.1
B/Taiwan/649/2005 emoagglutinina (HA)	EU068178.1
B/Taiwan/4554/2005 emoagglutinina (HA)	EU068177.1
B/Taiwan/987/2005 emoagglutinina (HA)	EU068176.1
B/Taiwan/2607/2006 emoagglutinina (HA)	EU068175.1
B/Vienna/1/99 emoagglutinina	AF387495.1
B/Vienna/1/99 emoagglutinina	AF387494.1
B/Vienna/1/99 emoagglutinina	AF387493.1
B/Vienna/1/99 emoagglutinina	AF387492.1

Tabella 12. Antigeni dell'influenza C

Ceppo/proteina	N. di accessione GenBank
C/JHB/1/66) mRNA della proteina di fusione dell'emoagglutinina-esterasi (HEF), cds completa.	AY880247.1
STRAIN C/ANN ARBOR/1/50) mRNA variante persistente segmento 7	AF102027.1

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Ceppo/proteina	**N. di accessione GenBank**
proteina non strutturale 1 (NS1), cds completa	
(STRAIN C/ANN ARBOR/1/50) mRNA segmento 7 di tipo selvatico proteina non strutturale 1 (NS1), cds completa	AF102026.1
(C/JHB/1/66) mRNA proteina di fusione dell'emoagglutinina-esterasi (HEF), cds completa	AY880247.1
(STRAIN C/BERLIN/1/85) mRNA per il precursore della polimerasi basica 2	X55992.1

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Tabella 13: Sequenze amminoacidiche di emoagglutinina H7

SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2284	AAM19228 A /turkey/Minne sota/38429/1988 1988 // HA 20335017	ACVLVEAKGDKICLGHHAVVNGTKVNTLTEKGIEVVNATETVETANIGKICTQGKRPTDLGQCG LLGTLIGPPQCDQFLEFESDLIIERREGNDVCYPGKFTNEESLRQILRGSGGIDKESMGFTYSGI ITNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIVWGIHHSGSTTEQ TKLYGSGNKLITVESSKYQQSFTPSPGARPQVNGESGRIDFHWMLLDPNDTVTFTFNGAFIAP DRASFFKGESLGVQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQPSLLLA TGMRNVPENPKTRGLFGAIAGFIEKDGGSHYG
2285	AAY46211 A/mallard/Sweden/91/2002 2002// HA 66394828	MNTQILVFALVAIIPNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSRGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRNDPALIIWGIH HSGSTTEQTKLYGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQIDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVK QESLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQH TIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2286	ABI84694 A/turkey/Minne sota/1/1988 1988/07/13 HA 115278573	MNTQILVFIACVLVEAKGDKICLGHHAVVNGTKVNTLTEKGIEVVNATETVETANIGKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFESDLIIERREGNDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIVWGI HHSGSTTEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWMLLDPNDTVT FTFNGAFIAPDRASFFKGESLGVQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPR YVKQPSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHAQYREES LQNRIQIDPVKLSSGYKDILLWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2287	ABS89409 A/blue-winged teal/Ohio/566/2006 2006// HA 155016324	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDTDLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVH HSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTF TFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRY VKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESL QNRIQIDPVRLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2288	ACD03594 A/ruddy turnstone/DE/15 38/2000 2000// HA 187384848	MNTQILAFIACMLVGVRGDKICLGHHAVANGTKVNTLTEKGIEVVNATETVESANIKKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFDSDLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRLGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGV HHSGSANEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGIQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPRY VKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIDKTNQQFELMDNEFNEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESL QNRIQIDPVKLSSGYKDILWFSFGASCFLLLAIAMGLIFICIKNGNMRCTICI
2289	BAH22785 A/duck/Mongoli a/119/2008 2008// HA 223717820	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIGKET MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIHH SGSTTEQTKLYGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHNGGTIISNLPFQNINSRTVGKCPRYV KQESLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIERTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQ HTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSNGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2290	CA Y39406 A/Anascrecca/Spain/14 60/2008 2008/01/26 HA 254674376	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIH HSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2291	ACX53683 A/goose/Czech Republic/1848-K9/2009 2009/02/04 HA 260907763	MNIQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERRGGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIH HSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLKGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQINPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2292	ACZ48625 A /turkey/Minnesota/38429/1988 1988 11 HA 269826341	MNTQILVFIACVLVEAKGDKICLGHHAVVNGTKVNTLTEKGIEVVNATETVETANIGKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFESDLIIERREGNDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIVWGI HHSGSTTEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWMLLDPNDTVT FTFNGAFIAPDRASFFKGESLGVQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPR YVKQPSLLLATGMRNVPENPKTRGLFGAIAGFIENGMEGLIDGWYGFKHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFEL
2293	ADC29485 A/mallard/Spain/08.00991.3/2005 5 2005/11/ HA 284927336	STQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAME NQHTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREE AMQNRIQIDPVKLSSGYKDVILWFSFGASCFILL

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2294	ADK71137 A/blue winged teal/Guatemala/ CIP049 01/2008 2008/02/07 HA 301333785	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSSYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVH HSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGTRPQVNGQSGRIDFHWLLLDPNDTVTFT FNGAFIAPDRASFLRGKSLGIQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVK QTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIDKTNQHFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHT IDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQN RIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2295	ADK71148 A/blue-winged teal/Guatemala/ CIP049-02/2008 2008/03/05 HA 301333804	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNXTETVETANIKKICTHGKRP TDLGQCGLLGTLIGPPQCDRFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVH HSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGTRPQVNGQSGRIDFHWLLLDPNDTVTFT FNGAFIAPDRASFLRGKSLGIQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVK QTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHT IDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQN RIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2296	ADN34727 A/goose/Czech Republic/1848-T14/2009 2009/02/04 HA 307141869	MNIQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERRGGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGXTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIH HSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLKGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQINPVKLSSGYKDVILWFSFGASCFLLAIAMGLVFICVKNGNMRCTICI
2297	AEK84760 A/wild bird/Korea/A14/ 2011 2011/02/ HA 341610308	PAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQ ESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQS AIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTI DLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQN RIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2298	AEK84761 A/wild bird/Korea/A3/2 011 2011/02/ HA 341610310	ILVFALVAIIPTNANKIGLGHHAVSNGTKVNTLTERGVEVFNATETVERTNVPRICSKGKKTVDL GQCGLRGTITGPPQCDQFLKFSPDLIIERQKGSDVCYPGKFVNEKPLRQLRESGGIDKETMGF AYNGIKTNGPPIACRKSGSSFYAKMKWLLSNTDKAAFPQMTKSYKNTRRNPALIVWGIHHSGS TTKQTKLYGIGSNLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGA FIPPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQES LMLATGMKNVPELPKGKGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAI DQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTID LADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRI QIDPVKLSSGYKDVILWFSFGASCFILAIAMGLVFICVKNGNMRCTICI
2299	AEK84763 A/wild bird/Korea/A9/2011 2011/02/HA 341610314	ILVFALVAIIPTNANKIGLGHHAVSNGTKVNTLTERGVEFFNATETVEPTNVPRICSKGKKTVDLG QCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEKALRQILRESGGIDKETMGFA YSGIKTNGPPIACRKSGSSFYAKMKWLLSNTDKAAFPQMTKSYKNIRRDPALIVWGIHHSGSTT KQTNLYGIGSNLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFIFNGAFIA PDRASFLIGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLML ATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQIT GKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADS EMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDP VKLSSGYKDVILWFSFGASCFILAIAMGLVFICVKNGNMRCTICI
2300	AEK84765 A/spot-billed duck/Korea/447/2011 2011/04/ HA 341610318	LVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVDLG QCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFT YSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGIHHSGS TTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGA FIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQES LMLATGMKNVPEPPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAI DQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTID LADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMARIRNNTYDHSKYREEAMQNRI QIDPVKLSSGYKDVILWFSFGASCFILAIAMGLVFICVKNGNMRCTICI

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SEQID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2301	AEM98291 A/wild duck/Mongolia/1-241/2008 2008/04/ HA 344196120	SILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVD LGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMG FTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIHHSG STTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFN GAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGSIISNLPFQNINSRAVGKCPRYVKQ ESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQS AIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTI DLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNR IQINPVKLSSGYKDVILWFSFGASCFLLAIAMGLVFICVKNGNMRCTI
2302	AFM09439 A/emperor goose/Alaska/44063-061/20062006/05/23 HA 390535062	QILAFIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETVNIKKICTQGKRPTDL GQCGLLGTLIGPPQCDQFLEFDADLIIERRKGTDVCYPGKFTNEESLRQILRGSGGIDKESMGF TYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVHHSG SATEQTKLYGSGNKLITVGSSKYQQSFVPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFN GAFIAPERASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQ TSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQS AIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHTI DLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQNR IQINPVKLSSGYKDILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTIC
2303	AFV33945 Alguinea fowl/Nebraska/17096-1/2011 2011104105 HA 409676820	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERRIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRNKPALIVWGV HHSGSATEQTKLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESL QNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTIC

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2304	AFV33947 A/goose/Nebraska/1709 7-4/2011 2011104105 HA 409676827	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIVWGV HHSASATEQTKLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTF TFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPRY VKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMENQ HTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESLQ NRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2305	AFX85260 Alruddy turnstone/Delaware Bay/220/1995 1995/05/21 HA 423514912	MNTQILAFIACMLIGINGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKRICTQGKRP IDLGQCGLLGTLIGPPQCDQFLEFDSDLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESM GFTYSGIRTNGATSACIRLGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVHHS GSANEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTF NGAFIAPDRASFFRGESLGVQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGRCPRYVK QTSLLLATGMKNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIDKTNQQFELIDNEFNEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQH TIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQN RIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2306	AGE08098 A/northern shoveler/Mississippi/11O S 145/2011 2011/01/08 HA 444344488	MNTQILTLIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVH HSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTF TFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHNGGTIVSSLPFQNINPRTVGKCPRY VKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESL QNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI

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SEQID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2307	AGI60301 A/Hangzhou/1/2013 2013/03/24 HA 475662454	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGISGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2308	AGI60292 A/Shanghai/4664T/2013 2013103105 HA 476403560	MNTQILVFALIAIIPANADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCHHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2309	AGJ72861 A/chicken/Zhejiang/DTI D-ZJU01/2013 2013/04/ HA 479280294	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGGEVVNATETVERTNIPRICSKGKKT VDLGQGGPRGTITGPPQCDQFLEFSADLIMERREGSDVCYPGKFVNEEALRQILRESGGIDKE AMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGI HHSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTV TFSFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCP RYVKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADY KSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAME NQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREE AMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2310	AGJ73503 A/Nanjing/1/2013 2013/03/28 HA 479285761	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKMT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2311	BAN16711 A/duck/Gunma/466/201 1 2011// HA 482661571	MNTQVLVFALMAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGK RTVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDK ETMGFTYSGIRTNGTTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIAWG IHHSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVT FSFNGAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPR YVKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAME NQHTIDLADSEMNKLYERVRRQLRENAEEDDTGCFEIFHKCDDDCMASIRNNTYDHSKYREE AMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2312	AGK84857 A/Hangzhou/2/2013 2013104101 HA 485649824	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQITKSYKNTRKSPALIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2313	AGL44438 A/Shanghai/02/2013 2013103105 HA 496493389	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2314	AGL33692 A/Shanghai/4655T/2013 2013/02/26 HA 491874175	GMIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGN VINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFH KCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLV FICVKNGNMRCTICI
2315	AGL33693 A/Shanghai/4659T/2013 2013/02/27 HA 491874186	GMIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIG NVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIF HKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGL VFICVKNGNMRCTICI
2316	AGL95088 A/Taiwan/S02076/2013 2013104122 HA 501485301	VFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDLGQ CGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTA EQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAF IAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSL LLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQ ITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLAD SEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQID PVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMR

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2317	AGL95098 A/Taiwan/T02081/2013 2013104122 HA 501485319	LVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDLGQ CGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTA EQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAF IAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSL LLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQ ITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLAD SEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQID PVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCT
2318	AGM53883 A/Shanghai/5083T/2013 2013/04/20 HA 507593986	GFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRD SITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCM ASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGN MRCT
2319	AGM53884 A/Shanghai/5180T/2013 2013/04/23 HA 507593988	AQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWS YNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNT YDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2320	AGM53885 A/Shanghai/5240T/2013 2013/04/25 HA 507593990	QNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEV WSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIR NNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRC T
2321	AGM53886 A/Shanghai/4842T/2013 2013/04/13 HA 507593992	NAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVW SYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNN TYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCT
2322	AGM53887 A/Shanghai/4701T/2013 2013104106 HA 507593994	NAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVW SYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNN TYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTIC

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2323	AGN69462 A/Wuxi/2/2013 2013103131 HA 511105778	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGSTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGSKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2324	AGN69474 A/Wuxi/1/2013 2013103131 HA 511105798	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2325	AGO51387 A/Jiangsu/2/2013 2013104120 HA 514390990	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKMT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREAM XBXIQIDPVKLSSGYKDVXJWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2326	BAN59726 A/duck/Mongolia/147/20 08 2008/08/29 HA 519661951	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIGKET MGFTYSGIRTNGATSACRRSRSSFYAEMKWLLSNTDNAAFPQMTRSYKNTRKDPALIIWGIHH SGSTTEQTKLYGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHNGGTIISNLPFQNINSRTVGKCPRYV KQESLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIERTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQ HTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSNGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2327	BAN59727 A/duck/Mongolia/129/20 10 2010// HA 519661954	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERINVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIH HSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQINPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2328	AGQ80952 A/duck/Jiangxi/3096/20 09 200911 HA 523788794	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTSIPRICSKGKRA VDLGQQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKET MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQTTKSYKNTRKDPALIIWGIHH SGSTTEQTKLYGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHNGGTIISNLPFQNINSRAVGKCPRYV KQESLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFTEVERQIGNVINWTRDSMTEVWSYNAELLVAMENQ HTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2329	AGQ80989 A/duck/Jiangxi/3257/20 09 200911 HA 523788868	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTSIPRICSKGKRA VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKET MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQTTKSYKNTRKDPALIIWGIHH SGSTTEQTKLYGSGNKLITVGXSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHNGGTIISNLPFQNINSRAVGKCPRYV KQESLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFTEVERQIGNVINWTRDSMTEVWSYNAELLVAMENQ HTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2330	AGQ81043 A/chicken/Rizhao/515/2 013 2013// HA 523788976	MNTQLVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEE MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2331	AGR33894 A/chicken/Rizhao/719b/ 2013 2013// HA 524845213	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDRSKYREEAM QNRXXXXXXXXXXXXXKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2332	AGR49399 A/chicken/Jiangxi/SD00 112013 2013/05/03 HA 525338528	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2333	AGR49495 A/chicken/Shanghai/S1 35812013 2013104103 HA 525338689	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKMT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIKNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2334	AGR49506 A/chicken/Shanghai/S1 41012013 2013104103 HA 525338708	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVT FSFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPR YVKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMEN QHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2335	AGR49554 A/chicken/Zhejiang/SD0 33/2013 2013/04/11 HA 525338789	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2336	AGR49566 A/duck/ Anhui/SC702/20 13 2013/04/16 HA 525338809	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDNRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2337	AGR49722 A/homing pigeon/Jiangsu/SD184/ 2013 2013104120 HA 525339071	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSEIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVT FSFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPR YVKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMEN QHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2338	AGR49734 A/pigeon/Shanghai/S10 69/2013 2013104102 HA 525339091	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTITF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2339	AGR49770 A/wild pigeon/Jiangsu/SD001/ 2013 2013104117 HA 525339151	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVT FSFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPR YVKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMEN QHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2340	AGY41893 A/Huizhou/01/2013 2013108108 HA 552049496	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2341	AGY42258 A/mallard/Sweden/91/2 002 2002/12/12 HA 552052155	FALVAIIPINADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSRGKRTVDLGQC GLLGTIXGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTYS GIRTNGAXSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRNDPALIIWGIHHSGSTTE QTKLYGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGAFIA PDRASFLRGKSMGIQSGVQIDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLLLA TGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITG KLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSE MNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPV KLSSGYKDVILWFSFGASCFILLAIAMGLVFMCVKNGNMRCTICI
2342	AHA11441 Alguinea fowl/Nebraska/17096/20 1 12011/04/10 HA 557478572	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRNKPALIVWGV HHSGSATEQTKLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESL QNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2343	AHA11452 A/turkey/Minnesota/327 10/2011 2011/07/12 HA 557478591	MNTQILALIACMLVGTKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFDADLIERREGTDVCYPGKFTNEEPLRQILRGSGGIDKE SMGFTYSGIRTNGATSTCRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRNKPALIVWGV HHSGSATEQTKLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFEEMIDNEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESL QNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI

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2344	AHA11461 A/turkey/Minnesota/319 00/2011 2011107105 HA 557478606	MNTQILALIACMLVGTKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKR PTDLGQCGLLGTIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEEPLRQILRGSGGIDKE SMGFTYSGIRTNGATSTCRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRNKPALIVWGV HHSGSATEQTKLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESL QNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2345	AHK10585 A/chicken/Guangdong/ G1/2013 2013/05/05 HA 587680636	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2346	AGG53366 A/wild duck/Korea/CSM42-34/2011 2011/03/ HA 459252887	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGLTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGI HHSGSSTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVRLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI

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2347	AGG53377 A/wild duck/Korea/CSM42-1/2011 2011/03/ HA 459252925	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGLTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGI HHSGSTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVRLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCT
2348	AGG53399 A/wild duck/Korea/MHC39-26/2011 2011/03/ HA 459253005	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGI HHSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPEPPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAME NQHTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREE AMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2349	AGG53432 A/wild duck/Korea/MHC35-41/2011 2011/03/ HA 459253136	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGI HHSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPEPPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAME NQHTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREE AMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCT

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2350	AGG53476 A/wild duck/Korea/SH19-27/2010 2010/12/ HA 459253257	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGI HHSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILAIAMGLVFICVKNGNMRCTI
2351	AGG53487 A/wild duck/Korea/SH19-50/2010 2010/01/ HA 459253278	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGI HHSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILAIAMGLVFICVKNGNMRCTICI
2352	AGG53520 A/wild duck/Korea/SH20-27/2008 2008/12/ HA 459253409	QILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVD LGQCGLLGTITGPPQCDQLLEFSADLIIERREGTDVCYPGKFVNEEALRQILRESGGIEKETMG FTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIHHSG STTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFN GAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQ ESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQS AIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTI DLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNR IQINPVKLSSGYKDVILWFSFGASCFILAIAMGLVFICVKNGNMR

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2353	AGL43637 A/Taiwan/1/2013 2013// HA 496297389	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGPSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIINNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2354	AGL97639 A/mallard/Minnesota/AI 09-3770/2009 2009109112 HA 505555371	IACMLVGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKLCTQGKRPTDLGQC GLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVHHSGSAT EQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFI APDRASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQTSLL LATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQI TGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTELWSYNAELLVAMENQHTIDLAD SEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQNRIQIDP VKLS
2355	AGO02477 A/Xuzhou/1/2013 2013104125 HA 512403688	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGSKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKSRNMMRCTICI

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2356	AGR84942 A/Suzhou/5/2013 2013104112 HA 526304561	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGSKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2357	AGR84954 A/Nanjing/6/2013 2013104111 HA 526304594	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQQGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNRNMRCTICI
2358	AGR84978 A/Wuxi/4/2013 2013104107 HA 526304656	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQQGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKSRNMRCTICI

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2359	AGR84990 A/Wuxi/3/2013 2013104107 HA 526304688	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKSRNMRCTICI
2360	AGR85002 A/Zhenjiang/1/2013 2013104107 HA 526304708	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKMT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKSRNMRCTICI
2361	AGR85026 A/Nanjing/2/2013 2013104105 HA 526304762	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKMT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKSRNMRCTICI

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2362	AGU02230 AIZhejiangIDTID-ZJU05/2013 2013/04/ HA 532808765	LVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGGEVVNATETVERTNIPRICSKGKRTVDLGQ CGLRGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTA EQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAF IAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSL LLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQ ITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLAD SEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQID PVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCT
2363	AGU02233 AIZhejiangIDTID-ZJU08/2013 2013/04/ HA 532808788	FALIAIIPTNADKICLGHHAVSNGTKVNTLTERGGEVVNATETVERTNFPRICSKGKRTVDLGQC GLRGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAE QTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFI APDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLL LATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQI TGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADS EMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDP VKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCT
2364	AGW82588 Alfree sparrow/Shanghai/01/20 13 2013/05/09 HA 546235348	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTIGI

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2365	AGW82600 A/Shanghai/CN01/2013 2013/04/11 HA 546235368	ALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDLGQCG LLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGI RTNGATSACRRSRSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQ TKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIA PDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIMSNLPFQNIDSRAVGKCPRYVKQRSLL LATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQI TGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADS EMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDP VKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2366	AGW82612 A/Shanghai/JS01/2013 2013104103 HA 546235388	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKNPALIVWGIH HSGSTAEQTKLYGSGNKLVTVGSSNYQQSFAPSPGARTQVNGQSGRIDFHWLMLNPNDTVT FSFNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPR YVKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSITEVWSYNAELLVAMEN QHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2367	AHA11472 A/turkey/Minnesota/316 76/2009 2009/12/08 HA 557478625	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANVKKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGETSACRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRDKPALIIWGV HHSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPEKPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITNKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRKESL QNRIQIDPVKLSSGYKDILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI

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2368	AHA11483 A/turkey/Minnesota/141 35-2/2009 2009/08/07 HA 557478644	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANVKKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRDKPALIIWGV HHSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPEKPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITSKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRKESL QNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2369	AHA11500 A/Zhejiang/DTID-ZJU10/2013 2013/10/14 HA 557478676	TQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQDGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGF TYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVS TAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPPVNGLSGRIDFHWLMLNPNDTVTFSFNG AFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQR SLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAI DQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDL ADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQ IDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKN
2370	AHA57050 A/turkey/Minnesota/146 59/2009 2009/08/12 HA 558484427	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANVKKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRDKPALIIWGV HHSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPEKPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITSKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHNCDDQCMESIRNNTYDHTQYRKES LQNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2371	AHA57072 A/turkey/Minnesota/184 21/2009 2009/09/09 HA 558484465	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANVKKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSNDAAFPQMTKSYRNPRDKPALIIWGV HHSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPEKPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRKESL QNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2372	AHD25003 A/Guangdong/02/2013 2013/10/ HA 568260567	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFLLAIVMGLVFICVKNGNM
2373	AHF20528 A/Hong Kong/470129/2013 2013/11/30 HA 570933555	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISSLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFLLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2374	AHF20568 A/Shanghai/CN02/2013 2013/04/02 HA 570933626	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIMSNLPFQNIDSRAVGKCPR YVKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMEN QHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2375	AHH25185 A/Guangdong/04/2013 2013/12/16 HA 576106234	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIEKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2376	AHJ57411 A/Shanghai/PD-01/2014 2014/01/17 HA 585478041	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVSSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCKGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRIIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2377	AHJ57418 A/Shanghai/PD-02/2014 2014/01/17 HA 585478256	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDICYPGKFVNEEALRQILRESGGIDKEAM GFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHS VSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSF NGAFIAPDRASFLKGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVK QRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRIIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTI DLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNR IQIDPVKLSSGYKDVILWFSFGASCFLLAIVMGLVFICVKNGNMRCTICI
2378	AHK10800 A/Shanghai/01/2014 2014/01/03 HA 587681014	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRIIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFLLAIVMGLVFICVKNGNMRCTICI
2379	AHM24224 A/Beijing/3/2013 2013/04/16 HA 594704802	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVKEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFLLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2380	AHN96472 A/chicken/Shanghai/PD-CN-02/2014 2014/01/21 HA 602701641	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2381	AHZ39686 A/Anhui/DEWH72-01/2013 2013// HA 632807036	MNTQLVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQQGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDDAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2382	AHZ39710 A/Anhui/DEWH72-03/2013 2013// HA 632807076	MNTQLVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQQGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTDGATSACRRSGSSFYAEMKWLLSNTDDAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2383	AHZ39746 A/Anhui/DEWH72-06/2013 2013// HA 632807136	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGERPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2384	AHZ41929 A/mallard/Sweden/1621 /2002 2002/12/12 HA 632810949	MNTQILVFALVAIIPINADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSRGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRNDPALIIWGIH HSGSTTEQTKLYGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQIDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVK QESLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQH TIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFMCVKNGNMRCTICI
2385	AHZ42537 A/mallard/Minnesota/AI 09-3770/2009 2009/09/12 HA 632811964	MNTQILAFIACMLVGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKLCTQGK RPTDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDK ESMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWG VHHSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTV TFTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCP RYVKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADY KSTQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTELWSYNAELLVAME NQHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTE SLQNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2386	AHZ42549 A/ruddy turnstone/Delaware/AI0 0-1538/2000 2000/05/20 HA 632811984	MNTQILAFIACMLVGVRGDKICLGHHAVANGTKVNTLTEKGIEVVNATETVESANIKKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFDSDLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRLGSSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWG VHHSGSANEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTV TFTFNGAFIAPDRASFFRGESLGIQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFELMDNEFNEIEQQIGNVINWTRDSMTEVWSYNAELLVAME NQHTIDLADSEMMKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTE SLQNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLIFICIKNGNMRCTICI
2387	AID70634 A/Shanghai/Mix1/2014 2014/01/03 HA 660304650	MNTQLVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRIIEKTNQQFELIDNEFNEVEKQISNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2388	AIN76383 A/Zhejiang/LS01/2014 2014/02/08 HA 684694637	MNTQLVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGTTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2368	AIU46619 A/chicken/Zhejiang/DTI D-ZJU06/2013 2013/12/ HA 699978931	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVEVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2369	AIU47013 A/chicken/Suzhou/0402 01H/2013 2013/04/ HA 699979673	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDMILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2370	AJJ90490 A/chicken/Shenzhen/74 2/2013 2013/12/10 HA 755178094	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2371	AJJ90526 A/chicken/Shenzhen/89 812013 2013/12/09 HA 755178154	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDICYPGKFVNEEALRQILRESGGIDKEAM GFTYSGIRANGATSACKRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHS VSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSF NGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISSLPFQNIDSRAVGKCPRYVK QRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTI DLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNR IQIDPVKLSRGYKDVILWFSFGASCFILAIVMGLVFICVKNGNMRCTICI
2372	AJJ90538 A/silkie chicken/Shenzhen/918/ 2013 2013/12/09 HA 755178174	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILAIVMGLVFICVKNGNMRCTICI
2373	AJJ90576 A/chicken/Shenzhen/16 65/2013 2013/12/12 HA 755178238	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDICYPGKFVNEEALRQILRESGGIDKEAM GFTYSGIRANGATSACKRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHS VSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSF NGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVK QRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTI DLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNR IQIDPVKLSRGYKDVILWFSFGASCFILAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2374	AJJ90588 A/chicken/Shenzhen/21 1012013 2013/12/13 HA 755178258	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSIGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2375	AJJ90661 A/chicken/Dongguan/29 12/2013 2013/12/18 HA 755178380	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2376	AJJ90673 A/silkie chicken/Dongguan/3049 12013 2013/12/18 HA 755178400	MNTQILVFALTAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2377	AJJ90795 A/silkie chicken/Dongguan/3281 12013 2013/12/18 HA 755178604	MNTQILVFALIAIIPTNADKICLGHHAVPNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2378	AJJ90891 A/silkie chicken/Dongguan/3520 12013 2013/12/19 HA 755178764	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKXPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2379	AJJ90951 A/chicken/Dongguan/35 44/2013 2013/12/19 HA 755178864	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYRNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2380	AJJ91035 A/chicken/Shenzhen/37 80/2013 2013/12/19 HA 755179004	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDNRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2381	AJJ91155 A/chicken/Dongguan/40 37/2013 2013/12/19 HA 755179204	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2382	AJJ92005 A/chicken/Shenzhen/80 1/2013 2013/12/09 HA 755180629	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSRGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2383	AJJ94254 A/chicken/Dongguan/13 74/2014 2014/02/21 HA 755184382	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2384	AJJ94606 A/chicken/Dongguan/19 1/2014 2014/02/20 HA 755184968	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2385	AJJ96552 A/chicken/Jiangxi/12206 /2014 2014/03/16 HA 755188219	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTI DLGQQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAM GFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHS VSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSF NGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVK QKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTI DLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHNKYREEAMQN RIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2386	AJJ96684 A/chicken/Jiangxi/13207 /2014 2014/03/30 HA 755188439	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTV DLGQQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAM GFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHS VSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSF NGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVK QKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQHTI DLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNR IQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2387	AJJ96732 A/chicken/Jiangxi/13223 /2014 2014/03/30 HA 755188519	MNTQLVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2388	AJK00354 AlduckIZhejiangILS0212 01420l4/01/12 HA 755194469	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQQCGLLGTITGPPQCDQFLEFSADLIVERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIHH SGSTTEQTKLYGSGNKLITVGSSNYQQSFVPSPGARPLVNGQSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYV KQESLLLATGMKNVPEVPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQVTGKLNRLIEKTNQQFELIDHEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQ HTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2389	AJJ91264 A/silkie chicken/Dongguan/4129 12013 2013/12/19 HA 755179386	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLMEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMEN QHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2390	AJJ91314 A/chicken/Shaoxing/241 7/2013 2013/10/20 HA 755179470	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPPVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2391	AJJ91402 A/chicken/Huzhou/4045/ 2013 2013/10/24 HA 755179618	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKEVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2392	AJJ91476 A/chicken/Huzhou/4076/ 2013 2013/10/24 HA 755179743	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSRGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2393	AJJ91725 A/chicken/Shaoxing/520 1/2013 2013/10/28 HA 755180161	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2394	AJJ91885 A/Shenzhen/SP4/2014 2014/01/16 HA 755180429	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSRGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2395	AJJ91909 A/Shenzhen/SP26/2014 2014/01/20 HA 755180469	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDICYPGKFVNEEALRQILRESGGIDKEAM GFTYSGIRANGATSACKRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHS VSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSF NGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISSLPFQNIDSRAVGKCPRYVK QRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTI DLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDGCMASIRNNTYDHSKYREEAMQN RIQIDPVKLSRGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2396	AJJ91945 A/Shenzhen/SP38/2014 2014/01/22 HA 755180529	MNTQILAFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2397	AJJ91957 A/Shenzhen/SP44/2014 2014/01/23 HA 755180549	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGTTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISSLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2398	AJJ91969 A/Shenzhen/SP48/2014 2014/01/23 HA 755180569	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2399	AJJ91993 A/chicken/Dongguan/41 19/2013 2013/12/19 HA 755180609	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLLGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2400	AJJ92031 A/chicken/Dongguan/40 64/2013 2013/12/19 HA 755180672	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVESSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2401	AJJ92967 A/silkie chicken/Jiangxi/9469/20 142014/02/16 HA 755182232	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2402	AJJ93027 A/chicken/Jiangxi/9558/ 2014 2014/02/16 HA 755182332	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVKEEALRQILRESGGIDKEA MGFTYSGIRTNGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2403	AJJ93051 A/chicken/Jiangxi/10573 /2014 2014/02/18 HA 755182372	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGVTSACRRSGSSFYAEMKWLLSNTDDAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2404	AJJ93845 A/silkie chicken/Dongguan/157/2014 2014/02/20 HA 755183695	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2405	AJJ93857 A/chicken/Dongguan/16 9/2014 2014/02/20 HA 755183715	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACMRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2406	AJJ93869 A/chicken/Dongguan/17 3/2014 2014/02/20 HA 755183735	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTVTGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2407	AJJ93881 A/chicken/Dongguan/18 9/2014 2014/02/20 HA 755183755	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTVTGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPKY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2408	AJJ93907 A/chicken/Dongguan/44 9/2014 2014/02/20 HA 755183799	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2409	AJJ93931 A/chicken/Dongguan/53 6/2014 2014/02/20 HA 755183839	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISKLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2410	AJJ93943 A/chicken/Dongguan/56 8/2014 2014/02/20 HA 755183859	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIEKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSGGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2411	AJJ93979 A/silkie chicken/Dongguan/656/ 2014 2014102120 HA 755183919	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTVTGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFGLIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2412	AJJ94134 A/chicken/Dongguan/10 51/20142014/02/21 HA 755184182	MNTQILVLALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVXLSXGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2413	AJJ94158 A/chicken/Dongguan/10 75/2014 2014/02/21 HA 755184222	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYRGEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2414	AJJ94182 A/chicken/Dongguan/11 77/2014 2014/02/21 HA 755184262	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACKRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSIAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNIDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2415	AJJ94194 A/silkie chicken/Dongguan/1264 /2014 2014/02/21 HA 755184282	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTI DLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAM GFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHS VSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNIDTVTFSF NGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVK QRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKSTQ SAIDQVTGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYRGEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFMLLAIVMGLVFICVKNGNMRCTICI

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2416	AJJ94206 A/silkie chicken/Dongguan/1268 /2014 2014/02/21 HA 755184302	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISDLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2417	AJJ94344 A/silkie chicken/Dongguan/1451 /2014 2014/02/21 HA 755184532	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNSTETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRTVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGMEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2418	AJJ94356 A/chicken/Dongguan/14 56/20142014/02/21 HA 755184552	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2419	AJJ94396 A/chicken/Dongguan/14 94/2014 2014/02/21 HA 755184618	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPETPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2420	AJJ94754 A/chicken/Dongguan/74 8/2014 2014/02/20 HA 755185215	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQQGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIEKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSNAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSGGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2421	AJJ94838 A/chicken/Dongguan/83 5/2014 2014/02/20 HA 755185356	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQQGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSASTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFGFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2422	AJJ94862 A/chicken/Dongguan/84 3/2014 2014/02/20 HA 755185396	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIEKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSGGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2423	AJJ94886 A/chicken/Dongguan/85 1/2014 2014/02/20 HA 755185436	MNTQILAFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2424	AJJ94910 A/chicken/Dongguan/87 4/2014 2014/02/20 HA 755185476	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSASTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2425	AJJ94959 A/silkie chicken/Dongguan/967/ 20142014/02/21 HA 755185558	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACXRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2426	AJJ95048 A/chicken/Dongguan/10 09/20142014/02/21 HA 755185708	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPETPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2427	AJJ95171 A/chicken/Dongguan/13 14/2014 2014/02/21 HA 755185913	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF NFNGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2428	AJJ95227 A/chicken/Dongguan/13 82/20142014/02/21 HA 755186006	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDICYPGKFVNEEALRQILRESGGIDKEAM GFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2429	AJJ95251 A/chicken/Dongguan/14 01/20142014/02/21 HA 755186046	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYKRVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2430	AJJ95346 A/chicken/Dongguan/15 48/2014 2014/02/21 HA 755186206	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYKRVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHNKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2431	AJJ95382 A/chicken/Dongguan/16 90/20142014/02/21 HA 755186266	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSIGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVK QRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTI DLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNR IQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2432	AJJ95464 A/chicken/Shenzhen/13 8/20142014/02/19 HA 755186404	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYRGEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFMLLAIVMGLVFICVKNGNMRCTICI
2433	AJJ95572 A/chicken/Dongguan/11 00/20142014/02/21 HA 755186584	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIEKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSGGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2434	AJJ95584 A/silkie chicken/Dongguan/1519 /2014 2014/02/21 HA 755186604	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPERASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYRGEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFMLLAIVMGLVFICVKNGNMRCTICI
2435	AJJ95596 A/Shenzhen/SP58/2014 2014/01/25 HA 755186624	MNTQILAFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2436	AJJ95620 A/Shenzhen/SP75/2014 2014/02/15 HA 755186664	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGSTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAVVMGLVFICVKNGNMRCTICI

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2437	AJJ95632 A/Shenzhen/SP62/2014 2014/02/05 HA 755186684	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNATFPQMTKSYKNTRKSPALIIWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2438	AJJ96720 A/chicken/Jiangxi/13220 /2014 2014/03/30 HA 755188499	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTTIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSRGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2439	AJJ96817 A/chicken/Jiangxi/9513/ 2014 2014/02/16 HA 755188661	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATEIVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2440	AJJ96841 A/Shenzhen/SP139/201 4 2014/04/02 HA 755188701	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSTCRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRACFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVERQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2441	AJJ96889 A/chicken/Jiangxi/13496 /2014 2014/04/11 HA 755188781	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTXIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKXA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSXGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2442	AJJ96901 A/chicken/Jiangxi/13502 /2014 2014/04/11 HA 755188801	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSXGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2443	AJJ96925 A/chicken/Jiangxi/13513 /2014 2014/04/11 HA 755188841	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYNGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH TVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDLHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIAKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2444	AJJ97267 A/chicken/Jiangxi/13252 /2014 2014/03/30 HA 755189411	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2445	AJJ97291 A/chicken/Jiangxi/13493 /2014 2014/04/06 HA 755189451	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYNGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIAKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2446	AJJ97331 A/chicken/Jiangxi/13512 /2014 2014/04/06 HA 755189517	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYNGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSIGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVK QRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIAKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTI DLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQN RIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2447	AJJ97373 A/chicken/Jiangxi/13521 /2014 2014/04/06 HA 755189587	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYNGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPXRASFLRGKSXGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIAKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2448	AJJ97443 A/chicken/Jiangxi/13530 /2014 2014/04/06 HA 755189702	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTTIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSRGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2449	AJJ97582 A/chicken/Jiangxi/14023 /2014 2014/04/13 HA 755189933	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIAKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2450	AJJ97697 A/chicken/Jiangxi/14517 /2014 2014/04/20 HA 755190125	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCDGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2451	AJJ97709 A/chicken/Jiangxi/14518 /2014 2014/04/20 HA 755190145	MNTQILVFALIAIIPANADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYNGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNIKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGNCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIAKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2452	AJJ97745 A/chicken/Jiangxi/14554 /2014 2014/04/20 HA 755190205	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELMDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMEN QHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2453	AJJ97757 A/chicken/Shantou/2537 /2014 2014/04/16 HA 755190225	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2454	AJJ97841 A/duck/Jiangxi/15044/2 0142014/04/27 HA 755190365	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIAKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQ NRIQIDPVRLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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2455	AJJ97899 A/chicken/Jiangxi/15524 /2014 2014/05/05 HA 755190462	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIAKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFLLAIVMGLVFMCVKNGNMRCTICI
2456	AJJ97925 A/silkie chicken/Shantou/2050/2 014 2014/03/25 HA 755190506	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEVPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFLLAIVMGLVFICVKNGNMRCTICI
2457	AJJ97973 A/chicken/Shantou/4325 /2014 2014/07/01 HA 755190586	MNTQILVFALISIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEA MGFTYSGIRTNGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHH SVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEVPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQH TIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFLLAIVMGLVFICVKNGNMRCTICI

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2458	AJJ97998 A/chicken/Shantou/4816 /2014 2014/07/22 HA 755190628	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQKSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELVDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMEN QHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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Tabella 14: Sequenze amminoacidiche di emoagglutinina H10

SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2459	AAM19228 A/turkey/Minnesota/384 29/1988 1988// HA 20335017	ACVLVEAKGDKICLGHHAVVNGTKVNTLTEKGIEVVNATETVETANIGKICTQGKRPTDLGQCG LLGTLIGPPQCDQFLEFESDLIIERREGNDVCYPGKFTNEESLRQILRGSGGIDKESMGFTYSGI ITNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIVWGIHHSGSTTEQ TKLYGSGNKLITVESSKYQQQSFTPSPGARPQVNGESGRIDFHWMLLDPNDTVTFTFNGAFIAP DRASFFKGESLGVQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQPSLLLA TGMRNVPENPKTRGLFGAIAGFIEKDGGSHYG
2460	AAY46211 A/mallard/Sweden/91/2 002 2002// HA 66394828	MNTQILVFALVAIIPNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSRGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGAPSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRNDPALIIWGIH HSGSTTEQTKLYGSGNKLITVGSSNYQQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQIDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVK QESLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQH TIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQ NRIQIDPVKLSSGYKDVILWFSFGASCFLLAIAMGLVFMCVKNGNMRCTICI
2461	ABI84694 A/turkey/Minnesota/1/19 88 1988/07/13 HA 115278573	MNTQILVFIACVLVEAKGDKICLGHHAVVNGTKVNTLTEKGIEVVNATETVETANIGKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFESDLIIERREGNDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIVWGI HHSGSTTEQTKLYGSGNKLITVGSSKYCQQSFTPSPGARPQVNGQSGRIDFHWMLLDPNDTVT FTFNGAFIAPDRASFFKGESLGVQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPR YVKQPSLLLATGMRNVPENPKTRGLFGAIAGFIENGMEGLIDGWYGFKHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHAQYREES LQNRIQIDPVKLSSGYKDILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2462	ABS89409 A/blue-winged teal/Ohio/566/2006 2006// HA 155016324	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDTDLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVH HSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTF TFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRY VKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESL QNRIQIDPVRLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2463	ACD03594 A/ruddy turnstone/DE/1538/2000 2000// HA 187384848	MNTQILAFIACMLVGVRGDKICLGHHAVANGTKVNTLTEKGIEVVNATETVESANIKKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFDSDLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRLGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGV HHSGSANEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGIQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPRY VKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIDKTNQQFELMDNEFNEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESL QNRIQIDPVKLSSGYKDILWFSFGASCFLLLAIAMGLIFICIKNGNMRCTICI
2464	BAH22785 A/duck/Mongolia/119/20 08 2008// HA 223717820	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIGKET MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIHH SGSTTEQTKLYGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFS FNGAFIAPDRASFLRGKSMGIQSGVQVDAMCEGDCYHNGGTIISNLPFQNINSRTVGKCPRYV KQESLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKST QSAIDQITGKLNRLIERTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQ HTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSNGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2465	CAY39406 A/Anas crecca/Spain/1460/2008 2008/01/26 HA 254674376	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIH HSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2466	ACX53683 A/goose/Czech Republic/1848-K9/2009 2009/02/04 HA 260907763	MNIQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERRGGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIH HSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLKGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQINPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2467	ACZ48625 A/turkey/Minnesota/384 29/1988 198811 HA 269826341	MNTQILVFIACVLVEAKGDKICLGHHAVVNGTKVNTLTEKGIEVVNATETVETANIGKICTQGKR PTDLGQCGLLGTLIGPPQCDQFLEFESDLIIERREGNDVCYPGKFTNEESLRQILRGSGGIDKE SMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNVAAFPQMTKSYRNPRNKPALIVWGI HHSGSTTEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWMLLDPNDTVT FTFNGAFIAPDRASFFKGESLGVQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPR YVKQPSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFEL
2468	ADC29485 A/mallard/Spain/08.009 91.3/2005 2005/11/ HA 284927336	STQSMIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAME NQHTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREE AMQNRIQIDPVKLSSGYKDVILWFSFGASCFILL

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2469	ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008 2008/02/07 HA 301333785	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSSYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVH HSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGTRPQVNGQSGRIDFHWLLLDPNDTVTFT FNGAFIAPDRASFLRGKSLGIQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVK QTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIDKTNQHFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHT IDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQN RIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2470	ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008 2008/03/05 HA 301333804	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNXTETVETANIKKICTHGKRP TDLGQCGLLGTLIGPPQCDRFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVH HSGSATEQTKLYGSGNKLITVGSSKYQQSFTPSPGTRPQVNGQSGRIDFHWLLLDPNDTVTFT FNGAFIAPDRASFLRGKSLGIQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVK QTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHT IDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQN RIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICVKNGNMRCTICI
2471	ADN34727 A/goose/Czech Republic/1848-T14/2009 2009/02/04 HA 307141869	MNIQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKR TVDLGQCGLLGTITGPPQCDQFLEFSADLIIERRGGSDVCYPGKFVNEEALRQILRESGGIDKE TMGFTYSGIRTNGXTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIH HSGSTTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLKGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRY VKQESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEA MQNRIQINPVKLSSGYKDVILWFSFGASCFLLAIAMGLVFICVKNGNMRCTICI
2472	AEK84760 A/wild bird/Korea/A14/2011 2011/02/ HA 341610308	PAFIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQ ESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQS AIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTI DLADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQN RIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2473	AEK84761 A/wild bird/Korea/A3/2011 2011/02/ HA 341610310	ILVFALVAIIPTNANKIGLGHHAVSNGTKVNTLTERGVEVFNATETVERTNVPRICSKGKKTVDL GQCGLRGTITGPPQCDQFLKFSPDLIIERQKGSDVCYPGKFVNEKPLRQILRESGGIDKETMGF AYNGIKTNGPPIACRKSGSSFYAKMKWLLSNTDKAAFPQMTKSYKNTRRNPALIVWGIHHSGS TTKQTKLYGIGSNLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGA FIPPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQES LMLATGMKNVPELPKGKGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAI DQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTID LADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRI QIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2474	AEK84763 A/wild bird/Korea/A9/2011 2011/02/HA 341610314	ILVFALVAIIPTNANKIGLGHHAVSNGTKVNTLTERGVEEFNATETVEPTNVPRICSKGKKTVDLG QCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEKALRQILRESGGIDKETMGFA YSGIKTNGPPIACRKSGSSFYAKMKWLLSNTDKAAFPQMTKSYKNIRRDPALIVWGIHHSGSTT KQTNLYGIGSNLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTFIFNGAFIA PDRASFLGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLML ATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQIT GKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADS EMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDP VKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI
2475	AEK84765 A/spot-billed duck/Korea/447/2011 2011/04/ HA 341610318	LVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVDLG QCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFT YSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGIHHSGS TTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGA FIAPDRASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQES LMLATGMKNVPEPPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAI DQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTID LADSEMNKLYERVRRQLRENAEEDGTGCFEIFHKCDDDCMARIRNNTYDHSKYREEAMQNRI QIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2476	AEM98291 A/wild duck/Mongolia/1-241/2008 2008/04/ HA 344196120	SILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVD LGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMG FTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIHHSG STTEQTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFN GAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGSIISNLPFQNINSRAVGKCPRYVKQ ESLMLATGMKNVPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQS AIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTI DLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNR IQINPVKLSSGYKDVILWFSFGASCFLLAIAMGLVFICVKNGNMRCTI
2477	AFM09439 A/emperor goose/Alaska/44063-061/20062006/05/23 HA 390535062	QILAFIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETVNIKKICTQGKRPTDL GQCGLLGTLIGPPQCDQFLEFDADLIIERRKGTDVCYPGKFTNEESLRQLRGSGGIDKESMGF TYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVHHSG SATEQTKLYGSGNKLITVGSSKYQQSFVPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFN GAFIAPERASFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQ TSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQS AIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHTI DLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQNR IQINPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2478	AFV33945 A/guinea fowl/Nebraska/17096-1/2011 2011/04/05 HA 409676820	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSNVAAFPQMTKSYRNPRNKPALIVWGV HHSGSATEQTKLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVT FTFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPR YVKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYK STQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESL QNRIQIDPVKLSSGYKDILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2479	AFV33947 A/goose/Nebraska/1709 7-4/2011 2011/04/05 HA 409676827	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIVWGV HHSASATEQTKLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTF TFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPRY VKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMENQ HTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESLQ NRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2480	AFX85260 A/ruddy turnstone/Delaware Bay/220/1995 1995/05/21 HA 423514912	MNTQILAFIACMLIGINGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKRICTQGKRP IDLGQCGLLGTLIGPPQCDQFLEFDSDLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESM GFTYSGIRTNGATSACIRLGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVHHS GSANEQTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTF NGAFIAPDRASFFRGESLGVQSDVPLDSGCGGDCFHSGGTIVSSLPFQNINPRTVGRCPRYVK QTSLLLATGMKNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQ SAIDQITGKLNRLIDKTNQQFELIDNEFNEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQH TIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQN RIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI
2481	AGE08098 A/northern shoveler/Mississippi/110 S145/2011 2011/01/08 HA 444344488	MNTQILTLIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRP TDLGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKES MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVH HSGSATEQTKLYGSGNKLITVGSSKYQQSFTFSPGARPQVNGQSGRIDFHWLLLDPNDTVTF TFNGAFIAPDRASFFRGESLGVQSDVPLDSGCEGDCFHNGGTIVSSLPFQNINPRTVGKCPRY VKQTSLLLATGMRNVPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIDKTNQQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMEN QHTIDLADSEMNKLYERVRKQLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESL QNRIQIDPVKLSSGYKDIILWFSFGASCFLLLAIAMGLVFICIKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2482	AGI60301 A/Hangzhou/1/2013 2013/03/24 HA 475662454	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGISGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2483	AGI60292 A/Shanghai/4664T/2013 2013/03/05 HA 476403560	MNTQILVFALIAIIPANADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRT VDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEA MGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIH HSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTF SFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCHHSGGTIISNLPFQNIDSRAVGKCPRY VKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKS TQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQ HTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAM QNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI
2484	AGJ72861 A/chicken/Zhejiang/DTI D-ZJU01/2013 2013/04/ HA 479280294	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGGEVVNATETVERTNIPRICSKGKKT VDLGQGGPRGTITGPPQCDQFLEFSADLIMERREGSDVCYPGKFVNEEALRQILRESGGIDKE AMGFTYSGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGI HHSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNIDTV TFSFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCP RYVKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADY KSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAME NQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREE AMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2485	AGJ73503 A/Nanjing/1/2013 2013/03/28 HA 479285761	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFLLAIVMGLVFICVKNGNMRCTICI
2486	BAN16711 A/duck/Gunma/466/2011 2011// HA 482661571	MNTQVLVFALMAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTV DLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFT YSGIRTNGTTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIAWGIHHSGSTTE QTKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGAFIAPDR ASFLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQESLMLATGMKN VPELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKT NQQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQ LRENAEEDDTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSF GASCFILLAIAMGLVFICVKNGNMRCTICI
2487	AGK84857 A/Hangzhou/2/2013 2013/04/01 HA 485649824	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQITKSYKNTRKSPALIVWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILLAIVMGLVFICVKNGNMRCTICI

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2488	AGL44438 A/Shanghai/02/2013 2013/03/05 HA 496493389	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2489	AGL33692 A/Shanghai/4655T/2013 2013/02/26 HA 491874175	GMIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFTEVEKQIGNVIN WTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDD CMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMGLVFICVKNGNM RCTICI
2490	AGL33693 A/Shanghai/4659T/2013 2013/02/27 HA 491874186	GMIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVIN WTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDD CMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVMGLVFICVKNGNM RCTICI
2491	AGL95088 A/Taiwan/S02076/2013 2013/04/22 HA 501485301	VFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDLGQCGLL GTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGIRTNGA TSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKLYGSGN KLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASFLRGKS MGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPEIPKGR GLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELID NEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEED GTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAI VMGLVFICVKNGNMR

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2492	AGL95098 A/Taiwan/T02081/2013 2013/04/22 HA 501485319	LVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDLGQCGL LGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGIRTNG ATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKLYGSG NKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASFLRGK SMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPEIPKG RGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELI DNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEE DGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVLWFSFGASCFILL AIVMGLVFICVKNGNMRCT
2493	AGM53883 A/Shanghai/5083T/2013 2013/04/20 HA 507593986	GFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITE VWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNN TYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILAIVMGLVFICVKNGNMRCT
2494	AGM53884 A/Shanghai/5180T/2013 2013/04/23 HA 507593988	AQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNA ELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYY REEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILAIVMGLVFICVKNGNMRCTICI
2495	AGM53885 A/Shanghai/5240T/2013 2013/04/25 HA 507593990	QNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSY NAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHS KYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILAIVMGLVFICVKNGNMRCT
2496	AGM53886 A/Shanghai/4842T/2013 2013/04/13 HA 507593992	NAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYN AELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSK YREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILAIVMGLVFICVKNGNMRCT
2497	AGM53887 A/Shanghai/4701T/2013 2013/04/06 HA 507593994	NAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYN AELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSK YREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILAIVMGLVFICVKNGNMRCTIC

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2498	AGN69462 A/Wuxi/2/2013 2013/03/31 HA 511105778	MNTQILVFALIAIIPTNADKICLGHHAVSNG`KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGSTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGSKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2499	AGN69474 A/Wuxi/1/2013 2013/03/31 HA 511105798	MNTQILVFALIAIIPTNADKICLGHHAVSNG`KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLINGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVMSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2500	AGO51387 A/Jiangsu/2/2013 2013/04/20 HA 514390990	MNTQILVFALIAIIPTNADKICLGHHAVSNG`KVNTLTERGVEVVNATETVERTNIPRICSKGKMTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVMSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYRXEAMXBXIQIDPVKLSSGYKDVX.JMFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2501	BAN59726 A/duck/Mongolia/147/200 8 2008/08/29 HA 519661951	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIGKETMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTRSYKNTRKDPALIIWGIHHSGSTTEQTK LYGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHKGGTIISNLPFQNINSRTVGKCPRYVKQESLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIERTNQQ FELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIAMGLVFICVKNGNMRCTICI
2502	BAN59727 A/duck/Mongolia/129/201 0 2010// HA 519661954	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERINVPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIHHSGSTTEQTK LYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLMLATGMKNVP ELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVKRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQINPVKLSSGYKDVILWFSFGA SCFILLAIAMGLVFICVKNGNMRCTICI
2503	AGQ80952 A/duck/Jiangxi/3096/200 9 2009// HA 523788794	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTSIPRICSKGKRAVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQTTKSYKNTRKDPALIIWGIHHSGSTTEQTKL YGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASFL RGKSMGIQSGVQVDANCEGDCYHNGGTIISNLPFQNINSRAVGKCPRYVKQESLLLATGMKNVPEI PKGRGLFGAIAGFIENGMEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFTEVERQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIAMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2504	AGQ80989 A/duck/Jiangxi/3257/200 9 2009// HA 523788868	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTSIPRICSKGKRAVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQTTKSYKNTRKDPALIIWGIHHSGSTTEQTKL YGSGNKLITVGXSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASFL RGKSMGIQSGVQVDAN CEGDCYHNGGTIISNLPFQNINSRAVGKCPRYVKQESLLLATGMKNVPEI PKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFTEVERQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIAMGLVFICVKNGNMRCTICI
2505	AGQ81043 A/chicken/Rizhao/515/20 13 2013// HA 523788976	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEEMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2506	AGR33894 A/chicken/Rizhao/719b/2 013 2013// HA 524845213	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAF PQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDAN CEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDRSKYREEAMQNRXXXXXXXXXXXXXXKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2507	AGR49399 A/chicken/Jiangxi/SD001/ 2013 2013/05/03 HA 525338528	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2508	AGR49495 A/chicken/Shanghai/S13 58/2013 2013/04/03 HA 525338689	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKMTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2509	AGR49506 A/chicken/Shanghai/S14 10/2013 2013/04/03 HA 525338708	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2510	AGR49554 A/chicken/Zhejiang/SD03 3/2013 2013/04/11 HA 525338789	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVRRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2511	AGR49566 A/duck/Anhui/SC702/201 3 2013/04/16 HA 525338809	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDNRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2512	AGR49722 A/homing pigeon/Jiangsu/SD184/2013201310412O HA 525339071	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS EIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2513	AGR49734 A/pigeon/Shanghai/S106 9/2013 2013/04/02 HA 525339091	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTITFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FLLAIVMGLVFICVKNGNMRCTICI
2514	AGR49770 A/wild pigeon/Jiangsu/SD001/2 013 20131041 17 HA 525339151	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2515	AGY41893 A/Huizhou/01/2013 2013/08/08 HA 552049496	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2516	AGY42258 A/mallard/Sweden/91/20 02 2002/12/12 HA 552052155	FALVAIPNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSRGKRTVDLGQCGLL GTIKGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTYSGIRTNGA XSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRNDPALIIWGIHHSGSTTEQTKLYGSGNK LITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGAFIAPDRASFLRGKSMGI QSGVQIDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLLLATGMKNVPEIPKGRGLFG AIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFT EVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQLRENAEEDGTG CFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIAMG LVFMCVKKNGNMRCTICI
2517	AHA11441 A/guinea fowl/Nebraska/17096/201 12011/04/10 HA 557478572	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRPTDL GQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRNKPALIVWGVHHSGSATEQT KLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDRAS FFRGESLGVQSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRNVP ENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIDKTN QQFELIDNEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMENQHTIDLADSEMNKLYERVRKQLR ENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESLQNRIQIDPVKLSSGYKDIILWFSFGAS CFLLLAIAMGLVFICIKNGNMRCTICI
2518	AHA11452 A/turkey/Minnesota/3271 0/2011 2011/07/12 HA 557478591	MNTQILALIACMLVGTKGDKICLGHHAVANGTKVVTLTERGIEVVNATETVETANIKKICTQGKRPTD LGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEEPLRQILRGSGGIDKESMGFTY SGIRTNGATSTCRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRNKPALIVWGVHHSGSATEQ TKLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDRA SFFRGESLGVQSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRNV PENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIDKTN QQFEMINEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMENQHTIDLADSEMNKLYERVRKQLR ENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESLQNRIQIDPVKLSSGYKDILWFSFGAS CFLLLAIAMGLVFICIKNGNMRCTICI

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2519	AHA11461 A/turkey/Minnesota/3190 0/2011 2011/07/05 HA 557478606	MNTQILALIACMLVGTIKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKICTQGKRPTD LGQCGLLGTLIGPPQCDQFLEFDADLIERREGTDVCYPGKFTNEEPLRQILRGSGGIDKESMGFTY SGIRTNGATSTCRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRNKPALIVWGVHHSGSATEQ TKLYGSGSKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDRA SFFRGESLGVVSDVPLDSGCEGDCFHKGGTIVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRNV PENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIDKTN QQFELIDNEFSEIEQQIGNVINWTRDSMTEIWSYNAELLVAMENQHTIDLADSEMNKLYERVRKQLR ENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRAESLQNRIQIDPVKLSSGYKDIILWFSFGAS CFLLLAIAMGLVFICIKNGNMRCTICI
2520	AHK10585 A/chicken/Guangdong/G 1/2013 2013/05/05 HA 587680636	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2521	AGG53366 A/wild duck/Korea/CSM42-34/2011 2011/03/ HA 459252887	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVD LGQCGLLGTITGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGLTY SGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGIHHSGSSTEQ TKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLMLATGMKNVP ELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVRLSSGYKDVILWFSFGA SCFILLAIAMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2522	AGG53377 A/wild duck/Korea/CSM42-1/2011 2011/03/ HA 459252925	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVD LGQCGLLGTITGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGLTY SGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGIHHSGSSTEQ TKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLMLATGMKNVP ELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVRLSSGYKDVILWFSFGA SCFILLAIAMGLVFICVKNGNMRCT
2523	AGG53399 A/wild duck/Korea/MHC39-26/2011 2011/03/ HA 459253005	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVD LGQCGLLGTITGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGIHHSGSTTEQ TKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNIINSRAVGKCPRYVKQESLMLATGMKNVP EPPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTN QQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQL RENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFG ASCFILLAIAMGLVFICVKNGNMRCTICI
2524	AGG53432 A/wild duck/Korea/MHC35-41/2011 2011/03/ HA 459253136	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVD LGQCGLLGTITGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGIHHSGSTTEQ TKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNIINSRAVGKCPRYVKQESLMLATGMKNVP EPPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTN QQFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQL RENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFG ASCFILLAIAMGLVFICVKNGNMRCT

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2525	AGG53476 A/wild duck/Korea/SH19-27/2010 2010/12/ HA 459253257	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVD LGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGIHHSGSTTEQ TKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLMLATGMKNVP ELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIAMGLVFICVKNGNMRCTI
2526	AGG53487 A/wild duck/Korea/SH19-50/2010 2010/01/ HA 459253278	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVD LGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRDPALIVWGIHHSGSTTEQ TKLYGSGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLILNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDASCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLMLATGMKNVP ELPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIAMGLVFICVKNGNMRCTICI
2527	AGG53520 A/wild duck/Korea/SH20-27/2008 2008/12/ HA 459253409	QILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSKGKRTVDLGQQ CGLLGTITGPPQCDQLLEFSADLIIERREGTDVCYPGKFVNEEALRQILRESGGIEKETMGFTYSGIR TNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIHHSGSTTEQTKLYG SGSKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASFLRG KSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLMLATGMKNVPELPK GRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFE LIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVKRQLRENA EEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQINPVKLSSGYKDVILWFSFGASCFI LLAIAMGLVFICVKNGNMR

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2528	AGL43637 A/Taiwan/1/2013 2013// HA 496297389	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGPSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIINNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2529	AGL97639 A/mallard/Minnesota/AI0 9-3770/2009 2009109112 HA 505555371	IACMLVGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKLCTQGKRPTDLGQCGLL GTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESMGFTYSGIRTNGA TSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVHHSGSATEQTKLYGSGN KLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDRASFFRGESL GVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRNVPENPKTR GLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIDKTNQQFELID NEFSEIEQQIGNVINWTRDSMTELWSYNAELLVAMENQHTIDLADSEMNKLYERVRKQLRENAEED GTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQNRIQIDPVKLS
2530	AGO02477 A/Xuzhou/1/2013 2013/04/25 HA 512403688	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGSKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKSRNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2531	AGR84942 A/Suzhou/5/2013 2013/04/12 HA 526304561	MNTQILVFALIAIIPTNADKICLGHHAVSNG~KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGSKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2532	AGR84954 A/Nanjing/6/2013 2013/04/11 HA 526304594	MNTQILVFALIAIIPTNADKICLGHHAVSNG~KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNRNMRCTICI
2533	AGR84978 A/Wuxi/4/2013 2013/04/07 HA 526304656	MNTQILVFALIAIIPTNADKICLGHHAVSNG~KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKSRNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2534	AGR84990 A/Wuxi/3/2013 2013/04/07 HA 526304688	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR˜GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKSRNMRCTICI
2535	AGR85002 A/Zhenjiang/1/2013 2013/04/07 HA 526304708	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKMTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR˜GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKSRNKRCTICI
2536	AGR85026 A/Nanjing/2/2013 2013/04/05 HA 526304762	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKMTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR˜GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKSRNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2537	AGU02230 A/ZhejiangIDTID-ZJU05/2013 2013/04/ HA 532808765	LVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGGEVVNATETVERTNIPRICSKGKRTVDLGQCGL RGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGIRTN GATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKLYGS GNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASFLRG KSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPEIPK GRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFE LIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAE EDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFIL LAIVMGLVFICVKNGNMRCT
2538	AGU02233 A/Zhejiang/DTID-ZJU08/2013 2013/04/ HA 532808788	FALIAIIPTNADKICLGHHAVSNGTKVNTLTERGGEVVNATETVERTNFPRICSKGKRTVDLGQCGLR GTITGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGIRTNGA TSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKLYGSGN KLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASFLRGKS MGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPEIPKGR GLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELID NEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEED GTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAI VMGLVFICVKNGNMRCT
2539	AGW82588 A/tree sparrow/Shanghai/01/201 3 2013/05/09 HA 546235348	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVMGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTIGI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2540	AGW82600 A/Shanghai/CN01/2013 2013/04/11 HA 546235368	ALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDLGQCGLLGT ITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGIRTNGATS ACRRSRSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKLYGSGNKL VTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASFLRGKSMGI QSGVQVDANCEGDCYHSGGTIMSNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPEIPKGRGL FGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNE FNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGT GCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLAIVM GLVFICVKNGNMRCTICI
2541	AGW82612 A/Shanghai/JS01/2013 2013/04/03 HA 546235388	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKNPALIVWGIHHSGSTAEQT KLYGSGNKLVTVGSSNYQQSFAPSPGARTQVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRA SFLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNV PEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTN QQFELIDNEFTEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIAMGLVFICVKNGNMRCTICI
2542	AHA11472 A/turkey/Minnesota/3167 6/2009 2009/12/08 HA 557478625	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANVKKICTQGKRPTD LGQQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESMGFTY SGIRTNGETSACRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRDKPALIIWGVHHSGSATEQ TKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDRA SFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRNV PEKPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITNKLNRLIDKTN QQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRKQL RENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRKESLQNRIQIDPVKLSSGYKDILWFSFGA SCFLLLAIAMGLVFICIKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2543	AHA11483 A/turkey/Minnesota/1413 5-2/2009 2009/08/07 HA 557478644	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANVKKICTQGKRPTD LGQCGLLGTLIGPPQCDQFLEFDADLIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRDKPALIIWGVHHSGSATEQ TKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDRA SFFRGESLGVQSDVPLDSGCEGDCFHSGGTVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRNV PEKPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITSKLNRLIDKTN QQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRKQL RENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRKESLQNRIQIDPVKLSSGYKDILWFSFGA SCFLLLAIAMGLVFICIKNGNMRCTICI
2544	AHA11500 A/Zhejiang/DTID-ZJU10/2013 2013/10/14 HA 557478676	TQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDLGQ CGLLGTITGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGIR TNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKLY GSGNKLVTVGSSNYQQSFVPSPGARPPVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASFL RGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPEI PKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILLAIVMGLVFICVKN
2545	AHA57050 A/turkey/Minnesota/1465 9/2009 2009/081/2 HA 558484427	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANVKKICTQGKRPTD LGQCGLLGTLIGPPQCDQFLEFDADLIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNSNNAAFPQMTKSYRNPRDKPALIIWGVHHSGSATEQ TKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDRA SFFRGESLGVQSDVPLDSGCEGDCFHSGGTVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRNV PEKPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITSKLNRLIDKTN QQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRKQL RENAEEDGTGCFEIFHNCDDQCMESIRNNTYDHTQYRKESLQNRIQIDPVKLSSGYKDIILWFSFGA SCFLLLAIAMGLVFICIKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2546	AHA57072 A/turkey/Minnesota/1842 1/2009 2009/09109 HA 558484465	MNTQILALIACMLIGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANVKKICTQGKRPTD LGQCGLLGTLIGPPQCDQFLEFDADLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNSNDAAFPQMTKSYRNPRDKPALIIWGVHHSGSATEQ TKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDRA SFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRNV PEKPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIDKTN QQFELIDNEFSEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRKQL RENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRKESLQNRIQIDPVKLSSGYKDVILWFSFGA SCFLLLAIAMGLVFICIKNGNMRCTICI
2547	AHD25003 A/Guangdong/02/2013 2013/10/ HA 568260567	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNM
2548	AHF20528 A/Hong Kong/470129/2013 2013/11/30 HA 570933555	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISSLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2549	AHF20568 A/Shanghai/CN02/2013 2013/04/02 HA 570933626	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIMSNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNV PEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTN QQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI
2550	AHH25185 A/Guangdong/04/2013 2013/12/16 HA 576106234	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIEKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2551	AHJ57411 A/Shanghai/PD-01/2014 2014/01/17 HA 585478041	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVSSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCKGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRIIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2552	AHJ57418 A/Shanghai/PD-02/2014 2014/01/17 HA 585478256	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSG IRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LKGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILLAIVMGLVFICVKNGNMRCTICI
2553	AHK10800 A/Shanghai/01/2014 2014/01/03 HA 587681014	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2554	AHM24224 A/Beijing/3/2013 2013/04/16 HA 594704802	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVKEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2555	AHN96472 A/chicken/Shanghai/PD-CN-02/2014 2014/01/21 HA 602701641	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2556	AHZ39686 A/Anhui/DEWH72-01/2013 2013// HA 632807036	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDDAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2557	AHZ39710 A/Anhui/DEWH72-03/2013 2013// HA 632807076	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTDGATSACRRSGSSFYAEMKWLLSNTDDAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2558	AHZ39746 A/Anhui/DEWH72-06/2013 2013// HA 632807136	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIERR*EGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGERPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFLLAIVMGLVFICVKNGNMRCTICI
2559	AHZ41929 A/mallard/Sweden/1621/ 2002 2002/12/12 HA 632810949	MNTQILVFALVAIIPNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNVPRICSRGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRESGGIDKETMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRNDPALIIWGIHHSGSTTEQTK LYGSGNKLITVGSSNYQQSFVPSPGARPQVNGQSGRIDFHWLLLNPNDTVTFSFNGAFIAPDRASFL RGKSMGIQSGVQIDANCEGDCYHSGGTIISNLPFQNINSRAVGKCPRYVKQESLLLATGMKNVPEIP KGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQF ELIDNEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILAIAMGLVFMCVKNGNMRCTICI
2560	AHZ42537 A/mallard/Minnesota/AI0 9-3770/2009 2009/09/12 HA 632811964	MNTQILAFIACMLVGAKGDKICLGHHAVANGTKVNTLTERGIEVVNATETVETANIKKLCTQGKRPTD LGQCGLLGTLIGPPQCDQFLEFDADLIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESMGFTY SGIRTNGATSACRRSGSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVHHSGSATEQ TKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDRA SFFRGESLGVQSDVPLDSGCEGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRNV PENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIDKTN QQFELIDNEFSEIEQQIGNVINWTRDSMTELWSYNAELLVAMENQHTIDLADSEMNKLYERVRKQLR ENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQNRIQIDPVKLSSGYKDIILWFSFGAS CFLLLAIAMGLVFICIKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2561	AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000 2000/05/20 HA 632811984	MNTQILAFIACMLVGVRGDKICLGHHAVANGTKVNTLTEKGIEVVNATETVESANIIKKICTQGKRPTD LGQCGLLGTLIGPPQCDQFLEFDSDLIIERREGTDVCYPGKFTNEESLRQILRGSGGIDKESMGFTY SGIRTNGATSACRRLGSSSFYAEMKWLLSNSDNAAFPQMTKSYRNPRNKPALIIWGVHHSGSANE QTKLYGSGNKLITVGSSKYQQSFTPSPGARPQVNGQSGRIDFHWLLLDPNDTVTFTFNGAFIAPDR ASFFRGESLGIQSDVPLDSSCGGDCFHSGGTIVSSLPFQNINPRTVGKCPRYVKQTSLLLATGMRN VPENPKTRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIDKT NQQFELMDNEFNEIEQQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVRK QLRENAEEDGTGCFEIFHKCDDQCMESIRNNTYDHTQYRTESLQNRIQIDPVKLSSGYKDIILWFSF GASCFLLLAIAMGLIFICIKNGNMRCTICI
2562	AID70634 A/Shanghai/Mix1/2014 2014/01/03 HA 660304650	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSGSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQISNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2563	AIN76383 A/Zhejiang/LS01/2014 2014/02/08 HA 684694637	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGTTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNVAQGEGTAACYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2564	AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013 2013/12/ HA 699978931	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVEVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2565	AIU47013 A/chicken/S uzhou/04020 1H/2013 2013/04/ HA 699979673	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDMILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2566	AJJ90490 A/chicken/Shenzhen/742/ 2013 2013/12/10 HA 755178094	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNG.SGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2567	AJJ90526 A/chicken/Shenzhen/898/ 2013 2013/12/09 HA 755178154	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDICYPGKFVNEEALRQILRESGGIDKEAMGFTYSG IRANGATSACKRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNIDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISSLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSRGYKDVILWFSFGASC FILAIVMGLVFICVKNGNMRCTICI
2568	AJJ90538 A/silkie chicken/Shenzhen/918/2 013 2013/12/09 HA 755178174	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNIDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2569	AJJ90576 A/chicken/Shenzhen/166 5/2013 2013/12/12 HA 755178238	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDICYPGKFVNEEALRQILRESGGIDKEAMGFTYSG IRANGATSACKRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNIDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSRGYKDVILWFSFGASC FILAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2570	AJJ90588 A/chicken/Shenzhen/211 012013 2013/12/13 HA 755178258	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSIGQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILLAIVMGLVFICVKNGNMRCTICI
2571	AJJ90661 A/chicken/Dongguan/291 2/2013 2013/12/18 HA 755178380	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2572	AJJ90673 A/silkie chicken/Dongguan/3049/ 2013 2013/12/18 HA 755178400	MNTQILVFALTAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2573	AJJ90795 A/silkie chicken/Dongguan/3281/2013 2013/12/18 HA 755178604	MNTQILVFALIAIIPTNADKICLGHHAVPNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2574	AJJ90891 A/silkie chicken/Dongguan/3520/2013 2013/12/19 HA 755178764	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKKPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2575	AJJ90951 A/chicken/Dongguan/354 4/2013 2013/12/19 HA 755178864	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYRNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNG.SGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2576	AJJ91035 A/chicken/Shenzhen/378 012013 2013/12/19 HA 755179004	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRRSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDNRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2577	AJJ91155 A/chicken/Dongguan/403 7/2013 2013/12/19 HA 755179204	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMNKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2578	AJJ92005 A/chicken/Shenzhen/801/ 2013 2013/12/09 HA 755180629	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSRGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2579	AJJ94254 A/chicken/Dongguan/137 4/2014 2014/02/21 HA 755184382	MNTQILVFALIAIIPTNADKICLGHHAVSNG`KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPERAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFLLAIVMGLVFICVKNGNMRCTICI
2580	AJJ94606 A/chicken/Dongguan/191 /2014 2014/02/20 HA 755184968	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFLLAIVMGLVFICVKNGNMRCTICI
2581	AJJ96552 A/chicken/Jiangxi/12206/ 2014 2014/03/16 HA 755188219	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTIDLG QCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGI RTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHNKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FLLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2582	AJJ96684 A/chicken/Jiangxi/13207/ 2014 2014/03/30 HA 755188439	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKINTLTERGVEVVNATETVERTNIPRICSKGKKTVDLG QQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGI RTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILLAIVMGLVFICVKNGNMRCTICI
2583	AJJ96732 A/chicken/Jiangxi/13223/ 2014 2014/03/30 HA 755188519	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR-EGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2551	AJK00354 A/duck/Zhejiang/LS02/20 14 2014/01/12 HA 755194469	MNTQILVFALVAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIVERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKDPALIIWGIHHSGSTTEQTK LYGSGNKLITVGSSNYQQSFVPSPGARPLVNGQSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIINSRAVGKCPRYVKQESLLLATGMKNVPE VPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQVTGKLNRLIEKTNQ QFELIDHEFTEVEKQIGNVINWTRDSMTEVWSYNAELLVAMENQHTIDLADSEMNKLYERVKRQLR ENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2552	AJJ91264 A/silkie chicken/Dongguan/4129/ 2013 2013/12/19 HA 755179386	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLMEKTN QQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI
2553	AJJ91314 A/chicken/Shaoxing/2417 12013 2013/10/20 HA 755179470	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPPVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILLAIVMGLVFICVKNGNMRCTICI
2554	AJJ91402 A/chicken/Huzhou/4045/2 013 2013/10/24 HA 755179618	MNTQILVFALIAIIPTNADKICLGHHAVSNG`KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKEVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2555	AJJ91476 A/chicken/Huzhou/4076/2 013 2013/10/24 HA 755179743	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSRGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2556	AJJ91725 A/chicken/Shaoxing/5201 12013 2013/10/28 HA 755180161	MNTQILVFALIAIIPTNADKICLGHHAVSNG˜KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2557	AJJ91885 A/Shenzhen/SP4/2014 2014/01/16 HA 755180429	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSRGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI

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2558	AJJ91909 A/Shenzhen/SP26/2014 2014/01/20 HA 755180469	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDICYPGKFVNEEALRQILRESGGIDKEAMGFTYSG IRANGATSACKRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISSLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDGCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSRGYKDVILWFSFGASC FILLAIVMGLVFICVKNGNMRCTICI
2559	AJJ91945 A/Shenzhen/SP38/2014 2014/01/22 HA 755180529	MNTQILAFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2560	AJJ91957 A/Shenzhen/SP44/2014 2014/01/23 HA 755180549	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGTTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISSLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2561	AJJ91969 A/Shenzhen/SP48/2014 2014/01/23 HA 755180569	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2562	AJJ91993 A/chicken/Dongguan/411 9/2013 2013/12/19 HA 755180609	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLLGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFTLLAIVMGLVFICVKNGNMRCTICI
2563	AJJ92031 A/chicken/Dongguan/406 4/2013 2013/12/19 HA 755180672	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVESSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILLAIVMGLVFICVKNGNMRCTICI

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2564	AJJ92967 A/silkie chicken/Jiangxi/9469/201 4 2014/02/16 HA 755182232	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFLLAIVMGLVFICVKNGNMRCTICI
2565	AJJ93027 A/chicken/Jiangxi/9558/2 0142014/02/16 HA 755182332	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVKEEALRQILRESGGIDKEAMGFTYS GIRTNGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFLLAIVMGLVFICVKNGNMRCTICI
2566	AJJ93051 A/chicken/Jiangxi/10573/ 2014 2014/02/18 HA 755182372	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGVTSACRRSGSSFYAEMKWLLSNTDDAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFLLAIVMGLVFICVKNGNMRCTICI

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2567	AJJ93845 A/silkie chicken/Dongguan/157/2 014 2014/02/20 HA 755183695	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2568	AJJ93857 A/chicken/Dongguan/169 /2014 2014/02/20 HA 755183715	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACMRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2569	AJJ93869 A/chicken/Dongguan/173 /2014 2014/02/20 HA 755183735	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTVTGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNG.SGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2570	AJJ93881 A/chicken/Dongguan/189 /2014 2014/02/20 HA 755183755	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTVTGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNG.SGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPKYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2571	AJJ93907 A/chicken/Dongguan/449 /2014 2014/02/20 HA 755183799	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPERAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2572	AJJ93931 A/chicken/Dongguan/536 /2014 2014/02/20 HA 755183839	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISKLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAACYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI

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2573	AJJ93943 A/chicken/Dongguan/568 /2014 2014/02/20 HA 755183859	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRESGGIEKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSGGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2574	AJJ93979 A/silkie chicken/Dongguan/656/2 014 2014/02/20 HA 755183919	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTVTGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNG.SGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFGLIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2575	AJJ94134 A/chicken/Dongguan/105 1/2014 2014/02/21 HA 755184182	MNTQILVLALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSTEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSKGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI

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2576	AJJ94158 A/chicken/Dongguan/107 5/2014 2014/02/21 HA 755184222	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPERAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYRGEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2577	AJJ94182 A/chicken/Dongguan/117 7/2014 2014/02/21 HA 755184262	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACKRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSIAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAACYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2578	AJJ94194 A/silkie chicken/Dongguan/1264/ 20142014/02/21 HA 755184282	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTIDLG QCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYSGI RTNGATSACRRSGSSFYAEMKWLLSNTDVAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPERASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKSTQSAIDQVTGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYRGEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFMLLAIVMGLVFICVKNGNMRCTICI

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2579	AJJ94206 A/silkie chicken/Dongguan/1268/ 2014 2014/02/21 HA 755184302	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPERAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISDLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2580	AJJ94344 A/silkie chicken/Dongguan/1451/ 2014 2014/02/21 HA 755184532	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNSTETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRTVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAACYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2581	AJJ94356 A/chicken/Dongguan/145 6/2014 2014/02/21 HA 755184552	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPERAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2582	AJJ94396 A/chicken/Dongguan/149 4/2014 2014/02/21 HA 755184618	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP ETPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTN QQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI
2583	AJJ94754 A/chicken/Dongguan/748 /2014 2014/02/20 HA 755185215	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIEKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSNAEQT KLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRA SFLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNV PEIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTN QQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI
2584	AJJ94838 A/chicken/Dongguan/835 /2014 2014/02/20 HA 755185356	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSASTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFGFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2585	AJJ94862 A/chicken/Dongguan/843 /2014 2014/02/20 HA 755185396	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIEKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSGGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2586	AJJ94886 A/chicken/Dongguan/851 /2014 2014/02/20 HA 755185436	MNTQILAFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2587	AJJ94910 A/chicken/Dongguan/874 /2014 2014/02/20 HA 755185476	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSASTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2588	AJJ94959 A/silkie chicken/Dongguan/967/2 014 2014/02/21 HA 755185558	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACPRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2589	AJJ95048 A/chicken/Dongguan/100 9/2014 2014/02/21 HA 755185708	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP ETPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTN QQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDNDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI
2590	AJJ95171 A/chicken/Dongguan/131 4/2014 2014/02/21 HA 755185913	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFNFNGAFIAPERAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2591	AJJ95227 A/chicken/Dongguan/138 2/2014 2014/02/21 HA 755186006	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDICYPGKFVNEEALRQILRESGGIDKEAMGFTYSG IRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPERASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILLAIVMGLVFICVKNGNMRCTICI
2592	AJJ95251 A/chicken/Dongguan/140 1/2014 2014/02/21 HA 755186046	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYKRVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2593	AJJ95346 A/chicken/Dongguan/154 8/2014 2014/02/21 HA 755186206	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYKRVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHNKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2594	AJJ95382 A/chicken/Dongguan/169 0/2014 2014/02/21 HA 755186266	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSIGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FLLAIVMGLVFICVKNGNMRCTICI
2595	AJJ95464 A/chicken/Shenzhen/138/ 2014 2014/02/19 HA 755186404	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPERAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYRGEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFMLLAIVMGLVFICVKNGNMRCTICI
2596	AJJ95572 A/chicken/Dongguan/110 0/2014 2014/02/21 HA 755186584	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIEKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSGGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2597	AJJ95584 A/silkie chicken/Dongguan/1519/2014 2014/02/21 HA 755186604	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPERAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFMLLAIVMGLVFICVKNGNMRCTICI
2598	AJJ95596 A/Shenzhen/SP58/2014 2014/01/25 HA 755186624	MNTQILAFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRANGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2599	AJJ95620 A/Shenzhen/SP75/2014 2014/02/15 HA 755186664	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGSTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAVVMGLVFICVKNGNMRCTICI

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2600	AJJ95632 A/Shenzhen/SP62/2014 2014/02/05 HA 755186684	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSSFYAEMKWLLSNTDNATFPQMTKSYKNTRKSPALIIWGIHHSVSTAEQTKL YGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRASF LRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQ FELIDNEFNEVETQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILLAIVMGLVFICVKNGNMRCTICI
2601	AJJ96720 A/chicken/Jiangxi/13220/ 2014 2014/03/30 HA 755188499	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTTIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSRGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVMSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2602	AJJ96817 A/chicken/Jiangxi/9513/2 0142014/02/16 HA 755188661	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVMSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2603	AJJ96841 A/Shenzhen/SP139/2014 2014/04/02 HA 755188701	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSTCRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAC FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVERQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2604	AJJ96889 A/chicken/Jiangxi/13496/ 20142014/04/11 HA 755188781	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTXIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKXAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSXGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2605	AJJ96901 A/chicken/Jiangxi/13502/ 20142014/04/11 HA 755188801	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSXGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2606	AJJ96925 A/chicken/Jiangxi/13513/ 20142014/04/11 HA 755188841	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYN GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHTVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDLHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIAKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2607	AJJ97267 A/chicken/Jiangxi/13252/ 2014 2014/03/30 HA 755189411	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2608	AJJ97291 A/chicken/Jiangxi/13493/ 2014 2014/04/06 HA 755189451	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYN GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIAKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2609	AJJ97331 A/chicken/Jiangxi/13512/ 2014 2014/04/06 HA 755189517	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYN GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSIGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPE IPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIAKTNQQ FELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLREN AEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASC FILAIVMGLVFICVKNGNMRCTICI
2610	AJJ97373 A/chicken/Jiangxi/13521/ 2014 2014/04/06 HA 755189587	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYN GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPXRAS FLRGKSXGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIAKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI
2611	AJJ97443 A/chicken/Jiangxi/13530/ 2014 2014/04/06 HA 755189702	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTTIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSRGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILAIVMGLVFICVKNGNMRCTICI

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2612	AJJ97582 A/chicken/Jiangxi/14023/ 2014 2014/04/13 HA 755189933	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIAKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2613	AJJ97697 A/chicken/Jiangxi/14517/ 2014 2014/04/20 HA 755190125	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCDGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2614	AJJ97709 A/chicken/Jiangxi/14518/ 2014 2014/04/20 HA 755190145	MNTQILVFALIAIIPANADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYN GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGNCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIAKTNQ QFELIDNEFNEVEKQIGNVINWTRDSTEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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2615	AJJ97745 A/chicken/Jiangxi/14554/ 2014 2014/04/20 HA 755190205	MNTQILVFALIAIIPTNADKICLGHHAVSNG`KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDAMCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELMDNEFNEVEKQIGNVINWTRDSITELWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI
2616	AJJ97757 A/chicken/Shantou/2537/ 2014 2014/04/16 HA 755190225	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFKHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI
2617	AJJ97841 A/duck/Jiangxi/15044/20 14 2014/04/27 HA 755190365	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDAMCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIAKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQNRIQIDPVRLSSGYKDVILWFSFGAS CFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2618	AJJ97899 A/chicken/Jiangxi/15524/ 2014 2014/05/05 HA 755190462	MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKRTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIAKTNQ QFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRE NAEEDGTGCFEIFHKCDDDCMASIRNNTYDHRKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGAS CFILLAIVMGLVFMCVKNGNMRCTICI
2619	AJJ97925 A/silkie chicken/Shantou/2050/20 14 2014/03/25 HA 755190506	MNTQILVFALIAIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EVPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTN QQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI
2620	AJJ97973 A/chicken/Shantou/4325/ 2014 2014/07/01 HA 755190586	MNTQILVFALISIIPTNADKICLGHHAVSNG*KVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERR=GSDVCYPGKFVNEEALRQILRKSGGIDKEAMGFTYS GIRTNGVTSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPAIIWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDADCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVP EVPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTN QQFELIDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILLAIVMGLVFICVKNGNMRCTICI

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SEQ ID NO	N. di accessione / Ceppo / Proteina	Sequenza amminoacidica
2621	AJJ97998 A/chicken/Shantou/48161 2014 2014/07/22 HA 755190628	MNTQILVFALIAIVPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRICSKGKKTVDL GQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQILRESGGIDKEAMGFTYS GIRTNGATSACRRSGSSFYAEMKWLLSNTDNAAFPQMTKSYKNTRKSPALIVWGIHHSVSTAEQTK LYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRIDFHWLMLNPNDTVTFSFNGAFIAPDRAS FLRGKSMGIQSGVQVDANCEGDCYHSGGTIISNLPFQNIDSRAVGKCPRYVKQKSLLLATGMKNVP EIPKGRGLFGAIAGFIENGWEGLIDGWYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQ QFELVDNEFNEVEKQIGNVINWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLR ENAEEDGTGCFEIFHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGA SCFILAIVMGLVFICVKNGNMRCTICI

Tabella 15: Esempi di antigeni dell'emoagglutinina di tipo selvatico

SEQ ID NO	Proteina/ceppo	Sequenza di acido nucleico
2622	H1	AGCAAAAGCAGGGGAAAATAAAAACAACCAAAATGAAGGCAAACCTACTGGTCCTG TTATGTGCACTTGCAGCTGCAGATGCAGACACAATATGTATAGGCTACCATGCGAA CAATTCAACCGACACTGTTGACACAGTGCTCGAGAAGAATGTGACAGTGACACACT CTGTTAACCTGCTCGAAGACAGCCACAACGGAAAACTATGTAGATTAAAAGGAATA GCCCCACTACAATTGGGGAAATGTAACATCGCCGGATGGCTCTTGGGAAACCCAGA ATGCGACCCACTGCTTCCAGTGAGATCATGGTCCTACATTGTAGAAACACCAAACT CTGAGAATGGAATATGTTATCCAGGAGATTTCATCGACTATGAGGAGCTGAGGGAG CAATTGAGCTCAGTGTCATCATTCGAAAGATTCGAAATATTTCCCAAAGAAAGCTC ATGGCCCAACCACAACACAACCAAAGGAGTAACGGCAGCATGCTCCCATGCGGGGA AAAGCAGTTTTTACAGAAATTTGCTATGGCTGACGGAGAAGGAGGGCTCATACCCA AAGCTGAAAAATTCTTATGTGAACAAGAAAGGGAAAGAAGTCCTTGTACTGTGGGG TATTCATCACCCGTCTAACAGTAAGGATCAACAGAATATCTATCAGAATGAAAATG CTTATGTCTCTGTAGTGACTTCAAATTATAACAGGAGATTTACCCCGGAAATAGCA GAAAGACCCAAAGTAAGAGATCAAGCTGGGAGGATGAACTATTACTGGACCTTGCT AAAACCCGGAGACACAATAATATTTGAGGCAAATGGAAATCTAATAGCACCAAGGT ATGCTTTCGCACTGAGTAGAGGCTTTGGGTCCGGCATCATCACCTCAAACGCATCA ATGCATGAGTGTAACACGAAGTGTCAAACACCCCTGGGAGCTATAAACAGCAGTCT CCCTTTCCAGAATATACACCCAGTCACAATAGGAGAGTGCCCAAAATACGTCAGGA GTGCCAAATTGAGGATGGTTACAGGACTAAGGAACATTCCGTCCATTCAATCCAGA GGTCTATTTGGAGCCATTGCCGGTTTTATTGAAGGGGGATGGACTGGAATGATAGA TGGATGGTACGGTTATCATCATCAGAATGAACAGGGATCAGGCTATGCAGCGGATC AAAAAAGCACACAAAATGCCATTAACGGGATTACAAACAAGGTGAACTCTGTTATC GAGAAAATGAACATTCAATTCACAGCTGTGGGTAAAGAATTCAACAAATTAGAAAA AAGGATGGAAAATTTAAATAAAAAAGTTGATGATGGATTTCTGGACATTTGGACAT ATAATGCAGAATTGTTAGTTCTACTGGAAAATGAAAGGACTCTGGATTTCCATGAC TCAAATGTGAAGAATCTGTATGAGAAAGTAAAAAGCCAATTAAAGAATAATGCCAA AGAAATCGGAAATGGATGTTTTGAGTTCTACCACAAGTGTGACAATGAATGCATGG AAAGTGTAAGAAATGGGACTTATGATTATCCCAAATATTCAGAAGAGTCAAAGTTG AACAGGGAAAAGGTAGATGGAGTGAAATTGGAATCAATGGGGATCTATCAGATTCT GGCGATCTACTCAACTGTCGCCAGTTCACTGGTGCTTTTGGTCTCCCTGGGGGCAA TCAGTTTCTGGATGTGTTCTAATGGATCTTTGCAGTGCAGAATATGCATCTGAGAT TAGAATTTCAGAAATATGAGGAAAAACACCCTTGTTTCTACT
2623	H7	

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SEQ ID NO	Proteina/ceppo	Sequenza di acido nucleico
		AGCGAAAGCAGGGGATACAAAATGAACACTCAAATCCTGGTATTCGCTCTGATTGC GATCATTCCAACAAATGCAGACAAAATCTGCCTCGGACATCATGCCGTGTCAAACG GAACCAAAGTAAACACATTAACTGAAAGAGGAGTGGAAGTCGTCAATGCAACTGAA ACAGTGGAACGAACAAACATCCCCAGGATCTGCTCAAAAGGGAAAAGGACAGTTGA CCTCGGTCAATGTGGACTCCTGGGGACAATCACTGGACCACCTCAATGTGACCAAT TCCTAGAATTTTCAGCCGATTTAATTATTGAGAGGCGAGAAGGAAGTGATGTCTGT TATCCTGGGAAATTCGTGAATGAAGAAGCTCTGAGGCAAATTCTCAGAGAATCAGG CGGAATTGACAAGGAAGCAATGGGATTCACATACAGTGGAATAAGAACTAATGGAG CAACCAGTGCATGTAGGAGATCAGGATCTTCATTCTATGCAGAAATGAAATGGCTC CTGTCAAACACAGATGATGCTGCATTCCCGCAGATGACTAAGTCATATAAAAATAC AAGAAAAAGCCCAGCTCTAATAGTATGGGGGATCCATCATTCCGTATCAACTGCAG AGCAAACCAAGCTATATGGGAGTGGAAACAAACTGGTGACAGTTGGGAGTTCTAAT TATCAACAATCTTTTGTACCGAGTCCAGGAGCGAGACCACAAGTTAATGGTCTATC TGGAAGAATTGACTTTCATTGGCTAATGCTAAATCCCAATGATACAGTCACTTTCA GTTTCAATGGGGCTTTCATAGCTCCAGACCGTGCAAGCTTCCTGAGAGGAAAATCT ATGGGAATCCAGAGTGGAGTACAGGTTGATGCCAATTGTGAAGGGGACTGCTATCA TAGTGGAGGGACAATAATAAGTAACTTGCCATTTCAGAACATAGATAGCAGGGCAG TTGGAAAATGTCCGAGATATGTTAAGCAAAGGAGTCTGCTGCTAGCAACAGGGATG AAGAATGTTCCTGAGATTCCAAAGGGAAGAGGCCTATTTGGTGCTATAGCGGGTTT CATTGAAAATGGATGGGAAGGCCTAATTGATGGTTGGTATGGTTTCAGACACCAGA ATGCACAGGGAGAGGGAACTGCTGCAGATTACAAAAGCACTCAATCGGCAATTGAT CAAATAACAGGAAAATTAAACCGGCTTATAGAAAAAACCAACCAACAATTTGAGTT GATAGACAATGAATTCAATGAGGTAGAGAAGCAAATCGGTAATGTGATAAATTGGA CCAGAGATTCTATAACAGAAGTGTGGTCATACAATGCTGAACTCTTGGTAGCAATG GAGAACCAGCATACAATTGATCTGGCTGATTCAGAAATGGACAAACTGTACGAACG AGTGAAAAGACAGCTGAGAGAGAATGCTGAAGAAGATGGCACTGGTTGCTTTGAAA TATTTCACAAGTGTGATGATGACTGTATGGCCAGTATTAGAAATAACACCTATGAT CACAGCAAATACAGGGAAGAGGCAATGCAAAATAGAATACAGATTGACCCAGTCAA ACTAAGCAGCGGCTACAAAGATGTGATACTTTGGTTTAGCTTCGGGGCATCATGTT TCATACTTCTAGCCATTGTAATGGGCCTTGTCTTCATATGTGTAAAGAATGGAAAC ATGCGGTGCACTATTTGTATATAAGTTTGGAAAAAAACACCCTTGTTTCTAC
2624	H10	

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SEQ ID NO	Proteina/ceppo	Sequenza di acido nucleico
		ATGTACAAAATAGTAGTGATAATCGCGCTCCTTGGAGCTGTGAAAGGTCTTGATAA AATCTGTCTAGGACATCATGCAGTGGCTAATGGGACCATCGTAAAGACTCTCACAA ACGAACAGGAAGAGGTAACCAACGCTACTGAAACAGTGGAGAGTACAGGCATAAAC AGATTATGTATGAAAGGAAGAAAACATAAAGACCTGGGCAACTGCCATCCAATAGG GATGCTAATAGGGACTCCAGCTTGTGATCTGCACCTTACAGGGATGTGGGACACTC TCATTGAACGAGAGAATGCTATTGCTTACTGCTACCCTGGAGCTACTGTAAATGTA GAAGCACTAAGGCAGAAGATAATGGAGAGTGGAGGGATCAACAAGATAAGCACTGG CTTCACTTATGGATCTTCCATAAACTCGGCCGGGACCACTAGAGCGTGCATGAGGA ATGGAGGGAATAGCTTTTATGCAGAGCTTAAGTGGCTGGTATCAAAGAGCAAAGGA CAAAACTTCCCTCAGACCACGAACACTTACAGAAATACAGACACGGCTGAACACCT CATAATGTGGGGAATTCATCACCCTTCTAGCACTCAAGAGAAGAATGATCTATATG GAACACAATCACTGTCCATATCAGTCGGGAGTTCCACTTACCGGAACAATTTTGTT CCGGTTGTTGGAGCAAGACCTCAGGTCAATGGACAAAGTGGCAGAATTGATTTTCA CTGGACACTAGTACAGCCAGGTGACAACATCACCTTCTCACACAATGGGGGCCTGA TAGCACCGAGCCGAGTTAGCAAATTAATTGGGAGGGGATTGGGAATCCAATCAGAC GCACCAATAGACAATAATTGTGAGTCCAAATGTTTTTGGAGAGGGGGTTCTATAAA TACAAGGCTTCCCTTTCAAAATTTGTCACCAAGAACAGTGGGTCAGTGTCCTAAAT ATGTGAACAGAAGAAGCTTGATGCTTGCAACAGGAATGAGAAACGTACCAGAACTA ATACAAGGGAGAGGTCTATTTGGTGCAATAGCAGGGTTTTTAGAGAATGGGTGGGA AGGAATGGTAGATGGCTGGTATGGTTTCAGACATCAAAATGCTCAGGGCACAGGCC AGGCCGCTGATTACAAGAGTACTCAGGCAGCTATTGATCAAATCACTGGGAAACTG AATAGACTTGTTGAAAAAACCAATACTGAGTTCGAGTCAATAGAATCTGAGTTCAG TGAGATCGAACACCAAATCGGTAACGTCATCAATTGGACTAAGGATTCAATAACCG ACATTTGGACTTATCAGGCTGAGCTGTTGGTGGCAATGGAGAACCAGCATACAATC GACATGGCTGACTCAGAGATGTTGAATCTATATGAAAGAGTGAGGAAACAACTAAG GCAGAATGCAGAAGAAGATGGGAAAGGATGTTTTGAGATATATCATGCTTGTGATG ATTCATGCATGGAGAGCATAAGAAACAACACCTATGACCATTCACAGTACAGAGAG GAAGCTCTTTTGAACAGATTGAATATCAACCCAGTGACACTCTCTTCTGGATATAA AGACATCATTCTCTGGTTTAGCTTCGGGGCATCATGTTTTGTTCTTCTAGCCGTTG TCATGGGTCTTTTCTTTTTCTGTCTGAAGAATGGAAACATGCGATGCACAATCTGT ATTTAG

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Tabella 16: Sequenze codone-ottimizzate codificanti per emoagglutinina H1

Seq ID No.	Sequenza nucleotidica
2625	ATGAAGGCAAACCTCTTAGTCCTTCTCTGCGCACTGGCCGCTGCCGACGCAGATACCATATGTATCGGTTATCACGCCAATAACTCTACC GATACAGTCGATACGGTGCTTGAGAAAAACGTCACGTGACTCATAGCGTGAACCTGCTCGAGGACTCCCATAACGGTAAGCTATGCCG ACTAAAGGGCATCGCCCCCCCTGCAGCTGGGGAAATGCAACATCGCTGGCTGGTTGTTAGGTAATCCCGAATGCGATCCACTGCTGCCCG TGAGATCCTGGTCTTACATCGTCGAAACCCCCTAACTCTGAAAATGGCATCTGCTATCCGGGAGACTTTATTGACTATGAGGAGCTCCGAG AACAGCTGAGCTCAGTATCCAGCTTTGAACGCTTCGAAATTTTTTCCAAAGGAATCCAGCTGGCCAAACCATAACACGAATGGCGTCACAG CCGCATGCAGCCACGAGGGAAAGAGCAGCTTTTATAGGAACCTTCTGTGGTTGACGGAAAAAGAGGGAAGTTATCCCAAACTTAAAAACA GCTATGTGAATAAAAAGGGCAAGGAGGTCTTGGTACTTTGGGGAATCCATCACCCTCCAAACAGTAAGGAACAACAAAATCTGTACCAGA ATGAAAATGCATACGTGTCCGTGGTTACATCTAATTACAACCGACGGTTTACTCCCGAGATCGCCGAGCGACCGAAAGTTCGCGACCAG GCCGGGAGGATGAACTATTATTGGACGTTGCTGAAACCCGGTGACACAATTATCTTTGAGGCAAATGGTAATCTTATCGCCCCGATGTAC GCATTCGCACTGTCGCGCGGATTTGGCAGTGGGATTATAACCAGTAACGCATCTATGCATGAATGCAACACAAAGTGCCAGACTCCTTTA GGCGCTATAAACTCTTCTTTGCCCTATCAGAATATACACCCAGTGACCATCGGCGAGGTGTCCAAAGTACGTACGCAGCGCCAAGCTCCGA ATGGTTACAGGCCTCAGAAATAACCCCAGTATCCAGAGCCGCGGCTTATTCGGGCGATCGCTGGATTTATTGAGGGGGGCTGGACGG GAATGATAGATGGGTGGTACGGCTACCATCATCAGAATGAGCAGGGTAGCGGCTATGCGGCCGACCAGAAAAGCACCCAGAACGCTAT CAACGGTATAACCAATAAAGTGAACACTGTGATCGAAAAAATGAACATACAGTTCACTGCCGTGGGAAAGGAATTCAACAAACTGGAAAAA AGGATGGAAAATCTTAACAAAAAAGTGGATGACGGGTTTTTGGACATTTGGACATACAATGCCGAACTGCTGGTTCTGCTGGAGAACGAA AGGACACTGGACTTTCACGATTCCAACGTCAAGAATCTCTATGAAAAAGTGAAGTCCCAATTGAAAAACAACGCCAAGGAGATCGGTAAT GGGTGCTTTGAGTTCTATCACAAGTGTGACAACGAGTGCATGGAGCGTTAGGAACGGCACATACGATTACCCAAAATATTCTGAGGAG TCTAAGTTGAACAGAGAGAAGGTCGATGGCGTTAAACTGGAAAGCATGGGAATTTACCAGATCCTTGCCATCTACTCCACCGTGGCCTCC TCCCTTGTGCTGGTGTCGCTGGGGGCCATCTCCTTTTGGATGTGCTCCAATGGTTCACTGCAATGTCGAATCTGCATC

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Seq ID No.	Sequenza nucleotidica
2626i	ATGAAGGCTAACCTCCTAGTGCTGCTCTGTGCCTTGGCGGCTGCGGATGCTGACACCATTTGCATTGGGTACCACGCCAATAATTCAACC GATACTGTCGACACCGTGTTGGAGAAGAATGTGACCGTGACTCATTCCGTGAACCTTCTTGAAGATTCGCACAACGGGAAGCTGTGTCGA CTCAAAGGCATCGCGCCTCTACAGTTGGGCAAATGTAACATCGCTGGGTGGCTGCTCGGGAACCCAGAATGTGATCCTTTGCTGCCAGT GAGATCGTGGTCATACATTGTGGAGACCCCCAATTCAGAGAACGGGATATGCTACCCAGGTGACTTTATCGATTATGAGGAACTTCGGGA ACAACTGTCTTCAGTGTCGTCATTTGAGCGTTTCGAGATCTTTCCCAAAGAGTCCTCGTGGCCAAACCACAACACTAACGGCGTTACTGC CGCCTGCTCACATGAAGGAAAGAGCTCATTCTACAGAAACCTGTTGTGGCTCACCGAGAAGGAGGGGAGTTATCCCAAGTTGAAAACA GTTATGTTAACAAGAAGGGCAAAGAAGTGTTAGTCCTGTGGGAATCCACCACCCACCGAATTCTAAAGAGCAGCAGAATCTATATCAGA ACGAGAACGCCTATGTGTCAGTTGTAACTTCAAATTACAACCGCAGGTTTACTCCTGAAATCGCGGAGGCGCCCGAAAGTGCGTGATCAGG GCGCGATTAATAGCTCGCTCCCCTACCAAAACATACACCCAGTGACAATTGGCGAGTGCCCTAAATATGTGCGCTCTGCTAAGTTACGTA CTGGACGTATGAATTACTACTGGACTTTGCTAAAACCTGGCGACACCATCATTTTCGAAGCTAACGGCAATCTCATTGCGCCGATGTACG TGGTGACGGGCCTAAGAAACAACCCCTCAATTCAGAGCAGGGGGCTGTTCGGAGCTATTGCAGGTTTCATCGAAGGGGGCTGGACAGG GATGATCGACGGCTGGTATGGGTATCACCACCAGAACGAACAGGGATCCGGCTATGCTGCCGATCAGAAATCAACACAAAATGCAATCA ATGGCATCACTAACAAAGTGAATACCGTAATTGAGAAGATGAACATACAGTTTACCGCTGTCGGTAAAGAATTCAACAAGCTGGAGAAAC GGATGGAGAATCTGAACAAGAAAGTCGATGATGGCTTCTTGGATATCTGGACCTATAATGCTGAGTTACTTGTGCTCTTGGAAAACGAGC GTACTCTCGACTTTCATGATTCAAATGTCAAGAATCTGTATGAAAAGGTAAAGTCCCAGCTAAAAAACAATGCCAAGGAGATCGGGAATGG CTGCTTTGAATTCTACCACAAATGCGATAATGAGTGCATGGAGTCGGTGAGGAACGGAACCTACGATTACCCAAAAATATAGCGAGGAATC AAAACTGAACAGAGAGAAGGTGGATGGTGTGAAGCTGGAATCCATGGGTATCTACCAGATCCTCGCCATCTATTCAACTGTGGCTAGTTC CCTGGTGCTGCTCGTGAGCCTTGGTGCAATCTCCTTCTGGATGTGTTCCAACGGGTCATTGCAGTGTAGGATCTGCATA

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Seq ID No.	Sequenza nucleotidica
2627	ATGAAGGCTAACTTGCTGGTCTTGCTTTGCCGCGCTGGCCGCTGCTGACGCCGACACCATCTGTATTGGGTATCATGCTAACAACTCCACG GATACCGTGGATACAGTGTTGGAAAAAAATGTTACAGTTACTCATTCGGTGAACCTGCTGGAGGACTCTCACAATGGGAAGCTGTGCAGG CTCAAAGGTATCGCTCCGCTCCAACTAGGCAAATGTAATATTGCCGGCTGGCTGTTAGGAAACCCAGAGTGTGACCCTCTCTTACCCGTG AGATCTTGGTCCTACATCGTCGAGACCCCCAACAGCGAAAACGGAATTTGTTATCCCGGAGACTTCATAGATTATGAGGAGCTGCGCGAA CAGCTCTCTTCTGTTAGCTCTTTTGAGCGTTTTCCTAAAGAGAGTTCATGGCCCAACCACAATACCAACGGAGTGACAGCCG CATGCTCCCATGAAGGGAAGTCTAGCTTCTATAGAAATCTTCTGTGGCTGACTGAAAAAGAAGGATCTTACCCCAAGTTGAAGAATTCTTA TGTGAACAAAAAGGGCAAAGAGGTGTTGGTACTCTGGGGCATTCATCACCCACCTAATTCAAAGGAGCAGCAAAACCTTTATCAAAACGA GAATGCCTATGTTAGCGTCGTCACTTCTAATTATAAACCGGAGATTCACCCCGGAGATAGCGGAACGCCCCAAGGTTCGGGATCAGGCTG GCCGCATGAATTACTACTGGACCCTCCTAAAACCTGGCGACACCATAATCTTCGAAGCAAATGGCAACCTGATCGCACCTATGTACGCCT TTGCGCTGTCTAGGGGATTCGGCTCGGGCATTATTACCAGTAATGCCTCAATGCACGAGTGTAATACAAAATGCCAGACCCCTCTGGGAG CCATTAATTCTAGTCTGCCTTATCAGAATATTCATCCTGTGACCATTGGCGAATGTCCGAAATATGTTAGATCCGCAAAGCTGCGAATGGT TACCGGACTTCGCAACAACCCCCTCTATACAAAGCCCGCGGACTCTTTGGAGCAATCGGCTGGCTTCATTGAGGGTGGCTGGACGGGCATGA TCGATGGGTGGTACGGATACCATCATCAGAACGAGCAGGGAAGCGGATATGCCGCAGACCAAAAATCTACTCAGAACGCTATTAACGGA ATTACCAACAAAGTCAACACAGTTATCGAGAAAATGAATATTCAGTTCACCGCAGTTGGTAAGGAATTTAACAAACTGGAGAAACGAATGG AGAACTTGAACAAGAAGGTCGACGATGGCTTCTTAGACATCTGGACATATAATGCCGAACTGTTGGTCCTCCTGGAGAACGAGAGAACCT TGGACTTTCACGACTCTAACGTGAAGAATCTTTACGAGAAGGTGAAGTCCCAACTGAAGAATAATGCAAAAGAGATCGGAAACGGCTGTT TTGAGTTCTACCACAAGTGCGACAATGAGTGCATGCGAGTGCCGGAATGGGACATATGATTATCCCAAGTATAGTGAAGAAAGCAAGC TGAATCGAGAAAAGGTTGACGGAGTGAAGCTGGAGAGCATGGGGATCTACCAGATCTTAGCAATTTATAGCACAGTGGCTTCTTCCCTTG TGTTGCTGGTCTCGCTGGGAGCTATCAGCTTTTGGATGTGCAGCAACGGAAGTCTGCAGTGCCGCATTTGCATT

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Seq ID No.	Sequenza nucleotidica
2628	ATGAAAGCCAACCTGTTGGTGCTGTTATGCGCGCTGGCAGCCGCAGATGCTGATACTATCTGTATCGGATACCATGCCAATAACAGCACC GATACCGTGGATACTGTGTTAGAGAAGAATGTGACAGTGACGCATTCAGTAAACCTCCTCGAGGACAGTCATAATGGAAAACTGTGTAGG CTCAAGGGTATAGCTCCGCTGCAGCTGGGCAAGTGTAACATCGCTGGGTGGCTGCTGGGCAACCCTGAATGCGATCCCCCTGTTGCCCG TTCGGAGTTGGTCTTACATCGTGGAGACCCCAAACTCTGAGAACGGAATTTGTTACCCCGGTGACTTTATCGATTACGAGGAATTGCGGG AGCAGCTTAGCTCAGTGTCTTCATTTGAACGGTTTGAAATCTTTCCCAAGGAAAGCAGCTGGCCCAATCATAATACTAACGGCGTGACTG CCGCTTGTTCCCACGAAGGCAAGAGCTCCTTCTACAGAAATCTGCTTTGGTTGACAGAGAAAGAGGGCAGCTATCCAAAGCTGAAGAACA GTTATGTGAATAAGAAGGGCAAGGAGGTCCTGGTTCTTTGGGGATCCATCATCCCCCTAATAGTAAGGAGCAGCAGAACTTATACCAGA ATGAGAATGCCTACGTCAGCGTTGTCACCTCAAACTATAACCGGCGATTTACACCCGAAATTGCCGAACGTCCCAAGGTCCGGCGACCAAG CCGGGCGTATGAACTACTATTGGACACTTCTGAAACCTGGGGACACAATAATTTTCGAAGCCAACGGTAACTTAATCGCTCCCATGTACG CTTTCGCTCTCAGCAGGGGCTTCGGCAGCGGCATTATCACTTCCAATGCGTCCATGCATGAATGTAATACGAAGTGCCAGCAGCCCCTCTCG GTGCCATAAACTCTTCTCTCCCCTACCAGAACATTCACCCTGTCACCATAGGAGAATGCCCAAAGTATGTCCGGTCGGCAAAGTTGAGGA TGGTTACGGGCCTGCGTAACAACCCTTCTATACAGTCTAGGGGCCTGTTCGGAGCAATCGCCGGCTTCATCGAAGGAGGCGTGGACTGG GATGATCGATGGCTGGTACGGCTATCATCACCAGAATGAGCAGGGCTCAGGTTATGCAGCCGATCAGAAGTCCACACAGAACGCTATTA ACGGGATAACGAACAAGGTGAACACCGTCATTGAAAAGATGAACATTCAGTTTACAGCCGTTGGAAAAGAGTTCAACAAACTGGAAAAGC GGATGGAGAACCTGAACAAAAAGGTGGACGATGGATTTCTGGATATTTGGACATATAACGCCGAGCTGCTGGTACTCCTTGAGAACGAG CGTACGCTTGACTTTCATGACAGTAACGTGAAGAATCTGTACGAGAAGGTCAAAAGCCAGCTGAAGAACAATGCCAAAGAAATTGGGAAC GGGTGTTTCGAATTCTACCACAAGTGTGACAATGAATGCATGGAGAGTGTTCGGAACGGAACCTACGACTATCCTAAATATTCTGAGGAG TCCAAGCTGAATCGGGAAAAGGTTGACGGGGTGAAACTGGAGAGTATGGGAATCTACCAGATCCTGGCTATTTACTCCACAGTCGCTTC CTCTCTCGTCTTGTTGGTGTCCCTTGGTGCCATCTCATTTTGGATGTGTTCTAATGGTTCTCTTCAGTGCCGAATCTGTATA

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Seq ID No.	Sequenza nucleotidica
2629	ATGAAAGCTAACCTTCTCGTATTGCTCTGCGCTTTGGCTGCAGCCGATGCCGATACGATTTGCATCGGATACCACGCAAA˜AACAGCACT GACACTGTGGACACGGTACTGGAAAAGAATGTTACCGTGACACACTCCGTCAACCTGCTCGAGGACTCCCACAACGGAAAGTTGTGTAG GCTTAAAGGTATCGCCCCTCTACAGTTAGGGAAGTGCAACATCGGCAGGGTGGTTGTTAGGAAACCCCGAATGTGACCCACTCCTGCCTG TGCGCTCTTGGAGCTATATTGTGGAAACCCCGAATAGCGAAAACGGAATTTGTTACCCTGGCGACTTTATCGATTATGAAGAGCTCCGAG AGCAACTGAGCAGCGTGTCCAGCTTTGAGCGATTTGAAATATTCCCCAAAGAGAGTTCCTGGCCCAACCATAACACTAACGGAGTGACCG CTGCATGTTCGCACGAAGGCAAATCGAGTTTTTACCGGAACCTGCTTTGGCTCACCGAGAAGGAAGGAAGTTATCCCAAACTCAAAAATT CATACGTGAATAAAAAGGGTAAGGAGGTGCTGGTGCTGTGGGGAATCCACCATCCTCCAAACAGCAAGGAACAACAGAATCTCTACCAG AATGAGAACGCCTATGTGAGCGTGGTAACCTCCAACTACAATCGGCGGTTCACTCCTGAGATCGCCGAGCGCCCGAAGGTCCGGGATCA AGCAGGTCGAATGAACTACTACTGGACCCTGCTGAAGCCAGGTGATACTATCATTTTCGAGGCTAATGGAAACCTGATTGCGCCTATGTA CGCTTTCGCGCCTGTCTAGGGGGTTTGGGTCCGGTATCATCACGTCTAACGCTTCAATGCATGAATGCAACACGAAGTGTCAGACCCCGCT TGGCGCCATAAACAGCTCCCTCCCCTACCAGAACATTCACCCCGTCACCATAGGCGAGTGTCCCAAGTACGTGCGGTCAGCCAAGTTGC GGATGGTAACGGGCCTCCGGAATAATCCAAGTATACAATCCCGAGGACTTTTCGGGGCAATCGCGGGCTTCATTGAGGGCGGATGGAC CGGCATGATTGATGGATGGTACGGTTACCACCACCAGAACGAGCAGGGCAGTGGATATGCCGCTGACCAGAAGAGCACTCAGAACGCA ATTAATGGCATCACCAATAAGGTGAACACCGTCATTGAGAAGATGAACATCCAGTTTACGGCAGTAGGCAAGGAGTTTAACAAGCTGGAG AAACGTATGGAAAACCTGAATAAGAAAGTGGACGACGGGTTTTTTGGATATTTGGACATATAACGCCGAACTCCTCGTGCTGCTCGAGAAT GAAAGAACATTAGACTTTCACGATAGTAACGTGAAAAACCTGTATGAAAAGGTCAAATCCCAGCTAAAGAACAACGCCAAAGAGATCGGC AATGGCTGTTTTGAGTTTTACCACACAAGTGTGATAATGAATGCATGGGAAAGTGTTCGGAACGGAACCTACGATTATCCAAAATACTCGGAGG AGTCCAAACTGAATAGAGAGAAGTGTGACGGCGTCAAACTAGAGAGTATGGGTATCTATCAGATACTTGCGATCTACTCAACCGTCGCCA GCTCCTTAGTACTTCTCGTCAGCCTCGGTGCTATCTCCTTTTGGATGTGTAGTAACGGCAGTCTGCAGTGTCGGATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2630	ATGAAGGCTAACCTGTTGGTGCTCCTATGTGCCCTGGCCGCTGCAGATGCTGACACAATCTGCATTGGGTATCATGCAAACAACTCCACCC GACACTGTTGACACAGTTTTGGAAAAGAACGTGACAGTCACTCACAGCGTAAACCTCCTGGAAGACTCACACAATGGGAAGTTATGTCGG CTGAAGGGCATAGCCCCATTGCAACTGGGCAAGTGCAATATAGCGGGGGTGGCTTCTCGGCAACCCGGAATGCGACCCCCCTGTTGCCCG TACGCAGCTGGAGTTACATTGTGGAGACGCCCAATTCCGAGAATGGCATCTGTTACCCGGGCGATTTCATAGATTACGAAGAACTGCGG GAGCAGCTCTCCTCCGTTTCCTCGTTCGAACGGTTCGAGATTTTCCCTAAAGAATCATCATGGCCTAATCACAATACAAATGGCGTGACG GCCGCATGCTCACACGAGGGCAAGTCCAGCTTTTACAGAAATCTCCTGTGGCTGACGGAGAAGGAAGGAAGCTACCCTAAGCTTAAGAA TAGCTATGTAAACAAAAAGGGGAAGGAGGTGCTGGTTCTCTGGGGGATTCATCATCCGCCAAATAGTAAGGAACAGCAGAACCTTTACCA GAATGAGAATGCATACGTCTCTGTGGTCACGTCTAACTACAATCGGCGCTTCACACCCGAGATCGCTGAACGGCCCAAAGTCCGGGACCC AAGCCGGACGAATGAATTACTACTGGACCCTTTTGAAGCCCGGCGATACCATTATCTTCGAAGCGGAACGGGAACCTGATAGCTCCCATGT ACGCCTTTGCTCTCAGTAGGGGATTCGGCTCCGGCATTATTACCTCTAATGCTTCTATGCACGAGTGCAACACAAAATGTCAGACTCCGGC TCGGTGCCATCAACAGTTCGTTGCCATACCAGAATATACACCCCGTCACTATCGGGGAATGTGTCCTAAATACGTGAGGAGCGGCCAAACTCA GGATGGTCACTGGACTCAGGAATAATCCAAGCATCCAGTCGAGGGGCTTATTCGGAGCAATTGCTGGCTTCATCGAAGGCGGGTGGACT GGCATGATCGATGGATGGTATGGGTACCCACCAGAACGAACAAGGTAGCGGATATGCCGCTGACCAGAAATCAACACACAAAACGGCCAT CAACGGTATTACCAACAAGGTTAACACTGTTATTGAGAAGATGAATATCCAATTTACCGCCGTAGGGAAGGAGTTTAATAAGTTGGAGAAA CGTATGGAGAATCTGAACAAGAAAGTTGACGACGGATTTCTGGACATCTGGACCTACAACGCCGAGCTGTTAGTGCTGTTGGAAAATGAG AGAACCCTTGACTTCCATGATAGCAACGTGAAAAACCTATATGAAAAGGTCAAGTCCCAGCTGAAGAACAATGCAAAGGAAATAGGCAAT GGCTGCTTCGAGTTTTATCATAAATGCGACAACGAATGTATGGAAAGCGTCCGAAACGGCACTTATGACTATCCCAAATATAGCGAAGAG TCAAAGCTGAATCGGGAAAAGGTGGACGGGGTCAAGCTCGAGTCAATGGGGATCTACCAGATTCTTGCAATCTATTCCACAGTGGCGTC TTCCCTCGTGCTGCTGGTTAGTCTCGGCGCCATATCATTTTGGATGTGCAGCAATGGCTCCCTGCAGTGTCGGATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2631	ATGAAGGCGAACTTGCTGGTCCTGTTGTGCGCTTTAGCTGCTGCGGATGCCGATACAATCTGTATCGGGTATCACGCAAACAACAGTACA GATACCGTGGATACAGTTCTCGAGAAGAATGTCACTGTTACGCACAGTGTAAACCTGCTGGAGGACAGTCACAATGGGAAGCTGTGCCG GCTAAAGGGCATTGCGCCACTACAGCTCGGCAAGTGCAATATTGCGGGGGTGGTTATTGGGTAACCCCGAATGCGACCCACTATTGCCAG TGCGCTCTTGGTCGTACATCGTCGAAACCCCCAATTCAGAAAATGGCATTTGCTACCCAGGGGATTTTATAGACTACGAAGAGTTACGAG AACAATTAAGTAGTGTTTCTTCCTTTGAGCGATTCGAGATTTTCCCCAAGGAGAGTTCTTGGCCCAACCATAACACAAATGGAGTGACTGC CGCATGCTCACACGAGGGCAAATCATCCTTTTATAGAAACCTGCTTTGGCTGACTGAAAAGGAGGGGAGTTACCCGAAGCTTAAAAACTC CTATGTGAACAAGAAGGGCAAGGAAGTGCTGGTCCTGTGGGGGATCCCACCCACCCAACTCCAAAGAGCAACAGAACCTCTACCAGA ACGAGAATGCCGTATGTGAGCGTGGTGACAAGTAACTATAATCGAAGGTTCACTCCCCGAGATAGCAGAGCGTCCAAAAGTGCCGAGATCAA GCCCGGCCGAATGAACTACTATTGGACCTTACTGAAACCCCGGCGATACCATCATATTCGAAGCTAACGGCAATCTCATAGCTCCTATGTAC GCTTTCGCTTTGAGTAGAGGTTTCGGATCTGGAATTATAACATCTAATGCATCAATGCACGAGTGCAATACTAAATGCCAGACCCCTCTTG GTGCTATCAACTCTAGTTTACCCTATCAGAACATCCACCCTGTGACGATAGGAGAGTGTCCCAAGTATGTGCGCTCCGCTAAGCTTAGAA TGGTCACCGGGCTTCGGAACAACCCTTCAATCCAAAGTCGAGGGCTTTTTGGCGCTATCGCTGGCTTCATCGAAGGCGGTTGGACAGGT ATGATCGATGGTTGGTACGGCTACCATCATCAGAACGAGCAGGGGTCTGGTTATGCGGCCGACCAAAAATCTACTCAGAATGCCATCAA CGGGATCACAAATAAGGTAAACACTGTGATTGAGAAGATGAACATCCAGTTTACTGCAGTGGGAAAGGAGTTTAACAAACTGGAGAAACG TATGGAAAACCTAAACAAAAAAGTGGACGGATTCTTAGACATTTGGACATACAACGCCGAGCTGCTCGTGCTGCTTGAGAATGAGCG GACACTCGACTTCCACGACAGCAACGTGAAGAACCTATACGAAAAGGTCAAGAGCCAGCTCAAGAATAACGCGAAGGAGATTGGAAACG GCTGCTTCGAGTTCTACCATAAGTGCGATAACGAATGTATGGAGTCTGTTCGGAATGGCACTTACGACTACCCAAAGTATAGCGAGGAAT CTAAGCTCAACCGAGAGAAGGTGGATGGAGTGAAATTAGAGTCAATGGGAATTTATCAGATTCTGGCCATCTACTCAACAGTTGCGAGCT CGTTAGTGCTGCTTGTCTCACTGGCGCGATTAGTTTTTGGATGTGCAGTAATGGGTCCCTCCAGTGTCGCATCTGCATT

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Seq ID No.	Sequenza nucleotidica
2632	ATGAAGGCCAACTTGCTGGTGTTACTATGTGCTCTCGCGCGCCGCCGATGCCGATACTATTTGCATTGGCTATCAGCCAACAATAGTACG GACACCGTGGCACACTGTCCTGGAAAAAAAATGTCACCGTCACCCATTCTGTGAATCTCCTAGAGGATTCTCATAACGGCAAGCTGTGCCGG CTTAAAGGAATCGCTCCCTTGCAGCTTGGGAAGTGCAATATCGGCGGCTGGCTCCTTGGAAACCCGGAGTGTGATCCATTGCTCCCTGT CAGAAGCTGGAGCTATATCGTTGAGACCCCGAACAGTGAGAATGGCATCTGTTACCCCGGAGATTTCATTGATTACGAGGAGGCTGCGCG AACAGCTCAGCTCAGTCTCTAGTTTCGAGCGATTTGAGATCTTCCCCAAGGAGTCTAGCTGGCCAAATCATAACACCAACGGAGTGACAG CCGCCTGTAGCCATGAAGGGAAAAGCAGCTTCTACCGAAATTTGCTGTGGCTAACTGAGAAAGAGGGGAGTTATCCTAAGCTCAAAAACA GCTATGTGAACAAGAAGGGGAAAGAAGTCCTGGTGTTGTGGGGCATCCACCATCCCCCAAATAGCAAGGAACAGCAGAACCTTTACCAG AACGAGAATGCATACGTGAGCGTCGTAACATCCAATTATAACAGACGGTTCACACCCGAGATAGCCGAACGGCCAAAAGTGAGGGACCA GGCCCGAAAGGATGAATTACTATTGGACTCTCTTAAAGCCAGGCGACACCATTATATTTGAGGCAAACGGAAACTTGATTGCGCCAATGTA CGCATTCGCACTGTCACGGGGATTCGGATCCGGGATTATCACGTCCAATGCATCGATGCATGAGTGTCAGACCCCCAC TGGGAGCCATCAATTCCAGCTTGCCCTATCAGAACATTCACCCCGTGACTATAGGAGAGTGCCCTAAATATGTCCGCAGCGCCAAACTGC GAATGGTTACCGGCCTGCGCAACAATCCTTCGATCCAGTCACGGGGCCTGTTCGGGGCCATAGCTGGCTTCATTGAGGGGGGATGGAC CGGTATGATTGATGGGTGGTACGGCTACCACCATCAGAACGAGCAGGGTTCAGGCTACCGCGGCTGACCAGAAATCCACTCAGAACGCTA TCAATGGCATCACAAACAAGGTCAATACTGTTATAGAAAAAATGAATATCCAATTCACTGCTGTGGGTAAAGAGTTTAACAAGCTGGAGAA AAGAATGGAAAATCTGAACAAAAAAGTGGATGACGGCTTCTTGGATATCTGGACATACAACGCTGAACTTCTGGTGCTGTTGGAAAACGA AAGGACTCTGGATTTCCACGATTCCAACGTGAAAAATCTCTACGAAAAAGTTAAGTCCCAACTGAAGAATAACGCGAAGGAGATCGGAAA CGGATGCTTTGAGTTCTATCATAAGTGTGATAATGAGTGTATGGAATCAGTTAGAAACGGTACGTACGATTACCCAAAATACTCCGAAGAG TCTAAGCTGAATCGCGAGAAAGTCGATGGGGTCAAACTCGAATCCATGGGAATTTACCAGATCTTAGCTATTTACAGTACAGTGGCCAGC TCTCTTGTCTTACTGGTGTCACTTGGCGCGATTAGTTTCTGGATGTGCTCCAATGGCAGCCTCCAGTGTCGGATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2633	ATGAAGGCCAACCTGCTTGTACTGCTATGCGCCTTGGCTGCTGCAGACGCCGACACAATTTGCATCGGCTATCATGCCAACAATTCTACA GATACAGTGGACACTGTGCTGGAGAAAAACGTTACTGTCACTCATAGCGTTAATCTCCTCGAGGACTCTCACAATGGAAAACTCTGTCGT CTGAAAGGCATCGCGCCACTGCAGTTGGGTAAATGTAATATCGCCCGGCTGGTTGTTGGGCAACCCCGAATGTGACCCCCTCCTCCCAGT GAGGTCCTGGTCTTATATCGTAGAGACACCTAATTCGGAGAATGGAATTTGTTACCCTGGCGACTTCATAGACTATGAGGAACTGAGGGA GCAGCTTTCTTCTGTGAGTTCTTTTGAAAGATTTGAGATCTTCCCTAAAGAATCATCTTGGCCCAACCATAATACCAACGGCGTTACAGCA GCCTGTTCCCACGAGGGCAAGTCGAGTTTCTACAGGAATTTGTTATGGCTGACTGAGAAAGAGGGGTCTTATCCAAAGCTGAAAAACAGC TATGTCAACAAGAAAGGCAAAGAGGTTTTGGTGCTGTGGGAATCCATCACCCACCAAACTCGAAGGAACAGCAAAATCTTTACCAAAAC GAAAATGCATACGTATCAGTGGTTACTAGCAATTATAATCGGCGCTTTACGCCAGAGATTGCCGAAAGACCTAAGGTGAGAGACCAAGCA GGAAGGATGAATTACTACTGGACACTACTGAAACCAGGCGATACTATCATTTTTGAGGCCAACGGAAACCTGATCGCACCCATGTACGCC TTCGCACTGTCGCGGGGTTTTGGGTCTGGCATCATCACCTCAAATGCCAGCATGCATGAGTGCAATACTAAATGCCAAACACCTTTAGGT GCCATTAATAGCTCACTCCCCTACCAGAACATCCATCCAGTAACTATCGGGGAGTGTCCCAAGTACGTGCGATCTGCAAAACTGAGGATG GTCACTGGTTTGCGCAACAATCCCCTCTATCCAGTCAAGGGGCCTATTTGGCGCAATTGCGGGCTTTATCGAGGGAGGGTGGACGGGTAT GATTGACGGATGGTACGGCTACCACCACCAGAATGAACAGGGTTCGGGGTACGCGGCAGATCAGAAGAGTACTCAGAACGCAATTAATG GTATAACTAATAAGGTCAACACCGTAATTGAAAAAATGAATATCCAATTCACAGCTGTTGGGAAAGAATTTAACAAACTGGAGAAGAGGAT GGAGAATCTCAATAAGAAGGTTGATGACGGCTTTCTCGATATCTGGACTTACAATGCTGAGCTGCTAGTTCTGCTCGAGAACGAACGGAC ACTCGATTTTCACGATTCCAACGTTAAAAACCTGTACGAAAAAGGTCAAATCTCAGCTGAAGAATAATGCTAAGGAAATTGGTAATGGCTGT TTCGAATTTTATCATAAATGTGATAATGAGTGCATGGAAAGTGTCCGTAACGGCACCTACGATTATCCAAAGTATAGCGAGGAAAGCAAGC TTAATCGTGAAAAAGTAGATGGCGTGAAGCTGGAAAGTATGGGCATATATCAGATCCTGGCCATATACAGTACTGTTGCCTCCAGTCTAG TTTTTACTGGTATCCCTCGGAGCTATCTCATTCTGGATGTGTAGCAATGGCAGCCTTCAGTGCCGTATCTGTATA

Ing. Ines Sangiacomo
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Seq ID No.	Sequenza nucleotidica
2634	ATGAAAGCTAACCTGCTAGTTCTACTTTGTGCCCTTGCCGCTGCCGACGCTGACACCATCTGCATAGGGTACCACGCTAACAACAGTACT GACACAGTGGATACCGTTCTTGAAAAGAACGTCACCGTAACTCACTCTGTGAATTTGCTCGAGGATTCACACAATGGGAAACTCTGCAGA CTGAAAGGAATTGCTCCACTTCAGTTGGGCAAGTGTAACATCGCTGGCTGGCTGCTTGGGAATCCGGAGTGCGACCCATTGCTGCCTGT GCGCAGTTGGAGCTACATTGTGGAGACCCCCAACAGCGAGAATGGCATCTGTTATCCCGGAGATTTCATCGACTACGAGGAGCTCCGAG AACAATTATCCTCTGTGTCTAGTTTCGAACGGTTTGAGATCTTTCCCAAGAATCAAGCTGGCCCAACCACACAACACAAACGGTGTGACAGC AGCATGCAGTCATGAGGGCAAGTCGTCCTTCTATAGGAATCTGCTGTGGCTTACTGAGAAGGAGGGTAGCTACCCGAAACTCAAGAACT CCTACGTCAATAAGAAGGGCAAAGAGGTGTTAGTCTTGTGGGAATACACCACCCACCCAACTCTAAAGAGCAACAAAACCTGTACCAGA ACGAAAACGCCTACGTCTCCGTAGTAACCTCAAATTATAACAGACGCTTTACGCCCGAGATCGCAGAGGCGCCCAAGGTCAGGGACCAG GCAGGGAGAATGAACTACTATTGGACTTTGTTGAAGCCCGGAGACACAATTATCTTCGAGGCGAATGGCAATCTGATTGCCCCCATGTAC GCTTTTGCACTGTCCCGCGGTTTTGGTTCCGGCATCATAACTTCCAACGCATCGATGCACGAATGTAACACCAAATGTCAGACACCATTG GGCGCCATAAACTCCAGTCTCCCATATCAAAATATCCACCCAGTCACAATCGGGGAATGTCCTAAATACGTGAGGTCAGCAAAGCTTAGG ATGGTCACGGGACTGCGCAACAATCCCTCAATACAGTCCAGAGGGCTTTTCGGAGCCATAGCCGGCTTCATCGAAGGCGGCTGGACTG GGATGATCGATGGCTGGTATGGGTATCATCACCAGAATGAGCAGGGCTCCGGCTATGCTGCCGATCAGAAATCCACACACAGAACGCTATC AATGGGATAACTAACAAAGTTAACACCGTGATTGAGAAGATGAACATACAATTTACTGCAGTGGGAAAGGAGTTCAACAAACTGGAGAAG CGGATGGAGAACTTAAATAAAAAGGTGGATGACGGCTTCCTGGACATCTGGACTTATAACGCTGAACTGTTGGTACTGCTTGAGAATGAG CGGACCCTCGACTTTCACGACTCAAACGTGAAGAATCTCTATGAGAAGGTAAAATCCCAGTTGAAAAACAACGCCAAGGAGATCGGGAAT GGCTGCTTTGAATTTTACCACAAGTGCGACAATGAGTGTATGGAAAGTGTGCGCAACGGAACATATGACTATCCTAAATATAGTGAAGAGT CCAAACTGAACCGTGAAAAGGTGGATGGGGTGAAACTCGAGTCCATGGGAATCTACCAAATCCTCGCCATTTATTCAACCGTGGCAAGCA GCCTCGTGCTACTGGTCAGTCTCGGCGCGATTTCTTTCTGGATGTGCTCCAACGGGTCACTGCAGTGTCGCATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2635	ATGAAGGCGAACCTCCTTGTGCTTCTCTGCGCTCTCGCAGCTGCTGATGCAGACACGATTTGCATAGGGTATCATGCAAACAATAGTACA GACACTGTGGACACCGTGCTGGAGAAAAACGTGACTGTCTCACGCACTCAGTTAATCTTTTGGAGGACTCCCATAATGGAAAACTGTGCAGA CTTAAGGGGATCGCACCCCTGCAGTTAGGCAAGTGTAATATAGCCGGGTGGCTTCTGGGGAACCCAGAATGTGACCCACTGTTACCTGT GCGAAGCTGGTCTTACATAGTGGAGACGCCAAATTCTGAGAACGGCATCTGTTACCCTGGGGACTTTATTGATTATGAGGAACTCCGGGA ACAACTCTCGAGCGTTAGCAGCTTCGAAAGGTTTGAAATTTTTCCCAAGGAATCTTCATGGCCTAACCACAACACTAACGGTGTGACGGC TGCTTGCTCACATGAGGGAAAGTCCAGTTTCTATAGGAACCTGTTGTGGCTGACTGAGAAAGAAGGCAGCTACCCAAAGCTGAAGAACTC TTACGTTAACAAAAAAGGCAAGGAAGTGTTAGTACTGTGGGGTATCCACCCACCCAAACAGCAAGGAGGCAGCGAGCAGAACTTGTACCAGAA CGAAAATGCCTACGTCAGTGTTGTCACATCAAACTACAATAGAAGATTTACGGCCAGAAATTGCCGAAAGGCCAAAGGTGCGGGACCAAGC TGGGCGGATGAACTATTATTGGACCCTTCTGAAGCCGGGAGACACGATCATATTCGAAGCAAACGGGAATCTGATCGCTCCGATGTACG CCTTCGCACTCAGCCGGGGTTTTGGATCAGGGATCATCACATCTAACGCCTCTATGCATGAATGTAACACGAAGTGCCAGACTCCTCTAG GCGCTATCAACTCTAGCTTACCCTACCAGAATATACATCCCGTCACCATCGGCGAGTGTCCTAAGTATGTGCGCAGCGCCAAACTGCGGA TGGTGACTGGCCTGAGAAATAATCCGTCCATCCAGTCAAGAGGGCTGTTTGGAGCAATCGCCGGCTTCATTGAAGGGGGCTGGACAGGT ATGATTGATGGTTGGTACGGATACCACCATCAGAATGAACAGGGGAGTGGCTACGCAGCAGATCAAAAGTCGACACAAAACGCGATAAA CGGAATCACAAACAAGGTCAATACCGTGATTGAAAAGATGAATATTCAGTTCACCGCCGTCGGCAAAGAATTTAACAAGCTTGAGAAACG TATGGAAAATCTCAATAAGAAAGTTGACGACGGTTTCTTAGACATCTGGACCTATAACGCAGAACTGCTGGTGCTACTGGAAAACGAGAG AACCCTTGATTTCCATGATAGCAACGTGAAAAACCTTTACGAGAAAGTTAAGAGTCAGCTCAAAAACAATGCTAAAGAAATCGGAAACGGC TGCTTCGAGTTTTATCATAAGTGCGACAATGAGTGTATGGAGAGTGTTCGAAACGGGACATATGATTACCCGAAGTATTCAGAGGAGAGC AAACTCAATCGCGAAAAAGTTGATGGTGTGAAGCTGGAATCTATGGGCATCTACCAGATACTGGCCATCTACTCAACAGTGGCAAGTTCT CTGGTATTGCTCGTTTCCCTGGGAGCTATCTCCTTCTGGATGTGTTCGAACGGCTCACTTCAGTGTAGGATTTGCATA

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2636	ATGAAGGCCAACCTGTTGGTTCTCTTGTGTGCTCTGGCAGCCGCAGACGCTGACACTATTTGTATCGGATACCACGCCAATAATAGTACT GACACCGTTGACACAGTACTTGAGAAGAACGTGACAGTAACCCACTCAGTGAACCTCCTTGAGGATAGCCACAATGGAAAATTATGTAGA CTTAAGGGTATCGCTCCCCTCCAGCTGGGCAAATGTAATATTGCCGGCTGGCTACTGGGGAATCCGGAATGTGATCCTCTCCTGCCAGT CCGATCATGGAGTTATATAGTAGAAACTCCAAATAGCGAGAATTTGTTACCCCGGCGATTTTATTGACTACGAAGAGCTCCGAGAA CAGCTCAGTTCAGTGTCTTCATTCGAACGGTTTGAAATCTTCCCAAAAGAATCCTCATGGCCCAATCACACAACTAACGGGGTCACGGCA GCATGCAGCCCACGGAAGGGAAGTCGTCTTTCTACCGAAATCTCCTGTGGCTGACCGAGAAAGAGGGTTCGTACCCCAAGCTCAAGAATTC TTACGTTAACAAGAAGGGGAAGGAAGTACTTGTGCTGTGGGGTATACACCATCCACCTAATTCCAAAGAGCAGCAGAACCTGTATCAAAA CGAAAATGCATACGTCAGCGTGGTTACAAGTAACTACAACAGGCGCTTTACCCCAGAGATCGCCGAGAGGCCTAAGGTTCGGGATCAGG CCGCGAGAATGAACTACTATTGGACTCTCCTCAAGCCCGGTGACACAATAATCTTCGAGGCCAATGGAAATCTTATAGCACCGATGTATG CCTTCGCACTGTCACGCGGGTTTGGCTCAGGCATTATAACATCTAACGCTAGTATGCATGAGTGCAATACCAAGTGCCAGACCCCACTGG GTGCAATCAACAGCTCCTTGCCTTACCAGAACATACACCCAGTCACTATTGGCGAGTGCCCGAAATACGTACGCTCTGCCAAGCTGCGTA TGGTCACCGGACTCCCGCAATAACCCCAGTATCCAAAGCCGAGGTTTGTTGGCGCTATTGCTGGATTCATTGAAGGAGGCTGGACGGGA ATGATTGACGGGTGGTACGGCTATCATCATCAGAATGAGCAAGGGTCAGGTTACGCCGCCGACCAGAAGAGTACACAGAATGCAATCAA CGGAATAACCAATAAGGTCAACACCGTCATCGAAAAGATGAATATCCAGTTCACGGGCAGTGGGAAAGGAATTCAATAAGCTAGAAAAACG CATGGAGAATCTCAACAAGAAGGTTGACGATGGGTTTCTGGATATCTGGACATACAACGCTGAGCTGCTTGTGCTGCTGGAGAACGAGA GGACACTGGACTTCCACGACTCTAATGTCAAGAATCTTTATGAAAAAGTCAAATCCCAGCTCAAAAATAATGCAAAGGAGATCGGAAATGG CTGCTTCGAATTCTACCACACAAGTGTGACAACGAGTGCATGGAGTCTGTGCGGAACGGAACCTACGACTATCCAAAGTATTCTGAGGAATC AAAACTCAATCGAGAGAAAGTTGATGGGGTAAAACTGGAATCTATGGGGATTTACCAGATCCTGGCCATCTACTCCACAGTGGCTAGTTC CTTGGTTCTGTTGGTGTCTCTAGGTGCGATCTCCTTCTGGATGTGTTCCAATGGGAGTCTTCAATGTCGAATCTGCATA

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Seq ID No.	Sequenza nucleotidica
2637	ATGAAGGCAAATTTGCTTGTTTTACTGTGTGCTTTGGCTGCGGCTGATGCCGACACCATATGCATCGGTTACCACGCTAATAACAGCACC GACACAGTGGATACGGTGCTGGAGAAAAATGTGACCGTAACTCACAGTGTGAACCTGCTTGAGGACAGCCACAACGGTAAGCTCTGCCG TCTGAAAGGAATCGCCCCGCTGCAATTGGGAAAGTGCAACATTGCTGGCTGGCTCCTGGGTAATCCTGAGTGTGACCCGCTGCTGCCCG TGCGAAGCTGGTCCTACATCGTGGAGACTCCAAACTCAGAGAACGGGATCTGTTACCCTGGAGATTTTATAGACTATGAAGAGCTAAGGG AACAATTGTCGTCTGTCAGTTCCTTTGAACGGTTCGAGATTTTCCCAAAGGAGTCCAGTTGGCCTAATCATAATACCAATGGTGTCACTGC TGCATGTAGTCACGAAGGCAAGTCCTCATTTTATCGGAATTTGCTGTGGCTGACTGAGAAGGAGGGCAGCTATCCGAAGTTGAAGAATTC ATACGTTAATAAAAAAGGTAAGGAAGTGCTTGTCCTTTGGGGCATTCATCATCCCCCTAACAGTAAGGAACAGCAGAATCTCTACCAGAAC GAGAACGCATACGTGTCCGTGGTTACTAGTAATTACAATAGGAGGTTCACACCAGAGATTGCGGAACGGCCTAAAGTCCGGGATCAGGC CGGTAGAATGAACTATTATTGGACTTTGCTGAAACCCGGAGACACAATCATATTCGAAGCTAATGGTAACCTGATTGCTCCTATGTACGCA TTCGCTCTGTCCCGTGGCTTCGGCTCCGGGATTATCACCTCTAATGCTAGCATGCACGAGTGTAACACCAAATGCCAGACCCCACTCGG GGCGATTAACAGCAGCCTCCCATACCAGAACATTCATCCCGTTACTATAGGCGAGTGCCCAAAATATGTTCGGTCTGCAAAACTGCGGAT GGTGACGGGGCTGCGAAATAACCCTTCAATACAGAGTAGGGGGCTGTTCGGAGCAATAGCTGGTTTTATTGAGGGCGGATGGACTGGC ATGATCGATGGCTGGTATGGATACCATCACCAAAACGAGCAAGGATCTGGTTATGCAGCGGACCAGAAGTCAACTCAGAATGCCATTAAC GGCATTACTAATAAAGTTAATACCGTTATTGAAAAGATGAACATTCAGTTTACCGCCGTAGGGAAGGAGTTTAACAAGCTTGAAAAGCGCA TGGAGAACCTCAACAAGAAAGTGGATGATGGGTTCCTTGACATCTGGACATATAACGCCGAATTACTAGTGCTTTTGGAAAACGAAAGAA CACTGGATTTCCATGACTCCAATGTGAAGAATTTATATGAAAAGGTCAAAAGTCAGCTCAAGAATAATGCAAAGGAAATCGGCAATGGTTG CTTCGAATTTTACCATAAGTGTGACAACGAGTGTATGGAGAGTGTAAGGAATGGGACATACGATTACCCAAAGTATAGCGAGGAATCAAA GCTGAACAGAGAGAAAGTGGACGGCGTGAAATTGGAGTCCATGGGGATCTACCAGATTCTGGCGATCTATAGCACCGTCGCCAGCAGCT TGGTCTTGCTGGTATCTCTCGGGGCCATTTCCTTTTGGATGTGTTCAAATGGGAGCCTCCAATGTAGAATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2638	ATGAAAGCCAATCTACTGGTGTTGCTCTGTGCCCTGGCTGCTGCCGATGCTGACACGATATGTATCGGCTACCACGCAAACAACTCCACC GATACAGTTGATACCGTGCTCGAAAAGAATGTCACCGTAACACATAGCGTGAACCTTTTGGAGGATTCGCACAACGGTAAGCTGTGTCGT TTAAAGGGCATCGCCCCTCTTCAGCTGGGAAAATGCAATATTGCGGGCTGGTTGCTCGGTAACCCCGAGTGTGACCCTCTGCTCCCCGT GCGTAGTTGGTCATATATTGTGGAGACACCCAATAGCGAGAATGGAATTTGTTACCCCGGGGACTTTATCGATTACGAAGAGCTGCGGGA ACAACTGTCTAGTGTCAGCTCGTTCGAACGCTTTGAGATTTTCCCAAAAGAGAGCTCCTGGCCCAACCATAACACTAACGGGGTGACTGC TGCCTGTTCCCATGAGGGGAAGTCTAGTTTTTTACCGAAATCTGCTGTGGCTAACGGAGAAAGAGGGCTCTTATCCAAAGCTAAAGNATAG TTACGTAAACAAGAAAGGAAAAGAGGTGCTCGTTCTCTGGGGCATTCATCACCCACCAAACTCCAAGGAGCAGCAGAATCTGTATCAGAA TGAAAACGCCTACGTATCCGTGGTGACAAGCAACTACAACAGGCGATTCACGCCCGAGATCGGCCGAGCGGCCTAAAGTGAGGGATCAG GCTGGCAGGATGAACTACTATTGGACGCTGCTGAAGCCAGGGGATACTATTATTTTTGAGGCGAACGGAAACTTAATTGCCCCCATGTAC GCATTTGCGCTCTCCAGAGGATTCGGCTCTGGAATCATCACGTCAAACGCTAGCATGCACGAGTGTAATACAAAGTGTCAGACCCCACTG GGGGCAATCAATAGCAGCTTACCTTACCAAAACATCCATCCAGTGACTATCGGTGAATGCCCGAAGTACGTAAGGTCCGCAAAGCTGAGA ATGGTGACGGGCCTCAGAAATAACCCTAGTATACAGAGTCGTGGCCTGTTTGGGGCCATTGCTGGATTTATCGAAGGAGGGTGGACCGG AATGATAGACGGCTGGTATGGCTACCACCACCAGAATGAGCAGGGATCTGGGTACGCTGCTGATCAGAAGAGCACGCAGAACGCCATTA ACGGCATAACCAACAAGGTGAATACAGTCATCGAAAAAATGAACATACAGTTTACAGCAGTTGGGAAAGAATTCAACAAACTGGAGAAGA GGATGGAAAACTTGAACAAAAAAGTCGATGACGGGTTTCTCGACATCTGGACTTACAACGCCGAGCTGCTTGTGTTACTGGAGAACGAAA GGACACTCGACTTTCACGACTCTAACGTGAAGAATCTTTATGAGAAAGTGAAAAGCCAACTGAAAAACAATGCCAAAGAAATTGGTAACG GCTGCTTCGAGTTTTACCATAAGTGTGACAACGAGTGTATGGAATCAGTCCGCAACGGTACCTACGACTATCCAAAATACTCTGAAGAATC AAAGCTGAATAGGGAGAAGGTGGACGGCGGTTAAATTGGAGAGCATGGGCATTTATCAAATCCTTGCCATTTATTCGACAGTGGCCTCCTC TTTAGTGCTCTTAGTGTCCCTGGGCGCCATCAGTTTCTGGATGTGTAGTAACGGCTCACTCCAATGTCGAATTTGCATT

Ing. Ines Sangiacomo
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Seq ID No.	Sequenza nucleotidica
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Ing. Ines Sangiacomo
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Seq ID No.	Sequenza nucleotidica
2640	ATGAAGGCTAATCTGTTAGTACTTTTATGTGCACTTGCCGCAGCTGACGCGGATACGATCTGCATTGGGTACCATGCCAACAACAGTACC GACACCGTCGATACCGTTTTGGAAAAGAATGTGACCGTGACCCACAGCGTCAACCTTCTCGAGGATAGTCACAATGGGAAACTCTGTCG GCTGAAAGGCATAGCTCCTCTGCAGCTCGGAAAATGTAACATCGCCGGCTGGTTATTGGGGAACCCCGAATGCGATCCCCTCCTCCCAG TAAGGTCTTGGTCCTATATCGTGGAAACACCTAACAGCGAGAATGGCATCTGCTACCCCGGGGACTTCATTGATTACGAAGAACTAAGAG AACAACTGTCGAGTGTGAGTAGTTTCGAAAGATTTGAAATATTCCCTAAGGAGTCAAGTTGGCCCAATCACAACACGAACGGCGTTACGG CAGCGTGCTCCCATGAAGGGAAATCAAGCTTCTATAGAAATCTGCTCTGGCTAACAGAAAAGGAGGGCTCATACCCAAAGTTGAAGAACT CCTACGTCAATAAAAAAGGTAAGGAAGTATTGGTCCTGTGGGGATCCATCACCCCCCAAATTCGAAAGAGCAACAGAACCTTTATCAGA ATGAGAATGCTTACGTTAGCGTAGTTACGAGCAACTATAATCGGCGATTCACACCCGAGATTGCTGAGAGACCTAAGGTGAGAGATCAGG CAGGTCGGATGAACTACTACTGGACTCTTCTAAAGCCCGGCGATACTATAATCTTTGAGGCTAACGGCAATCTGATTGCCCCTATGTATG CTTTCGCATTGTCCAGAGGTTTTGGGAGTGGGATCATCACGAGCAATGCCAGTATGCATGAGTGTAACACTAAATGTCAGACACCCTTAG GGGCTATCAACAGTTCTCTTCCCTATCAGAATATCCACACCCAGTAACCATCGGAGAATGCCCTAAATACGTCAGATCTGCAAAACTCAGGAT GGTGACTGGCCTCAGAAATAACCCCAGTATACAGAGCAGAGGTTTATTCGGGGCGATCGCTGGCTTTATAGAAGGAGGCTGGACGGGCA TGATTGACGGCTGGTATGGCTATCATCATCAGAATGAACAGGGCAGCGGTTACGCAGCCGACCAGAAGAGGCACACAAAACGCTATTAAC GGAATCACCAACAAGGTGAATACAGTCATTGAAAAAATGAATATTCAATTCACTGCAGTCGGAAAGGAATTCAACAAACTGGAAAAAAGGA TGGAGAATCTCAACAAAAAAGTCGACGACGGGTTCCTGGATATCTGGACATACAATGCCGAACTCCTCGTCCTGCTCGAGAATGAGCGG ACCCTTGATTTCCACGATTCCAATGTCAAGAACCTTTACGAGAAGGTGAAATCCCAGTTAAAGAATAACGCCAAAGAGATTGGCAATGGGT GCTTCGAATTTTATCACAAGTGCGACAACGAGTGTATGGAAAGCGTCAGAAATGGCACCTACGACTATCCTAAATATTCAGAAGAGTCTAA ACTGAATAGGGAAAAAGTCGACGGCGTCAAGCTTGAGTCTATGGGATATATCAGATTCTTGCGATTTATTCAACTGTCGCATCCTCCCTC GTTCTGCTCGTGTCCCTGGGCGCAATCTCATTCTGGATGTGCTCTAATGGTTCATTGCAGTGTCGCATCTGTATC

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Seq ID No.	Sequenza nucleotidica
2641	ATGAAGGCAAACCTGCTGGTTCTTCTGTGTGCATTAGCCGCGGCCGACGCCGATACAATATGTATCGGATACCACGCAAATAACAGCACC GACACCGTTGACACAGTGCTTGAGAAAAACGTGACCGTGACACACAGTGTGAATCTGCTAGAGGACTCCCATAACGGGAAGCTGTGCCG GTTGAAGGGAATCGCTCCGCTGCAGTTGGGCAAATGCAATATTGCTGGGTGGCTGTTAGGTAACCCTGAATGCGATCCACTCCTCCCTG TACGTTCTTGGTCGTATATAGTGGAAACTCCCAATAGCGAAAATGGTATTTGTTATCCTGGGGATTTCATAGATTACGAAGAGCTGCGCGA ACAGCTCAGCTCTGTGAGCTCTTTCGAGCGCTTCGAAATATTCCCCAAGGAGTCCAGTTGGCCCAACCACACAATACCAACGGCGTTACCGC AGCCTGTAGCCACGAGGGCAAGTCCAGCTTTTACCGCAACCTCTTGTGGTTGACCGAAAAGGAGGAAGCTATCCGAAACTCAAGAACA GCTACGTCAATAAAAAAGGCAAGGAGGTACTAGTGCTGTGGGGCATCCACCACCCTCCAAATAGTAAAGAGCAGCAGAATCTGTATCAGA ACGAAAACGCGTATGTCTCAGTTGTGACAAGCAATTACAACCGCAGGTTCACTCCGGAGATAGCTGAAAGACCCAAAGTACGGGATCAG GCTGGGCGAATGAACTACTACTGGACACTACTCAAACCAGGTGACACCATTATTTTCGAAGCAAATTGGCAATTTGATCGCACCCATGTAC GCATTTGCCTTGTCCCGGGGGTTCGGCTCCGGCATTATTACGTCTAACGCATCTATGCACGAGTGCAACACGAAATGCCAGAACTCCCCT GGGGGCCATAAACTCAAGCCTGCCATATCAGAACATCCACCCGGTCACCATCGGCGAGTGCCCCAAATACGTCCGCTCAGCTAAACTCA GGATGGTCACGGGCCTCAGAAATAATCCTAGCATTCAGTCTCGTTTGGCGCCATCGCAGGCTTCATTGAAGGGGGCTGGACC GGAATGATCGATGGGTGGTACGGGTATCATCACCAGAACGAGCAAGGCAGTGGCTATGCTGCCGATCAGAAATCAACCCAGAATGCGAT TAACGGAATAACTAACAAGGTGAACACCGTCATTGAGAAGATGAATATTCAGTTCACGGCCGTCGGAAAGGAGTTTAACAAGCTCGAAAA GCGCATGGAGAACCTGAACAAGAAGGTAGATGATGGCTTCCTGGACATTTGGACCTACAATGCTGAGCTCCTCGTCTTGCTGGAGAATG AACGGACTCTCGACTTCCACGATTCCAACGTTAAGAATTTATATGAGAAAGTGAAGAGTCAACTTAAAAACACAACGCGAAGGAAATCGGTAA TGGCTGCTTTGAGTTCTACCATAAGTGTGATAACGAGTGTATGGAAAGCGTGCGAAATGGGACTTATGACTACCCTAAGTATTCGGAAGA ATCTAAACTGAATAGAGAGAAGGTGGATGGGGTGAAGCTCGAATCTATGGGGATTTACCAGATCTTGGCTATCTATTCGACAGTGGCTTC CAGTCTTGTCCTACTGGTGTCTCTTGGCGCCATTTCCTTCTGGATGTGCTCCAACGGATCTCTGCAGTGCGCATCTGTATA

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Seq ID No.	Sequenza nucleotidica
2642	ATGAAGGCAAATTTGTTAGTCTTGTTGTGGCGCTCTGGCCGCTGCAGATGCAGACACCATCTGTATCGGGTATCACGCAAATAATTCCACA GATACAGTGGACACCGTTCTCGAGAAAAACGTCACCGTGACCCATAGCGTGAACCTTCTCGAGGACTCTCACAACGGTAAATTATGCAGG CTTAAGGGAATAGCTCCCCTGCAACTTGGTAAGTGCAATATAGCAGGATGGCTCCTGGGCAACCCAGAATGTGACCCGCTACTGCCAGT GAGGAGCTGGTCTTACATCGTCGAAACGCCTAACTCCGAAAACGGGATCTGTTATCCTGGCGATTTCATTGATTATGAAGAGTTACGGGA GCAGTTATCAAGCGTGTCGAGCTTCGAAAGGTTTGAGATCTTCCCTAAGGAGTCAAGTTGGCCGAACCACACAACACGAATGGCGTCACAG CCGCATGTTCCCATGAAGGGAAGTCCTCTTTCTATCGGAATCTTTTGTGGCTAACGGAGAAGGAGGGATCCTATCCTAAGCTTAAAAACT CCTACGTAAACAAAAAGGGCAAGGAGGTCTTAGTACTGTGGGCATACACCACCCACCTAACTCAAGGAGCAGCAGAACCTTTATCAGA ATGAAAATGCTTACGTCTCGGTGGTGACCAGCAACTACAACAGACGCTTCACGCCGGAAATTGCCGAGAGACCAAAGGTAAGGGATCAA GCCGGTCGAATGAATTACTATTGGACCTTATTGAAACCCGGGGACACCATCATATTTGAAGCTAACGGCAATTTGATCGCTCCAATGTAC GCGTTTGCCCTTTCCCGCGGTTCGGTTCTGGGATCATAACCTCTAACGCTTCCATGCATGAATGTAACACAAAGTGCCAGACTCCATTA GGGGCCATTAATAGCAGTTTACCTTATCAAAATATCCACCCAGTCACTATCGGAGAGTGCCCAAAATACGTGAGGAGCGCGAAATTGAGG ATGGTGACAGGCCTTCGGAACAATCCCCTCTATCCAGAGCAGAGGACTGTTTGGCGCAATTGCTGGGTTTATAGAGGGGGGGATGGACCGG CATGATTGACGGATGGTACGGATACCATCATCAGAATGAGCAGGGAAGTGGATATGCTGCAGACCAAAAGTCAACTCAGAATGCTATTAA TGGTATCACCAACAAGGTGAACACAGTCATAGAAAAGATGAACATCCAGTTTACCGCCGTTGGGAAGGAATTTAACAAGCTGGAAAAAAG GATGGAGAATCTCAATAAAAAGGTAGACGATGGGTTCCTTGATATTTGGACTTACAATGCTGAGCTGTTAGTCCTACTAGAAAATGAGAGA ACCCTTGACTTTCACGACTCCAACGTTAAAAACTTATACGAGAAAGTGAAATCCCAATTAAAGAATAACGCGAAAGAGATCGGCAACGGGT GTTTCGAATTCTATCACAAATGCGACAACGAATGCATGGAGTCTGTGAGGAATGGGACTTATGATTATCCCAAGTATTCAGAGGAGTCTAA ACTGAATCGAGAAAAAGTGGACGGAGTAAAGCTGGAGTCCATGGGCATATATCAAATCCTCGCCATCTATTCCACAGTCGCCTCCTCCCT TGTTTTGTTGGTTCCCTTGGTGCGATCAGTTTTTGGATGTGCTCTAACGGGTCCCTACAGTGCCGAATTTGTATT

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Seq ID No.	Sequenza nucleotidica
2643	ATGAAAGCTAATCTTCTCGTGCTACTGTGCGCCTTAGCAGCTGCCGACGCTGATACCATCTGTATAGGCTATCATGCCAATAACTCCACA GACACCGTTGATACTGTGCTTGAGAAGAATGTGACGGTAACCCACAGCGTTAATCTCCTTGAGGACAGCCATAATGGCAAACTGTGTCGG CTGAAGGGAATCGCTCCCCTACAATTGGGAAAATGCAACATTGCAGGATGGTTGTTAGGAAACCCAGAATGCGACCCTCTACTGCCAGT GCGCAGCTGGAGTTACATTGTTGAAACACCTAACAGCGAAAATGGTATTTTGCTACCCTGGGGATTTCATAGATTACGAGGAGTTAAGAGA GCAGCTGTCCAGTGTGTCTTCCTTCGAAAGGTTTGAAATCTTCCCAAAGGAGTCCTCATGGCCCAACCACACAACGAATGGCGTCACAGC TGCCTGTTCACACGAGGGTAAGTCAAGTTTTTTATAGGAACTTGCTTTGGTTAACCGAAAAAGAGGGAAGCTACCCAAAGCTGAAAAATAG CTACGTGAATAAAAAGGGCAAAGAGGTGCTGGTGCTATGGGTATCCATCATCCGCCAAACAGCAAAGAGCAGCAAAACCTGTACCAGA ACGAAAATGCCTACGTGTCTGTTGTGACGAGCAACTACAACCGTAGATTTACCCCGGAAATCGCAGCGGCCGAAGGTGCGCCGATCAG GCGGGACGTATGAATTACTATTGGACATTGCTTAAGCCCGGAGACACAATTATTTTCGAAGCTAACGGGAATCTCATTGCCCCAATGTATG CTTTCGCACTGAGCCGAGGCTTTGGGAGCGGCATCATCACAAGTAATGCTAGCATGAGTGCAATACCAAGTGTCAAACGCCTCTG GGCGCAATCAATTCCAGTTTACCATATCAGAACATTCATCCAGTCACCATCGGGGAGTGCCCTAAATATGTAAGGTCTGCTAAACTGCGG ATGGTCACTGGTCTCCGCAACAATCCATCTATCCAGAGCCGGGGTTTGTTCGGAGCTATTGCTGGATTTATAGAGGGGGGCTGGACGGG GATGATTGATGGCTGGTACGGCTATCACCATCAGAACGAACAGGGCAGCGGCTACGCTGCAGACCAAAAAAGTACTCAGAACGCTATTA ATGGCATTACCAACAAGGTTAACACTGTGATTGAGAAGATGAACATCCAGTTCACTGCGGTAGGAAAGGAATTCAACAAACTTGAGAAGC GGATGGAAAATCTCAACAAGAAGGTAGACGATGGGTTCCTAGATATATGGACCTATAATGCCGAGCTCTTGGTCTTGTTAGAAAACGAGC GGACCTTAGACTTCCATGATAGCAACGTGAAAAACCTGTACGAGAAAGTGAAGAGCCAGTTAAAGAATAACGCTAAGGAAATCGGAAACG GGTGCTTTGAGTTCTACCATAAGTGTGACAATGAGTGTATGGAATCTGTGCGTAACGGGACCTACGACTACGCCCAAATATTCTGAGGAAT CAAAACTAAATCGAGAGAAGGTAGACGGCGTGAAGTTAGAATCTATGGGTATCTATCAAATCCCTGGCTATATACTCAACCGTGGCCTCAT CCCTAGTTCTCCTGGTATCCCTCGGCGCCATCTCTTTCTGGATGTGCAGCAACGGCTCTCTCCAGTGTCGCATTTGCATC

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Seq ID No.	Sequenza nucleotidica
2644	ATGAAGGCCAATTTGCTGGTGTTGTGTGCTCTGGCAGCAGCCGATGCTGACACTATCTGCATCGGCTACCATGCCAACAATAGTACC GATACTGTGGACACTGTGTTAGAGAAGAACGTGACAGTCACTCACTCAGTAAACTTGCTGGAGGATAGCCATAATGGCAAACTCTGTCGC CTCAAGGGCATCGCCCCTCTGCAGCTGGGAAAATGCAACATTGCTGGATGGCTGCTGGGGAACCCGGAATGCGACCCGCTGCTCCCCG TGAGATCCTGGAGTTATATAGTTGAAACTCCCAACAGTGAGAACGGGATATGTTATCCTGGCGACTTCATTGACTACGAGGAGCTGCGCG AACAGCTCTCTAGCGTATCTTCGTTTGAACGTTTCGAAATATTTCCCAAGGAATCTTCTTGGCCAAATCACAATACCAACGGAGTCACGGC GGCCTGCTCGCACGAGGGGAAGAGTTCCTTTTATCGCAACCTACTGTGGCTCACCGAGAAGGAGGGTTCCTACCCCAAGCTGAAAAACA GCTATGTGAACAAAAAAGGCAAAGAAGTCTTGGTACTGTGGGGCATTCATCACCCACCCAACAGCAAGGAACAGCAGAACCTGTATCAAA ATGAAAATGCTTACGTCTCCGTTGTGACATCAAACTACAACAGACGGTTCACCCCTGAAATTGCTGAGAGGCCTAAGGTCAGGGACCAGG CCGGGCGGATGAATTACTACTGGACACTGCTGAAGCCGGGAGACACGATTATCTTCGAAGCAAACGGCAATCTGATCGGCCCCAATGTAC GCGTTTGCTCTTTCTCGGGGATTTGGCTCTGGGATCATTACCTCTAATGCATCCATGCACGAATGCAACACCAAATGTCAGACCCCACTA GGCGCTATTAATAGTTCCCTGCCCTATCAGAATATCCACCCCGGTGACCATCGGCGAATGTCCTAAATATGTGCGGAGTGCCAAGCTGAG GATGGTCACTGGCTTACGTAACAATCCCTCAATTCAGAGCCGGGGGCCTCTTTGGAGCAATCGCTGGATTCATCGAGGGGGGTTGGACCG GAATGATCGACGGCTGGTACGGATATCATCACCAGAATGAACAAGGGTCTGGCTACGCCGCCGACCAAAAATCTACCCAAAACGCTATTA ATGGGATTACCAATAAGGTGAACACTGTAATAGAAAAAATGAATATTCAGTTTACTGCGTTGGAAAGGAATTCAATAAGCTGGAGAAACG TATGGAGAATCTGAACAAGAAGGTAGATGACGGATTCCTGGACATCTGGACCTATAATGCAGAATTGCTCGTTCTGCTTGAAAATGAGCG CACACTGGACTTTCATGACTCTAACGTCAAAAATCTGTATGAAAAGGTCAAGTCCCAGCTGAAAAATAATGCGAAAGAGATTGGGAACGG ATGTTTCGAATTCTACCACAAGTGTGACAACGAATGCATGGAGTCCGTACGGAACGGCACGTACGACTACCCAAAATATTCTGAGGAAAG CAAGCTGAATAGAGAAAAGGTCGATGGGGTGAAACTGGAGAGTATGGGAATCTATCAGATTCTCGCCATCTACTCCACTGTCGCCAGCTC CTTGGTACTTCTTGTTAGCTTGGGAGCCATATCATTCTGGATGTGCTCCAATGGATCCCTCCAATGCAGAATCTGCATC

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2645	ATGAAAGCTAACCTTTTGGTGCTGCTCTGTGCCCTGGCAGCTGCCGATGCCGATACCATCTGTATCGGCTACCATGCTAATAATAGTACA GACACAGTGGACACCGTTCTGGAGAAAAAATGTCACCGTGACACATAGCGTGAACTTGCTGGAGGATTCTCACAACGGGAAGCTGTGCCG TCTGAAAGGGATTGCCCCTCTTCAGCTCGGTAAATGCAACATCGCCGGGTGGCTGCTAGGCAATCCAGAGTGTGATCCCCTGCTGCCGG TGAGAAGCTGGAGCTACATCGTGGAGACACCCAACTCCGAAAATGGCATTTGCTACCCCGGCGATTTCATCGACTACGAAGAACTGCGG GAGCAGCTGTCGTCTGTGAGCTCCTTCGAGAGATTCGAGATCTTTCCAAAAGAAAGCAGTTGGCCCAATCACAATACCAACGGCGTGAC CGCTGCATGTAGTCACGAGGGCAAGAGCTCATTCTATAGAAACCTGTTGTGGCTGACAGAGAAGGAGGGGAGCTATCCCAAACTGAAGA ATTCCTATGTGAATAAAAAGGGGAAGGAGGTTCTGGTATTATGGGGCATCCATCATCCTCCTAACAGCAAAGAGCAGCAAAACCTTTATCA GAACGAGAATGCCTATGTATCGGTTGTTACCAGCAATTATAATCGGAGGTTTACCCCAGAGATAGCTGAGCGTCCAAAAGTGAGAGACCA AGCTGGCCGGATGAATTACTATTGGACCCTCCTCAAACCGGGCGATACCATCATTTTCGAAGCCAATGGCAACTTAATAGCGCCCATGTA TGCTTTTGCCCTTTCGAGGGGATTTGGATCAGGTATCATCACAAGCAACGCATCAATCAATGCACGAGTGTAACACTAAGTGTCAGACTCCACT CGGGGCAATTAACAGCAGCCTACCTTACCAGAACATCCACCCCGTGACGATTGGAGAGTGTCCCAAGTACGTAAGGTCAGCCAAGCTCA GGATGGTTACAGGGCTGCGAAATAACCCCTCTATTCAGTCAAGGGGCTTGTTCGGCGCCATCGCCGGGTTTATCGAGGGCGGCTGGAC CGGAATGATCGACGGATGGTATGGCTACCATCACCAGAACGAACAAGGGTCTGGCTATGCTGCGGATCAGAAGTCAACACAGAATGCTA TAAATGGTATCACGAATAAGGTAAATACAGTCATTGAAAAGATGAATATCCAGTTTACGGCCGTTGGGAAGGAGTTCAACAAGCTTGAAAA GAGAATGGAAAATCTGAATAAAAAAGTGGACGACGGCTTTTTGGATATCTGGACATATAACGCGGAGCTGCTAGTGCTCCTGGAAAACGA GCGGACTCTTGACTTTCACGATTCCAACGTCAAGAACCTCTATGAAAAGGTTAAATCACAATTGAAGAATAATGCTAAGGAGATTGGCAAT GGGTGCTTTGAGTTCTACCATAAGTGTGACAACGAATGTATGGAGTCAGTCCGGAACGGTACTTACGATTACCCCAAGTATTCGGAAGAG TCAAAGTTGAATAGAGAAAAAGTCGACGGCGTGAAACTCGAGTCTATGGGCATTTACCAGATCCTTGCGATTTATAGCACCGTCGCCAGT AGCTTGGTACTCCTAGTATCTCTGGGTGCAATCTCCCTTTTGGATGTGTTCTAACGGCAGCTTACAGTGCAGGATCTGCATT

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Seq ID No.	Sequenza nucleotidica
2646	ATGAAAGCTAACTTGCTTGTTGTTGTTGTGCGCTTTGGCCGCTGCCGACGCCGACACTATTTGCATCGGGTATCACGCCAATAATTCCACA GATACCGTCGATACCGTGCTCGAGAAGAACGTGACCGTCACTCACTCAGTGAACCTTCTGGAGGACTCCCATAACGGGAAGCTCTGTAG GTTGAAAGGAATCGCCCCACTGCAGCTTGGTAAATGCAATATAGCCGGTTGGCTGCTGGGAAACCCTGAGTGCGACCCACTCCTCCCCG TACGGTCTTGGAGCTACATCGTGGAGACGCCAAATTCCGAGAATGGAATCTGTTATCCCGGCGACTTTATCGATTATGAGGAGTTGCGCG AGCAGCTGAGTTCAGTTTCATCCTTTGAACGGTTCGAGATTTTTCCAAAAGAGTCTAGCTGGCCTAATCATAATACCAATGGGGTTACAGC CGCTTGCTCACATGAGGGGAAGTCCAGTTTCTATAGGAACCTGCTTTGGCTGACCGAGAAAGAGGGCTCCTATCCAAAGCTCAAGAACA GCTATGTAAATAAGAAAGGCAAGGAAGTGTTGGTCCTGTGGGCATACACCACCCTCCCAACTCGAAGGAGCAGCAAAACCTATACCAG AACGAGAATGCCTACGTCAGCGTGGTCACTAGCAATTACAATAGAAGGTTCACACCCGAAATTGCTGAGCGGCCGAAAGTGAGAGACCA GGCAGGACGAATGAACTACTATTGGACCCTGCTGAAGCCCGGGGATACAATCATTTTCGAGGCGAACGGGAACCTCATTGCCCCCATGT ACGCTTTTGCCCTCAGCAGAGGCTTTGGTCTGGTATAATCACCAGTAACGCTAGCATGCATGAATGTAATACCAAGTGCCAGACACCCT TAGGGGCCATTAACTCATCTCTCCCATATCAGAACATACATCCTGTGACCATCGGTGAATGCCCGAAATACGTAAGGAGCGCAAAATTAA GGATGGTGACCGGTCTTAGGAACAATCCATCCATTCAGTCTCGAGGGCTTTTCGGCGCCATTGCTGGATTCATAGAAGGCGGATGGACA GGCATGATCGATGGATGGTACGGTTATCACCACCAGAATGAGCAGGGGTCGGGCTACGCTGCCGATCAGAAGTCTACCCAAAATGCCAT CAATGGCATAACCAACAAGGTGAACACAGTTATCGAGAAAATGAACATACAGTTTACTGCAGTGGGAAAGGAGTTCAACAAACTGGAGAA ACGAATGGAGAACTTGAATAAAAAAGTCGACCGACGGCTTCCTTGATATTTGGACTTATAATGCCGAGCTTTTAGTCCTGTTAGAGAATGAA CGTACATTGGACTTCCACGATAGCAACGTAAAGAACCTCTATGAGAAAGTGAAAAGTCAGCTAAAAAATAATGCCAAAGAGATCGGGAAT GGTTGTTTCGAGTTTTATCACAAGTGTGATAATGAGTGCATGGAGTCTGTGAGAAACGGCACGTACGATTACCCTAAGTATTCTGAGGAG AGTAAGTTAAATCGCGAGAAAGTTGATGGTGTGAAGCTTGAGTCAATGGGCATCTACCAGATCCTGGCCATCTACTCCACCGTGGCGTCT TCTCTGGTGCTTGTTAGCCTGGGTGCTATCTCCTTCTGGATGTGTTCTAACGGCTCCCTGCAGTGTAGGATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2647	ATGAAAGCAAATCTGCTGGTGTTGCTGTGTGCCCTGGCTGCCGCAGACGCAGATACCATCTGTATCGGCTATCACGCTAATAACAGTACA GACACTGTGGATACTGTTCTCGAGAAGAACGTCACTGTGACCCACTCAGTAAATTTACTCGAAGACAGTCACAACGGCAAGTTGTGTAGA CTCAAAGGCATTGCCCCTCTCCAGCTGGGAAAGTGCAACATTGCTGGATGGCTCCTGGGAACCCCGAATGTGATCCGCTTTTGCCTGT GAGAAGCTGGTCCTACATAGTAGAAACCCCAAACTCCGAAAATGGTATTTGCTATCCGGGCGATTTTATAGATTATGAAGAATTAAGGGAG CAGTTGTCTTCCGTGTCCTCCTTCGAACGCTTCGAAATCTTCCCCCAAAGAGAGTTCCCTGGCCAAACCATAATACTAACGGGGTGACAGCG GCTTGCTCTCACGAAGGAAAATCTTCCTTCTACCGGAACCTGCTTTGGTTGACCGAGAAGGAGGGCAGTTACCCGAAATTGAAAAATAGT TACGTTAATAAGAAAGGGAAGGAAGTCCTGGTGTTATGGGGTATTCATCACCCCCCAAACAGCAAGGAGCAGCAAAATTTGTACCAGAAC GAGAATGCGTACGTGAGTGTGGTCACCAGTAATTACAACCGGAGGTTTACCCCCGAGATCGCAGAACGCCCGAAAGTACGGGACCAGG CAGGGAGGATGAATTACTATTGGACTCTTTTTAAAGCCCGGGGATACCATCATCTTTGAGGCAAACGGTAACCTCATAGCTCCCATGTACG CCTTCGCCCTGAGCCGCGGTTTCGGCAGTGGCATTATAACCTCTAACGCCAGCATGCACGAATGTAACACTAAATGTCAGACCCCTCTCG GCGCCATTAATAGCAGTCTCCCTTACCAAAATATCCACCCCGTTACCATTGGCGAGTGTCCAAAATACGTAAGGTCCGCAAAACTGCGCA TGGTGACTGGACTGAGAAACAATCCCTCTATTCAGTCGAGGGGACTATTCGGAGCCATCGCTGGGTTTATCGAAGGGGGATGGACTGGA ATGATCGATGGTTGGTACGGGTACCACCACCAGAACGAGCAAGGCTCAGGGTATGCCGCAGACCAGAAGAGTACCCAGAACGCCATCA ACGGTATCACTAATAAGGTGAATACCGTCATCGAGAAGATGAATATCCAGTTTACCGCTGTGGCAAAAGAGTTTAATAAGCTGGAAAAGC GCATGGAGAACCTGAATAAGAGGTTGACGACGGCTTCCTCGATATTTGGACTTATAACGCCGAGCTGCTCGTTCTCCTCGAAAATGAAC GCACCCTTGACTTTCACGATTCAAACGTCAAGAATCTGTATGAGAAGGTGAAGAATAACGCGAAGGAAATCGGGAAC GGTTGTTTCGAATTTTACCACAAGTGCGATAATGAGTGCATGGAGAGCGTGCGAAATGGCACATATGACTATCCTAAGTACAGCGAGGAA AGTAAACTCAACAGAGAAAAGGTTGATGGCGTCAAGCTCGAGTCAATGGGGATTTACCAGATTCTGGCCATCTATAGTACTGTGGCTTCC TCTCTGGTTTTGCTCGTTTCACTGGGAGCCATTTCTTTCTGGATGTGTTCGAACGGATCCCTCCAATGCAGGATTTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2648	ATGAAAGCAAATCTGCTCGTCCTCCTGTGCGCTCTTGCAGCCGCCGACGCCGACACCATATGCATTGGATATCATGCTAACAACTCAACA GACACCGTGGACACTGTCCTAGAAAAAAAACGTGACCGTGACACACTCGGTCAATCTGTTAGAAGACAGCCATAACGGGAAGCTGTGCCG ACTCAAGGGAATAGCCCCCCCTGCAGCTGGGCAAGTGCAATATCGCCGGGTGGCTCCTCGGCAACCCTGAGTGCGATCCCTTGCTTCCA GTTAGAAGTTGGTCCTATATCGTCGAAACTCCTAACTCAGAGAATGGAATTTGCTATCCCGGAGATTTCATCGACTACGAAGAGCTCAGA GAGCAACTTTCCAGTGTGTCAAGTTTCGAACGCTTTGAAATCTTCCCAAAGGAATCTTCATGGCCCAACCACAATACGAATGGAGTGACC GCCGCCTGTAGTCACGAGGGAAAAAAGTAGCTTCTACCGCAATCTTTTTGTGGCTGACCGAGAAGGAAGGAAGCTACCCAAAGCTGAAGAA CTCCTACGTGAACAAAAAAAGGTAAGGAGGTCCTGGTGCTGTGGGGATTCACCATCCCCCTAACAGTAAGGAGCAGCAAAATCTCTACC AGAACGAGAACGCTTACGTATCTGTTGTGACTTCTAATTATAACAGGAGGTTCACGCCAGAAATTGCTGAGAGGCCAAAGGTCAGGGACC AGGCTGGGGCGCATGAACTACTACTGGACCCTGCTAAAGCCTGGTGACACTATCATCTTTGAGGCCAATGGAAATTTAATTGCACCCATGT ACGCATTTGCCCTATCGCGCGGGTTCGGGAGCGGGATAATTACCTCCAACGCATCGATGCATGAGTGCAACACAAAATGTCAAACACCT CTCGGGGCCATTAACAGCTCCCTCCCCTATCAGAATATTCACCCGGTAACAATCGGTGAATGTCCTAAGTACGTACGCTCCGCCAAGCTG AGGATGGTAACCGGTCTGCGGAATAATCCTAGCATCCAGTCCCGGGGTCTTTTCGGCGCCATCGGCAGGTTTTATAGAAGGGGGCTGGAC TGGTATGATCGATGGATGGTACGGGTACCATCACCAAAATGAGCAAGGTTCGGGGTACGCAGCAGACCAGAAATCAACCCAAAATGCCA TTAACGGAATTACAAATAAGGTTAACACCGTTATCGAAAAGATGAATATCCAGCCGTAGGGAAAGAATTTAATAAGCTCGAGAA GCGGATGGAAAACCTGAACAAGAAAGTGGATGACGGGTTCCTTGACATCTGGACTTATAATGCAGAGCTATTAGTGCTGCTGGAGAACG AACGTACCCTGGATTTCCATGATTCAAACGTCAAAAATCTTTATGAGAAAGTTAAGTCCCAGCTCAAGAATAATGCGAAGGAAATCGGCAA CGGGTGTTTCGAATTCTATCACAAGTGCGATAACGAATGCATGGAGAGCGGTTAGAAACGGCACCTATGACTACCCCAAGTACAGCGAAGA GTCTAAGCTGAACCGGGAAAAGGTCGACGGTGTGAAACTGGAATCCATGGGCATTTACCAGATCCTCGCTATTTACTCGACAGTCGCAA GTAGCCTGGTGCTTTTGGTTTCTCTCGGCGCAATCTCATTCTGGATGTGCTCCAACGGATCCCTCCAGTGTCGCATCTGTATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2649	ATGAAAGCTAACCTGCTGGTCCTTCTCTGTGCGCTCTCGCAGCAGATGCGGACACCATCTGCATAGGATACCATGCTAATAATTCCACA GACACTGTGGACACAGTGCTGGAAAAGAATGTAACGGTGACCCACAGCGTTAACTTGCTGGAGGATAGCCACAATGGTAAGCTTTGTCG TTTGAAAGGGATCGCACCCCTGCAGTTGGGCAAATGTAATATCGCCGGGTGGCTCCTGGGCAACCCGGAGTGCGACCCTTTGCTGCCC GTGCGGAGTTGGTCATACATTGTGGAAACTCCTAACAGTGAGAATGGTATTTGCTATCCTGGGGACTTCATTGACTATGAAGAACTTCGC GAACAGTTATCTAGCGTGTCTAGCTTTGAACGCTTTGAGATCTTCCCAAAGGAGAGTAGTTGGCCTAACCATAACACCAACGGGGTCACA GCGGCCTGTTCGCACGAAGGCAAGTCCAGCTTTATCGCAATCTGCTGTGGTTGACAGAGAAGGAGGATCATACCCGAAGCTGAAAAA AGGCAGGCCGCATGAACTATTACTGGACACTCCTGAAGCCTGGTGACACAATAATCTTCGAAGCTAACGGCAACCTGATAGCCCCAATGT TTCCTACGTGAACAAGAAGGGCAAAGAAGTACTGGTGTTATGGGGCATTCACCACCCACCAAATAGCAAAGAGCAGCAGAACCTTTATCA ACGCCTTTGCCCTAAGTAGAGGTTTCGGCTCTGGAATTATTACGTCTAACGCCAGCATGCACGAGTGTAACACTAAATGCCAAACCCCAC GAACGAGAACCGCCTACGTGAGCGTTGTTACGAGTAATTACAACCGCCGATTTACTCCCGAGATTGCGGAAAGGCCGAAGGTGAGAGACC TAGGTGCTATTAACTCGTCTCTGCCGTACCAGAATATCCACCCAGTAACGATTGGAGAGTGCCCTAAATATGTGCGATCAGCAAAGCTTA GAATGGTGACTGGTTACGCAACAATCCCTCTATTCAGTCCCGCGGCCTGTTTGGGCGATAGCCGGATTCATCGAAGGGGGCTGGAC GGGCATGATTGACGGCTGGTATGGGTATCATCATCAGAACGAACAGGGATCAGGATACGCAGCTGACCAAAAATCCACCGCAGAACGCCA TCAACGGGATCACGAATAAAGTGAATACAGTGATCGAGAAAATGAACATTCAGTTCACGGCAGTTGGAAAAGAGTTCAACAAACTTGAGA AGAGGATGGAGAACCTGAATAAAAAGGTGGACGACGGATTCCTGGATATATGGACTTACAATGCCGAACTACTCGTCCTACTGGAAAATG AGCGAACGCTGGACTTCCATGATTCGAATGTCAAGAATCTGTATGAAAAGGTCAAGTCCCAGCTGAAAAATAATGCTAAAGAGATAGGCA ACGGGTGTTTCGAGTTTTTACCATAAGTGCGATAATGAATGTATGGAGTCCGTGCGAAACGGTACTTACGACTACCCAAAATACTCAGAGG AGTCCAAACTCAACAGGGAGAAAGTGGACGGGGTTAAGCTGGAAAGTATGGGTATTTATCAGATCCTGGCCATCTATTCTACAGTTGCAT CTTCTCTAGTGCTGCTGGTATCTCTGGGCGCAATATCTTTTTGGATGTGTTCAAATGGGAGCCTGCAGTGCCGGATTTGTATC

Ing. Ines Sangiacomo
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Seq ID No.	Sequenza nucleotidica
2650	ATGAAAGCAAATCTTCTGGTGTTACTGTGTGCTTTGGCAGCAGCCGATGCTGACACCATATGTATTGGCTATCACGCAAACAATTCAACCG ACACAGTCGACACCGTCCTCGAAAAGAACGTTACCGTGACCCACTCAGTGAACCTCCTCGAGGACTCCCATAATGGCAAGCTGTGTAGG TTAAAGGGGATCGCCCCCACTGCAGTTGGGAAAGTGTAATATTGCTGGGTGGCTTCTGGGTAACCCCGAATGCGATCCACTCCTCCCCGT TCGCAGCTGGAGTTACATTGTTGAAACCCCAAACAGCGAGAACGGTATCTGTTACCCAGGAGATTTTATTGATTACGAGGAGTTACGAGA ACAACTGTCCTCAGTGAGTTCTTTTGAAAGGTTTGAGATATTCCCTAAAGAGAGCAGCTGGCCGAATCATAACACCAATGGGGTGACTGC AGCTTGCTCCCACGAGGGCAAGTCCTCCTCTATCGCAATCTGTTGTGGCTCACCGAAAAGGAGGGATCATATCCGAAGTTGAAAAATAG CTACGTTAATAAGAAGGGAAAAGAGGTGCTGGTGCTGTGGGGAATCCATCATCCACCTAATTCCAAGGAGCAACAGAATCTATACCAAAA CGAAAATGCTTACGTTTCTGTGGTGACCTCAAATTATAACCGCCGCTTCACTCCAGAGATCGCTGAGCGACCAAAAGTGCGGGACCAAGC CGGCAGAATGAATTACTATTGGACCTTGCTGAAACCCGGAGACACCATAATTTTTGAAGCCAATGGGAACCTGATTGCCCCTATGTACGC CTTCGCCCTGTCTAGGGGTTTCGGCAGCGGGATCATAACATCTAACGCAAGCATGCACGAATGTAATACCAAGTGTCAGACCCCTCTGG GAGCCATTAATTCCAGTCTCCCATACCAGAACATCCACCCCGTTACCATTGGGGAGTGTCCGAAATACGTTAGAAGTGCCAAATTACGAA TGGTGACAGGATTGCGGAACAACCCCAGCATCCAGAGCAGAGGCCTATTTGGCGCCATCGCAGGATTCATCGAAGGCGGATGGACCGG AATGATCGACGGATGGTACGGGTATCACCACCAGAATGAACAGGGGTCGGGTTACGCCGCCGACCAGAAATCTACCCAGAATGCCATTA ATGGGATAACAAACAAGGTCAACACCGTGATTGAGAAGATGAATATACAGTTTACTGCCGTCGGCAAAGAGTTTAATAAACTGGAAAAGC GAATGGAAAACCTGAACAAGAAAGTCGACGATGGGTTCCTGGATATCTGGACATACAACGCTGAGTTGCTCGTGCTGCTCGAGAATGAG AGAACCTTGGACTTTCACGATTCAAACGTAAAAAACTTATACGAAAAAGTCAAGAGTCAGCTGAAAAATAATGCCAAGGAAATCGGGAACG GATGCTTTGAGTTCTATCACAAGTGGCACAATGAGTGTATGGAATCCGTTAGGAACGGGACATACGATTACCCAAAATACTCCGAGGAGA GCAAGTTAAACAGAGAAAAAGTTGACGGAGTGAAACTAGAGTCCATGGGTATTTACCAGATCCTGGCCATTTATTCTACCGTCGCGTCAT CACTGGTACTCCTTGTCTCCCTTGGAGCGATATCCTTCTGGATGTGTTCCAACGGCTCCCTTCAGTGCCGAATCTGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2651	ATGAAGGCTAATCTTCTGGTGTTACTGTGCGCCCTGGCTGCCGGCCGACGCCGACACCATCTGCATTGGTTATCACGCTAATAACTCGACG GATACAGTGGATACTGTACTGGAAAAGAACGTGACAGTCACCCACAGTGTTAACCTGCTCGAGGATAGTCACAATGGCAAGTTGTGCAG GCTGAAGGGGATCGCTCCCCTGCAACTCGGCAAGTGTAATATCGCCGGCTGGCTTTTAGGCAACCCCGAGTGCGACCCCCTACTGCCC GTTAGGTCCTGGAGCTACATCGTGGAAACTCCTAACAGCGAGAACGGCATCTGCTATCCTGGGGACTTCATCGATTACGAAGAGGCTCCG GGAACAGCTCTCTTCCGTGAGCTCCTTTGAGATTTGAGATCTTCCCTAAGGAATCGTCCTGGCCTAACCACACAATACAAATGGCGTGAC AGCTGCCTGTTCACACGAAGGGAAAAGTTCCTTCTATAGGAATCTGCTGTGGCTGACAGAGAAAGAGGGCTCTTATCCTAAATTAAAGAA CTCCTACGTGAACAAGAAGGGTAAAGAGGTCTTAGTGCTGTGGGCATTCACCATCCCCCCAATTCCAAGGAGCAGCAAAATCTGTACCA GAACGAGAACGCTTATGTGTCCGTCGTTACTTCTAACTATAATAGGCGTTTCACCCCGGAGATTGCTGAGAGGCCTAAGGTACGGGACCA GGCCGGTAGAATGAATTACTACTGGACACTACTTAAGCCAGGTGACACAATCATCTTTGAGGCAAACGGAAACCTAATCGCTCCAATGTA TGCATTTGCCCTGAGCCGCGGATTCGGTAGCGGAATTATCACCAGCAATGCCTCTATGCACGAGTGCAATACTAAGTGTCAGACTCCTTT GGGAGCGATCAACTCCAGCTTGCCATACCAAAACATTCACCCGGTGACTATTGGTGAATGCCCCAAGTACGTGCGGTCTGCAAAACTGA GAATGGTTACCGGACTCCGGAATAACCCTAGTATACAGTCTAGGGGGCTCTTTGGAGCCATTGCAGGTTTCATCGAAGGCGGCTGGACC GGCATGATCGACGGATGGTATGGTTATCACCACCAAAACGAGCAGGGATCAGGATATGCTGCAGATCAAAAATCTACTCAAAATGCAATA AACGGTATCACCAATAAGGTGAACACCGTAATCGAAAAAATGAACATCCAGTTTACAGCCGTGGGCAAGGAGTTTAATAAGCTGGAGAAA CGCATGGAGAACCTCAATAAGAAGGTTGACGATGGATTCCTGGACATCTGGACGTATAATGCCGAGCTCCTGGTACTGCTCGAGAATGA ACGAACCCTCGACTTCCATGATAGCAACGTGAAGAACTTATATGAGAAGGTGAAGTCACAACTGAAAAACAATGCTAAGGAAATAGGCAA CGGATGTTTTGAATTCTACCACAAGTGTGACAACGAATGTATGGAATCGGTGAGGAATGGGACATATGACTACCCCAAGTACTCGGAAGA AAGTAAGCTTAATAGGGAGAAGGTGGACGGCGTGAAACTCGAGAGCATGGGGATTTACCAAATCCTAGCAATCTATTCCACAGTTGCTTC TTCTCTGGTGCTCCTTGTGTCACTTGGGGCGATTTCGTTCTGGATGTGCTCAAACGGGAGCCTCCAGTGCCGGATCTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2652	ATGAAGGCAAACCTGCTGGTCCTGCTCTGCGCACTGGCCGCGGGCAGACGCCGACACAATCTGCATAGGCTATCACGCAAATAACAGTAC TGACACCGTCGATACAGTCCTGGAGAAAAACGTGACTGTGACCCACAGCGTAAATCTGCTGGAAGACAGCCACAATGGAAAATTGTGCA GATTGAAAGGAATAGCACCCCCTGCAATTGGGGAAATGTAATATTGCCGGATGGCTGCTCGGCAACCCCGAATGCGACCCGCTGCTGCCC GTCCGGTCTTGGAGTTATATCGTTGAGACACCGAACTCCGAGAATGGTATCTGCTATCCGGGCGACTTCATCGACTATGAGGAACTCAGA GAGCAGCTGTCATCTGTGTCTTCATTCGAGCGTTTCGAGATTTTCCCAAAGGAGTCATCGTGGCCCAACCATAACACAAACGGAGTCACG GCAGCATGCTCTCACGAAGGGAAAAGCTCTTTCTACCGCAACCTGCTCTGGTTGACTGAGAAAGAGGGGTCTTACCCCAAACTTAAGAAC AGCTACGTGAACAAGAAGGGCAAGGAGGTCTTGGTACTGTGGGGCATCCATCACCCACCTAATAGTAAAGAGCAACAAAACCTATACCA GAACGAGAAGCGCATACGTGTCAGTAGTCACCTCTAATTACAACAGGGCGGTTTACACCAGAGATAGCTGAGCGGCCAAAGGTCCGGGACC AGGCAGGCAGGATGAACTACTATTGGACTTTGTTAAAGCCTGGAGACACCATCATCTTTGAGGCTAACGGGAATCTGATTGCTCCCATGT ATGCTTTTGCACTTTCCAGAGGCTTTGGATCCGGTATTATCACATCGAATGCGTCCATGCATGAGTGTAACACTAAGTGTCAAACACCACT CGGCGCAATCAATTCTTCACTTCCTTATCAAAATATTCACCCCGTGACCATCGGCGAGTGCCCCAAGTATGTCAGGAGCGCTAAGCTGCG GATGGTGACAGGGTTGAGGAATAATCCTTCAATTCAGTCGAGGGGATTATTCGGTGCCATCGCGGGATTCATTGAGGGGGGGTGGACAG GAATGATAGACGGGTGGTATGGTTACCACCATCAGAACGAGCAGGGGTCAGGCTACGCCGCTGACCAAAAATCCACCCAAAATGCCATC AATGGAATCACAAATAAGGTAAATACAGTGATCGAAAAAATGAACATTCAATTCACAGCTGTCGGAAAGGAGTTCAATAAGCTTGAGAAAC GAATGGAGAACTTAAATAAAAAAGTTGACGACGGTTTCCTGGACATTTGGACATACAACGCAGAACTGCTCGTTTTACTAGAGAACGAAC GGACGCTGGACTTTCATGATTCTAACGTAAAGAACTTGTACGAGAAGGTGAAAAGCCAGCTTAAAAATAACGCCAAAGAAATCGGAAACG GCTGCTTCGAATTCTACCACAAATGTGATAACGAGTGCATGGAGACGCGTGACGGAATGGGACATATGACTATCCCAAATATTCTGAAGAGT CAAAACTGAATCGGGAAAAGGTCGATGGTGTCAAACTGGAGTCTATGGGCATCTATCAGATACTGGCAATCTACTCCACCGTGGCCAGCA GTCTCGTGCTGCTGGTGAGCCTGGGCGCAATAAGCTTCTGGATGTGCTCAAACGGAAGCCTGCAATGTAGGATTTGTATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2653	ATGAAGGCCAATCTCCTGGTGCTGTTGTGCGCACTGGCAGCGGCGGATGCAGATACAATATGTATCGGATATCACGCAAATAACAGCAC AGATACAGTGGACACCGTGCTGGAGAAGAATGTGACTGTGACGCATAGTGTTAACCTCTTGGAAGATAGCCACAATGGCAAGCTGTGTC GCTTGAAGGGAATCGCCCCCCCTGCAGCTCGGGAAATGCAATATCGCGGGATGGCTTCTGGGTAACCCTGAATGCGACCCGCTGCTGCC CGTGCGCTCATGGTCATACATTGTGGAGACACCTAATTCAGAGAATGGGATTTGCTATCCTGGGGACTTTATCGATTACGAGGAACTGAG AGAGCAGCTATCTTCAGTTAGTTCCTTCGAACGATTCGAGATCTTTCCAAAGGAGAGTAGCTGGCCCAATCATAACACTAACGGAGTGAC CGCCGCGTGCAGCCACGAGGGCAAATCCTCATTTTACCGAAACCTGTTATGGCTCACAGAAAAGGAGGGGTCTTACCCGAAGCTGAAAA ACTCTTATGTGAACAAGAAGGGGAAAGAGGTGTTAGTTCTGTGGGGCATTCACCACCCTCCAAATTCCAAGGAACAACAAAACCTTTACC AAAACGAGAATGCATATGTCTCGGTCGTGACGTCGAACTATAATAGAAGATTTACCCCCGAGATTGCTGAACGACCCAAGGTGAGAGATC AGGCGGGAAGAATGAACTATTACTGGACCTTGCTCAAACCGGGAGATACAATCATATTCGAGGCTAACGGAAACTTGATCGCCCCAATGT ACGCCTTTGCCCTCTCCCGCGGTTTCGGGAGCGGTATCATCACCTCAAATGCTTCTATGCATGAATGCAATACCAAATGTCAAACACCTCT GGGCGCAATCAACTCGAGCCTGCCTTATCAGAACATTCACCCTGTCACCATTGGTGAGTGCCCCAAGTACGTAAGATCAGCTAAGCTGC GTATGGTGACCGGGCTGAGAAACAATCCCTCCATCCAAAGTCGCGGTTTATTCGGCGCCATTGCCGGGTTCATAGAGGGTGGGTGGACA GGAATGATCGATGGCTGGTATGGATATCATCATCAGAACGAACAAGGATCAGGGTATGCAGCAGACCAGAAGTCTACTCAAAACGCAATT AATGGCATCACCAATAAGGTTAACACTGTCATAGAAAAGATGAACATCCAGTTCACTGCGGTGGGCAAAGAGTTTAACAAGCTCGAGAAG CGGATGGAGAACCTCAATAAGAAAGTCGATGACGGATTCCTGGATATATGGACATATAATGCCGAGCTGCTGGTGCTGCTGGAAAACGA AAGAACCCTCGATTTCCACGACTCTAATGTGAAGAATCTGTACGAGAAGGTCAAGTCCCAGCTGAAAAATAACGCCAAGGAGATAGGGAA CGGCTGCTTTGAATTCTATCACAAGTGCGACAATGAGTGCATGGAGAGCGGTTCGGAACGGGACTTACGATTATCCGAAGTATTCAGAGGA GAGCAAGCTTAATCGTGAAAAGGTCGACGGAGTGAAATTAGAAAGTATGGGAATCTATCAGATTCTTGCAATCTATAGCACCGTTGCCAG CTCTCTGGTGTTACTGGTAAGCCTCGGGGCAATATCTTTTTGGATGTGTAGCAATGGGTCTCTCCAGTGTCGAATTTGTATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2654	ATGAAGGCCAACCTGCTCGTGCTTCTGTGTGCGCTGGCCGCCGCCGACGCAGACACTATCTGTATCGGCTATCACGCCAATAACAGCAC GGATACCGTGGATACCGTATTGGAGAAAAATGTCACGGTAACACACTCTGTGAATCTGCTTGAAGACTCCCATAACGGAAAACTTTGTCG GCTCAAGGGCATTGCCCCTCTGCAACTGGGCAAGTGCAACATCGCCGGGTGGCTGCTGGGCAATCCGGAGTGCGACCCTCTCCTGCCA GTCAGGTCCTGGTCCTATATCGTAGAAACCCCCAATAGTGAAAACGGCATATGCTACCCAGGTGATTTCATCGATTATGAAGAGCTCAGA GAGCAACTGAGCTCCGTCAGCAGTTTTGAGCGGTTCGAGATTTTCCCAAAGGAATCATCATGGCCGAATCACACAACACCAATGGAGTGACC GCAGCGTGTTCTCATGAGGGGAAGAGCTCGTTCTATCGGAACCTGCTTTGGTTGACGGAGAAGGAGGGTCATACCCCAAACTTAAGAA CTCATACGTGAATAAAAAGGGCAAGGAGGTCCTCGTGCTGTGGGGATTCACCACCCCCCCAATTCCAAGGAGCAGCAGAATCTGTACC AAAACGAGAATGCTTATGTGAGTGTGGTGACGTCTAATTATAATAGACGGTTTACACCTGAGATCGCAGAAAGACCCAAAGTGCGCCGACC AGGCTGGGAGGATGAATTACTATTGGACTCTGTTAAAGCCCGGCGATACCATCATTTTCGAGGCAAATGGGAATCTTATCGCTCCAATGT ACGCCTTCGCCCTGTCACGGGGGTTCGGGAGCGGGATTATCACATCAAATGCCAGCATGCATGAATGCAACACTAAGTGCCAGACCCCA CTGGGCGCCATCAATTCCAGCCTCCCTTACCAGAACATACACCCTGTTACAATAGGAGAGTGCCCCAAGTACGTCCGATCCGCTAAACTG CGGATGGTTACAGGCCTACGTAATAATCCTAGCATTCAGTCACGGGGACTGTTTTGGCGCAATAGCCGGGTTCATCGAGGGCGGGTGGAC CGGAATGATTGATGGGTGGTACGGATACCACCATCAGAATGAGCAGCGGATCTGGGTACGCCGCCGACCAGAAGAGCACACAGAATGCC ATTAATGGCATAACCAACAAAGTGAACACCGTGATCGAGAAGATGAACATTCAATTTACGGCTGTAGGTAAGGAATTCAACAAACTGGAGA AACGGATGGAGAATTTGAACAAGAAGGTCGATGATGGGTTCCTCGATATTTGGACCTACAACGCTGAGCTTTTGGTGCTGCTGGAGAACG AGAGGACACTTGATTTTCATGATTCGAATGTGTAAAAACTTGTACGAAAAGGTCAAGTCACAGCTGAAGAACAACGCTAAAGAGATTGGAAA TGGATGCTTCGAGTTTTATCACAAATGCGACAATGAATGTATGGAGAGTGTGCGGAACGGAACATACGATTACCCCAAATATTCCGAGGA GTCTAAGCTTAACCGTGAGAAGGTCGATGGCGTTAAGTTAGAGTCCATGGGAATCTACCAGATCCTGGCTATATATAGCACCGTCGCAAG CTCTCTAGTCTTGCTCGTCTCACTGGGAGCAATCTCGTTTTGGATGTGCTCTAACGGGTCCCTACAGTGTCGGATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2655	ATGAAAGCTAATCTGCTGGTCCTGTTGTGTGCACTGGCGGCTGCAGATGCGGATACCATTTGTATCGGTTATCACGCTAATAACTCTACT GACACAGTCGACACGGTGTTGGAAAAGAACGTCACAGTCACCCACAGCGTCAATCTGCTCGAAGATTCACACAACGGAAAGCTATGTAG GTTAAAGGGTATTGCACCATTGCAACTGGGAAAGTGTAACATTGCTGGATGGCTGCTGGGGAACCCCGAGTGTGATCCTTTGCTCCCTGT CAGATCCTGGTCCTACATTGTGGAAACCCCCTAACTCAGAGAACGGGATCTGCTATCCACGGAGATTTTATCGACTATGAAGAGCTGAGGGA ACAACTATCCAGCGTCTCCAGCTTTGAGAGGTTCGAGATATTCCCTAAGGAGTCAAGCTGGCCAAATCACAATACAAACGGTGTCACAGC CGCCTGCAGTCACGAAGGCAAGTCATCGTTCTACCGAAATTTGTTGTGGTTGACGGAAAAAGAGGGATCATACCCAAAACTCAAGAATAG CTATGTCAACAAGAAAGGCAAGGAAGTGCTTGTCCTCTGGGGCATACATCATCCTCCTAACTCTAAGGAGCAGCAAAACTTATACCAGAA CGAGAACGCCTATGTGAGTGTGGTCACCAGCAATTATAATCGCAGGTTCACGCCTGAGATTGCCGAGAGGCCCAAAAGTCAGAGACCAGG CCGGCAGGATGAATTACTATTGGACATTACTGAAACCAGGCGATACTATTATCTTCGAGGCTAACGGAAATCTGATAGCACCAATGTACG CCTTTGCCTTGTCCCGTGGGTTCGGCTCTGGGATCATAACATCCAACGCAAGCATGCATGAGTGCAACACAAAGTGCCAGACACCGCTT GGAGCCATTAATTCTTCTCTGCCATATCAGAACATTCATCCTGTAACAATCGGGGAATGCCCAAAGTACGTTAGAAGTGCCAAGCTGCGC ATGGTGACCGGCCTGAGGAATAATCCCCTCTATTCAGTCCAGAGGACTGTTCGGAGCCATCGCTGGGTTTATTGAGGGCGGCTGGACCGG AATGATAGATGGCTGGTACGGGTACCACCACCAGAATGAACAGGGCTCTGGCTATGCCGCGCGGACCAGAAATCTACCCAAAAATGCCATCA ATGGAATCACCAATAAAGTTAACACGGTGATTGAGAAAATGAACATTCAATTTACCGCGGTAGGAAAGGAGTTTAATAAGCTTGAGAAGCG TATGGAGAATTTGAACAAGAAGGTGGATGACGGTTTCCTCGATATTTGGACCTATAATGCCGAACTACTAGTTTTATTGGAGAACGAACGC ACACTGGATTTCCACGACTCTAATGTTAAAAATCTGTACGAGAAAGTGAAGTCACAGCTAAAGAATAATGCCAAGGAAATAGGAAATGGAT GCTTTGAATTTTACCACAAATGTGACAACGAATGCATGGAATCTGTGCGGAATGGAACTTACGATTACGCCTAAGTACTCTGAGGAGAGTAA ACTGAACAGAGAGAAGGTAGACGGCGTAAAGCTCGAATCAATGGGAATCTACCAAATTCTGGCCATCTACTCTACCGTCGCCTCCTCTCT GGTTTTATTGGTCTCTCTTGGAGCCATTAGTTTCTGGATGTGCAGTAACGGCTCCCTGCAGTGCAGGATTTGTATC

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2656	ATGAAGGCCAACCTCCTCGTGCTGCTCTGCGCCTTGGCAGCCGCAGACGCCGATACCATCTGTATAGGGTACCACGCCAACAATTCAAC AGATACCGTCGATACCGTACTGGAGAAAAACGTCACCGTCACGCACAGCGTTAACCTGTTGGAAGATAGTCATAATGGAAAGCTCTGTCG CCTAAAAGGAATCGGCGCCTCTGCAGCTGGGAAAGTGCAACATAGCCGGGTGGCTCCTCGGGAACCCGGAGTGTGACCCTCTTTTGCCG GTGCGCTCATGGTCATATATTGTTGAGACCCCTAACAGCGAAAACGGAATATGTTACCCAGGGGACTTCATCGATTATGAGGAATTACGA GAACAACTAAGTTCCGTCTCTTCCTTCGAGCGCTTTGAAATCTTTCCTAAAGAGAGTTCCTGGCCCAACCACAACACTAATGGCGTGACAG CTGCTTGCAGTCATGAGGGCAAAAGTTCATTCTATAGAAATCTTCTCTGGCTAACTGAGAAAGAAGGATCCTACCCTAAACTCAAAAATTC CTATGTTAACAAGAAGGGCAAAGAGGTGCTCGTGCTGTGGGGATCCACCACCCACCAAATTCAAAAGAGCAACAAAACCTCTACCAGA ATGAAAATGCCTACGTGAGCGTTGTGACTTCAAATTACAATAGACGGTTTACCCCAGAGATCGCAGAACGCCCTAAGGTACGTGATCAGG CTGGGCGAATGAACTACTACTGGACACTCCTCAAACCAGGCGACACTATAATCTTCGAGGCTAACGGCAACCTGATTGCTCCAATGTACG CGTTCGCTCTTTCACGCGGATTCGGCTCCGGCATCATTACTAGTAATGCATCTATGCATGAATGCAATACTAAGTGCCAGACCCCACTCG GAGCCATAAACAGTTCTCTGCCATATCAGAACATACACCCTGTGACTATAGGAGAATGCCCCAAAATATGTTCGGTCCGCTAAGCTGCGCA TGGTGACCGGACTCCGGAACAACCCATCCATACAATCACGGGGGGCTGTTTGGCGCCATTGCCGGCTTCATCGAGGGTGGATGGACTGG TATGATCGATGGTTGGTATGGATACCATCATCAGAATGAACAGGGCTCCGGCTATGCCGCCGATCAGAAGTCCACCCAGAACGCCATTAA CGGAATTACCAACAAGGTTAATACTGTGATCGAGAAGATGAATATTCAGTTCACAGCAGTCGGGAAGGAATTCAACAAACTGGAGAAACG TATGGAAAATCTCAACAAGAAGGTGGACGATGGGTTTTTAGACATTTGGCACTTATAATGCCGAACTGCTGGTGCTGCTGGAAAACGAGAG AACGTTGGACTTTCACGACAGCAACGTGAAAAACCTGTATGAAAAAGTGAAGTCCCAGCTCAAAAACAATGCAAAGGAAATCGGCAACGG TTGCTTTGAGTTCTACCATAAGTGCGACAACGAATGTATGGAATCTGTGCGCAATGGAACCTACGACTATCCTAAGTATAGCGAAGAATCT AAATTAAATAGGGAAAAGGTTGATGGAGTGAAACTGGAGTCTATGGGGATCTACCAGATCCTTGCTATCTACTCAACCGTCGCTAGCTCC CTCGTACTGCTGGTCAGTTTAGGAGCGATATCTTTCTGGATGTGTTCTAATGGGTCACTGCAGTGTAGAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2657	ATGAAGGCCAATCTGCTGGTGCTTCTCTGCGCCTTAGCCGCCGCCGATGCAGATACCATTTGTATTGGATATCACGCTAACAACAGTACA GATACTGTGGACACTGTCCTGGAAAAGAACGTCACCGTCACGCATAGCGTAAACCTGCTCGAGGACTCACACAACGGGAAGCTCTGTCG TCTGAAGGGCATCGCCCCCCCTGCAGCTCGGCAAATGCAACATTGCGGGATGGCTTCTTGGAAACCCCGAGTGTGATCCCTTATTACCAG TGCGCTCTTGGTCCTATATAGTAGAAACCCCAAACAGCGAGAACGGGATTTGTTACCCCGGCGATTTCATAGACTACGAGGAGTTGCGC GAACAGCTGTCTAGCGTCTCCTCATTCGAACGTTTCGAGATTTTCCCAAAGGAATCCTCGTGGCCCAATCATAATACCAATGGAGTCACTG CCGCCTGCAGCCACGAGGGAAAGTCATCTTTCTATCGGAATCTGCTCTGGCTGACCGAAAAGGAGGGATCTTATCCTAAACTGAAAAATT CTTACGTCAATAAGAAAGGCAAGGAAGTCTTAGTATTATGGGGAATTCATCACCCTCCCAACAGTAAGGAGCAGCAGAACCTGTACCAGA ACGAGAACGCCTATGTTTCTGTCGTGACATCTAACTATAACAGACGTTTCACCCCAGAAATTGCTGAAAGGCCAAAGGTCCGTGATCAGG CCGGCAGGATGAATTACTACTGGACTCTTCTGAAGCCTGGTGACACAATCATTTTCGAAGCCAACGGCAACCTGATTGCTCCCATGTACG CGTTCGCTCTGAGTCGCGGCTTTGGATCGGGTATTATTACGTCCAATGCCTCTATGCATGAATGTCAGACCCCTCTAG GCGCCATCAATTCTAGCCTCCCGTACCAGAACATTCATCCTGTGACTATTGGTGAATGCCCAAAGTACGTGAGGTCCGCCAAGCTTCGCA TGGTGACCGGCCTGCGTAACAACCCCTCCATCCAATCCAGAGGTCTCTTTGGGCAATCGCCGGTTTTATTGAGGGTGGTTGGACCGGA ATGATCGATGGTTGGTACGGGTACCACCATCAGAATGAGCAGGGCAGTGGATATGCCGCTGACCAAAAATCTACACAAAAACGCGATCAA TGGAATCACCAATAAAGTGAACACAGTCATAGAAAAAATGAACATCCAGTTTACTGCGGTCGGGAAGGAATTTAATAAGCTCGAGAAAAGA ATGGAAAATCTAAACAAAAAGGTCGATGACGGTTTCCTCGATATCTGGACATACAATGCCGAATTACTGGTCCTGCTCGAGAATGAGCGG ACATTAGACTTCCACGACAGCAATGTAAAGAACCTTTACGAGAAGGTGAAGTCCCAGCTGAAGAACAATGCTAAAGAGATTGGGAATGGC TGTTTTGAATTTTACCATAAATGCGACAACGAGTGTATGGAAAGCGTGCGGAACGGGACTTACGATTACCCAAAATATAGTGAGGAGAGC AAATTAAACCGTGAGAAGGTCGACGGGGGTGAAGTTGGAATCCATGGGCATTTACCAAATCCTCGCAATTTACTCCACCGTGGCTTCTTCA TTGGTTCTCCTGGTGTCCCTTGGGGCCATATCATTTTGGATGTGCTCTAATGGGAGTCTCCAGTGCCGTATATGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2658	ATGAAGGCTAACCTACTGGTTCTGCTGTGTGCGCTTGCCGCCGCAGATGCCGACACCATCTGCATCGGGTATCACGCAAATAACTCCAC CGACACAGTAGACACAGTATTGGAAAAAAACGTGACCGTCACCCACTCTGTGAACCTGCTCGAAGATAGCCATAATGGCAAATTGTGTAG ACTCAAAGGTATCGCTCCCTTGCAGCTAGGAAAGTGCAAACATTGCAGGATGGCTCCTCGGCAACCCTGAGTGTGACCCCCTCCTGCCCG TCCGATCCTGGTCCTACATCGTGGAGACTCCAAACTCGGAGAACGGAATATGTTATCCTGGGGATTTCATTGACTATGAGGAGCTTAGGG AGCAACTATCCAGCGTATCTAGTTTCGAACGGTTCGAGATCTTTCCAAAAGAGTCCAGTTGGCCTAACCATAACACGAACGGTGTGACCG CTGCTTGTAGCCATGAGGGGAAATCATCTTTCTATCGCAACTTGCTTTGGCTCACAGAGAAGGAGGGCTCCTACCCTAAGTTGAAAACA GCTATGTCAATAAAAAAGGCAAAGAGGTTCTCGTGTTATGGGGTATTCACCACCCTCCTAACTCTAAAGAGCAACAAAATCTGTATCAGAA CGAGAATGCGTATGTGTCAGTCGTTACATCAAATTACAATAGGCGGTTTACACCAGAGATCGCTGAAAGACCTAAAGTTCGGGACCAGGC CGGCCGCATGAATTACTACTGGACTCTGCTGAAGCCAGGGGATACGATTATCTTTGAAGCTAATGGTAACCTGATTGCTCCCATGTACGC CTTTGCCTTATCAAGAGGATTTGGATCCGGCATAATCACATCCAATGCTAGCATGCACGAGTGCAACACCAAATGCCAGACTCCTTTGGG AGCCATCAACTCTAGTCTGCCATATCAGAATATCCATCCTGTGACCATCGGGGAGTGCCCGAAGTATGTGCGATCAGCCAAGCTGCGGA TGGTCACCGGATTAAGAAATAACCCCTCCATTCAGTCTCGAGGACTGTTCGGTGCTATCGCTGGTTTTATTGAAGGTGGTTGGACAGGCA TGATCGATGGCTGGTACGGTTATCACCACCAGAACGAACAGGGGTCTGGGTACGCTGCCGATCAGAAGAGTACCCAGAACGCGATCAAT GGCATTACCAACAAAGTGAACACAGTAATAGAAAAGATGAACATTCAGTTCACCGCTGTTGGTAAAGAGTTCAACAAGCTGGAAAAACGG ATGGAGAATCTCAACAAAAAGGTTGATGATGGGTTCCTGGATATCTGGACCTACAACGCGGAACTGCTGGTACTGCTGGAAAATGAACGG ACACTTGACTTTCACGACTCTAACGTGAAGAATCTGTACGAAAAGGTAAAATCACAGCTAAAGAACAATGCAAAGGAGATTGGGAATGAT GCTTCGAGTTCTACCATAAGTGCGACAACGAGTGTATGGAGTCTGTGCGGAATGGCACTTACGATTACCCTAAGTACTCCGAGGAATCTA AACTGAATCGAGAGAAAGTGGATGGTGTAAAGCTCGAGAGTATGGGCATTTATCAGATTCTGGCTATCTACTCGACTGTAGCCTCCTCAC TGGTGTTACTGGTGAGCCTCGGTGCAATCTCATTCTGGATGTGTAGTAACGGCTCCTTACAGTGTCGCATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2659	ATGAAGGCCAACTTGTTAGTCCTGCTGTGCGCTTTAGCGGCTGCCGACGCCGATACAATCTGTATTGGCTATCACGCTAACAATAGCACT GACACAGTCGATACAGTTCTGGAGAAGAATGTTACAGTCACGCATAGCGTGAACTTACTGGAAGACTCTCACAATGGCAAGTTGTGTCGG CTGAAGGGGATCGGCTCCATTGCAACTCGGAAAATGCAATATAGCGGGCTGCTCGGAAATCCAGAATGTGATCCCCTTCTGCCTGT CCGCTCCTGGTCCTACATCGTGGAGACTCCTAATTCTGAGAACGGAATATGCTACCCTGGCGACTTCATCGACTACGAAGAACTCCGGGA ACAGCTCTCTAGCGTGAGTTCCTTTGAGAGATTCGAAATTTTTCCAAAAGAGTCCAGCTGGCCTAATCATAATACAAACGGGGTGACTGCT GCATGCAGCCACGAAGGGAAATCGTCTTTTTATAGAAATCTGCTGTGGCTGACGGAGAAGGATCATACCCAAAGCTAAAGAACTCA TATGTTAACAAGAAAGGGAAGGAGGTGCTGGTGCTGTGGGGATACATCACCCACCCAATTCTAAAGAGCAGCAGAACTTGTATCAGAA CGAAAATGCCTACGTGAGCGTCGTGACTTCCAACTATAACCGAAGATTCACTCCCGAAATTGCCGAACGCCCCAAGGTCCGGGATCAGG CGGGACGCATGAATTACTATTGGACCCTGCTGAAACCTGGAGACACTATTATCTTCGAGGCCAACGGCAACTTGATCGCTCCCATGTATG CCTTTGCCCTGAGTCGAGGTTTTGGAAGCGGGATTATCACTTCCAATGCATCAATGCATGAATGCAAATACAAAGTGTCAGACACCCCTTG GCGCAATTAACTCATCTCTGCCCTACCAGAACATTCATCCAGTCACTATCGGGGAGTGCCCTAAATATGTTAGATCTGCCAAGCTGCGGA TGGTGACAGGGCTTAGAAATAACCCCAGCATTCAGAGCCGCGGCTTGTTTGGAGCCATTGCTGGGTTTATTGAGGGAGGGTGGACCGGA ATGATAGACGGTTGGTACGGGTACCATCATCAGAATGAGCAGGGCAGTGGTACGCCGCTGACCAAAAGAGCACCCAGGACGCTATCAA CGGAATTACCAATAAGGTCAATACAGTGATAGAAAAGATGAACATTCAGTTTACTGCTGTGGGGAAGGAGTTCAATAAACTCGAAAAACG GATGGAGAACCTCAACAAGAAAGTGGACGACGGATTTCTGGACATTTGGACCTATAACGCCGAGTTACTGGTACTGCTTGAAACGAAAG GACCTTAGACTTTCATGATTCTAATGTTAAAAATCTGTATGAAAAGGTCAAGAGCCAACTTAAGAACAACGCCAAAGAAATCGGAAACGGT TGCTTCGAGTTTTATCATAAGTGTGACAATGAGTGCATGGAGTCTGTTCGAAATGGTACATACGACTATCCCAAGTATAGTGAAGAGGCA AACTTAATCGGGAGAAGGTGGATGGCGTGAAACTGGAAAGCATGGGAATCTACCAGATCTTAGCCATATACAGTACAGTCGCTTCATCTC TCGTGCTTCTCGTCAGCCTCGGAGCAATCAGCTTTTGGATGTGTAGCAACGGCAGCCTCCAATGCCGAATCTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2660	ATGAAGGCAAACCTCCTTGTCCTCTGTGTGCACTGGCAGCCGCCGACGCCGACACTATTTGTATCGGGTACCATGCAAATAACTCCACC GATACCGTGGACACAGTCCTGGAAAAAAACGTGACAGTGACGCATTCAGTGAATCTCCTTGAAGATAGCCACAATGGAAAGTTGTGCCG GCTGAAAGGAATCGCACCTTTACAGCTGGGAAAGTGTAACATTGCAGGGTGGCTGTTGGGCAACCCTGAGTGTGACCCCCTCTTACCCG TCCGGTCTTGGAGTTACATAGTGGAAACACCAAATAGTGAGAACGGCATCTGCTACCCAGGAGATTTCATCGATTATGAAGAGCTGCGTG AACAACTCTCTAGTGTTAGTTCTTTCGAAAGGTTCGAGATCTTTCCTAAAGAATCGTCATGGCCCAATCACAATACAACGGGGTCACAGC TGCTTGCTCACACGAAGGAAAGAGCAGTTTCTATAGAAATCTGCTGTGGCTGACCGAGAAGGAGGGTTCTTACCCTAAACTTAAAAATTCT TATGTTAACAAGAAGGGCAAAGAAGTGCTTGTCCTGTGGGCATCCACCATCCCCCTAACTCTAAAGAGCAGCAGAACTTGTACCAGAAT GAGAACGCCTATGTGTCAGTGGTTACCTCAAATTATAACCGGAGATTTACGCCTGAGATCGCCGAGCCGCCCAAAGTGCGGGATCAAGC CGGACGTATGAACTACTATTGGACACTCCTTAAGCCAGCGGATACCATTATCTTTGAGGCAAATGGCAACCTGATCGCACCCATGTACGC GTTCGCCTTGTCTCGAGGATTCGGCAGCGGCATCATCACGTCCAACGCCAGTATGCATGAGTGTAATACAAAATGCCAAACTCCCCTCGG GGCAATTAACTCGTCTCTGCCATACCAGAACATACATCCAGTGACTATTGGTGAATGTCCCAAGTACGTCCGGTCTGCCAAGCTGCGGAT GGTGACTGGCTTGCGCAATAACCCTAGCATTCAGTCCAGAGGGCTGTTCGGCGCAATCGGCGGGTTCATCGAGGGGGGCTGGACTGGC ATGATCGATGGCTGGTATGGATATCACCATCAGAATGAACAGGGGAGCGGTTATGCGGCCGATCAGAAATCGACCCAGAACGCAATCAA TGGAATTACCAACAAGGTTAACACAGTCATAGAGAAAATGAACATCCAGTTCACGGCCGTTGGGAAGGAGTTTAATAAGTTGGAAAAGCG AATGGAAAACCTGAATAAAAAAGTCGACGACGTTCCTGGATATCTGGACCTATAACGCCGAGCTACTCGTTCTGTTGGAGAACGAGAG GACACTCGACTTCCATGACAGCAATGTGAAAAACCTGTACGAAAAGGTGAAAAGTCAGCTCAAGAACAATGCAAAAGAGATCGGCAACGG ATGTTTCGAGTTTTACCACAAGTGCGATAATGAGTGTATGGAAAGCGTGCGCAATGGCACTTATGACTACCCCAAGTATTCTGAGGAGTC CAAATTGAATCGAGAAAAGGTGGATGGCGTCAAGCTAGAATCGATGGGGATATACCAGATATTGGCCATCTCTACTCCACCGTGGCCTCCTC CCTCGTCCTTCTTGTTTCGCTGGGCGCCATCTCTTTTTGGATGTGCTCAAACGGCTCGCTTCAGTGTCGCATTTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2661	ATGAAGGCAAACCTGTTAGTTCTCCTCTGCGCTTTGGCTGCGGCCGACGCCGACACAATCTGTATCGTTATCATGCGAACAACTCAACT GACACAGTGGATACTGTGCTGGAAAAAAATGTGACAGTCACCCACTCTGTGAATCTGCTAGAGGACTCACACAACGGAAAGCTGTGCAG GCTCAAGGGCATTGCGCCACTGCAATTAGGAAAGTGTAACATCGCTGGATGGCTACTGGGAAACCCCGAGTGTGACCCCCTGCTTCCTG TGCGTAGTTGGAGTTATATCGTCGAAACTCCAAACAGCGAAAACGGCATTTGTTATCCCGGCGATTTCATCGATTATGAGGAATTGCGGG AGCAACTATCTAGCGTGTCTAGTTTTGAGAGATTCGAGATCTTCCCTAAAGAGTCTTCCTGGCCCAATCATAACACAAATGGTGTCACCGC AGCCTGCAGTCACGAGGGGAAGAGTAGCTTTTATCGCAACCTGCTGTGGCTGACCGAAAAGGAAGGCTCCTATCCTAAACTTAAGAACA GCTACGTGAACAAAAAGGGTAAGGAGGTCCTTGTTCTCTGGGGAATCCACACCCCCCCTAATAGCAAAGAGCAGCAAAACCTTTATCAGA ATGAGAACGCTTATGTTTCTGTGGTGACCTCAAACTATAATAGACGTTTCACACCTGAAATCGCCGAAAGGCCCAAGGTTCGAGATCAAG CCGGTCGTATGAATTACTATTGGACGCTGCTAAAGCCAGGCGACACCATAATTTTCGAAGCGAACGGTAACTTGATCGCCCCTATGTATG CATTCGCCCTGTCACGTGGCTTTGGCTCTGGTATTATCACCAGCAATGCCTCTATGCACGAGTGTAATACTAAATGTCAGACCCCACTCG GCGCTATCAACTCATCCTTGCCCTACCAGAACATACATCCAGTGACAATTGGAGAATGCCCGAAATACGTGCGTAGTGCCAAGCTGAGAA TGGTGACTGGTCTCCGGAATAACCCCCTCTATACAGTCCAGGGGCCTGTTTGGGGCTATTGCCGGTTTTATTGAGGGAGGTTGGACTGGC ATGATCGATGGTACGGCTATCACCACCAGAACGAGCAAGGCTCTGGCTATGCCGCAGACCAGAAATCAACACAAAACGCTATCAA TGGAATAACTAACAAGGTCAACACAGTGATTGAAAAAATGAACATCCAGTTTACGGGCTGTGGGCAAGGAGTTCAACAAGCTGGAAAAGAG GATGGAAAATCTCAACAAAAAAGTCGACGACGGCTTCTTGGACATCTGGACTTACAATGCAGAGTTGCTTGTTCTGCTGGAAAACGAACG TACGCTGGACTTCCACGACAGTAATGTCAAGAATTTGTATGAAAAAGTGAAATCACAGCTGAAAAATAATGCGAAGGAGATAGGCAATGG CTGTTTTGAGTTCTATCATAAGTGCGATAATGAGTGCATGGAGTCAGTGCGAAACGGGACCTACGACTACCCCAAATATAGTGAAGAGAG CAAGCTGAATAGAGAGAAAGTCGATGGCGTTAAACTTGAGAGCATGGGTATCTATCAAATCCTGGCTATTTACAGTACAGTGGCCTCCTC TCTAGTGCTGCTCGTATCTCTCGGAGCGATATCCTTCTGGATGTGTTCCAATGGCTCTCTACAGTGCCGGATATGCATA

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Seq ID No.	Sequenza nucleotidica
2662	ATGAAAGCTAATCTGCTTGTACTGCTGTGCGCACTGGCAGCCGCAGACGCTGACACTATCTGTATCGGGTACCACGCCAACAATTCGACC GATACTGTGGACACAGTGTTGGAGAAGAACGTCACCGTAACGCACAGCGTGAACCTTTTAGAAGATAGTCATAATGGAAAGCTGTGTAGG CTCAAGGGAATCGCTCCACTTCAGTTGGGAAAATGCAATATCGCTGGCTGGCTACTGGGCAACCCTGAATGCGACCCCCTGCTGCCTGT GCGATCCTGGTCCTATATTGTAGAGACCCCCAACTCAGAGAATGGCATTTGCTACCCAGGCGATTTTATTGACTACGAGGAGCTGAGAGA GCAGTTGTCCTCCGTCTCCAGCTTTGAAAGGTTTGAGATTTTCCCAAAAGAGTCCAGCTGGCCAAATCACAATACAAATGGTGTGACCGC CGCTTGTTCTCACGAAGGCAAAAGCTCCTTCTATAGAAATCTTCTGTGGCTAACAGAAAAAGAAGGATCATACCCAAAGTTGAAAAACAGC TACGTTAATAAGAAAGGCAAAGAGGTGCTGGTCCTGTGGGGTATCCCACCCACCCAATTCTAAAGAACAACAAAATTTGTACCAAAAT GAAAACGCCTACGTTTCTGTCGTCACTAGCAATTATAACCGGAGAGGTTCACACCCGAGATCGCAGAAAGACCTAAGGTGAGAGACCAAGC CGGCAGAATGAATTATTACTGGACTCTCCTCAAACCCCGGGGACACCATCATCTTCGAAGCTAACGGCAATCTGATTGCTCCTATGTACGC TTTTGCTCTGTCCCGGGGGTTTGGCAGCGGTATTATCACATCAAACGCCAGTATGCACGAGTGTAATACGAAATGCCAGACTCCTCTGGG GGCTATCAATTCCAGTCTGCCCTATCAGAATATTCATCCTGTCACGATCGGTGAGTGCCCTAAGTATGTGCGAAGCGCCAAACTGCGGAT GGTAACGGGCCTGAGGAATAACCCCTCTATTCAGTCTCGCGGGCTGTTTGGCGCAATCGCCGGCTTTATCGAGGGCGGTTGGACTGGC ATGATCGACGGATGGTACGGGTACCATCACCAGAACGAACAGGGGTCCGGCTACGCCGCCGACCAGAAATCAACCCAGAACGCGATTA ACGGGATCACCAACAAGGTGAATACTGTGATTGAGAAGATGAATATTCAGTTTACAGCAGTGGGCAAGGAGTTTAACAAACTTGAGAAAC GCATGGAGAATCTCAACAAAAAGGTTGACGATGGATTCCTTGATATTTGGCACATATAATGCCGAGCTGCTGGTCCTTCTGGAAAATGAAC GCACACTGGATTTTCACGACTCGAACGTGAAGAATCTGTACGAGAAGGTAAAGTCCCAATTAAAAAACAATGCTAAGGAGATAGGCAACG GCTGCTTCGAGTTTTACCACAAGTGCGATAACGAGTGCATGGAGTCTGTGAGAAACGGTACGTACGATTACCCCAAATATTCCGAAGAGA GCAAGCTCAACCGCGAGAAAGTAGACGGCGTTAAACTGGAGAGCATGGGCATCTACCAGATCCTCGCCATTTACTCCACTGTGGCCTCG TCACTAGTTCTCTTGGTGTCCCTGGGAGCCATCTCATTTTGGATGTGCTCCAACGGCTCACTACAGTGCCGGATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2663	ATGAAGGCCAACCTCCTGGTGTTACTTTGTGCCCTAGCAGCCGCAGACCGCCGACACTATCTGCATCGGATACCATGCTAATAACAGCACC GATACAGTAGATACCGTTTTTGGAAAAGAATGTCACTGTCACCCACAGCGTTAATCTGTTGGAGGATAGCCACAACGGTAAACTGTGCAGGG CTGAAGGGAATTGCCCCCCCTTCAACTGGGCAAGTGCAACATTGCAGGCTGGCTCCTCGGTAACCCTGAGTGCGATCCTTTACTCCCTGTT AGAAGCTGGAGCTACATCGTGGAGACCCCCAATAGTGAGAACGGAATCTGCTACCCTGGAGATTTCATCGACTATGAAGAACTTCGGGA ACAGCTCAGTTCAGTGTCGAGCTTCGAGATTCGAGATCTTTCCAAAGGAGTCCAGCTGGCCTAATCACAACACAAATGGCGTTACAGC AGCATGCTCACACGAAGGCAAGAGCAGCTTCTACCGCAACCTGCTGTGGCTTACCGAGAAGGAGGGATCCTATCCCAAGCTCAAGAATT CTTATGTGAATAAAAAGGGTAAGGAAGTGCTGGTCCTGTGGGGTATCCATCATCCGCCAAATTCTAAGGAACAGCAGAATCTGTATCAGA ATGAAAATGCCTACGTGAGTGTTGTGACTTCGAATTACAACAGGCGGTTTACCCCGGAGATTGCTGAGCGGCCCAAAGTCCGGGATCAG GCTGGCCGCATGAATTATTATTGGACTCTGCTCAAGCCTGGCGACACCATCATTTTTGAGGCCAATGGCAACCTTATCGCTCCCATGTAC GCCTTCGCCCTCAGTAGGGGATTCGGGTCTGGTATCATCACTTCAAACGGCCAGCATGCACGAGTGCAATACCAAGTGCCAGACACCACT CGGTGCCATTAATAGCTCTCTTCCATATCAGAATATACATCCAGTCACGATCGGGGAATGCCCCCAAATATGTAAGAAGTGCCAAACTGCG CATGGTGACAGGCCTGCGGAACAACCCAAGCATCCAAAGCAGAGGGCTGTTTGGCGCCATCGCGGGCTTCATTGAAGGTGGTTGGACT GGCATGATTGATGGCTGGTACGGATATCATCATCAGAACGAGCAGGGATCAGGGTACGCGGCGCCGATCAGAAGAGTACCCAGAATGCCAT TAACGGCATCACGAATAAAGTAAATACTGTCATCGAAAAGATGAACATCCAATTTACTGCTGTCGGGAAGGAGTTCAACAAACTGGAAAAA AGGATGGAGAACCTGAATAAGAAAGTTGACGACGGCTTTTTAGATATTTGGACGTATAACGCAGAACTGCTCGTGCTCCTGGAGAACGAG AGGACCCTGGACTTTCACGACTCCAATGTGAAGAACCTTTATGAGAAAGTCAAATCTCAGCTCAAAAACACAACGCTAAAGAAATTGGGAATG GTTGTTTTGAGTTTTATCACAAATGCGACAACGAATGCATGGAGAGCGTCAGGAACGGGACATACGACTATCCAAAGTACTCAGAAGAGT CAAAACTCAACAGAGAGAAGGTTGACGGAGTCAAACTTGAGTCTATGGGCATATACCAGATCTTGGCGATCTATTCCACGGTGGCCTCAA GCCTTGTTCTGTTGGTCTCATTGGGTGCCATCAGCTTTTGGATGTGTAGTAACGGCAGTCTGCAGTGTAGAATTTGCATC

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Seq ID No.	Sequenza nucleotidica
2664	ATGAAAGCAAACCTGCTCGTGCTCCTGTGCGCTCTGGCAGCCGGCAGATGCCGACACTATTTGCATCGGTTACCATGCCAACAACAGCAC TGATACGGTGGATACCGTACTAGAGAAGAATGTCACCGTAACCCACTCAGTGAACCTGCTCGAAGACTCTCACAACGGTAAGCTGTGTAG ATTAAAGGGAATTGCCCCCTTGCAGTTAGGAAAGTGTAACATAGCAGGTTGGCTCCTTGGCAATCCTGAGTGTGACCCCCTACTGCCAGT CCGCAGCTGGAGCTATATCGTTGAGACTCCCAACTCTGAAAATGGAATCTGTTATCCAGGTGACTTCATCGATTATGAAGAATTACGCGA GCAGTTGTCCAGTGTTAGCTCTTTCGAGAGATTTGAAATATTCCCAAAGGAGTCGTCCTGGCCCAATCACACAACACCAATGGAGTGACCGC TGCTTGCTCCCACGAAGGGAAGAGCTCTTTCTATCGGAATCTGTTGTGGCTGACAGAAAAGGAGGGCAGCTATCCTAAACTAAAGAACAG CTACGTGAACAAGAAGGGAAAGGAGGTGCTCGTGCTGTGGGCATTCATCATCCTCCAAATTCCAAGGAGCAGCAGAACTTATATCAGA ATGAGAATGCTTATGTCTCAGTGGTGACGTCAAATTACAACAGGCGCTTCACACCCGAGATCGCTGAGCGGCCCAAGGTCCGCGACCAG GCTGGTAGAATGAATTACTATTGGACCCTCCTGAAGCCCGGAGATACTATTATCTTCGAAGCAAATGGAAATTTGATCGCACCCATGTATG CTTTCGCTCTGTCCAGGGGATTCGGTAGTGGCATTATCACCAGCAATGCAAGTATGCATGAGTGCAACACAAAATGTCAGACGCCGTTAG GGGCTATTAACAGCAGCCTCCCTTATCAGAACATTCATCCGGTTACCATCGGGGAGTGCCCTAAGTACGTGAGAAGTGCCAAACTGAGG ATGGTGACAGGCCTGCGCAATAATCCCAGTATCCAGAGCCGAGGTCTCTTTGGTGCCATTGCGGGCTTTATTGAAGGGGGCTGGACCGG CATGATCGACGGTTGGTACGGATACCACCACCAGAACGAACAGGGCAGTGGCTACGCCGCCGACCAGAAGAGTACTCAGAACGCAATC AATGGAATTACGAACAAGTTTAATACCGTAATCGAAAAAATGAATATCCAGTTTACCGCCGTAGGCAAGGAGTTTAACAAGCTCGAAAAAC GCATGGAAAACCTGAATAAGAAAGTGGATGATGGATTCCTTGACATCTGGACCTACAACGCGGGAACTTCTTGTCCTGCTCGAAAATGAGA GAACGCTCGACTTTCACGACAGCAATGTCAAGAATCTGTACGAAAAGGTAAAGTCACAGCTGAAGAACAACGCTAAGGAGATAGGCAAC GGCTGCTTCGAGTTTTACCATAAATGCGACAATGAATGCATGGAATCCGTGAGAAACGGCACTTACGATTACCCCAAATACAGCGAAGAA TCAAAGCTAAACAGGGAGAAGGTGGACGGGGTGAAACTAGAAAGCATGGGCATCTATCAGATCCTCGCCATTTACTCCACAGTCGCATC TTCTTTAGTGCTCCTTGTGTCACTGGGCGCTATCTCGTTTTGGATGTGCTCAAACGGATCTCTGCAGTGTCGGATCTGTATT

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Seq ID No.	Sequenza nucleotidica
2665	ATGAAAGCAAATCTGCTAGTGCTGCTGTGCGCCCTGGCCGCCGCAGATGCAGATACTATCTGCATTGGTTACCATGCCAACAACTCTACC GATACCGTGGATACTGTCCTCGAGAAGAATGTGACTGTGACTCATTCCGTGAACTTACTCGAAGACAGCCACAACGGAAAGCTGTGCCG ATTGAAGGGCATCGCGCCACTCCAGCTGGGGAAATGCAACATCGCCGGCTGGCTTTTGGGAAACCCCGAGTGCGATCCGCTATTGCCC GTAAGATCATGGTCCTACATCGTGGAAACACCAAATTCAGAAAATGGCATCTGCTACCCCGGAGATTTTATCGATTACGAGGAACTGAGG GAGCAACTGAGCAGCGTTAGTTCTTTTGAGCGATTCGAAATTTTCCCAAAGGAGTCCTCATGGCCCAATCACACAATACCAATGGCGTTACA GCCGCTTGTAGCCATGAAGGTAAGAGTTCATTTTATCGAAATCTTCTCTGGCTGACGGAGAAGGAGGGTAGTTACCCTAAATTGAAAAATT CATACGTGAACAAGAAAGGAAAGGAGGTGCTGGTCCTCTGGGGGATTCACCATCCCCCCAATAGCAAAGAGCAACAGAATCTGTACCAG AACGAAAACGCTTATGTCTCCGTGGTCACCTCAAATTACAATAGACGGTTTACCCCGGAGATAGCCGAGAGGGCCCAAAGTCCGCGATCA GGCCGGCCGCATGAACTACTACTGGACCCTCCTCAAGCCAGGCGATACCATCATATTCGAGGCGAATGGGAACTTGATTGCCCCGATGT ACGCATTTGCTTTGTCCAGAGGCTTTGGCTCCGGGATCATCACATCTAATGCCTCCATGCATGAATGCCAGAACACAAATGCCAGACACCCC TGGGCGCTATTAACTCCTCTCTACCTTACCAGAACATCCACCCGGTTACTATTGGCGAGTGTGCCTAAATATGTCCGCAGCGCCAAACTGA GGATGGTGACAGGGCTGAGGAATAACCCCAGCATTCAGTCCAGAGGCTTGTTCGGCGCTATAGCGGGGTTCATAGAAGGAGGCTGGAC CGGAATGATCGATGGCTGGTACGGCTACCACCATCAGAACGAGCAGGGCTCCGGGTACGCCGCTGACCAGAAGAGTACGCAGAACGCC ATTAATGGAATCACCAACAAGGTGAATACCGTAATCGAGAAAATGAATATTCAGTTCACAGCTGTGGGGAAGGAATTCAATAAGCTGGAAA AACGCATGGAGAACCTGAATAAAAAAGTGGATGATGGCTTCTTGGATATCTGGACCTATAATGCGGAACTCCTGGTCCTTTTGGAAAATG AGCGCACACTTGACTTCATGACTCAAACGTTAAAAACCTGTACGAAAAAGTCAAGTCACAGCTAAAGAATAATGCAAAGGAGATTGGCAA CGGGTGCTTCGAATTTTATCATAAATGCGACAACGAATGCATGGAAAGCGTAAGGAATGGTACATACGATTATCCTAAGTACAGTGAGGA GTCAAAGTTGAATCGCGAAAAAGTTGACGGTGTCAAACTGGAATCCATGGGGATTTATCAGATTCTTGCAATTTACTCAACGGTGGCTAGT TCTCTGGTGCTGGTCTCCCTGGGCGCAATTAGTTTCTGGATGTGTAGCAACGGCTCTCTCCAGTGCCGGATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2666	ATGAAAGCAAATCTTCTGGTCCTGCTGTGTGCACTAGCCGCCGCCGACGCAGACACAATTTGCATCGGATATCACGCCAACAACTCTACG GATACAGTGGACACAGTGCTGGAGAAGAACGTAACTGTTACACACAGCGTGAACCTGCTAGAAGATTCTCACAATGGCAAACTGTGCAGA CTGAAAGGAATTGCACCCTTGCAGTTGGGAAAATGTAATATCGCGGGTTGGCTCCTCGGTAATCCCGAATGCGACCCCCTACTTCCCGTC CGTTCTTGGTCTTACATAGTGGAGACACCCAACTCGGAGAATGGGATTTGCTATCCTGGGGATTTTATTGACTACGAGGAGCTCAGGGAA CAGTTGAGTTCTGTGTCATCATTCGAGAGGTTTGAAATCTTTCCCAAAGAGTCTTCTTGGCCTAATCACAACACTAACGGTGTGACCGCTG CTTGTTCTCACGAAGGCAAATCATCCTTCTACAGAAATCTGCTCTGGCTGACGGAGAAGGAAGGATCATACCCAAAGCTAAAGAATTCATA TGTGAATAAAAAGGGAAGGAGGTCCTCGTTCTGTGGGGTATTCACCATCCCCCTAATTCTAAAGAACAGCAGAACCTTTATCAGAATGA AAATGCATACGTGTCAGTGGTGACAAGCAACTATAACAGGCGCTTTACCCCGGAAATCGCCGAACGGCCGAAGGTGAGGGACCAGGCC GGGAGGATGAACTACTACTGGACCTTGCTGAAGCCGGGCGACACAATCATTTTTGAAGCTAACGGGAATCTAATTGCTCCCATGTACGCC TTTGCTCTGTCTCGCGGCTTTGGCAGCGGGATTATCACTAGCAACGGCGTCCATGCACGAGTGTAATACTAAATGCCAGACGCCACTGGG CGCAATCAATAGCAGCCTTCCATACCAGAACATACATCCCGTCACCATAGGAGAATGTCCAAAGTACGTCCGGTCTGCAAAACTAAGGAT GGTGACCGGGCTTAGAAACAACCCAAGTATTCAGAGCCGGGGGGCTCTTTGGTGCCATCGCAGGCTTTATCGAGGGAGGGTGGACAGGC ATGATAGACGGATGGTATGGATACCATCACCAGAATGAGCAGGGCAGCGGATACGCTGCCGACCAAAAAAGCACCCAAAACGCTATCAA TGGCATTACTAATAAGGTGAACACTGTGATTGAGAAGATGAACATTCAGTTCACCGCAGTCGGGAAGGAATTTAACAAGCTGGAGAAAAG GATGGAGAACTTAAACAAGAAGGTTGATGACGGGTTTCTCGACATATGGACGTAATAACGCGGAGTTGCTGGTATTACTGGAGAATGAACG GACTCTTGACTTCCACGATTCAAATGTGAAGAATCTCTATGAAAAAGTCAAATCGCAGCTCAAAAATAATGCCAAGGAGATCGGCAACGG CTGTTTCGAGTTTTATCACAAATGCGACAACGAATGTATGGAATCAGTGCGAAATGGCACATATGACTATCCGAAATACTCCGAGGAAAGT AAGCTGAATAGAGAAAAGGTGGACGGAGTAAAGCTCGAGTCCATGGGGATCTACCAGATTTTGGCTATCTATTCCACAGTTGCTTCATCT CTGGTGCTGCTGGTTTCCTTAGGCGCCATATCGTTCTGGATGTGCTCCAACGGGTCCCTGCAGTGTCGAATCTGCATC

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Seq ID No.	Sequenza nucleotidica
2667	ATGAAGGCGAATCTACTTGTCCTGCTGTGCGCGCTTGCGGCTGCTGACGCCGACACGATCTGCATAGGCTACCATGCAAATAACTCCAC TGACACCGTCGACACCGTTCTTGAGAAGAATGTGACGGTTACTCACTCCGTGAACCTCTTAGAGGATAGTCACAATGGCAAGTTGTGCAG ATTAAAAGGCATAGCTCCTCTTCAGCTGGGGAAATGTAATATCGCCGGGTGGCTCCTCGGGAACCCTGAATGCGATCCTCTGCTACCTGT GAGGAGTTGGAGCTACATAGTCGAAACTCCTAACTCGGAGAATGGAATTTGTTACCCTGGAGACTTCATTGATTACGAAGAGCTGCGGGA ACAATTGTCCTCTGTGTCATCATTTGAGCGGTTTGAGATTTTCCCCAAAGAAAGTAGTTGGCCAAATCATAACACTAACGGGGTCACCGCC GCATGTTCCCATGAAGGAAAGAGCTCTTTTTATCGAAACCTCCTCTGGCTTACTGAGAAGGAAGGATCCTATCCCAAGCTCAAGAACTCC TACGTGAATAAAAAAGGGCAAAGAAGTTCTGGTGCTGTGGGGTATTCACCATCCCCCCAACTCAAAAGAGCAACAGAACCTCTACCAGAAT GAGAATGCGTACGTGTCAGTGGTTACTAGCAACTACAATAGGCGGTTTACACCGGAGATCGGCGAGCGTCCTAAAGTGAGAGACCAGGC TGGAAGAATGAACTATTATTGGACGCTGCTCAAACCCGGTGACACTATCATTTTCGAGGCTAATGGGAACTTGATTGCCCCTATGTATGCT TTCGCCTTATCACGCGGATTTGGCTCCGGGATCATTACCTCAAATGCCTCAATGCACGAGTGTAACACCAAGTGTCAGACACCCCTGGGC GCGATTAACAGCAGTCTGCCGTACCAAAATATCCACCCCGTGACGATTGGGGAGTGCCCTAAGTACGTGCGGAGTGCCAAACTGCGTAT GGTGACAGGGCTGCGCAACAATCCTTCCATTCAGTCGAGAGGCCTGTTTGGCGCCATCGCCGGGTTCATCGAAGGGGGGTGGACCGGA ATGATTGATGGATGGTATGGGTACCATCATCAGAATGAGCAGGGGTCTGGATATGCAGCAGACCAGAAATCGACTCAAAATGCAATAAAT GGCATAACGAATAAAGTTAATACAGTGATAGAGAAGATGAATATCCAGTTTACTGCCGTGGGCAAGGAGTTCAATAAACTCGAGAAGCGC ATGGAGAACCTTAACAAAAAGGTGGACGATGGATTCCTGGATATCTGGATACTTATAATGCCGAGCTGCTGGTACTTCTCGAAAATGAGCGT ACACTAGACTTCCATGACTCAAATGTAAAAAATTTATATGAGAAGGTGAAATCCCAGCTCAAGAACAATGCAAAGGAGATCGGCAATGGGT GTTTCGAATTTTATCACAAGTGTGACAACGAGTGCATGGAATCAGTGAGAAACGGAACATACGACTACCCTAAATATAGTGAAGAGTCTAA GCTGAATCGTGAGAAAGTGGACGGGGTGAAACTCGAGTCTATGGGCATTTACCAGATTCTGGCTATTTATAGTACAGTGGCTTCAAGCTT AGTCCTTCTAGTGAGCTTGGGTGCCATTTCATTTTGGATGTGTAGTAATGGGTCATTGCAGTGTAGGATTTGTATC

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Seq ID No.	Sequenza nucleotidica
2668	ATGAAAGCAAACCTGCTGGTCTTATTGTGCGCCTTGGCAGCTGCCGATGCCGACACCATCTGCATCGGGTACCACGCCAATAATAGTACT GACACCGTCGATACCGTGCTCGAAAAGAACGTAACTGTGACTCACAGTGTGAACCTGCTGGAGGATAGCCATAACGGCAAACTCTGCCG ACTGAAAGGAATCGCTCCCTTGCAACTGGGCAAGTGCAACATAGCAGGGTGGTTACTGGGGAACCCCGAGTGCGACCCGCTGCTCCCT GTAAGATCTTGGAGCTATATCGTGGAAACACCTAACTCAGAAAATGGGATATGTTACCCAGGTGACTTTATCGATTACGAAGAATTGAGGG AACAGCTGAGCAGCGTTAGTAGCTTTGAACGATTTGAGATCTTCCCAAAGGAGTCCTCTTGGCCTAATCACAACACAAATGGGGTGACCG CCGCTTGCTCTCATGAGGGTAAAAGTAGCTTTTACCGGAACTTACTATGGCTGACCGAGAAAGAAGGAAGCTACCCCAAACTGAAAAATT CGTACGTGAATAAAAAGGGGAAAGAGGTGTTAGTGCTCTGGGGGATACATCACCCTCCAAATTCCAAGGAGCAGCAGAATCTGTACCAA AACGAGAACGCCTACGTTTCCGTGGTGACTAGCAATTATAACAGGCGGTTTACACCTGAAATCGCCGAACGGCCTAAAGTTCGAGATCAG GCCGGGCGGATGAACTACTATTGGACTTTGCTCAAGCCTGGCGACACAATCATTTTTGAAGCCAACGGGAACCTGATCGCACCGATGTAT GCTTTTGCACTGAGTCGGGGGTTTGGCTCTGGCATTATCACCTCTAATGCGTCCATGCACGAATGTAATACCAAGTGTCAGACACCCCTG GGGGCTATAAACTCCTCCCTCCCCTATCAGAACATCCACCCTGTGACCATCGGAGAATGTCCTAAATATGTCCGCTCCGCCAAACTGCGG ATGGTTACTGGCCTCAGAAATAATCCAAGCATTCAGAGTCGAGGCCTCTTCGGCGCGATCGCCGGCTTCATTGAGGGTGGCTGGACCGG CATGATCGATGGGTGGTACGGGTATCATCATCAGAATGAACAGGGATCCGGCTACGCAGCAGATCAAAAAAGCACACAGAACGCGATTA ATGGCATTACTAACAAGGTGAACACGGTGATCGAGAAGATGAATATACAATTCACTGCTGTCGGGAAAGAGTTCAATAAGCTCGAAAAGA GGATGGAGAATTTGAACAAGAAAGTGGATGATGGCTTCCTGGACATTTGGACCTACAATGCTGAACTCCTGGTCCTTCTGGAAAACGAAA GAACCCTAGATTTCCATGACTCTAACGTGAAGAACCTTTACGAAAAGGTGAAGAGCCAGTTGAAAAACAACGCAAAGGAAATTGGAAATG GGTGCTTCGAGTTTTATCATAAGTGCGACAACGAGTGCATGGAAAGTGTCCGTAATGGCACTTACGATTACCCCAAATATTCTGAAGAATC CAAGCTGAACAGGGAGAAAGTCGATGGGGTTAAATTAGAATCCATGGGCATCTATCAGATACTGGCCATTTATTCCACTGTGGCGAGCTC CTTAGTGCTCTTGGTCTCTTTAGGTGCCATCTCCTTTTGGATGTGCAGTAACGGGTCCCTCCAATGCAGGATTTGTATC

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Seq ID No.	Sequenza nucleotidica
2669	ATGAAGGCCAACCTCCTCGTTCTGCTGTGTGCGCTGGCAGCGGCAGATGCCGATACCATTTGTATCGGTTACCATGCCAACAATTCCACC GACACCGTCGACACTGTTCTTGAAAAGAATGTAACTGTCACCCATTCTGTCAACTTGCTTGAAGATAGTCACACAACGGCAAACTGTGTCGG CTTAAAGGCATAGCCCCGCTGCAACTGGGCAAATGTAACATCGCCGGATGGCTGCTGGGAAATCCAGAATGCGACCCCCTGTTGCCTGT GCGGTCTTGGAGTTACATAGTAGAACCCCCAATTCCGAAAATGGGATTTGTTATCCTGGCGACTTCATCGATTATGAGGAGTTGAGAGA GCAATTGAGTAGCGTTTCTTCATTTGAGCGCTTCGAAATATTCCCGAAAGAGAGTTCATGGCCTAACCACACAACACAAATGGAGTGACAGC TGCCTGTTCCCACGAAGGAAAAAAGCTCCTTTTACCGTAACCTGCTATGGCTGACTGAAAAGGAGGGGTCCTACCCCAAACTTAAGAACTC TTATGTCAACAAGAAGGGGAAAGAGGTACTGGTTCTGTGGGAATTCATCATCCCCCGAATTCAAAAGAGCAGCAAAATCTGTACCAAAA TGAAAACGCGTACGTCTCCGTTGTGACATCTAACTACAATAGGCGGTTCACGCCCGAGATCGCTGAACGGCCGAAAGTCCGGGACCAAG CTGGCAGAATGAACTATTACTGGACACTGCTCAAACCCGGCGACACCATTATTTTCGAGGCAAATGGGAACCTGATTGCACCAATGTACG CCTTCGCTCTGTCCAGGGGCTTTGGTAGCGGAATTATCACCTCGAATGCTTCAATGCATGAGTGCAACACCAAGTGCCAGACACCTTTGG GCGCCATCAATAGTAGCCTTCCTTACCAGAACATTCACCCTGTCACCATTGGTGAATGTCCTAAGTACGTGCGAAGCGCCAAACTGCGGA TGGTTACTGGCCTGCGAAATAATCCCTCCATCCAGTCTCGCGGTCTGTTCGGAGCCATTGCAGGGTTCATCGAGGGAGGCTGGACCGG GATGATTGACGGCTGGTATGCGTACCACCATCAGAACGAGCAAGGATCCGGGTATGCCGCCGACCAGAAGAGCACCCAGAACGCTATC AATGGGATTACAAATAAAGTCAACACCGTCATCGAGAAGATGAACATCCAATTCACTGCGGTTGGCAAGGAGTTCAACAAACTCGAGAAA AGAATGGAAAACTTGAATAAGAAGGTAGACGACGGGTTTCTGGATATCTGGACTTATAACGCCGAATTATTGGTGCTGCTGGAGAATGAA CGGACTTTAGATTTCCACGACTCCAATGTGAAGAATCTATACGAGAAAGTGAAGTCTCAGTTGAAGAACAACGCCAAGGAGATAGGAAAT GGCTGTTTCGAGTTTTATCACAAGTGCGATAATGAGTGCATGGAAAGCGTGCGCAACGGGACATATGATTACCCGAAGTACTCCGAGGAA AGCAAACTAAATCGCGAAAAGGTAGATGGCGTGAAGCTGGAATCGAATGGGAATCTACCAGATCCTAGCTATTTACTCTACTGTTGCCAGC TCTCTGGTGCTTCTGGTATCTCTGGGGGCCATTAGTTTCTGGATGTGCAGTAACGGCTCATTACAGTGTAGGATATGCATT

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Seq ID No.	Sequenza nucleotidica
2670	ATGAAAGCAAACTTGCTGGTTCTGTTGTGCGCTCTCGCCGGCCGCTGACGCGGACACTATCTGCATCGGGTACCACGCGAATAATTCGAC TGACACAGTTGACACTGTGCTCGAAAAGAATGTGACCGTCACGCACTCCGTCAATCTCCTGGAGGGACTCACACAATGGCAAACTTTGTCG TTTGAAGGGCATCGCACCCCTCCAACTCGGGAAATGCAACATTGCAGGTTGGCTTTTAGGTAATCCTGAGTGTGATCCCCTGCTGCCTGT GCGCAGCTGGAGCTATATTGTCGAGACACCCAACTCCGAAAATGGAATCTGTTACCCAGGAGACTTCATTGACTATGAAGAATTAAGAGA GCAATTAAGCTCCGTGAGCTCCTTTGAGAGGTTTGAGATCTTCCCGAAGGAAAGCTCCTGGCCTAACCATAACACCAATGGAGTGACTGC CGCCTGCAGCCACGAAGGAAAGTCTTCCTTCTATAGAAACCTACTGTGGTTGACAGAGAAGGAAGGCTCCTATCCTAAATTGAAGAACTC ATATGTCAACAAGAAGGGGAAAGAGGTCCTCGTGCTGTGGGGAATCCATCATCCTCCTAACTCTAAGGAGCAACAAAATTTATACCAGAA CGAAAATGCATACGTTTCTGTGGTTACATCAAACTATAATAGGCGCTTCACACCTGAGATTGCTGAACGTCCCAAAGTGAGGGATCAAGC GGGGCGTATGAACTACTACTGGACACTGTTAAAACCGGGGGATACCATCATCTTTGAGGCGAACGGCAATCTTATTGCACCTATGTATGC TTTTGCCCTCTCGGCGCGGTTTCGGCAGTGGAATAATAACATCAAATGCCAGTATGCACGAGTGCCAATACGAAGTGCCAGACTCCCTTAGG CGCTATAAATAGTTCCTTACCTTACCAGAATATTCACCCAGTGACCATCGGCGAATGCCCAAAGTACGTCAGGTCTGCGAAACTGAGAAT GGTCACAGGGTTGAGAAATAATCCATCTATCCAGTCACGAGGCCTGTTTGGCGCGATCGCGGGCTTTATTGAAGGAGGGTGGACGGGTA TGATTGACGGATGGTACGGTTACCATCATCAAAATGAACAAGGTTCAGGGTATGCCGCGCGGACCAGAAGAGCACCCAGAATGCAATCAAT GGCATTACCAACAAGGTGAACACGGTGATCGAGAAGATGAATATTCAGTTTACCGCTGTGGGCAAGGAGTTTAATAAGCTCGAGAAACGC ATGGAAAATCTGAACAAAAAAAGTAGACGATGGATTCCTCGACATATGGACGTACAATGCCGAGCTTCTCGTCCTCTTAGAGAACGAGCGG ACCCTGGATTTCCACGATTCAAACGTCAAAAACCTGTATGAGAAAGTCAAGAGCCAGCTTAAGAATAACGCCAAGGAAATCGGGAACGGC TGCTTCGAGTTCTATCATAAATGCGACAATGAGTGTATGGAATCTGTACGCAATGGAACATACGACTACCCTAAGTACTCCGAACGAAAGCA AACTGAATAGGGAGAAGGTAGACGGAGTGAAATTGGAGAGCATGGGCATATACCAGATCCTGGCCATTTACTCAACCGTCGCCTCATCC TTGGTGTTGCTGGTGTCCTTGGGTGCTATTTCTTTTTGGATGTGCAGCAATGGCAGTCTCCAGTGCAGGATTTGTATC

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Seq ID No.	Sequenza nucleotidica
2671	ATGAAGGCTAACCTGCTGGTGCTCCTCTGCGCTCTGGCAGCTGCAGACGCTGATACCATTTGCATTGGCTACCATGCCAATAACAGCACC GATACAGTCGATACAGTTCTGGAGAAGAACGTGACAGTGACTCACAGCGTTAATCTGTTGGAGGACAGCCATAATGGGAAGCTGTGTCG CCTGAAGGGAATTGCTCCATTACAGCTGGGGAAATGTAACATCGCTGGATGGCTGTTGGGAAACCCAGAGTGTGATCCCCTACTTCCTGT ACGGAGTTGGAGTTATATCGTGGAGACACCCAATAGTGAGAACGGTATCTGTTATCCTGGAGATTTATAGACTATGAAGAGTTAAGGA GCAGCTGAGCTCCGTCAGTTCATTCGAACGCTTCGAAATTTTCCCTAAGGAGTCTTCCTGGCCCAACCACAATACCAACGGGGTCACCGC TGCTTGTAGTCATGAAGGAAAATCTAGCTTCTACCGAAACCTGCTCTGGCTAACTGAGAAAGAAGGATCATACCCGAAGCTGAAGAATAG CTACGTGAACAAGAAGGGGAAGGAAGTGCTGGTTCTGTGGGGCATTCACCACACCCCCTAACAGTAAGGAACAGCAGAACCTCTATCAGA ATGAGAACGCATACGTGAGTGTCGTTACAAGCAACTACAATCGCCGGTTTACTCCAGAGATCGCGGAAAGACCCAAAGTCAGGGACCAG GCTGGTAGGATGAATTACTATTGGACCCTTCTCAAACCTGGGGACACTATCATATTCGAGGCCAATGGCAACCTGATTGCCCCTATGTAC GCCTTTGCTCTGAGCCGCGGATTCGGCTCCGGCATAATCACGTCTAATGCTTCCATGCACGAGTGTAACACAAAATGTCAGACGCCCTTG GGCGCTATCAATTCTAGTCTGCCTTATCAGAACATACATCCAGTCACTATCGGAGAGTGCCCAAAGTACGTTCGCTCTGCAAAGCTCCGG ATGGTTACAGGTCTAAGAAATAATCCTAGTATTCAGAGCAGGGGCCTGTTTGGAGCCATAGCTGGATTTATAGAGGGCGGATGGACTGG GATGATAGATGGGTGGTATGGCTACCATCACCAGAATGAACAGGGGAGCGGATACGCTGCCGACCAAAAAATCTACTCAGAACGCAATTA ATGGTATCACAAACAAAGTGAACACAGTGATCGAAAAGATGAACATTCAGTTCACTGCTGTGGGGAAAGAGTTCAACAAGCTGGAGAAAC GAATGGAAAATCTGAATAAAAAGGTGGACGACGGATTCCTTGACATTTGGACTTACAACGCCGAATTACTTGTCCTCTTGGAAAACGAAC GGACCCTGGATTTTCATGACTCCAATGTTAAGAACCTGTATGAGAAGGTGAAGAGCCAGCTGAAAAATAACGCAAAGGAAATCGGGAACG GATGTTTTGAGTTTTACCACACAAGTGCGATAATGAATGTATGGAGAGTGTTCGGAATGGGACATACGACTACCCTAAGTATTCTGAGGAGTC TAAGCTCAACCGGGAGAAGGTGGATGGTGTTAAGTTAGAGAGTATGGGAATTTACCAGATTCTGGCCATATACTCTACAGTAGCATCTTC TCTGGTGTTATTGGTCAGTCTCGGTGCTATTTCTTTTTGGATGTGCTCAAACGGCTCACTGCAGTGCCGCATCTGTATC

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Seq ID No.	Sequenza nucleotidica
2672	ATGAAAGCAAACCTGCTGGTCCTCTTGTGCGCGCTGGCAGCCGCCGATGCTGACACCATATGTATTGGCTATCACGCTAACAATTCTACG GACACTGTGGATACGGTGCTGGAGAAAAACGTAACCGTCACACACAGCGTGAATCTGCTGGAGGATTCGCATAATGGTAAACTTTGCAG ACTGAAGGGGATAGCCCCCGCTCCAGTTGGGTAAGTGTAATATCGCCGGATGGTTGCTTGGGAACCCCGAGTGTGATCCTCTGTTGCCGG TGCGCAGTTGGTCGTACATCGTGGAAACCCCGAATAGTGAGAATGGCATTTGTTATCCAGGGGACTTCATCGATTACGAAGAGCTCAGG GAGCAGCTCAGCTCTGTAAGTAGCTTCGAACGGTTCGAGATCTTCCCCAAAGAAAGCTCCTGGCCCAATCACAACACTAACGGGGTGAC AGCGGCCTGCAGCCACGAGGGCAAAAGTTCTTTCTATCGCAACCTACTGTGGCTCACCGAGAAGGAGGGAAGTTACCCTAAGCTGAAGA ACAGCTATGTCAACAAGAAAGGCAAGGAGGTCCTTGTGTTATGGGGCATTCACCACCCTCCCAATAGCAAAGAGGCAGCAAAACCTTTATC AAAATGAGAACGCCTACGTGAGCGTGGTGACCTCTAACTACAACAGAAGGTTTACACCAGAGATCGCCGAAAGGCCTAAAGTTAGGGAC CAGGCCGGACGGATGAATTACTATTGGACGTTATTAAAGCCTGGGGATACCATTATCTTTGAGGCCAATGGCAACTTGATCGCCCCTATG TACGCCTTTGCTCTCTCGCGCGGATTTGGTTCCGGAATCATTACCAGCAATGCTTCAATGCATGAGTGCAATACAAAGTGTCAGACCCCA CTGGGCGCTATTAACTCGTCTTTACCGTATCAAAATATACATCCCGTGACTATTGGTGAGTGCCCTAAATATGTTCGCTCTGCTAAGCTCA GGATGGTTACTGGACTGCGGAACAATCCGTCGATTCAGTCCAGGGGACTCTTCGGCGCAATTGCGGGTTTCATCGAGGGTGGCTGGAC GGGCATGATCGACGGCTGGTACGGTTACCACCATCAGAACGAACAGGGATCCGGCTACGCAGCCGATCAAAAGTCTACGCAGAACGCT ATTAATGGAATCACCAACAAGGTGAATACAGTTATCGAAAAGATGAATATACAGTTTACTGCCGTGGGGAAAGAATTCAACAAACTGGAGA AGAGAATGGAGAATCTTAACAAGAAGGTCGACGATGGCTTCCTTGATATCTGGACGTACAATGCCGAGCTGCTGGTCCTCCTCGAGAATG AACGAACTCTGGACTTCCACGACTCCAATGTAAAGAATCTCTATGAAAAGGTGAAATCCCAGCTGAAAAATAACGCCAAGGAGATAGGAA ATGGCTGCTTCGAATTTTACCACAAATGTGACAATGAATGCATGGAGTCCGTGAGAAATGGAACCTACGACTATCCCAAATATTCAGAAGA GTCAAAGCTAAATCGCGAAAAAGTTGACGGAGTCAAGCTCGAGTCTATGGGCATATATCAGATTCTGGCCATCTACTCCACCGTGGCCTC TTCCCTTGTCCTTCTAGTGTCCTTGGGTGCAATTTCTTTTTTGGATGTGCAGCAACGGGTCCCTGCAATGCAGGATTTGTATA

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Seq ID No.	Sequenza nucleotidica
2673	ATGAAGGCCAACCTTCTCGTCTTACTATGTGCACTTGCCGCAGCAGATGCCGATACTATCTGCATCGGCTATCATGCCAATAACAGCACA GACACCGTGGATACGGTGCTGGAGAAGAACGTTACAGTGACCCACTCCGTTAATCTGCTTGAAGATAGTCATAACGGCAAGCTGTGTCG CTTGAAAGGGATCGCCCCCTCTCCAGCTGGGTAAGTGCAACATTGCTGGGTGGCTCCTTGGCAACCCTGAGTGTGTGACCCACTACTTCCTG TGAGAAGTTGGAGCTATATCGTAGAGACACCAAATTCTGAAAACGGAATCTGTTATCCCGGAGACTTCATCGACTACGAGGAACTGCGCG AACAACTGTCTTCCGTCTCTTCCTTTGAGAGATTTGAGATCTTTCCCAAAGAAAGTAGTTGGCCAAACCATAATACTAACGGCGTGACAGC AGCCTGTAGTCACGAAGGCAAGTCCAGTTTTTACCGCCAACCTGCTCTGGCTGACAGAAAAGGAGGGGAGTTATCCAAAGCTGAAAAACT CTTACGTCAACAAGAAAGGGAAAGAGGTCCTGGTTCTTTGGGGCATTCATCATCCCCCAAATTCAAAGGAACAGCAGAATCTTTACCAGA ACGAAAATGCTTACGTGAGTGTGGTCACCAGTAACTACAACAGGAGGTTCACACCAGAGATAGCAGAACGGCCAAAAGTAAGAGATCAG GCTGGTAGGATGAACTATTACTGGACACTGCTCAAGCCGGGTGACACCATAATCTTTGAGGCTAATGGCAACCTTATTGCTCCCATGTAC GCTTTCGCTCTTAGCAGAGGGTTTGGCAGCGGCATTATCACATCAAATGCAAGCATGCACGAGTGCAACACCAAGTGTCAAACACCCCTC GGCGCAATAAATAGCAGCTTGCCATATCAGAATATACACCCCGTGACAATCGGCGAGTGTCCTAAATACGTACGCTCTGCAAAACTCCGC ATGGTGACCGGCCTCCGTAACAACCCCAGCATCCAGAGTCGGGGGCTCTTTGGCGCCATCGCCGGGTTTATTGAAGGGGGGTGGACAG GGATGATTGATGGTTGGTATGGATATCACCACCAGAACGAACAAGGATCAGGTTACGCGGCGGACCACGAAGAGCACCCAAAACGCTATA AACGGCATAACCAACAAGGTAAACACCGTTATTGAAAAGATGAATATTCAGTTTACCGCAGTCGGTAAAGAGTTTAATAAGCTCGAGAAGA GGATGGAAAATCTGAACAAGAAGGTTGATGATGGGTTTTTAGATATTTGGACCTACAATGCGGAGCTGCTCGTCCTGTTAGAAAATGAGA GGACACTGGACTTCCACGATAGTAATGTGAAGAACCTCTATGAGAAGGTGAAAAGTCAGCTCAAGAATAACGCTAAAGAGATTGGGAATG GTTGTTTTGAATTTTATCACAAATGCGACAATGAATGTATGGAGAGTGTAAGGAACGGTACGTACGACTACCCAAAATATTCAGAAGAGTC TAAACTCAATAGAGAGAAGGTTGACGGAGTGAAACTGGAGTCCATGGGCATTTACCAGATCCTGGCAATCTACTCTACTGTTGCTAGCTC GTTGGTGTTGCTCGTCAGTCTGGGAGCTATCTCCTTCTGGATGTGTAGTAATGGGAGCCTGCAGTGCCGGATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2674	ATGAAGGCTAATCTACTGGTTCTTCTGTGCGCGCTCGCCGCAGCAGATGCTGATACTATCTGCATCGGGTATCATGCTAA"AACAGCAGC GACACCGTCGATACGGTACTACAGAGAAAAACGTTACTGTGACTCACTCCGTGAACCTGCTGGAAGACTCACATAACGGCAAACTGTGTCGC CTGAAGGGGATTGCCCCCCCTGCAGCTGGGGAAGTGTAATATAGCGGGATGGCTGTTGGGGAATCCTGAGTGTGATCCACTTCTCCCCGT GAGATCCTGGAGTTACATTGTGGAGACTCCAAATTCGGAGAACGGGATCTGCTATCCAGGAGACTTCATCGACTACGAAGAATTGCGAGA GCAACTGTCTAGCGTGTCCTCCTTTGAAAGATTCGAGATTTTTCCAAAGGAGTCCAGTTGGCCTAACCATAACACTAACGGCGTGACTGC CGCTTGTTCTCACGAGGGCAAGTCTTCTTTTTATAGAAACCTTCTCTGGCTCACCGAAAAAGAAGGTTCCTATCCCAAACTCAAAAACTCC TACGTGAATAAGAAAGGCAAAGAAGTCCTGGTGTTGTGGGGTATACACCATCCGCCTAACTCCAAGGAACAGCAGAATCTCTACCAGAAC GAGAATGCATACGTGTCAGTTGTCACCTCCAACTACAACCGGCGGTTCACCCCTGAGATCGCCGAAAGGCCAAAAGTGCGTGACCAGGC CGGACGCATGAACTACTACTGGACTCTCTTGAAGCCAGGAGACACCATTATCTTCGAAGCCAATGGCAACCTGATTGCCCCATGTACGC TTTCGCACTCAGCAGAGGTTTCGGGTCCGGCATAATTACTAGCAACGCCAGCATGCACGAATGCAACACTAAATGTCAGACCCACTCGG AGCCATCAACTCCAGTCTGCCCTACCAGAATATTCACCCTGTCACCATCGGCGAATGCCCCAAGTACGTGAGGAGTGCTAAACTTCGAAT GGTGACCGGCCTGCGGAACAATCCGAGCATTCAGTCCCGGGGATTGTTTGGAGCCATCGCTGGATTTATAGAGGGGGGCTGGACCGGC ATGATCGACGGCTGGTATGGCTATCATCATCAAAATGAACAGGGCAGCGGCTATGCAGCTGACCAAAAGTCAACCCAGAACGCTATTAAC GGAATCACAAACAAGGTGAATACCGTGATAGAAAAGATGAATATTCAGTTCCACGGCTGTGGGAAAGGAATTCAACAAGTTAGAGAAGAGG ATGGAAAATCTGAATAAGAAGGTGGACGACGGTTCTTGGATATCTGGACATACAACGCTGAGCTCTTGGTGCTGCTCGAAAATGAACGG ACTCTTGACTTTCACGACTCAAACGTAAAAAATCTCTATGAAAAGGTGAAATCTCAGTTGAAGAATAACGCAAAGGAGATTGGCAATGGGT GCTTCGAATTCTATCACAAGTGTGATAACGAGTGTATGGAGTCAGTCCGGAATGGGACTTACGACTATCCCAAGTATAGTGAAGAATCTAA GCTCAATCGCGAAAAGGTGGACGGGGTGAAGTTGGAATCAATGGGTATTTATCAGATCCTCGCAATTTACTCTACCGTGGCCTCCTCATT GGTTTTGCTGGTGTCCCTTGGAGCTATAAGCTTCTGGATGTGCAGTAATGGGTCACTACAGTGCCGTATTTGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2675	ATGAAGGCCAACTTGCTGGTGCTTCTTTGCGCCCTCGCAGCTGACGCCGATACCATCTGTATAGGCTATCACGCAAACAATAGCACC GATACTGTGGATACCGTGCTTGAGAAGAACGTTACAGTGACACATTCAGTGAACCTACTCGAGGGACTCCCACAATGGAAAGCTGTGTAGG CTGAAAGGCATTGCAACCACTGCAGCTCGGGAAATGTAATATAGCAGGGTGGCTCCTCGGCAATCCCGAGTGCGATCCCCTGCTGCCGT CAGGTCATGGAGCTACATTGTAGAAACCCCCGAACTCTGAGAATGGCATTTGTTATCCCGGAGATTTCATCGACTACGAAGAACTGCGAGA GCAACTCTCATCCGTGTCTTCATTTGAAAGGTTCGAGATCTTCCCCAAGGAGTCTAGCTGGCCTAATCACAACACAAACGGCGTGACTGC CGCCTGTTCACACGAGGGTAAGAGTTCATTTTACAGGAACCTCCTGTGGCTGACTGAGAAGGAAGGCAGCTATCCAAAGTTGAAGAATTC GTACGTGAACAAGAAGGGGAAAGAAGTTCTGGTACTCTGGGGGATCCACCACCCGCCTAATTCCAAAGAACAGCAGAATCTATACCAGA ACGAAAATGCTTACGTCAGCGTTGTGACATCCAATTACAACAGAAGATTTACCCCAGAGATAGCCGAGCGACCCAAGGTGAGGGACCAG GCGGGACGAATGAATTATTACTGGACCCTGTTGAAGCCAGGAGACACCATCATTTTTGAAGCCAACGGAAATCTTATCGCGCCGATGTAC GCGTTCGCACTGTCACGAGGATTTGGCTCGGGGATTATTACCTCAAATGCTAGCATGCACGAATGCAACACTAAGTGTCAGACTCCGCTG GGAGCTATCAATTCATCTCTCCCATATCAGAATATTCATCCCGTGACCATAGGCGAGTGCCCCAAATACGTCCGGTCGGCAAAATTGCGG ATGGTTACTGGTCTGAGAAATAATCCATCCATACAGTCTCGCGGTTTATTTGGGGCGATTGCAGGCTTTATTGAGGGGGGATGGAOGGG CATGATCGATGGTTGGTACGGATATCACCACCAAAACGAGCAAGGGAGTGGTTATGCCGCCGATCAGAAGTCGACACAAAACGCAATAA ATGGTATAACAAATAAAGTTAACACCGTAATCGAGAAGATGAACATCCAGTTTACAGCCGTGGGGAAGGAATTCAACAAGCTGGAAAAGC GCATGGAGAACCTGAACAAAAAGGTGGATGACGGCTTCCTGGACATTTGGACCTACAACGCAGAGTTGTTAGTGCTGCTGGAGAATGAG CGAACACTGGATTTTCATGACTCCAATGTGAAGAATCTCTACGAGAAGGTGAAGTCACAGCTCAAGAACAATGCTAAAGAGATTGGGAAC GGGTGCTTCGAATTTTACCATAAATGCGACAACGAGTGTATGGAGTCCGTCCGTAATGGCACTTATGACTACCCTAAATACTCTGAAGAGT CCAAACTCAATCGGGAGAAAGTGGACGGTGTGAAGCTGGAGTCAATGGGGATATACCAGATCTTAGCAATTTACAGCACCGTCGCCTCC TCATTGGTGCTTCTGGTCTCTCTCGGAGCAATTAGTTTTTGGATGTGTTCCAATGGGTCTCTCCAGTGCCGGATATGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2676	ATGAAAGCCAACCTTCTAGTGTTACTTTGCGCTCTCGGCCGCTGCCGATGCCGATACAATCTGTATCGGTTATCACGCGAATAATTCCACC GACACTGTCGATACAGTGTTGGAAAAGAATGTCACAGTCACACATTCCGTCAATTTGTTGGAGGACAGCCATAACGGAAAGTTGTGTAGA TTGAAAGGGATTGCCCCACTGCAGCTGGGTAAGTGTAATATTGCTGGTTGGCTACTGGGCAACCCAGAATGTGACCCCCTTCTACCCGT CAGGAGTTGGAGCTACATTGTGGAGACCCCTAACAGCGAGAATGGCATTTGCTACCCAGGCGACTTTATCGATTACGAAGAACTGCGGG AACAGTTGAGCTCTGTTAGTAGCTTCGAGAGATTCGAGATATTCCCAAAGGAGTCAAGCTGGCCCAATCACAACACCAATGGGGTTACAG CAGCTTGTAGCCATGAAGGCAAAAGCAGCTTCTATCGAAATCTACTCTGGCTCACCGAAAAGGAAGGATCCTACCCGAAACTCAAAAACA GCTACGTCAACAAGAAGGGAAAAGAGGTGCTGGTGCTGTGGGGAATCCATCATCCTCCCAACAGCAAAGAGCAACAGAATTTGTATCAA AACGAAAACGCTTACGTGAGCGTGGTAACCTCAAACTATAACAGACGGTTTACACCAGAAATCGCAGAGAGGCCAAAAGTGCGGGACCA AGCCGGTAGAATGAACTATTACTGGACCCTCTTGAAACCTGGAGACACCATAATATTCGAGGCCAACGGAAATCTGATCGCCCCAATGTA TGCCTTCGCTCTCTCTAGGGGCTTCGGCAGCGGGATAATTACCTCCAACGCCAGCATGCATGAGTGCAATACCAAGTGTCAAACTCCCCT GGGCGCAATTAACAGCTCCCTGCCTTACCAAAACATTCACCCAGTCACCATCGGAGAGTGCCCCAAATACGTTAGATCTGCAAAGCTGCG GATGGTGACAGGTCTACGCAACAACCCCTCAATCCAGTCACGGGGGCTTTTCGGTGCCATTGCCGGGTTTATTGAAGGTGGCTGGACCG GCATGATAGATGGGTGGTATGGCTACCACCATCAGAATGAACAGGGAAGTGGGTATGCAGCGGACCAGAAAAGCACGCAGAACGCAATA AACGGGATCACGAATAAAGTGAACACCGTCATTGAAAAGATGAACATCCAGTTTACCGCGGTTGGAAAAGAATTTAACAAGCTCGAAAAA AGAATGGAAAATCTGAACAAGAAGGTCGACGACGGATTCCTTGATATTTGGACTTACAATGCTGAGCTTCTTGTACTGTTAGAAAACGAGC GAACCTTGGATTTCCACGATTCAAACGTCAAAAACTTGTACGAGAAAGTGAAGAGCCAACTCAAGAACAACGCCAAGGAAATTGGGAATG GTTGCTTTGAATTTTACCATAAGTGCGACAATGAATGCATGGAGTCGGTACGAAACGGGACTTATGATTATCCAAAGTATAGCGAAGAGA GTAAACTCAACCGGGAGAAAGTCGATGGGGTGAAACTGGAGTCAATGGGAATTTATCAAATTCTGGCTATCTATTCTACAGTGGCCTCTT CTCTCGTCTTGCTAGTGAGCCTCGGAGCAATCTCTTTTTGGATGTGCAGCAATGGCTCCCTGCAATGCCGCATCTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2677	ATGAAGGCTAACCTCCTGGTGTTGTTGTGCCCTGGCTGCAGCTGACGCCGATACTATTTGCATAGGCTATCATGCTAATAATAGTACA GATACCGGTTGACACCGTTCTCGAAAAGAACGTGACGGTGACACATAGCGTTAATCTGCTAGAAGACTCCCACAATGGGAAGCTGTGCCG GCTGAAGGGGATCGCCACCACTCCAGCTAGGTAAGTGCAATATCGCCCGGGTGGCTGTTAGGAAATCCGGAGTGCGACCCTCTTCTCCCC GTGAGGTCTTGGTCCTACATCGTGGAAACTCCAAACAGTGAAAACGGAATCTGCTATCCTGGCGATTTTATAGACTATGAAGAGCTGCGT GAGCAACTGAGCAGCGTATCCAGCTTCGAAAGATTCGAGATTTTCCCTAAGGAATCGTCATGGCCGAATCACAACACTAATGGCGTCACT GCTGCATGCAGCCATGAGGGCAAAAGCAGCTTCTATAGAAATCTCCTGTGGCTTACCGAGAAAGAGGGTAGCTATCCTAAGCTCAAGAAT AGCTATGTCAATAAGAAAGGCAAGGAGGTGCTGGTGTTGTGGGGAATCCATCACCCACCTAACTCCAAAGAGCAGCAGAACCTGTATCA AAACGAGAACGCCTACGTGTCTGTAGTGACGAGCAACTACAACAGGCGTTTCACACCTGAGATCGCGGAGCGCCCCAAGGTTCGCGACCC AAGCGGGGCGCATGAATTACTATTGGACTCTTTTAAAGCCGGGAGATACGATCATCTTTGAGGCTAACGGCAACTTAATCGCCCCTATGT ACGCCTTTGCGTTGTCGCGGGGATTCGGATCCGGTATAATAACAAGCAACGCAAGTATGCACGAATGTAATACTAAATGTCAAACCCCTT TAGGGGCCATTAACAGCAGCCTTCCGTACCAGAACATTCATCCCGTCACCATCGGCGAATGCCCCAAAATATGTGCGGTCCGCGAAACTC AGAATGGTAACAGGCCTGCGGAATAATCCTAGTATACAGTCCAGAGGACTTTTTGGGGCGATAGCTGGATTCATTGAAGGCGGGATGGAC TGGGATGATTGACGGATGGTACGGCTACCACCATCAGAACGAACAGGGCAGTGGGTACGCTGCTGATCAAAAATCCACACACAAAATGCCA TTAATGGAATTACAAACAAAGTTAATACAGTCATCGAGAAAATGAATATTCAGTTCACAGCTGTGGGCAAAGAGTTTAACAAACTGGAGAA ACGAATGGAGAACCTGAACAAAAAGGTTGATGATGGCTTTCTGGACATCTGGACATATAATGCTGAGCTGTTGGTCCTACTGGAGAATGA GAGGACCTTGGACTTCCACGACTCCAATGTTAAGAACCTATATGAGAAGGTTAAGTCGCAATTGAAAAACAATGCAAAGGAAATCGGGAA CGGGTGCTTTGAATTCTATCATAAATGTGATAATGAGTGCATGGAAAGCGTGCGTAATGGGACTTACGATTATCCTAAGTATAGTGAGGAA TCTAAGTTGAACAGAGAGAAAGTGGATGGAGTCAAGTTAGAAAGTATGGTATCTACCAAATTCTTGCTATATATAGCACAGTGGCTTCCA GCCTCGTCTTGCTTGTCTCTCGGGGCTATCAGCTTTTGGATGTGCTCAAACGGCAGCCTCCAGTGTCGGATATGTATC

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Seq ID No.	Sequenza nucleotidica
2678	ATGAAGGCTAACCTGCTGGTGCTGTTGTGTGCACTCGCAGCCGCGGACGCCGACACTATCTGCATAGGCTATCACGCTAATAACTCAAC GGATACGGTGGATACCGTTCTGGAGAAGAATGTAACCGTCACACACAGCGTCAATCTGCTCGAGGATAGCCACAACGGCAAACTATGCC GCCTGAAGGGGATAGCTCCCCCTCCAGCTGGGAAAGTGTAACATTGCCGGATGGCTCCTGGGAAATCCAGAGTGCGATCCCCTGTTACCT GTCAGATCATGGTCTTACATCGTGGAGACCCCTAACTCCGAGAATGGGATCTGCTACCCCGGAGACTTTATTGACTACGAGGAGCTGAG AGAGCAATTGTCTTCAGTGAGTTCTTTTGAGAGGTTTGAAATCTTCCCGAAGGAGAGTTCATGGCCAAATCACAATACGAATGGAGTTACC GCAGCTTGCTCTCATGAGGGCAAGAGCAGTTTCTACAGGAACCTACTGTGGCTGACCGAGAAGGAAGGTAGCTACCCGAAGCTGAAGAA TTCATACGTCAATAAAAAGGGCAAGGAAGTGTTAGTGCTCTGGGGCATCCATCACCCCCCCCAACTCCAAAGAGCAGCAGGAACCTTTATCA GAATGAAAACGCTTATGTTTCAGTGGTGACCTCTAATTATAACCGACGTTTTACTCCAGAGATCGCTGAAAGACCCAAGGTCCGTGACCAA GCAGGGCGGATGAACTATTACTGGACCCTGCTAAAGCCTGGCGATACTATAATTTTCGAAGCTAACGGCAACCTTATTGCTCCCATGTAT GCATTCGCCCTGAGTCGTGGATTTGGCAGCGGTATTATCACCTCTAATGCATCGATGCATGAATGTAATACAAAATGCCAGACTCCATTG GGCGCTATTAACTCAAGCCTTCCTTATCAAAATATCCACCCTGTAACTATCGGGGAGTGTCCCAAATATGTGCGCTCAGCCAAGCTCCGC ATGGTAACTGGACTCCGCAACAATCCATCAATACAGAGCAGGACTGTTCGGGGCGATAGCCGGGTTCATCGAAGGAGGCTGGACCG GCATGATCGACGGGTGGTACGGTTACCATCACCAAAACGAGCAGGGCAGCGGCTACGCTGCCGATCAAAAGTCCACACAAAATGCCATA AACGGAATAACCAATAAGGTCAACACTGTGATCGAAAAGATGAATATTCAGTTCACTGTCGGTAAAGAATTCAATAAGCTGGAAAAGC GCATGGAGAACCTTAACAAAAAGGTGGACGACGGCTTTTTAGACATCTGGACCTACAATGCCGAACTGCTAGTGCTACTTGAAAACGAAA GGACCTTGGATTTTCACGACAGTAATGTTAAAAATCTCTACGAGAAAGTAAAGTCTCAGTTGAAGAACAATGCTAAGGAGATCGGCAATGG ATGCTTTGAGTTCTATCACAAGTGCGATAACGAATGCATGGAAAGTGTGCGCAACGGAACCTATGACTACCCCAAGTATTCCGAAGAGAG CAAGCTTAACAGAGAGAAGGTCGACGGAGTGAAGCTGGAAAGTATGGGGATCTACCAAATACTGGCAATATACAGCCACAGTTGCAAGCA GTCTCGTGTTACTCGTCTCCCTTGGAGCAATCTCTTTCTGGATGTGTTCTAACGGCAGCCTGCAGTGCAGAATTTGTATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2679	ATGAAGGCAAACTTGCTCGTGCTGTTGTGCGCATTAGCCGCCGCCGATGCCGACACAATCTGCATCGGCTATCACGCTAACAACTCCACT GACACTGTGGATACCGTACTTGAAAAAAATGTGACCGTCACACACTCGGTTAATCTCTTAGAGGACTCGCACAATGGCAAACTGTGTCGT CTGAAAGGGATCGCTCCACTTCAACTCGGGAAGTGTAATATTGCCGGGGTGGCTGCTGGCAACCCCCGAGTGCGACCCTCTTCTGCCTGT ACGGTCGTGGTCTTATATAGTGGAAACACCCAATAGTGAGAACGGCATATGCTATCCCGGAGACTTCATTGATTATGAAGAACTTAGGGA ACAGCTAAGCTCCGTGTCAAGCTTTGAAAGGTTTGAAATATTCCCCAAGGAGAGCTCCTGGCCTAATCACAATACCAACGGTGTGACCGC CGCCTGTTCGCACGAGGGCAAGAGCTCATTTTACAGGAATCTACTGTGGCTCACCGAGAAGGAAGGTTCGTACCCTAAGCTCAAGAATA GCTACGTGAATAAAAAGGGCAAAGAGGTACTGGTGCTGTGGGGGATTCACCACCCCCCTAATTCGAAGGAGCAGCAAAACTTGTACCAG AATGAGAATGCCTACGTCTCTGTTGTCACTAGTAATTACAACCGTAGATTCACGCCTGAAATTGCTGAGCGACCAAAGTTCGAGATCAG GCTGGCAGGATGAATTATTATTGGACCCTCCTGAAGCCCGGAGATACCATTATCTTCGAGGCTAATGGTAACCTGATCGCTCCTATGTAC GCCTTCGCTTTGAGTCGAGGCTTCGGCAGCGGGATAATTACGTCTAACGCTTCTATGCACGAGTGCAATACAAGTGTCAGACTCCCCTT GGGGCAATCAATTCAAGCCTTCCCTATCAGAATATCCCACCCTGTTACTATAGGGGAGTGTCCGAAATACGTTAGGTCGGCAAAGCTGAGG ATGGTCACTGGCCTGCGAAATAACCCGTCCATTCAGTCCAGGGGGCTTTTCGGTGCTATCGCTGGATTTATTGAAGGTGGTTGGACTGG CATGATCGACGGATGGTACGGGTATCACCACCAGAACGAACAGGGATCTGGGTACGCTGCCGATCAAAAATCGACCCAGAACGCCATAA ACGGCATTACAAATAAGGTGAATACCGTCATCGAAAAAATGAATATTCAATTCACCGCCGTAGGCAAAGAGTTTAATAAACTTGAGAAAAG GATGGAGAACCTCAATAAAAAAGTCGACGATGGGTTTCTGGATATCTGGACCTATAACGCTGAGCTTCTTGTGCTGCTCGAAAATGAACG CACACTGGATTTCCACGATTCCAACGTGAAAAATTTGTACGAAAAGGTGAAGTCACAACTGAAGAATAACGCAAAGGAAATCGGGAATGG CTGTTTTGAATTCTATCACAAGTGTGACAACGAATGCATGGAGAGTGTCCGAAACGGAACCTACGATTATCCAAAGTACTCGGAAGAATCT AAGCTGAATCGGGAGAAGGTGGACGGGGTCAAGCTGGAGTCAATGGGTATTTATCAGATCCTAGATTTACTCAACCGTGGCATCGAG CCTGGTCCTACTTGTTAGTCTTGGGGCAATAAGCTTCTGGATGTGCAGCAACGGCAGCTTGCAGTGCAGAATATGTATA

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2680	ATGAAGGCTAACCTGCTCGTTCTCTTATGTGCACTGGCCGGCCGCAGACGCGGATACTATTTGTATAGGCTACCACGCGGAATAACTCTACT GATACGGTGGACACAGTTCTCGAGAAAAACGTGACAGTGACTCACTCCGTGAATCTGCTGGAGGATTCACACAACGGCAAACTGTGTCG ACTGAAAGGAATCGCACCGTTGCAACTTGGTAAGTGCAATATTGCCGGATGGCTCCTGGGAAACCCCGAATGCGATCCTTTGCTTCCCGT GCGGAGTTGGTCCTACATCGTGGAGACCCCTAACTCTGAGAACGGAATCTGTTATCCCGGGGATTTCATTGATTATGAAGAGCTCAGAGA ACAATTGAGTTCTGTTTCTAGCTTTGAGAGATTCGAGATTTTCCCTAAGGAGTCGTCCTGGCCAAATCACACAACACTAACGGAGTAACCGCC GCCTGTTCTCACGAGAGGCAAGTCAAGCTTTTACAGGAATCTCCTGTGGTTAACAGAAAAGGAAGGGAGTTACCCAAAACTAAAAAACTCG TACGTGAACAAGAAAGGCAAGGAGGTCCTGGTGCTGTGGGGAATTCATCACCCCCCGAATTCCAAGGAACAACAGAATCTGTATCAAAA CGAAAACGCTTATGTGTCCGTCGTGACATCGAACTACAATAGAAGATTTACCCCCGAGATTGCAGAGCGCCCTAAAGTCAGGGATCAGG CTGGGAGAATGAACTATTATTGGACACTGCTAAAGCCCGGCGATACAATTATCTTTGAGGCCAATGGCAATCTGATTGCTCCCATGTATG CATTTGCCCTGAGCAGAGGGTTTGGCAGTGGAATCATTACCAGCAATGCTAGCATGCAATGTAATACAAAGTGTCAGACACCATTAG GAGCCATAAACAGTTCACTCCCTTATCAGAACATCCATCCCGTGACAATCGGAGAGTGTCCTAAATACGTCAGAAGTGCAAAATTGAGAAT GGTTACCGGCTTGAGGAATAATCCATCTATTCAATCCCGCGGGCTCTTTGGAGCCATCGCTGGCTTTATTGAAGGAGGATGGACCGGAAT GATTGATGGTATGGTTACCACCATCAGAATGAGCAGGGCTCCGGCTACGCCGCCGACCAGAAGTCTACCCAAAACGCCATAAACG GAATCACCAATAAGGTGAACACTGTCATTGAAAAGATGAATATACAATTCACTGCCGTCGGGAAGGAGTTTAACAAACTCGAAAAGCGGA TGGAGAATTTGAATAAAAAGGTCGACGACGGCTTCCTGGATATCTGGACATACAATGCCGAGCTCCTGGTCCTGTTGGMGAATGAACGCA CACTCGATTTTCACGACAGCAATGTGAAGAATCTTTACGAAAAGGTTAAAAGTCAGTTGAAAAACAACGCTAAAGAAATAGGTAATGGGTG TTTCGAGTTTTACCACAAGTGCGACAATGAGTGCATGGAATCTGTCAGAAATGGGACCTACGACTACCCTAAGTACTCCGAAGAGTCTAA GCTGAATAGGGAGAAGGTGGATGGGGTGAAGCTGGAATCCATGGGCATCTACCAGATCCTCGCTATCTACAGCACAGTGGCCTCTAGCT TGGTGCTTTTGGTGTCACTTGGGGCGATTTCGTTCTGGATGTGCTCCAACGGAAGCCTGCAATGCCGAATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2681	ATGAAGGCTAACCTTCTTGTGCTTCTCTGTGCACTTGCTGCCGCAGATGCTGATACAATATGCATCGGTTACCACGCTAATAATTCTACCG ATACGGTTGACACGGTTCTTGAAAAGAACGTCACAGTGACTCACAGCGTCAACCTCCTGGAGGACTCTCATAACGGAAAATTGTGCCGCC TCAAAGGCATTGCCCCATTGCAATTAGGCAAGTGTAATATTGCAGGTTGGCTCCTGGGTAACCCGGAATGCGACCCTCTGTTGCCTGTCA GGTCTTGGAGTTATATAGTCGAAACCCCAAATTCCGAAAATGGAATATGTTACCCTGGCGACTTTATCGACTACGAAGAACTGAGGGAGC AGCTTAGTTCCGTCAGTTCTTTCGAACGTTTCGAAATCTTCCCCAAGGAATCTAGTTGGCCCAACCATAACACCAACGGTGTGACGGCGG CATGCAGTCACGAGGGCAAGTCCAGCTTCTATAGAAACTTGCTGTGGTTAACCGAGAAAGAGGGAAGTTACCCTAAGCTGAAGAACAGC TACGTAAACAAAAAAGGCAAAGAAGTCCTGGTTCTCTGGGGCATTCACCACCCACCCAATTCCAAGGAACAGCAAAATCTCTATCAAAAT GAAAATGCTTATGTCTCTGTTGTGACCTCGAACTATAATCGGCGTTTTACCCCTGAGATCGCCGAGAGGCCTAAGGTCAGGGACCAAGCT GGCCGAATGAATTATTACTGGACCCTACTGAAGCCTGGCGATACCATAATCTTCGAGGCTAATGGAAATCTGATTGCGCCAATGTATGCT GTGACCGGGCTGCGTAACAACCCTAGTATCCAGTCACGCGGCCTCTTTGGGGCTATTGCCGGGTTCATCGAGGGAGGTTGGACTGGGA TGATCGACGGATGGTATGGGTACCACCATCAAAACGAGCAGGGATCAGGCTACGCCGCAGACCAGAAGAGGCACTCAGAACGCCATCAA CGGGATCACTAATAAAGTTAATACCGTGATTGAAAAAATGAACATACAATTTACTGCAGTGGGCAAGGAGTTCAACAAACTAGAGAAACGC ATGGAGAACTTGAACAAAAAAGTTGACGACGATTTCTGGACATCTGGACATATAATGCAGAGCTGCTGGTCCTGCTAGAGAACGAACGG ACCCTAGACTTCCATGACTCAAACGTCAAGAATCTGTACGAGAAGGTGAAATCTCAGCTCAAAAATAATGCCAAAGAGATCGGCAATGGA TGCTTTGAATTCTATCACAAGTGTGACAATGAGTGCATGGAGAGCGTGCGAAATGGAACTTACGACTACCCAAAGTACAGCGAGGAGAGT AAGCTTAACAGGGAGAAGGTGGACGGCGTGAAGCTCGAAAGCATGGGGATATACCAGATCCTCGCCATATACTCTACTGTGGCGTCGTC TCTCGTGCTTTTGGTATCACTCGGCGCTATCAGCTTCTGGATGTGTTCCAATGGCAGCTTGCAGTGCCGGATATGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2682	ATGAAAGCCAATCTCTTAGTGCTACTGTGCGCCCTTGCCGCCGCAGACGCAGATACGATTTGCATTGGGTATCACGCAAACAATTCCACC GACACAGTGGATACCGTGCTCGAAAAGAACGTAACTGTGACTCACTCTGTGAATTTACTCGAGGACAGTCACAACGGGAAGCTCTGCAG ACTTAAGGGGATCGCACCCTTGCAACTCCGAAAGTGTAACATTGCCGGGTGGCTTCTCGGCAACCCCGAGTGTGACCCTCTTCTTCCAG TTCGGAGCTGGAGTTATATAGTGGAAACGCCAAATTCCGAGAACGGCATATGTTACCCAGGAGACTTTATCGATTATGAAGAACTCCGCG AACAGCTCAGCAGCGTGAGTTCTTTCGAACGTTTCGAGATCTTCCCAAAAGAGTCCAGTTGGCCAAATCATAACACCAATGGCGTAACAG CAGCGTGCAGCCACGAGGGAAAATCTAGCTTTTACAGGAACCTACTTTGGCTCACAGAAAAGGAGGGATCCTATCCTAAACTGAAGAATT CATACGTCAATAAAAAAGGTAAAGAGGTGTTGGTGCTGTGGGGATTCATCACCCACCAAACTCCAAAGAACAGCAGAACCTGTACCAAA ACGAGAACGCCTACGTCTCCGTGGTGACGAGCAACTATAACCGACGCTTTACCCCCGAAATCGCGGAGCGCGTCCAAAGGTGCGGGACCA GGCAGGGCGTATGAACTATTATTGGACACTTCTAAAACCCGGTGACACCATTATCTTTGAAGCGAACGGCAACTTGATTGCGCCAATGTA TGCTTTCGCTCTGAGTCGGGGATTTGGATCGGGGATTATTACCTCCAACGCGTCTATGCATGAATGTAACACCAAATGTCAAACCCCTCTT GGGGCCATCAACAGCTCCCTGCCATATCAGAACATTCACCCAGTCACCATCGGAGAATGCCCCAAGTATGTCCGCAGTGCTAAGCTCCG CATGGTAACCGGCCTGAGAAACAATCCCAGTATTCAGTCTAGGGGCCTCTTCGGCGCTATTGCAGGATTCATTGAGGGCGGATGGACAG GCATGATCGATGGCTGGTACGGTTATCATCACCAGAACGAGCAAGGATCCGGCTACGCTGCGGACCAGAAGAGCACCCAGAACGCTATT AACGGCATTACGAATAAGGTGAACACTGTCATCGAGAAGATGAACATTCAGTTTACCGCGCGGTTGGGAAGGAGTTCAACAAACTTGAAAAA CGAATGGAGAATCTAAACAAAAAAGTCGACGATGGATTCCTGGATATCTGGACCTACAACGCTGAGCTGCTGGTGCTGCTGGAAAATGAG CGGACATTGGACTTCCACGATTCCAACGTGAAGAATCTTTACGAGAAAGTTAAATCACAGTTGAAGAATAATGCCAAAGATGATTGGGAAC GGCTGTTTTGAATTCTACCACACAAATGCGATAACGAATGTATGGAATCTGTACGGAATGGTACGTATGACTATCCAAAATACTCCGAAGAGT CCAAGCTGAACCGAGAAAAAGTGGACGGGGTCAAACTGGAAAGCATGGGGATATACCAGATCCTGGCCATATATAGCACTGTGGCTTCT TCTTTGGTTCTCCTTGTGTCACTCGGGGCCATAAGCTTCTGGATGTGTTCAAACGGAAGCTTGCAGTGCAGAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2683	ATGAAGGCCAACTTACTGGTGTTGCTATGCGCTCTGGCCGCCGCTGACGCCGATACCATCTGTATTGGATACCACGCCAACAACAGCAC CGACACTGTGGACACAGTGCTTGAGAAGAATGTCACCGTCACACATAGTGTAAACTTGCTCGAAGATAGTCACAACGGGAAGCTGTGCC GCCTTAAAGGTATTGCACCACTGCAGTTAGGCAAGTGCAATATTGCCGGGTGGCTGCTTGGGAACCCCGAGTGTGATCCTCTATTGCCA GTTCGGTCGTGCAGCTATATCGTGGAGACACCGAACAGCGAAAACGGCATCTGTTATCCTGGAGATTTTATCGACTATGAGGAACTCAGG GAACAGCTCTCGTCTGTGTCTAGCTTCGAACGCTTTGAAATTTTCCCAAAAGAGAGTTCCTGGCCAAATCATAACACTAACGGTGTGACTG CCGCTTGCTCCCATGAAGGCAAATCAAGCTTTTATAGGAATCTGTTGTGGTTGACTGAAAAAGAAGGCTCCTACCCGAAACTCAAGAACA GCTATGTGAACAAGAAAGGTAAGGAAGTGCTGGTGTGGGGCATCCATCATCCTCCTAACTCAAAGGAGCAGCAAAATCTTTACCAGA ATGAAAACGCATACGTGTCCGTTGTAACCTCTAATTATAACCGCCGGTTCACCCCAGAAATCGCCGAGCGTCCAAAGGTTAGAGATCAAG CAGGGCGCATGAATTATTACTGGACACTGCTCAAGCCCGGCGATACCATCATCTTTGAGGCTAACGGCAACCTCATTGCTCCGATGTATG CGTTCGCTCTGAGTCGCGCGCTTTGGCTCAGGCATTATTACTTCCAATGCCTCTATGCACGAGTGCAACACTAAATGCCAGAGCGCCCTGG GTGCAATCAACTCTAGCCTCCCATATCAGAACATACGTCCGTGACCATCGGCGAATGCCCTAAATACGTCCGGTCCGCAAAGCTGCGAA TGGTGACGGCGCTGAGAAATAACCCCTCAATACAGTCGCGAGGGCTGTTCGGCGCCATTGCCGGGTTTATTGAGGGGGGATGGACTGG GATGATAGATGGTTGGTATGGGTATCATCATCAGAACGAGCAAGGGTCTGGGTATGCCGCTGACCAAAAAAGCACCCAGAACGCCATAA ACGGGATTACCAATAAGGTTAACACAGTTATTGAGAAGATGAATATTCAGTTTACCGCTGTCGGGAAAGAATTCAATAAATTGGAAAAAAG GATGGAGAACCTGAACAAAAAGGTGGCACGATGGGTTTCTCGATATCTGGACATATAACGCTGAGCTTCTCGTACTGCTGGAAAATGAAAG GACGCTCGATTTCCATGATTCCAATGTCAAGAATCTCTACGAGAAGGTCAAGTCTCAGCTGAAGAACAATGCCAAAGAGATCGGGAATGG ATGTTTTGAGTTCTATCACAAGTGCGATAACGAATGCATGGAGTCCGTCAGGAACGGCACCTATGATTACCCTAAGTACAGTGAAGAAAG CAAACTTAATAGGGAAAAGGTGGATGGTGTGAAGCTGGAGTCAATGGGCATTTACCAGATTCTGGCCATTTACAGTACAGTAGCCTCTAG TCTGGTGCTGCTTGTCAGCCTTGGCGCCATCTCCTTTTGGATGTGTAGCAACGGATCACTGCAGTGCAGGATCTGCATT

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Seq ID No.	Sequenza nucleotidica
2684	ATGAAAGCAAACTTGCTTGTGCTGTTATGCGCTCTGGCAGCTGCGGACGCCGATACTATCTGCATCGGTTACCACGCTAACAATTCAACA GATACCGTTGATACTGTGCTGGAGAAGAACGTGACCGTCACCCACAGTGTGAAGACAGCCACAACGGAAAACTGTGCCG CCTGAAGGGCATCGCGCCGTTACAGCTGGGAAAGTGCAATATCGCCGGATGGCTTTTGGGTAATCCAGAATGTGATCCATTGCTCCCCG TGAGAAGCTGGAGCTATATTGTTGAAACCCCTAACTCAGAGAATGGGATCTGCTACCCCGGGGACTTCATTGACTACGAGGAACTGCGC GAGCAGTTGTCATCCGTCAGTTCATTCGAGCGGTTTGAAATATTTCCCAAGGAGTCAAGTTGGCCAAACCACACAACGGAGTAACA GCGGCTTGTAGCCATGAAGGTAAAAGCTCTTTTTACAGGAATCTGCTGTGGTTGACTGAGAAGGAGGGCTCCTACCCCAAACTGAAAAAC AGCTACGTGAACAAAAAGGGCAAGGAGGTCCTGGTGCTCTGGGGAATTCACCATCCGCCCAATTCCAAAGAGGCAGCAGAATTTATACCA AAATGAGAACGCCTACGTTTCTGTCGTCACGTCAAATTATAACCGACGCTTTACACCTGAAATAGCTGAGAGACCCAAGGTGAGAGATCA GGCTGGGAGGATGAATTACTATTGGACTCTGCTAAAACCTGGAGACACTATAATCTTCGAAGCCAACGGGAACCTGATTGCCCCTATGTA CGCATTTGCTTTATCCCGAGGGTTTGGAAGCGGGATCATTACTTCAAATGCTTCTATGCACGAGTGCAATACCAAATGCCAGACACCTTTA GGCGCTATCAATTCATCTCTGCCTTATCAGAACATTCACCCAGTGACAATAGGAGAGTGTCCTAAGTATGTCCGCTCCGCGAAGCTTCGT ATGGTCACAGGCCTCAGGAATAACCCAAGTATCCAGTCGAGAGGCCTTTTTGGTGCCATCGCTGGCTTTATCGAAGGAGGGTGGACCGG CATGATTGATGGGTGGTATGGATACCATCATCAGAACGAGCAAGGCTCAGGTTACGGCCGCGGACCAGAAGTCCACGCAAAATGCCATTA ACGGCATCACGAACAAAGTCAACACCGTTATCGAGAAGATGAATATACAGTTCACAGCCGTAGGCAAAGAATTTAATAAACTCGAAAAGC GGATGGAGAATTTAAACAAAAAAGTCGATGATGGATTTCTCGATATCTGGACTTATAACGCCGAACTTCTAGTGCTGCTTGAGAACGAGAG AACGCTTGATTTTCACGACAGTAACGTTAAAAACCTGTACGAAAAGGTAAAGTCCCAACTGAAAAACAATGCCAAAGAAATTGGAAACGGT TGCTTTGAATTTTACCACAAGTGCGATAATGAGTGCATGGAAAGTGTAAGAAATGGCACGTATGACTATCCCAAATACTCCGAAGAAAGCA AGCTCAATCGTGAGAAGGTGGATGGTGTGAAGCTGGAATCGATGGGGATTTATCAGATCCTAGCTATCTATTCAACAGTCGCCTCTAGTC TTGTTCTTCTTGTATCTCTTGGAGCCATCTCATTTTGGATGTGTTCAAACGGATCCCTGCAGTGTCGGATCTGTATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2685	ATGAAGGCTAACCTGCTGGTTCTACTCTGCGCACTCGCGAGCTGCGGACGCCGACACAATTTGTATTGGATATCACGCTAACAATAGCACC GATACCGTAGACACCGTACTGGAAAAGAATGTGACGGTCACACACTCAGTAAATCTCCTGGAAGACAGCCATAATGGCAAGCTGTGTAGA TTAAAAGGGATTGCTCCTCTCCAGTTGGGCAAATGTAACATCGCCGGTTGGCTGCTGGGAACCCCGAGTGCGACCCATTGCTGCCCGT AAGGAGCTGGTCCTATATAGTTGAGACACCCAATTCTGAGAATGGCATCTGCTACCCCGGAGATTTTATCGATTATGAGGAGTTGCGTGA GCAGCTCTCTAGCGTGAGCTCGTTTGAAAGATTTGAAATTTTTCCGAAAGAATCTAGTTGGCCCAACCACAATACGAACGGAGTGACTGC CGCCTGCTCCCACGAGGGAAAATCCTCATTTTACAGGAACTTACTCTGGCTTACTGAGAAGGAAGGTAGCTACCCAAAGCTCAAGAACAG CTACGTCAACAAGAAGGGCAAGGAAGTCCTGGTCCTGTGGGGAATCCATCATCCGCCAAACTCCAAGGAGCAACAGAATCTATATCAGA ATGAGAATGCCTACGTTTCAGTGGTTACGTCTAATTATAACCGCAGGTTTACCCCCGAGATCGCTGAGCGCCCCAAAGTTAGAGACCAGG CAGGGCGCATGAACTACTATTGGACCCTCCTGAAACCTGGCGACACAATTATCTTCGAGGCAAACGGTAATCTCATCGCGCCTATGTACG CTTTTGCCCTTAGCCCGGGTTTTGGATCAGGCATCATAACTTCTAACGCCTCTATGCACGAATGTAACACCAAGTGTCAGACCCCCCTAG GAGCTATCAACAGCTCGCTTCCTTACCAGAACATTCATCCCGTGACCATAGGTGAGTGTCCAAAATACGTCAGGAGTGCAAAACTAAGGA TGGTTACCGGACTCCGGAATAACCCTTCGATTCAGTCGCGCGGGCTCTTTGGAGCAATCGCCGGGTTCATCGAAGGCGGGTGGACCGG GATGATTGACGGTTGGTACGGCTACCATCACCAAAACGAACAAGGCTCAGGTTATGCAGCTGACCAGAAGTCCACTCAGAATGCCATAAA TGGCATTACCAACAAAGTTAATACAGTCATTGAGAAGATGAATATACAGTTCACCGCGGTGGGCAAAGAGTTCAACAAACTGGAGAAACG TATGGAAAACTTGAACAAAAAAGTGGACGATGGGTTCTTGGACATCTGGACGTATAATGCCGAGTTATTAGTGCTGCTGGAAAATGAAAG AACGTTAGACTTCCACGACTCTAATGTTAAAAATTTGTACGAAAAGGTCAAATCCCAACTGAAAAATAACGCCAAGGAAATAGGCAATGGC TGTTTTGAATTCTATCATAAGTGCGATAACGAGTGTATGGAGAGTGTTCGCAATGGTACATACGACTACCCTAAATACTCCGAGGAAAGTA AGCTGAACAGGGAAAAGGTCGATGGAGTCAAGCTGGAATCCATGGGGATTTATCAGATCCTGGCCATTTATAGCACTGTAGCCTCCTCCC TGGTGCTGCTGGTATCACTCGGCGCAATAAGCTTCTGGATGTGTTCTAACGGGAGCCTGCAATGCAGAATATGCATT

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Seq ID No.	Sequenza nucleotidica
2686	ATGAAAGCAAACCTCCTCGTGTTGCTCTGTGCCCTGGCTGCAGCCGACGCCGACACCATATGTATCGGGTACCACGCCAATAACTCCAC TGATACCGTCGATACCGTCCTTGAGAAAAATGTGACAGTCACACACAGCGTTAATTTATTGGAGGACAGCCACAACGGCAAGCTCTGTAG GCTGAAAGGGATCGCCCCCCTTACAGCTGGGGAAATGTAATATCGCTGGATGGCTGCTGGGAAACCCCGAGTGCGACCCCTTGCTGCCT GTGAGGTCTTGGAGCTACATTGTTGAGACCCCTAACAGCGAGAACGGCATTTGTTACCCTGGCGACTTCATTGACTACGAGGAGCTGAG GGAACAATTGTCATCTGTCAGCTCATTTGAGCGATTCGAGATCTTTTCCCAAGGAATCGTCATGGCCAAATCACACAACACAAACGGGGTGAC CGCGGCTTGCTCACATGAAGGAAAGAGCTCCTTTTACCGAAATCTTCTGTGGCTGACGGAGAAGGAAGGATCATACCCAAAATTGAAAAA CTCCTATGTGAACAAGAAAGGTAAAGAGGTCCTTGTTTTATGGGGCATTCACCACCCACCTAACTCAAAGAACAGCAAAACCTGTACCA GAACGAGAATGCATACGTTTCAGTAGTCACCTCTAACTATAATAGGAGATTCACCCCCGAAATCGCCGAGAGGCCAAAGGTACGGGATCA GGCTGGCAGGATGAATTACTATTGGACCCTACTTAAACCTGGAGACACGATCATCTTCGAGGCAAATGGAAACCTCATCGCCCCTATGTA TGCCTTTGCCCTTAGCCGAGGGTTTGGATCAGGGATAATAATAACCTCTCTAACCGCCAGTATGCACGAATACGAAGTGTCAAACCCCTCT GGGAGCAATAAATTCTTCCCTTCCTTATCAGAACATTCACCCCGTCACAATTGGAGAGTGCCCCCAAATACGTCAGGTCCGCCAAACTGAG AATGGTTACCGGCTTGCGGAATAATCCGAGCATTCAGAGCCGCGGATTATTTGGTGCTATTGCTGGCTTTATCGAAGGAGGGGTGGACCG GAATGATCGACGGGTGGTACGGCTACCATCATCAGAACGAGCAGGGTAGCGGTTACGCTGCCGATCAGAAATCCACTCAGAATGCCATC AATGGCATTACTAACAAAGTAAATACTGTGATTGAAAAGATGAACATCCAGTTTACCGCAGTAGGAAAAGAGTTCAACAAATTGGAGAAAA GGATGGAAAACCTCAACAAAAAAGTCGACGATGGATTCCTTGATATTTGGACATACAACGCTGAGCTGCTAGTGCTGCTGGAGAACGAGC GAACACTCGATTTCCATGATAGCAACGTCAAAAACCTGTACGAGAAGGTCAAAAGCCAGCTGAAAAATAACGCTAAGGAGATTGGGAATG GCTGTTTCGAATTCTACCACAAATGTGATAATGAATGCATGGAGAGTGTGCGGAATGGGACATACGACTACCCAAAATATTCTGAAGAGA GTAAACTTAATCGAGAGAAAGTGGATGGTGTTAAACTTGAGTCTATGGGCATTTACCAGATCCTGGCAATTTACAGTACCGTCGCTTCTTC TTTGGTCCTACTAGTGAGCCTCGGAGCAATCAGCTTCTGGATGTGTAGTAACGGGAGCCTTCAGTGTCGAATTTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2687	ATGAAAGCTAATCTGCTCGTACTGCTCTCTGCGCTCTGGCTGCCGCTGATGCCGGACACCATCTGTATTGGATATCACGCAAACAATTCTACT GATACCGTGGACACCGTGCTCGAGAAAAACGTGACCGTGACGCATTCCGTTAATCTGCTGGAAGATTCACACAACGGAAAGCTGTGTAG ACTGAAGGGAATCGCCCCCACTGCAATTGGGTAAATGTAACATTGCAGGATGGCTTCTGGGTAATCCTGAATGCGATCCACTGCTCCCTGT TAGATCATGGTCATATATCGTCGAAACACCGAATTCTGAAAATGGTATTTGCTACCCTGGCGATTTCATCGACTACGAAGAGCTGAGAGAG CAGCTATCTAGCGTGAGTAGCTTCGAACGCTTCGAAATTTTTTCCCAAAGAGAGCTCTTGGCCGAACCACACAATACCAATGGCGTGACCGCC GCATGCAGCCATGAGGGCAAATCTTCTTTCTACAGAAATCTACTTTGGCTGACCGAAAAAGAGGGAAGTTACCCAAAGCTGAAAAATTCC TATGTCAACAAAAAAGGGAAGGAGGTACTTGTGTTATGGGGAATTCACCACCCCCCTAACTCCAAGGAGCAGCAGAACCTGTATCAGAAT GAGAACGCGTATGTTTCAGTGGTCACCAGCAACTATAATCGTCGGTTCACCCCTGAGATCGCCGAACGGCCCAAGGTGAGAGATCAGGC TGGAAGAATGAATTACTATTGGACCTTGCTGAAGCCTGGGGATACCATCATCTTTGAAGCTAATGGAAACCTGATCGCGCCTATGTACGC ATTCGCCCTATCCCGTGGCTTCGGTTCCGGCATTATCACCTCAAATGCCTCAATGCACGAGTGCAACACTAAATGTCAGACCCCGCTGGG TGCCATCAACTCCAGCCTTCCCTACCAAAACATACATCCAGTGACGATTGGCGAGTGCCCAAAGTACGTCCGCTCTGCCAAGCTACGCAT GGTCACGGGCCTGCGAAATAACCCCTCTATACAATCCCGTGGGCTGTTTGGCGCGATTGCCGGGTTCATCGAGGGAGGATGGACAGGT ATGATCGATGGCTGGTACGGATACCATCATCAGAACGAACAGGGCTCCGGCTACGCTGCGGACCAGAAGTCTACGCAAAACGCAATTAA TGGAATCACAAACAAGGTGAACACTGTGATCGAGAAAATGAATATTCAGTTTACCGCCGTCGGTAAAGAATTCAATAAGCTCGAGAAGAG AATGGAGAACTTGAACAAAAAAGTGGATGATGGGTTTCTCGATATTTGGACATATAACGCGGAACTCCTGGTGCTGCTCGAGAATGAGCG CACCCTGGATTTTCACGACTCTAACGTCAAGAATTTATACGAGAAAGTAAAATCCCAGCTGAAGAACAATGCTAAAGAAATTGGCAACGGA TGTTTCGAGTTTTATCATAAAATGCGATAATGAGTGCATGGAGCGTGCGCAATGGAACATACGACTACCCTAAATACAGCGAGGAATCT AAGCTGAATAGAGAGAAGGTAGACGGAGTCAAGCTGGAAATCTATGGGAATATATCAAATTTTAGCTATTTACTCCACAGTTGCTTCATCCC TGGTCTTACTGGTTTCCCTCGGCGCGATCTCGTTTTGGATGTGCAGTAATGGCTCCCTTCAGTGTCGAATCTGCATC

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Seq ID No.	Sequenza nucleotidica
2688	ATGAAAGCTAATCTGTTGGTGCTGCTCTGCGCTTTGGCCGCTGCCGATGCAGATACCATCTGTATCGGCTATCACGCGAACAATTCCACA GATACAGTGGACACCGTCCTGGAGAAAAATGTGACCGTGACCCACTCTGTCAACCTGCTCGAAGACAGCCATAACGGCAAACTGTGTAG ACTGAAGGGCATTGCACCTTTACAGCTGGGCAAGTGCAATATAGCTGGATGGCTCCTCGGCAATCCCGAATGCGACCCTCTACTGCCCG TGAGAAGCTGGTCATATATCGTTGAAACCCCGAATTCCGAGAATGGAATCTGCTATCCCGGAGATTTCATCGACTATGAAGAGCTCAGGG AACAGCTGTCCTCTGTATCCTCCTTTGAACGTTTTGAGATTTTCCCAAAGGAGTCATCTTGGCCTAACCACACAACACGAACGGGGTAACCG CAGCCTGCAGTCACGAAGGTAAGAGCAGCTTTTACAGGAATCTGCTGTGGCTAACCGAGAAAGAGGGCAGTTATCCTAAACTGAAAAATT CATATGTGAACAAGAAAGGAAAGGAAGTGCTGGTGCTTTGGGGAATCCACCATCCGCCCAACAGCAAGGAGCAGCAGAACCTATACCAG AACGAAAACGCTTATGTGTCAGTGGTGACTAGCAACTACAACCGACGTTTTACCCCCGAGATTGCCGAGCGACCCAAGGTGAGACCA GGCCGGTCGCATGAACTACTACTGGACACTCCTTAAGCCAGGGCGATACAATCATATTTGAAGCTAACGGGAACCTCATTGCTCCTATGTA CGCTTTCGCGCTGTCTAGGGGTTTCGGCTCCGGAATAATTACAAGCAATGCTTCCATGCACGAGTGTCAATACCAAGTGTCAGACTCCCCT GGGGGCCATTAACAGCAGTCTGCCATACCAAAATATTCATCCAGTAACAATCGGCGAGTGTCCAAAGTACGTGCGATCTGCCAAGTTACG AATGGTGACCGGCCTGCGCAATAACCCCTCAATTCAGTCTAGGGGCTTATTCGGGGCTATCGCCGGCTTCATTGAGGGAGGATGGACAG GAATGATCGATGGATGGTACGGCTACCATCACCAGAATGAGCAAGGCAGCGGTTACGCTGCCGACCAGAAATCGACACAGAATGCTATC AATGGAATCACTAACAAAGTCAACACGGTGATTGAAAAGATGAATATCCAATTCACTGCAGTGGGCAAGGAATTCAACAAATTAGAGAAGC GGATGGAGAACCTGAATAAAAAAGTTGATGACGGTTTCCTGGATATCTGGACATACAATGCAGAACTTCTCGTCCTGCTCGAGAACGAGC GAACTCTCGATTTTCACGATTCTAATGTCAAAAATCTGTATGAAAAGGTGAAGTCCCAGCTGAAGAACAACGCCAAAGGAAATCGGGAATG GATGCTTCGAGTTTTACCATAAATGTGATAACGAGTGCATGGAAAGCGTCCGAAATGGCACTTATGACTATCCAAAATACTCAGAGGAGA GTAAACTTAACCGCGAGAAGGTTGATGGCGTTAAACTGGAATCCATGGGCATTTACCAGATCTTGGCTATCTATAGCACGGTGGCTTCTT CGCTGGTGCTCTTGGTCAGTCTCGGTGCCATCTCATTCTGGATGTGTTCGAACGGATCTCTCTTCAATGCCGAATCTGTATA

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Seq ID No.	Sequenza nucleotidica
2689	ATGAAAGCCAACCTTCTAGTTTTTACTATGTGCTCTCGCTGCTGACGCCGACACTATTTGTATTGGATATCACGCAAATAATTCCACAG ATACTGTCGACACCGTTTTGGAAAAGAACGTGACTGTCACTCACTCAGTCAACCTGCTCGAAGATTCTCACAATGGCAAATTATGCCGCCT CAAGGGAATCGCTCCGCTCCAATTGGGAAAATGTAACATCGCAGGATGGCTCCTCGGCAATCCCTGACCCTCTCCTGCCCGTCC GCTCTTGGTCATACATAGTGGAAACTCCCAACAGTGAAAATGGAATATGTTACCCCGGTGACTTCATCGACTATGAGGAATTGCGCGAGC AACTGTCCTCAGTTTCCTCGTTCGAAAGATTTGAGATCTTCCCCAAGGAGTCCTCCTGGCCCAATCACAATACGAATGGCGTTACGGCAG CCTGCTCTCATGAGGGGAAATCCTCATTCTACCGCAACCTGCTCTGGCTGACAGAGAAGGAGGGGTCCTACCCTAAGCTCAAAAATTCCT ATGTGAATAAAAAGGGCAAAGAAGTACTGGTCCTGTGGGGCATTCACCATCCCCCAAATAGTAAAGAACAACAGAACCTCTACCAGAATG AGAACGCTTACGTGAGTGTGGTCACTAGCAACTACAACAGGAGATTCACACCCGAGATAGCGGAACGACCCAAGGTCCGCGATCAGGCT GGTCGCATGAATTACTACTGGACCTTGCTGAAGCCCGGAGATACGATTATTTTTGAGGCCAATGGCAATCTTATCGCCCAATGTACGCC TTTGCACTCAGCCGTGGGTTCGGAAGTGGAATCATAACTTCAAATGCCTCCATGCATGAGTGCAATACAAAATGTCAGACCCCTCTCGGA GCCATCAACTCATCACTGCCATACCAGAATATTCACCCTGTTACAATTGGAGAGTGTCCAAAATACGTCAGAAGTGCAAAACTGCGCATG GTTACCGGACTACGTAACAACCCGTCCATCCAGTCAAGAGGGCTGTTTGGAGCCATCGCAGGATTTATAGAGGGAGGCTGGACCGGGAT GATTGATGGCTGGTACGGCTACCATCACCAAAATGAGCAGGGAAGTGGGTATGCTGCCGACCAGAAATCCACCCAAAACGCGATCAATG GTATCACCAACAAAGTCAATACCGTGATCGAAAAAATGAACATACAGTTTACAGCAGTGGGAAAGGAATTCAATAAACTTGAGAAACGCAT GGAGAATCTGAATAAAAAGGTCGACGATGGCTTCCTAGATATTTGGACCTACAATGCAGAATTACTGGTATTGTTGGAGAATGAGCGGAC CCTCGACTTCCATGATTCGAACGTTAAAAACCTCTACGAGAAGGTAAAGTCGCAACTGAAAAACACAACGCTAAGGAGATCGGGAACGGCTG CTTCGAATTTTATCACAAATGCGACAACGAATGCATGGAATCAGTGCGAAATGGCACCTATGATTATCCAAAGTATTCGGAGGAGTCAAAG CTGAATAGAGAGAAGGTGGATGGTGTGAAGTTGGAGAGTATGGGGATTTACCAGATCTTAGCAATCTATTCCACGGTTGCTAGTTCCCTC GTGTTACTTGTGAGCCTGGGTGCGATCAGTTTCTGGATGTGCAGTAACGGTTCACTGCAATGCAGAATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2690	ATGAAAGCTAATCTCCTGGTTTTGTTGTGTGCACTGGCCGCTGCCGACGCCGACACAATCTGCATAGGATACCATGCTAACAACAGTACA GATACAGTTGACACCGTGCTGGAAAAGAATGTTACTGTAACCCATAGCGTTAACTTGCTAGAGGACTCTCATAATGGAAAGCTCTGTAGG CTTAAAGGGATCGCCCCCCTTACAATTGGGCAAGTGCAATATCGCCGGATGGCTGCTCGGGAACCCTGAGTGTGATCCATTGCTGCCAGT TCGTTCCTGGTCTTACATAGTTGAAACGCCAAACTCCGAGAACGGGATCTGTTACCCAGGTGACTTCATTGATTACGAAGAACTGAGAGA ACAGCTAAGTTCTGTGTCTAGCTTCGAGAGATTCGAGATCTTTCCCAAAGAGTCAAGTTGGCCTAACCACAATACCAACGGGGTTACCGC GGCTTGCTCCCACGAAGGTAAAAGCTCATTCTACCGGAACCTTTTGTGGCTCACTGAGAAAGAGGGTAGCTACCCAAAGCTCAAGAACTC CTACGTGAATAAGAAGGGGAAGGAGGTGCTCGTTTTATGGGGTATCCACCACCCCCCTAATAGTAAGGAACAGCAAAATCTCTATCAGAA CGAAAACGCATATGTCTCGGTGGTGACCTCAAACTATAATCGGAGATTCACTCCAGAGATCGCCGAGAGACCCAAAGTCCGGGACCAGG AGCTATCAATAGCAGCCTGCCATATCAGAACATCCACCCGGTGACTATTGGAGAGTGTCCAAGTACGTTAGGTCCGCCAAGTTACGGAT GGTAACAGGCCTCCGCAATAATCCTTCTATCCAAAGTCGGGGGCTGTTTGGAGCAATCGCCGGCTTCATCGAGGGAGGTTGGACTGGGA TGATTGACGGATGGTATGGGTACCATCATCAGAATGAGCAAGGCAGTGGCTACGCAGCCGACCAGAAGTCAACCCAAAACGCCATCAAT GGAATCACGAATAAAGTGAACACAGTGATCGAGAAGATGAACATTCAGTTCACTGCAGTGGGGAAGGAATTTAACAAGTTGGAGAAGAGA ATGGAGAACCTGAACAAGAAGGTAGACGATGGATTCCTAGACATATAATGCCGAGCTGTTGGTCCTCCTCGAAAACGAAAGA ACACTGGACTTTCATGACAGTAACGTGAAGAATTTGTATGAGAAAGTTAAGTCTCAACTGAAAAACAACGCCAAAGAAATAGGGAACGGTT GTTTCGAGTTCTATCATAAGTGCGATAACGAGTGCATGGAGTCTGTGCGGAATGGCACGTACGATTATCCAAAATACTCCGAGGAGTCCA AACTTAACAGAGAGAAAGTGGATGGCGTGAAACTTGAAAGCATGGGCATTTACCAAATCCTCGCCATTTACAGCACAGTCGCTTCTAGTC TAGTACTGCTTGTATCACTCGGCGCCATATCATTCTGGATGTGTAGTAATGGCAGCCTGCAGTGCCGAATTTGCATT

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Seq ID No.	Sequenza nucleotidica
2691	ATGAAAGCCAACCTGCTCGTACTCCTGTGTGCCCTGGCTGCCGCTGACGCCGATACTATTTGCATAGGGTATCACGCCAATAATTCAACT GACACCGTCGATACCGTTCTTGAGAAGAACGTGACCGTCACACATTCAGTTAACCTTCTTGAGGACTCTCATAATGGTAAATTGTGTCGCC TCAAGGGTATCGCACCGCTACAACTAGGCAAGTGTAATATAGCAGGGTGGTTGTTGGGAAACCCTGAGTGTGACCCGCTGCTGCCCGTT CGCAGTTGGTCTTACATCGTCGAGACACCAAACTCTGAGAACGGGATTTGCTATCCAGGGGATTTTATCGACTATGAAGAGCTTCGCGAG CAGTTGAGCAGTGTTTCCTCTTTTGAGCGTTTTGAAATTTTCCCGAAAGAGAGTAGCTGGCCTAACCATAACACAAACGGGGTCACCGCA GCTTGCTCTCATGAGGGGAAGTCAAGCTTCTATCGGAATCTGCTGTGGCTGACGGAAAAAGAAGGCTCGTACCCAAAGCTAAAAAATTCA TACGTGAACAAGAAGGGGAAAGAGGTCCTGGTCCTGTGGGGATCCACCATCCACCTAATAGTAAAGAGCAGCAAAATTTGTACCAAAA CGAGAATGCGTACGTGAGCGTAGTGACATCAAACTACAACCGCCGCTTCACTCCTGAGATTGCTGAACGGCCCAAGGTGCGTGATCAGG CCGGCAGGATGAACTATTATTGGACTTTGCTAAAACCTGGGGATACTATAATTTTTGAGGCGAATGGCAATCTAATCGCACCGATGTATGC CTTCGCCTTGAGCCGGGGCTTCGGCAGTGGGATTATTACCAGTAACGCCTCCATGCACGAATGTAACACAAGTGTCAGACTCCATTAG GGGCAATCAACTCGTCACTTCCGTATCAAAATATTCACCCTGTGACCATCGGCGAGTGTCCAAAATACGTTAGAAGTGCCAAGCTGAGAA TGGTGACGGGTCTCCGGAACAATCCCTCAATCCAATCAAGGGGGTTATTTGGCGCTATTGCTGGTTTCATTGAGGGGGGGATGGACGGGA ATGATCGACGGCTGGTACGGATATCATCATCAGAACGAACAGGGGTCCGGCTATGCTGCCGACCAGAAGTCCACTCAGAACGCGATCAA TGGGATCACCAACAAGGTCAACACCGTCATCGAAAAGATGAATATTCAGTTTACAGCCGTCGGAAAGGAATTCAATAAGTTGGAGAAACG CATGGAAAACTTAAACAAGAAAGTGCGACGGATTCTTAGACATATGGACTATAACGCCAGAGCTGCTTGTACTCCTGGAGAATGAGCCG AACCTTGGATTTTCATGATTCAAACGTTAAGAACTTATATGAGAAGGTGAAGTCTCAACTCAAAAACAATGCCAAAGAAATCGGGAATGGG TGCTTCGAATTCTATCATAAATGTGATAACGAGTGTATGGAGAGCGTGCGGAATGGAACTTATGACTACCCCAAATACAGCGAAGAAAGC AAGTTGAACAGAGAGAAGGTGGATGGCGTGAAGCTGGAAAGCATGGGGATTTACCAGATTCTTGCAATCTATTCTACTGTTGCATCCAGT CTAGTTCTGCTCGTCTCTCTGGGGGCAATCAGCTTTTGGATGTGCTCTAATGGTTCCCTGCAGTGCCGTATCTGCATA

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Seq ID No.	Sequenza nucleotidica
2692	ATGAAAGCAAACCTTCTGGTACTGCTCTGCGCCTTAGCCGCGCTGATGCGGACACGATTTGTATTGGCTATCACGCCAATAATTCAACA GATACTGTCGACACAGTCTTGGAGAAAAATGTGACTGTAACCCATTCTGTCAATCTGCTCGAGGATTCACACAATGGAAAACTGTGTCGG CTTAAAGGAATCGCTCCTCTGCAGTTGGGCAAGTGTAATATAGCTGGCTGGCTGTTAGGAAACCCAGAATGCGATCCTCTCTTACCTGTG CGATCCTGGTCTTACATCGTTGAGACACCGAACAGCGAGAATGGTATATGCTACCCGGGTGACTTTATCGATTATGAAGAATTGAGAGAA CAGCTGTCAAGCGTCAGCTCTTTCGAACGATTCGAGATCTTTCCCAAAGAGTCAAGCTGGCCTAACCACACAATACAAATGGAGTGACAGCT GCGTGTTCCCATGAAGGCAAGAGTTCTTTCTACCGAAACCTGCTTTGGCTGACCGAGAAGGAGGGATCATACCCTAAGTTAAAAAATTCA TACGTCAACAAGAAGGGAAAAGAGGTACTAGTTCTTTGGGGTATTCACCACCCACCCAACTCCAAAGAGCAGCAGAATCTGTATCAAAAT GAAAACGCGTACGTCTCCGTGGTGACCTCGAACTACAATCGAACGATTCACTCCCGAAATCGCTGAGAGGCCCAAAGTCCGGGATCAGGC CGGACGCATGAATTATTACTGGACTCTACTAAAGCCAGGTGATACAATTATCTTCGAAGCCAATGGCAATCTTATCGCTCCCATGTACGCA TTCGCTCTGAGCCGTGGTTTTGGGTCTGGAATCATCACCTCCAACGCTTCTATGCATGAATGTAATACAAAATGCCAGACTCCGTTAGGG GCAATCAACAGTTCACTGCCATACCAAAACATCCACCCCGTGACTATTGGGGAGTGCCCAAAGTATGTCCGGAGCGCCAAACTCCGGAT GGTCACCGGCCTACGCAATAACCCCAGTATCCAGTCTAGGGGATTGTTCGGTGCTATCGCAGGTTTTATTGAGGGCGGCTGGACAGGAA TGATCGACGGATGGTATGGGTATCATCACCAGAATGAACAAGGCTCCGGGTATGCGGCTGACCAAAAATCCACGCAGAACGCAATCAAC GGAATCACCAATAAAGTGAATACTGTGATAGAAAAGATGAACATTCAGTTCACGGCTGTAGGCAAGGAGTTCAATAAGCTGGAGAAGAGA ATGGAGAACCTAAATAAGAAGGTCGATGACGGCTTCCTTGACATCTGGACTTACAATGCAGAACTGCTGGTACTGCTTGAGAACGAACGGC ACCCTGGATTTCCACGACTCTAATGTGAAGAACCTATACGAAAAAGTGAAGTCCCAGCTGAAAAACAATGCTAAAGAGATAGGCAACGGC TGCTTCGAATTCTATCATAAATGCGACAACGAGTGCATGGAGTCAGTCCGAAATGGTACGTACGATTACCCAAAATATTCTGAAGAGTCCA AGCTAAATAGAGAAAAGGTGGACGGCGTAAAACTCGAGTCCATGGGCATCTACCAGATTCTGTGGCCATCTACAGTACGGTGGCTTCATCG CTTGTACTCCTGGTGAGCCTAGGGGCCATCTCTTTTTGGATGTGTTCTAACGGTTCCCTGCAGTGCCGCATTTGTATT

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2693	ATGAAAGCTAACCTGCTGGTACTCTTATGCGCTCTGGCCGCTGCAGACGCCGATACCATCTGTATCGGGTATCATGCCAACAATAGCACC GACACCGTGGATACAGTCCTAGAAAAGAATGTGACCGTCACTCACTCAGTGAACCTATTAGAAGATTCCCACACGGCAAGTTGTGTCGC CTCAAAGGCATCGCCCCCACTGCAACTTGGGAAATGCAACATAGCCGGGTGGCTGCTGGGCAACCCAGAGTGCGATCCCCCTGTTGCCAG TGCGCAGTTGGTCATATATCGTGGAGACTCCAAATTCAGAAAATGGGATTTGCTATCCAGGGGACTTCATCGACTACGAAGAACTGCGCG AACAGCTGTCCAGCGTGAGTTCCTTCGAACGATTTGAAATTTTCCCAAAGGAGAGCAGCTGGCCTAACCACACAACACGAACGGAGTGACT GCCGCTTGCAGCCACGAGGGAAAGAGCTCTTTCTACCGCAACCTTCTGTGGTTGACAGAGAAGGAAGGGAGCTACCCCAAACTGAAGAA CTCCTACGTTAATAAGAAAGGTAAGGAAGTGCTAGTGCTCTGGGGTATCCATCATCCACCAAATAGCAAAGAGCAACAGAATCTGTATCA GAACGAGAACGCTTACGTGTCAGTTGTCACTTCCAACTATAACCGCCGGTTCACTCCAGAGATCGCTGAGCGCCCCAAGGTGCGCGATC AGGCTGGCCGCATGAACTATTACTGGACCTTGCTGAAGCCAGGGGACACAATTATCTTTGAGGCCAATGGAAATCTCATCGCACCGATGT ACGCCTTTGCCCTTTCCCGGGGCTTCGGGTCTGGCATCATTACCTCGAATGCTTCGATGCACGAGTGCAACACCAAGTGCCAAACTCCCT TGGGAGCTATTAATTCTTCACTCCCATACCAGAATATTCACCCAGTTACAATCGGCGAGTGTCCAAAGTACGTGCGTTCCGCAAAACTGC GGATGGTTACAGGTCTGCGAAACAATCCAAGTATACAGAGTAGAGGACTTTTTGGAGCTATTGCCGGATTCATAGAAGGGGGCTGGACC GGAATGATTGACGGTTGGTACGGCTACCACCATCAAAACGAACAGGGGTCCGGATACGCCGCAGACCAAAAAAGTACCCAAAATGCTAT TAATGGCATAACCAATAAAGTCAACACGGTCATTGAAAAGATGAACATCCAGTTCACTGCTGTGGGAAAGGAGTTCAATAAGCTGGAGAA ACGAATGGAGAACCTCAACACAAAAAAGTAGATGACGGCTTTTTGGACATCTGGACCTACAATGCAGAGCTTCTGGTGCTATTAGAGAACGA ACGTACATTAGACTTTCACGACTCCAACGTCAAAAACCTGTATGAGAAGGTGAAATCCCAGCTTAAGAATAACGCAAAGGAAATCGGGAA CGGCTGCTTTGAATTCTATCACAAGTGTGACAATGAGTGTATGGAGAGCGTGCGCAATGGGACCTACGACTATCCTAAGTACTCAGAAGA GTCTAAACTGAACCGTGAAAAGGTCGACGGCGTTAAGCTGGAGTCTATGGGGATCTATCAGATCCTTGCAATTTATTCCACCGTGGCGTC TTCCTTGGTTTTGCTAGTGAGTTTAGGTGCTATCAGTTTCTGGATGTGCTCCCTGCAATGTAGGATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2694	ATGAAGGCCAACCTCCTGGTCTTGCTGTGCGCCCTGGCTGCTGCCGATGCAGATACCATTTGCATCGGCTATCACGCCAACAATTCTACA GATACCGTGGATACAGTACTCGAAAAAAATGTTACTGTGACGCACTCAGTCAACCTGTTGGAAGACTCGCACAATGGCAAACTGTGCAGG CTGAAAGGCATTGCCCCCCCTACAGCTGGGAAGTGCAACATTGCAGGCTGGCTGTTGGGAAACCCTGAATGTGATCCATTGCTCCCAGT GCGGTCCTGGTCTTACATCGTGGAGACACCAAACAGCGAGAATGGGATCTGTTACCCTGGCGATTTTATAGACTACGAGGAGCTCAGGG AGCAGCTCAGCTCTGTGTCGTCTTTCGAGCGCTTTGAGATTTTTTCCTAAGGAGTCCTCCTGGCCAAACCACACAACACGAATGGAGTGACAG CCGCCTGTAGCCACGAGGGCAAGTCCTCATTCTATAGAAACTTGCTTTGGCTAACTGAAAAGGAGGGCAGCTACCCTAAACTGAAAAATA GCTATGTGAACAAAAAAGGCAAAGAAGTGCTCGTCCTGTGGGGGATCCATCATCCTCCTAACTCAAAGGAGCAGCAGAACCTGTATCAGA ATGAAAACGCTTACGTGTCTGTCGTGACTTCAAATTATAACCGGAGGTTCACTCCCGAAATTGCCGAGACCAAAGGTCAGGGACCAGG CAGGCCGCATGAATTACTATTGGACACTTCTGAAACCAGGCGACACAATTATTTTCGAGGCAAACGGGAACCTTATAGCCCCAATGTACG CCTTCGCACTATCAAGAGGCTTCGGTTCCGGCATCATTACAAGCAACGCGAGCATGCATGAATGCAACACCAAGTGCCAAACCCCACTG GGTGCAATTAATAGTTCCCTGCCATATCAGAATATCCACCCCGGTGACAATTGGAGAGTGCCCTAAGTGAGGAGCGCTAAGTTAAGA ATGGTGACGGGACTGAGAAACAACCCTTCCATTCAGTCCCGAGGACTTTTTGGAGCAATCGCCGGCTTTATTGAGGGGGGCTGGACGGG GATGATTGATGGCTGGTATGGGTATCACCACCAGAATGAACAGGGAAGTGGGTACGCTGCTGATCAGAAGTCAACTCAGAATGCCATCA ACGGGATAACAAATAAGGTAAATACTGTGATTGAAAAAATGAATATCCAGTTCACTGCCGTTGGGAAGGAGTTTAACAAGCTTGAGAAAAG GATGGAAAACCTGAATAAGAAGGTAGATGACGGATTCCTCGATATATGGACCTACAACGCTGAGCTGCTGGTTTTGCTAGAGAACGAAAG AACTTTGGATTTTCATGATTCTAACGTGAAGAACTTGTACGAAAAAGTGAAAAAGTCAGCTTAAAAACACAACGCAAAGGAGATTGGGAATGGC TGCTTTGAGTTTTATCACAAGTGCGACAATGAATGTATGGAGAGCGGTGAGGAACGGCACGTATGACTACCCCAAGTACAGTGAGGAATCC AAGCTGAACCGAGAAAAGGTCGACGGCGTGAAGCTGGAGTCTATGGGAATCTATCAGATTCTCGCAATTTACTCAACTGTCGCATCATCC CTAGTGCTCCTGGTGAGCCTGGGAGCCATTTCTTTCTGGATGTGTAGCAATGGTAGTTTACAATGCAGAATCTGTATT

Ing. Ines Sangiacomo
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Seq ID No.	Sequenza nucleotidica
2695	ATGAAGGCAAATCTGCTGGTCTTACTGTGCGCTCTGGCCGCTGCTGATGCTGATACAATCTGTATTGGCTACCACGCCAATAACTCCACT GATACAGTGGATACTGTGCTGGAAAAAAATGTTACAGTCACACATTCAGTGAACCTCCTAGAAGACAGCCATAACGGAAAACTCTGCCGG CTGAAAGGTATCGCACCTTTGCAGCTAGGTAAAGTGCAATATTGCGGGCTGGCTGCTTGGTAATCCCGAGTGCGACCCACTCTTACCAGT GAGAAGTTGGAGCTATATCGTAGAGACCCCCAACTCTGAGAATGGAATCTGTTATCCAGGCGACTTTATTGATTACGAGGAACTGCGCGA GCAACTCTCTTCTGTGTCTTCATTCGAGAGGTTTGAAATCTTCCCTAAGGAGTCGTCTTGGCCTAATCACACAATACCAACGGGGTGACCGC CGCTTGCAGCCACGAGGGGAAGAGTTCTTTTTACCGAAATCTTCTGTGGCTAACAGAAAAGGAAGGATCATACCCAAAATTAAAGAATAG CTATGTAAACAAGAAGGGTAAGGAGGTTCTTGTCTTATGGGGCATACATCATCCCCCCAACTCTAAGGAACAACAGAATCTATATCAGAAC GAGAATGCTTACGTGAGTGTGGTGACCAGTAATTATAATAGAAGATTCACTCCTGAGATTGCCGAAAGGCCTAAAGTGCGCGACCAAGCG GGACGGATGAACTACTACTGGACCTTGCTCAAGCCGGGTGACACAATTATTTTTGAAGCAAATGGTAATCTCATTGCACCAATGTATGCGT TTGCCCTGAGTCGTGGATTTGGCAGCGGAATAATAACTTCAAACGCCAGCATGCACGAATGCAATACTAAATGTCAGACCCCACTGGGG GCAATCAACTCCTCACTGCCATATCAGAACATCCACCCCGTGACCATTGGTGAGTGCCCTAAGTATGTTAGATCAGCGAAGCTTCGGATG GTAACAGGACTTAGAAATAATCCGAGCATTCAAAGCCGCGGGCTGTTTGGAGCCATTGCAGGGTTTATCGAAGGGGGTTGGACCGGCAT GATTGATGGCTGGTATGGATACCACCATCAGAACGAACAAGGCAGCGGGTATGCAGCTGACCAAAAGTCTACCCAGAACGCCATCAATG GAATCACGAACAAGGTTAATACAGTGATTGAGAAGATGAATATTCAGTTTACAGCCGTTGGCAAGGAGTTCAACAAGCTGGAGAAGCGAA TGGAGAACTTAAATAAAAAGGTCGACGACGGCTTCCTGGACATTTGGACATACAACGCTGAACTGTTGGTGCTTCTCGAGAATGAACGAA CTTTAGATTTTCACGATAGCAACGTTAAAAACTTATATGAGAAAGTGAAGTCTCAGCTCAAGAATAATGCCAAGGAGATAGGTAATGGTTG CTTCGAATTCTATCACAAGTGTGACAACGAATGCATGGAGAGTGTTAGAAACGGTACATACGATTATCCCAAGTATAGTGAGGAGTCCAAA CTCAATAGGGAAAAGGTGGACGGGGTGAAGCTCGAGAGCATGGGCATTTATCAGATCCTTGCAATATACTCAACCGTAGCATCTTCTCTC GTTCTTCTGGTGTCCCTGGGCGCTATTTCTTTTTGGATGTGCAGTAATGGCAGCCTTCAATGTAGAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2696	ATGAAGGCCAATCTCCTGGTGCTTCTATGTGCACTGGCCGCGGCCGATGCCGACACCATTTGCATTGGCTATCACGCCAATAATTCCACT GACACAGTTGATACCGTGCTCGAAAAAAACGTAACCGTGACCCATTCCGTTAACCTGCTTGAGGATTCTCACAACGGGAAACTCTGCAGA CTGAAGGGCATCGCCCCCCCTGCAGCTGGGAAAATGCAATATTGCCGGCTGGCTCTTAGGTAACCCAGAATGTGATCCATTACTGCCGGT CAGAAGCTGGAGCTACATCGTGGAAACCCCCCAACTCTGAGAATGGAATCTGTTATCCCGGAGATTTTATTGATTACGAGGAGCTCCGCGA ACAGCTATCCTCTGTATCTTCTTTTGAGAGATTCGAGATTTTCCCCAAGGAGAGGCAGCTGGCCAAACCACACAACTAATGGTGTCACCGC CGCCTGCTCCCATGAAGGAAAGTCCAGCTTTTATCGGAACTTACTGTGGCTGACAGAGAAGGAGGGGCTCTTACCCCAAGCTGAAGAACA GCTATGTCAATAAAAAGGGCAAGGAAGTCCTAGTGTTGTGGGGATCCACCATCCACCTAACAGCAAAGAGCAGCGAGAACCTCTACCAG AATGAGAATGCGTACGTTTCTGTGGTGACTTCAAACTATAACCGCCGATTCACACCCGAGATCGTCCGATCAGCGAAACTGCG GCGGGGAGAATGAACTACTACTGGACCCTCTTGAAGCCCGGCGATACCATTATTTTTGAGGCTAACGGCAACCTGATCGCCCCCATGTAT GCATTCGCTCTGAGCCGTGGCTTCGGATCTGGTATTATAACCTCAAACGCAAGCATGCATGAATGTAACACCAAATGCCAGACCCCCCCTG GGGGCCATCAACAGCAGTCTGCCATACCAGAACATCCACCCTGTCACCATTGGTGAATGCCCCCAAGTATGTCCGATCAGCGAAACTGCG GATGGTCACGGGGCTGCGAAACAATCCTTCAATCCAGAGCCGAGTCTTTTTGGAGCTATCGCCGGATTCATTGAAGGCGGCTGGACAG GGATGATCGACGGTTGGTACGGGTATCACCACCAGAACGAGCAAGGCAGTGGCTACGCAGCTGACCAGAAATCCACCCAAAACGCCATT AACGGGATCACTAACAAAGTGAACACGGTCATCGAGAAGATGAATATTCAATTCACTGCCGTTGGCAAAGAGTTTAATAAGTTGGAAAAG CGCATGGAGAATCTAAACAAAAAGGTTGACGATGGTTTCTTGGATATCTGGACATATAATGCCGAGCTGTTAGTCCTGTTAGAAAACGAGA GAACCCTTGATTTTCATGATAGCAACGTCAAAAACTTATACGAGAAGGTGAAAAGCCAGCTTAAAAATAATGCCAAAGAGATAGGAAATGG CTGTTTTGAGTTCTATCATAAGTGCGATAACGAGTGCATGGAGTCCGTTCGGAATGGTACCTACGATTACCCGAAGTACTCTGAGGAGAG CAAGTTGAATCGGGAGAAAGTTGATGGCGTCAAGCTCGAATCCATGGGTATCTACCAGATATTAGCTATTTACTCCACAGTCGCATCTAG CCTGGTCCTGCTGGTTTCGCTGGGCGCCATATCTTTTTGGATGTGTTCTAATGGCAGCTTACAATGCAGGATTTGTATC

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Seq ID No.	Sequenza nucleotidica
2697	ATGAAAGCCAACCTCCTCGTGTTGCTGTGCGCTTTGGCCGCTGCCGACGCCGACACCATCTGTATAGGCTATCATGCGAATAATAGCACC GACACAGTAGATACCGTTCTGGAGAAGAACGTGACCGTGACTCACAGCGTGAATCTGTTGGAGGACTCCCATAATGGGAAGCTGTGTAG ATTGAAAGGTATTGCACCGCTACAACTCGGGAAGTGCAATATCGCCGGGTGGCTGCTTGGTAACCCCGAGTGTGACCCACTGCTGCCAG TTCGTTCTTGGAGTTACATCGTGCAGACTCCTAATAGCGAGAATGGTATCTGCTACCCTGGCGACTTCATCGATTATGAGGAGCTCAGAG AGCAGTTGAGTTCCGTGTCATCATTTGAGCGGTTTGAGATTTTTCCAAAGGAAAGTTCGTGGCCGAACCATAACACTAACGGAGTCACCG CCGCCTGTAGTCACGAGGGCAAATCTTCTTTTTACCGGAATTTGCTGTGGCTTACAGAAAAAGAGGGCTCCTATCCGAAGCTGAAGAACT CTTATGTGAATAAAAAAGGAAAGGAAGTCCTAGTGCTGTGGGAATCCATCATCCTCCAAATAGTAAGGAGCAGCAGAACCTATATCAGA ACGAGAACGCATACGTGTCCGTGGTCACGTCAAACTACAACCGGAGAGGTTCACTCCCGAGATCGCCCGAAAGGCCTAACGGTTCGGGATCAG GCTGGGCGCATGAACTACTACTGGACTTTACTGAAACCAGGAGACACCATTATCTTCGAGGCTAACGGCAATCTCATAGCTCCGATGTAC GCCTTTGCCTTGAGTCGCGGATTCGGAAGTGGTATCATTACTAGCAATGCCTCAATGCATGAGTGTAACACAAAATGCCAGACCCCCTTG GGAGCAATTAACTCATCTCTACCATATCAGAACATCCACCCTGTCACTATAGGGGAGTGTCCCAAGTATGTCAGATCCGCCAAGTTGCGG ATGGTAACCGGGCTGCGGAATAACCCCTCCATCCAGTCCCGTGGCCTTTTTGGCGCCATTGCGGGATTTATTGAGGGAGGCTGGACGG GCATGATTGATGGCTGGTATGGTTATCACCACCAGAATGAACAGGGGTCTGGTTATGCTGCCGACCAGAAGAGTACCCAAAACGCCATC AATGGAATTACAAACAAGGTGAATACAGTGATCGAAAAAATGAACATCCAGTTTACTGCAGTTGGTAAAGAATTCAACAAACTAGAAAAGC GGATGGAGAACCTCAACAAGAAGGTCGATGACGGCTTTCTGGACATCTGGACATACAACGCCGAACTTCTAGTGCTTCTGGAGAATGAG CGCACACTGGATTTTCACGACTCAAATGTTAAGAACCTCTACGAAAAAGGTGAAGTCCCAGCTCAAAAACAACGCCAAGGAGATTGGCAAT GGCTGTTTTGAATTTTACCACACAAATGCGACAATGAATGTATGGAGTCCGTCCGGAATGGCACCTATGACTATCCAAAGTATTCTGAGGAAT CCAAGCTGAATCGGGAAAAAGTGGATGGTGTGAAACTTGAGTCAATGGGAATTTATCAGATCCTGGCCATTTACAGTACGGTGGCCTCCT CACTGGTGCTACTGGTAAGTCTGGGAGCAATTTCATTCTGGATGTGCTCCAATGGTTCACTGCAGTGCAGAATCTGCATA

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2698	ATGAAGGCTAACCTGCTGGTACTTCTGTGTGCGCTCGCGGCAGCTGATGCCGACACGATCTGTATTGGATATCATGCGAACAATAGCACA GACACCGTGGATACAGTTCTGGAAAAGAACGTGACTGTCACGCACTCCGTCAACTTACTAGAGGACTCTCACAACGGGAAGCTCTGCAG ACTGAAGGGAATTGCACCCTTGCAGCTGGGTAAGTGTAACATCGCTGGATGGCTACTTGGTAACCCCGAGTGTGACCCTCTCCTGCCCG TGCGGTCCTGGAGCTACATAGTTGAGACACCAAACTCTGAGAACGGGATCTGCTATCCTGGGGACTTCATTGACTACGAGGAGCTGCGG GAGCAGCTCTCCTCCGTCTCTTTCGAAAGGTTCGAGATTTTTCCCAAAAGAATCAAGTTGGCCCAACCACACAACACAAATGGTGTTACC GCCGCCTGTAGCCATGAAGGCGAAATCAAGCTTCTACCGTAATCTGCTTTGGCTTACCGAAAAAGAAGGAAGCTACCCTAAGTTAAAAAAC TCTTATGTCAACAAAAAAGGGAAAGAAGTTTTTGGTGCTGTGGGCATCCACCACCCTCCTAATTCGAAAGAACAGCAGAACTTGTATCAG AACGAAAATGCCTACGTGTCCGTGGTGACCAGTAACTACAACCGACGGTTCACCCCGGAGATAGCAGAGAGGCCAAAAGTCAGAGATCA GGCTGGCAGAATGAACTATTACTGGACCCTCCTAAAACCCGGAGACACTATTATATTTGAGGCAAATGGTAATCTGATCGCTCCAATGTAT GCTTTCGGCCTCTCCCGCGGATTCGGGTCAGGGATAATCACCTCTAACGCTTCTATGCACGAATGTAACACCAAGTGCCAAACTCCCCCTT GGAGCCATCAACAGTTCTCTACCATACCAGAATATCCATCCAGTGACGATCGGCGAATGCCCTAAATACGTCAGAAGTGCTAAGCTAAGA ATGGTTACTGGGCTGAGAAATAATCCGTCCATTCAGAGCAGGGGGCTGTTTGGAGCGATCGCTGGATTTATTGAAGGAGGTTGGACCGG GATGATCGATGGCTGGTACGGTTATCACCATCAAAATGAGCAGGGAAGCGGATACGCCGCAGACCAGAAAAGCACACAGAACGCTATTA ACGGAATCACTAATAAGGTGAATACTGTCATCGAGAAAATGAACATTCAGTTCACAGCAGTGGGCAAAGAGTTTAACAAGCTTGAAAAGA GGATGGAGAATCTCAACAAGAAGGTGGATGACGGCTTCCTCGACATCTGGACTTATAACGCCGAGCTCCTCGTCCTGCTCGAAAATGAA AGGACTTTGGACTTCCACGATTCAAACGTGAAGAATTTGTACGAAAAGGTGAAGTCCCAGCTGAAAAACAACGCTAAGGAGATAGGGAAT GGCTGTTTCGAATTCTACCACAAGTGCGACAATGAGTGCATGGAGAGTGTTAGAAATGGGACGTATGACTATCCTAAGTATTCGGAGGAA TCAAAGTTGAATCGAGAGAAGGTGGACGGTGTGAAGTTAGAGTCGATGGGCATCTACCAGATTCTGGCTATCTATTCCACCGTGGCTAGC AGCTTGGTCCTCCTCGTATCATTGGGCGCAATTAGCTTCTGGATGTGCTCCAACGGTTCCCTTCAGTGCAGAATCTGTATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2699	ATGAAAGCAAATCTGCTGGTGCTGTTGTGCGCGCTGGCGGCTGCTGACGCAGACACCATTTGCATCGGCTACCACGCCAACAACAGTAC TGATACTGTGGACACAGTTTTAGAAAAGAATGTGACCGTAACACATAGCGTAAACTTGCTGGAAGACAGTCACAATGGAAAACTCTGCCG GCTGAAGGGAATCGCCCCCTCTACAGCTCGGCAAATGCAATATCGCCGGGTGGCTATTGGGGAATCCAGAGTGCGACCCACTTCTGCCTG TGCGCAGTTGGTCATATATCGTGGAAACACCAAACTCCGAAAACGGCATTTGCTATCCTGGAGACTTTATTGACTACGAAGAGCTAAGAG AGCAGCTGAGCTCCGTGTCCAGTTTTGAGCGATTTGAGATCTTCCCAAAGGAGAGCTCTTGGCCAAATCACAATACCAACGGAGTGACC GCGGCTTGTTCTCACGAGGGTAAATCCTCCTTTTATAGGAACCTGCTGTGGCTGACCGAGAAAGAGGGATCTTACCCAAAACTTAAGAAC AGCTATGTTAACAAGAAGGGAAAAGAAGTGCTTGTGCTGTGGGTATTCACCACCCTCCTAATTCCAAGGAGCAGCAGAATCTGTATCAG AATGAGAATGCCTACGTCAGCGTGGTCACCTCAAATTATAACAGACGGTTCACCCCAGAGATTGCGGAGCGTCCCAAGGTAAGGGACCA AGCCGGACGCATGAACTATTATTGGACTCTGCTGAAACCTGGTGATACTATCATCTTTGAGGCCAATGGCAATCTTATCGCCCCTATGTAT GCATTTGCCCTATCTCGCGGATTTGGGAGCGGCATCATCACAAGTAATGCCAGCATGCACGAATGTAATACCAAATGCCAGACACCTCTG GGCGCTATCAACAGCAGCCTGCCTTATCAGAATATACACCCTGTCACCATCGGGGAATGCCCTAAATATGTTCGCAGTGCCAAACTTCGT ATGGTGACTGGCTGCGCAACAACCCATCAATTCAGAGCAGGGGCCTGTTCGGAGCGATTGCCCGGTTTATCGAGCGAGGGTGGACGG GCATGATAGATGGCTGGTACGGATACCACCATCAAAATGAACAGGGCAGTGGCTACGCAGCGGACCAGAAATCCACCCAGAATGCTATA AACGGTATCACAAATAAGGTGAATACAGTCATCGAAAAGATGAATATTCAGTTCACTGCGGTCGGTAAGGAGTTCAACAAACTGGAGAAG AGGATGGAAAATCTTAACAAAAAAGTGGACGACGGCTTCCTGGATATATGGACGTATAATGCAGAACTGTTAGTGTTACTCGAGAATGAG AGGACTCTCGACTTCCATGATTCCAACGTGAAGAATCTCTATGAGAAGGTGAAATCCCAACTGAAGAACAACGCCAAAGAGATAGGGAAT GGATGCTTCGAATTCTACCATAAGTGTGATAACGAGTCTGTATGGAGTCTGTGCGGAATGGCACTTACGACTATCCGAAATACAGTGAGGAG TCAAAGTTGAACCGGGAGAAGGTCGATGGCGTCAAGCTGGAGAGTATGGGAATCTATCAGATCCTCGCAATTTACTCAACCGTGGCTAG CTCCCCTGGTACTCCTGGTCTCACTTGGAGCCATCTCCTTCTGGATGTGCAGCAACGGCAGCCTTCAGTGCAGAATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2700	ATGAAGGCCAATCTTTTTAGTGCTGTTGTGTGCACTGGCGGCAGCTGATGCTGACACCATCTGCATCGGATACCACGCCAATAACAGCACT GACACAGTTGACACTGTTCTGGAAAAAAACGTGACGGTGACCCACTCCGTCAATCTTCTGGAGGACTCCCACAACGGGAAGCTGTGTAG GTTGAAGGGTATCGCCCCGTTGCAGCTGGGCAAATGCAACATCGCGGGTTGGCTGCTTGGCAATCCTGAGTGCGATCCACTGCTACCCG TACGGTCTTGGTCATATATCGTTGAGACCCCAAATAGCGAGAATGGCATCTGTTATCCTGGCGATTTCATCGACTACGAAGAGCTGCGAG AACAACTGAGTTCGGTGTCTAGTTTCGAGAGGTTTGAGATCTTCCCAAAAGAAAGTTCCTGGCCTAACCACACAATACCAACGGGGTAACGG CCGCTTGTAGCCACGAGGGCAAATCAAGCTTTTACAGAAATCTGCTGTGGCTCACAGAAAAAGAAGGGAGCTATCCTAAATTAAAGAATT CATACGTGAACAAAAAAGGAAAGGAAGTACTCGTCCTGTGGGGAATTCACCACCCTCCAAATTCTAAAGAACAACAGAACTTGTACCAGA ATGAAAACGCCTATGTATCCGTGGTTACCTCAAACTACAATCGGCGGTTCACCCCCGAAATAGCTGAGAGACCGAAGGTTCGGGACCAA GCGGGAAGAATGAACTATTACTGGACTCTCCTTAAGCCCGGTGATACTATCATCTTTGAAGCCAACGGAAACCTTATCGCCCCAATGTAT GCCTTCGCGTTATCCCGCGGGTTTGGAAGCGGTATTATTACTTCAAACGCGAGCATGCACGAATGTAATACTAAATGTCAGACACCCCTT GGCGCCATCAATAGCAGTCTGCCATACCAAAATATTCACCCCGTGACAATTGGCGAGTGTCCAAAATATGTTAGAAGCGCCAAACTCAGA ATGGTTACTGGCTTGCGGAATAACCCGTCATTCAGTCCAGAGGGTTATTTGGGGCAATCGCCGGCTTTATAGAAGGGGGCTGGACTGG AATGATCGACGGTTGGTACGGATATCATCACCAGAATGAACAGGGATCAGGATATGCCGCGCGGACCAAAAGTCTACCCAGAACGCCATCA ACGGCATCACTAATAAGGTCAACACTGTGATTGAGAAGATGAATATTCAGTTCACCGCAGTCGGCAAGGAATTCAACAAACTCGAGAAAC GCATGGAAAACCTTAACAAAAAAGGTGGACGATGGGTTTCTGGACATTTGGACCTACAATGCCGAGCTGCTAGTGCTGCTGGAAAACGAG CGGACTCTTGATTTCCATGACTCTAATGTAAAAAACCTTTACGAAAAAGTTAAATCACACAACTTAAAAATAATGCCAAAGAAATAGGGAACGG ATGTTTCGAGTTCTACCACAAATGTGATAACGAATGCATGGAGAGTGTTCGCAACGGAACATATGACTATCCTAAGTACAGCGAAGAGTC AAAACTAAATCGGGAGAAAGTCGACGGCGTGAAACTCGAATCCATGGGGATTTACCAGATCCTCGCAATCTATTCTACCGTGGCTAGCTC GCTGGTGCTGCTTGTTAGTCTGGGAGCTATCTCCTTTTGGATGTGTAGCAATGGAAGCCTGCAGTGTAGAATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
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Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2702	ATGAAGGCCAACTTGCTAGTGCTGCTGTGCGCGCTTGCAGCTGCGGATGCGGATACGATATGCATAGGATATCACGCCAATAATTCGAC GGATACCGTGGACACAGTGCTGGAAAAGAATGTAACGGTCACACACACAGCGTGAACCTGCTTGAAGATTCACACAACGGCAAACTGTGCA GGCTCAAAGGAATCGCACCATTACAGCTGGGGAAATGCAACATTGCGGGGTGGCTGCTAGGAAACCCAGAGTGCGATCCCCTGCTGCC CGTGCGGTCTTGGTCCTACATTGTAGAGACTCCGAACTCGGAGAACGGTATTTGCTACCCTGGAGATTTCATTGACTATGAAGAACTCAG GGAGCAACTGTCCTCAGTTTCGAGCTTTGAAAGGTTCGAGATCTTTCCTAAGGAGTCCAGCTGGCCTAACCACAATACAAACGGGGTGAC CGCGGCCTGTTCACATGAGGGTAAATCTTCATTCTACCGCAACCTCCTGTGGTTAACCGAAAAAGAAGGAAGCTATCCTAAGCTGAAGAA TTCTTACGTGAATAAAAAGGGTAAGGAAGTTCTGGTGCTGTGGGGCATCCAACCCACCCTAATAGTAAGGAACAGCAGAACCTATACCA GAACGAAAATGCGTACGTGAGCGTGGTAACTTCAAACTATAATCGGAGGTTCACACCCGAAATCGGCGGGCCCAAGGTGCGCGGAC CAGGCTGGGCGCATGAATTATTACTGGACACTGTTGAAACCTGGAGACACTATAATCTTCGAGGCGAACGGAAACTTAATCGCTCCCATG TACGCATTCGCCCTGTCCCGTGGCTTTGGCAGCGGTATCATCACATCCAACGCCTCTATGCACGAATGCAATACGAAGTGCCAAACCCCT CTCGGAGCCATTAATAGCTCCCTCCCATATCAGAACATTCACCCAGTGACCATAGGAGAGTGTCCTAAGTACGTTCGGAGCGCAAAACTC CGCATGGTGACGGGGTTGCGAAACAACCCTTCCATCCAGTCGAGGGGCCTTTTCGGGGCGATCGCTGGCTTCATCGAGGGAGGGTGGA CCGGGATGATTGACGGCTGGTACGGGTATCACCACCAGAACGAGCAGGGTAGCGGCTACGCGCGACCAGAAATCTACGCAGAATGC CATTAATGGGATTACAAACAAGGTTAATACCGTGATCGAGAAAATGAACATTCAGTTCACAGCCGTCGGCAAAGAATTTAACAAATTAGAG AAGCGGATGGAGAATCTGAATAAAAAAGTGGACGATGGATTCCTGGATATCTGGACGTATAATGCCGAGTTGCTCGTCCTTCTGGAAAAC GAGAGAACCCTGGACTTTCACGATTCAAATGTAAAGAACCTTTACGAAAAAGGTGAAGTCTCAACTGAAAAACAACGCCAAGGAGATAGGG AATGGCTGCTTTGAATTCTACCATAAATGCGACAATGAATGTATGGAGTCTGTTAGGAATGGTACTTACGACTACCCGAAGTATTCCGAAG AGAGCAAGCTGAATAGGGAGAAGGTGGATGGAGTGAAACTGGAATCTATGGGGATTTATCAGATCCTAGCTATTTATTCTACAGTAGCCA GCTCCCTCGTCCTTCTGGTCTCCCTGGGCGCAATTTCATTTTGGATGTGCAGCAACGGGTCCTTACAATGCCGCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2703	ATGAAGGCTAACCTGCTTGTGTTATTGTGCGCCCTGCGCGGCAGCAGACGCAGATACCATATGTATCGGGTATCACGCTAATAATAGCACT GACACCGTTGACACCGTCCTGGAAAAAAAACGTGACCGTGACTCATTCAGTTAATCTTTTGGAGGACAGCCATAATGGCAAGCTTTGTAGA CTCAAGGGCATCGCACCTTTACAGTTGGGTAAGTGCAACATCGCAGGATGGCTCCTTGGCAACCCTGAATGTGACCCGCTGCTCCCAGT CCGGAGTTGGTCATATATCGTAGAAACTCCCAATAGCGAAAACGGCATTTGCTACCCAGGCGACTTTATAGATTACGAAGAGCTCCGGGA GCAGCTATCAAGTGTCTCGTTTGAGCGTTTTGAGATTTTTCCGAAAGAATCCAGTTGGCCAAATCACAACACAAACGGTGTAACAGC GGCTTGTTCACACGAGGGTAAAAGTTCTTTCTACAGAAATTTATTGTGGCTTACAGAGAAAGAAGGCTCTTACCCAAAGCTGAAGAATTCT TATGTGAACAAGAAGGGTAAGGAGGTGTTAGTACTGTGGGGAATACATCACCCTCCTAATAGCAAGGAGCAGCAGAACTTGTATCAGAAC GAAAACGCATATGTGTCTGTGGTGACATCCAATTATAATAGGCGTTTTACTCCCGAAATTGCAGAGCGACCTAAAGTGCGTGACCAGGCA GGTAGAATGAATTACTACTGGACCCTGTTGAAGCCCCGGTGACACCATCATTTTCGAAGCAAATGGTAACCTGATCGCACCAATGTACGCA TTTGCACTGTCCCCGCGGATTTGGCTCCGGAATCATTACCAGTAATGCCTCTATGCATGAATGTAACACCAAATGCCAGACCCCCCTGGGC GCCATTAACTCCAGCCTGCCTTATCAGAATATACATCCTGTGACAATAGGTGAGTGCCCCAAGTACGTGAGATCTGCAAAACTAAGAATG GTCACCGGACTCAGGAACAATCCCTCCATCCAGAGTAGGGGTCTGTTCGGAGCCATAGCAGGGTTCATTGAAGGTGGATGGACAGGGAT GATCGATGGATGGTACGGCTACCACCACCAGAATGAGCAGGGCTCTGGCTACGCCGCTGACCAGAAATCTACACAGAACGCCATTAATG GCATCACTAACAAGTGAATACCGTCATTGAGAAGATGAATATTCAGTTCACTGCCGTTGGCAAGGAATTTAACAAACTGGAGAAGCGGA TGGAGAATCTAAATAAGAAAGTAGACGACGGGTTTCTCGATATTTGGACATATAACGCTGAGCTTCTAGTCCTACTCGAGAACGAGAGGA CCCTCGACTTCCATGATAGCAACGTGAAGAACCTATACGAGAAGGTCAAGTCTCAACTGAAGAACAACGCTAAGGAGATCGGAAATGGAT GTTTCGAGTTTTATCACAAGTGTGATAACGAGTGTATGGAGTCTGTAAGGAACGGTACCTATGACTACCCAAAATACAGCGAGGAATCAAA GCTCAATCGTGAGAAAGTCGATGGAGTTAAGCTGGAATCTATGGGGATTTATCAGATCTTAGCTATCTATTCAACCGTTGCTTCCAGCTTA GTCCTCCTCGTGTCACTGGGGGCTATAAGTTTTTTGGATGTGCAATGGCAGTTTGCAGTGTAGGATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2704	ATGAAGGCTAATTTATTGGTGCTGTTGTGTGCACTGGCTGCCGCAGACGCCGACACCATCTGCATTGGATATCATGCCAACAATTCAACT GATACGGTCGATACGGGTGCTTGAGAAAAATGTGACAGTTACACACTCTGTGAACCTTCTGGAAGACTCTCATAACGGCAAACTTTGTCGG TTGAAGGGTATCGCCCCACTGCAGCTTGGTAAGTGCAACATCGCCGGTTGGCTCCTCGGAAATCCAGAGTGTGATCCACTGTTACCTGT GCGTAGTTGGAGTTACATCGTGGAGACTCCTAATAGTGAAAACGGCATATGCTATCCAGCGCGATTTCATCGATTATGAAGAACTGCGTGA GCAGCTGTCCAGCGTGTCCTCATTCGAGCGCTTTGAGATCTTCCCGAAAGAGTCCAGTTGGCCAAACCACAATACCAATGGGGTCACTG CCGCCTGTAGTCATGAGGGTAAAAGCTCCTTCTATCGGAATCTTCTCTGGCTGACCGAAAAAGAAGGGTCCTACCCCAAACTTAAGAATT CGTACGTCAACAAGAAGGGCAAAGAAGTACTTGTGCTGTGGGGTATCCACCACCCTCCCAACTCTAAGGAGCAGCAGAATCTGTACCAG AATGAGAACGCTTACGTCAGCGTGGTGACCTCAAATTATAACCGAAGGTTCACTCCCGAGATAGCCGAGCGGCCTAAGGTCAGAGACCA AGCGGGTAGAATGAATTACTACTGGACACTACTAAAGCCCGGCGACACCATCATCTTTGAGGCAAATGGAAATCTGATCGCCCCCATGTA TGCATTTGCACTGAGCCGGGGGTTCGGATCTGGAATCATAACTTCAAACGCCAGTATGCAATGACAATACAAAGTGTCAGACTCCCTT GGGTGCCATCAATTCCAGCCTGCCTTATCAGAATATCCACCCTGTGACAATTGGAGAGTGCCCAAAATACGTTCGTTCAGCTAAACTGAG AATGGTCACCGGCCTCCGGAACAATCCTAGTATACAGTCACGCGGCCTTTTCGGCGCCATTGCCGGATTTATTGAAGGAGGCTGGACAG GCATGATAGACGGATGGTACGGATATCACCACCAGAACGAACAAGGGTCTGGCTATGCCGCAGACCAGAAATCCACCCAGAACGCTATC AATGGTATCACGAATAAAGTCAATACCGTCATCGAGAAGATGAATATCCAGTTTACAGCTGTGGGAAAAGAGTTCAATAAGCTTGAAAAGA GGATGGAGAACCTGAATAAAAAAGTTGATGACGGATTTCTCGACATCTGGACGTATAACGCTGAACTGCTTGTGCTGCTCGAAAACGAGA GGACATTGGATTTTCACGACTCCAATGTTAAGAATCTGTACGAGAAGGTGAAATCTCAGCTCAAGAATAATGCTAAGGAAATAGGCAACG GATGTTTCGAATTTTATCATAAGTGCGACAATGAATGCATGGAATCAGTGCGCAACGGGACCTATGACTACCCCAAGTACAGCGAGGAGT CCAAGCTGAATAGAGAAAAGGTGGACGGCGTCAAACTGGAAAGTATGGGCATTTACCAAATTCTCGCCATCTACTCTACCGTTGCCAGCA GTCTCGTGCTGTTAGTATCACTCGGTGCCATCTCTTTTTGGATGTGTAGTAATGGAAGCCTGCAGTGCCGGATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2705	ATGAAGGCCAACCTGCTCGTGTTGCTGTGTGCACTAGCTGCCGCCGACGCAGACACCATCTGTATCGGCTACCATGCCAACAACAGCAC CGACACAGTGGATACGGTGCTCGAGAAGAACGTGACTGTCACCCATAGTGTGAATCTCCTAGAGGATTCTCATAATGGGAAGCTATGCC GACTCAAGGGGATTGCACCTCTGCAACTGGGTAAGTGCAATATCGCCGGTTGGCTTCTTGGGAACCCCGAATGTGATCCCCTGCTCCCC GTGCGATCTTGGTCATATATCGTTGAAACACCCAATAGCGAAAATGGCATATGCTACCCTGGAGATTTCATTGACTATGAGGAACTCCGA GAACAGCTGTCAAGCGTGTCTAGTTTCGAACGGTTTGAAATATTCCCTAAGGAGAGTTCCTGGCCCAACCATAACACAAACGGAGTGACC GCAGCCTGCTCTCATGAGGGGAAGTCCTCATTTTATCGCAATCTCCTGTGGCTCACTGAAAAGGAGGGAAGTTACCCAAAATTGAAAAAC TCATACGTGAATAAGAAAGGCAAGGAGGTCCTCGTGCTGTGGGGATTCATCACCCCCCTAACTCAAAAGAACAGCAGAACCTGTATCA GAACGAAAACGCCTACGTGAGTGTGGTGACCTCTAACTATAACCGGAGCGTTCACGCCAGAGATTGCTGAAAGACCTAAAGTCAGGGACC AAGCCGGCAGAATGAATTACTATTGGACCCTGTTGAAGCCCGGCGATACCATTATATTCGAGGCAAACGGCAACCTGATTGCCCCCATGT ACGCGTTCGCCCTGAGTCGAGGCTTCGGCAGTGGGATTATTACCTCTAACGCCTCGATGCATGAGTGCAACACAAAATGTCAAACTCCAC TTGGGGCCATCAACTCGTCTCTTCCTTACCAAAATATCCACCCGGTTACAATTGGGGAATGTGCCCAAATACGTGCGGTCCGCAAAGCTTC GCATGGTCACGGGCCTGAGGAACAACCCCTCTATCCAGTCTCGCGGTCTATTTGCTGGCTATTGCTGGCTTTATCGAGGGGGGGTGGACA GGGATGATTGATGGCTGGTACGGGTACCATCACCAAAATGAACAGGGGTCCGGCTATGCTGCTGACCAAAAATCTACTCAAAACGCCATT AATGGAATCACAAATAAAGTGAATACGGTCATAGAAAAGATGAACATTCAATTTACAGCCGTGGGTAAGGAGTTCAACAAACTGGAGAAG CGAATGGAGAACTTAAACAAAAAGGTAGATGATGGTTTCCTCGATATCTGGACATATAATGCTGAGTTGTTGGTGCTCTTGGAGAATGAGC GGACCTTAGATTTCCACGACAGCAATGTTAAAAACCTCTATGAAAAGGTGAAAAGTCAACTGAAGAACAATGCGAAAGAGATCGGTAACG GGTGCTTCGAGTTCTACCACAAATGCGACAACGAGTGTATGGAGAGTGTAAGGAATGGTACATATGATTATCCTAAATACTCTGAAGAGT CGAAGCTGAACAGAGAGAAAGTCGACGGCGTAAAGCTGGAGAGTATGGGTATCTACCAAATCTTGGCCATCTATTCTACCGTGGCGTCA TCACTAGTTCTTCTGGTGTCCTTGGGGGCCATATCATTCTGGATGTGTTCAAACGGGTCCCTCCAGTGCCGCATCTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2706	ATGAAGGCAAACCTGTTGGTATTGTTGTGTGCCCTGGCAGCTGCGGATGCAGACACTATTTGCATCGGCTATCATGCAAATAATTCCACG GACACAGTTGACACCGTTCTGGAGAAAAATGTGACGGTCACTCATTCTGTGAACCTGCTGGAAGACTCTCATAACGGAAAGCTGTGCCG GTTGAAGGGAATTGCACCACTACAACTGGGAAAATGCAACATCGCCGGCTGGTTGCTAGGTAACCCTGAGTGCGATCCACTCCTTCCAG TGAGATCCTGGTCCTACATCGTCGAGACCCCAAACTCAGAGAACGGGATCTGTTATCCAGGAGATTTCATTGACTATGAAGAGTTACGTG AACAGCTCTCTTCCGTGTCGTCATTCGAACGGTTTGAAATCTTCCCCAAAGAGTCATCCTGGCCAAATCATAACACTAACGGCGTGACTG CAGCTTGTTCCCACGAAGGGAAATCATCTTTCTACAGAAATCTGCTGTGGCTCACCGAAAAAGAGGGGAGTTATCCCAAGCTGAAAAACT CCTACGTTAATAAAAAGGGAAAAGAAGTGCTTGTCTTATGGGGTATCCATCACCCCCCAAATTCTAAAGAACAGCAGAACCTGTACCAGAA CGAGAACGCGTATGTGTCAGTGGTGACCTCTAACTATAATCGCAGATTTACACCAGAGATCGCAGAGGCGCCTAAAGTACGGGACCAGG CCGGTCGGATGAACTACTATTGGACCCTACTGAAACCAGGCGATACCATCATCTTCGAGGCTAATGGGAACTTAATTGCCCCCATGTACG CTTTCGCACTTAGCCGTGGCTTTGGCAGCGGGATTATCACGTCTAATGCTTCCATGCACGAGTGTAATACGAAGTGTCAGACACCTCTTG GTGCCATTAACTCAAGTCTTCCCTATCAGAACATCCACCCGGTGACCATCGGCGAGTGTCCCAAGTACGTTCGAAGCGCCAAACTGCGG ATGGTCACAGGTCTAAGGAATAACCCCTCCATCCAGAGCCGCGGCTTGTTTGGTGCGATTGCCCGGTTTATCGAGGGAGGGTGGACTG GCATGATAGACGGATGGTACGGATACCACCACCAAAATGAACAAGGCTCCGGATACGCCGCCGACCAAAAATCCACCGCAGAACGCCATA AACGGAATTACAAACAAGGTAAACACAGTCATAGAAAAAATGAATATTCAGTTTACAGCGTCGGGAAAGAATTTAACAAGCTGGAAAAGA GAATGCAAAACCTGAATAAGAAGGTCGACGATGGTTTTCTCGATATATGGACTTACAATGCTGAACTTCTGGTCCTTCTGGAAAACGAACG AACCTTGGATTTCCATGACTCTAATGTGAAGAACTTGTACGAAAAGGTGAAATCACAGTTAAAGAACAACGCCAAAGAAATAGGAAACGG GTGCTTCGAATTTTACCATAAATGTGATAACGAGTGTATGGAGAGCGTTCGTAATGGTACGTACGACTATCCTAAATATAGTGAAGAGAGC AAACTCAACCGTGAAAAAGTAGACGGCGTGAAACTGGAATCCATGGGGATCTACCAAATCCTGGCCATCTACTCGACGGTGGCAAGTTCT CTCGTGCTTCTTGTAAGCCTGGGTGCTATCTCTTTTTGGATGTGTAGTAACGGATCCCTGCAGTGTCGAATTTGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2707	ATGAAAGCAAATCTTTTAGTTCTTCTGTGTGCGTTGGCTGCAGCCGACGCAGACACTATCTGCATTGGCTACCATGCTAATAATAGCACTG ACACTGTAGATACAGTGTTGGAAAAGAACGTTACAGTGACTCACTCTGTCAATCTGCTGGAGGATTCCCATAACGGCAAATTGTGCCGTC TAAAGGGCATTGCGCCACTCCAGCTGGGAAAGTGCAATATCGCAGGCTGGCTCCTGGGCAACCCAGAATGCGACCCGCTGCTGCCTGT TCGCTCATGGTCATACATCGTCGAAACCCCTAACAGTGAGAACGGGATTTGCTATCCCGGGGATTTCATCGATTACGAAGAATTACGCGA GCAACTGAGTTCCGTGTGTCGTTTTGAGAGGTTTGAGATCTTCCCGAAGGAATCTTCATGGCCCAACCATAACACCAATGGTGTGACTGC TGCCTGTTCACACGAGGGCAAAAGCTCTTTCTACCGAAATCTACTGTGGCTCACAGAGAAAGAGGGATCGTACCCCAAGCTGAAAAATTC CTATGTGAACAAGAAAGGCAAAGAGGTGCTGGTGCTTTGGGGAATTCATCACCCACCCAATTCTAAGGAGCAGCAGAATCTGTATCAGAA CGAAAATGCCTATGTTTCCGTGGTAACATCTAATTATAATAGGCGATTCACACCTGAGATTGCAGAGCGGCCGAAAGTCCGAGACCAGGC AGGCCGCATGAACTATTACTGGACGCTTCTCAAACCAGGCCGACACCATCATCTTCGAGGCCAATGGGAACTTGATCGCACCAATGTACGC GTTTGCCTTGAGTCGGGGCTTTGGGAGCGGTATTATCACCTCGAACGCCTCTATGCATGAATGTAATACGAAGTGTCAGACCCCTCTGGG GGCAATAAATAGCTCACTGCCCTATCAGAACATCCACCCCGTGACCATCGGTGAGTGTCCCAAATACGTCAGGTCAGCTAAACTCCGTAT GGTGACCGGCCTAAGGAATAATCCGTCCATTCAGTCCAGAGGTCTGTTCGGTGCAATCGCCGGGTTCATTGAGGGAGGATGGACGGGT ATGATCGACGGCTGGTATGGCTATCACCACCAGAACGAACAGGGTAGTGGCTACGCCGCTGATCAAAAGTCCACTCAAAATGCTATCAA CGGAATCACGAACAAAGTGAACACAGTGATAGAGAAGATGAACATTCAGTTCACCGCTGTGGGTAAAGAGTTTAATAAGCTGGAGAAAAG GATGGAAAATCTCAATAAGAAAGTTGACGATGGATTCCTTGACATTTGGACTTACAATGCCGAGCTGCTGGTGCTTCTGGAGAATGAGAG GACCTTAGACTTTCACGACAGCAACGTTAAAAATCTCTATGAGAAAGTGAAATCACAGCTGAAGAATAATGCAAAAGAGATTGGGAATGG GTGCTTCGAGTTTTATCACAAATGCGATAACGAATGTATGGAGTCCGTGAGAAATGGAACGTACGACTATCCTAAGTATAGCGAGAAAG CAAACTCAACAGGGAAAAGGTGGACGGTGTTAAACTCGAATCCATGGGGATTTATCAGATATTAGCGATCTATTCGACCGTGGCATCATC TCTCGTTCTTCTTGTGTCTTTGGCGCCATCAGCTTTTGGATGTGTTCAAATGGCTCTCTGCAGTGTCGCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2708	ATGAAAGCCAATCTACTGGTCCTCCTCTGCGCCTTGGCTGCCGCAGATGCTGACACGATCTGTATTGGCTACCATGCGAACAATAGCACG GATACAGTGGACACCGTTCTGGAGAAAAATGTCACCGTGACACATAGCGTAAACCTGCTCGAAGATTCCCACAACGGTAAGCTCTGTAGA CTCAAAGGTATTGCTCCCCTGCAGTTGGGCAAATGTAATATAGCCGGCTGGCTTCTCGGCAATCCCGAATGCGATCCCCTGTTGCCCGT GCGGTCTTGGTCTTATATCGTCGAAACCCCAAATTCAGAAAACGGAATTTGTTATCCTGGCGACTTCATCGATTACGAAGAGTTGAGGGA GCAGCTTTCAAGCGTTAGCAGTTTCGAGAGATTTGAGATATTTCCAAAGGAAAGTTCCTGGCCCAATCATAACACCAACGGCGTGACCGC CGCTTGCTCTCACGAAGGCAAAAGTAGTTTCTATCGAAATCTGCTCTGGCTGACGGAGAAGGAAGGTTACCCCAAGCTGAAAAACTC CTACGTCAACAAGAAGGGCAAAGAAGTGCTCGTACTGTGGCGCATCCATCACCCTCCCAATTCCAAAGAGCAGCAGAACCTGTATCAGA ATGAGAACGCTTATGTATCCGTTGTGACTTCAAACTATAATCGCCGGTTCACTCCTGAGATCGCAGAGCGGCCCAAAGTGAGAGACCAGG CCGCGAGGATGAATTATTATTGGACACTCCTCAAGCCAGGCGACACAATTATTTTTGAGGCTAACGGGAACTTGATCGCTCCCATGTATG CGTTCGCCTTGTCAAGAGGATTCGGATCCGGGATTATCACCTCTAATGCTTCGATGCACGAATGTGTAACACAAAGTGTCAAACTCCACTGG GAGCCATAAAATTCGTCCTTGCCATATCAGAATATTCACCCTGTTACAATTGGCGAGTGTCCCAAGTATGTCCGCTCTGCCAAGTTACGGAT GGTGACCGGGTTGCGCAACAACCCAAGTATACAGTCACGCGGGACTGTTCGGAGCTATCGCGGGATTCATTGAGGGAGGCTGGACAGGG ATGATCGATGGGTGGTACGGGTATCATCACCAGAACGAACAGGGATCGGGATATGCCGCGGACCAAAGTCAACACAAAACGCCATCAA CGGTATTACCAATAAGGTCAACACAGTGATCGAAAAGATGAATATCCAGTTCACTGCTGTGGGCAAGGAGTTTAATAAACTGGAGAAGCG CATGGAGAACCTGAACAAGAAGGTTGACGACGGTTCCTGGACATATGGACGTACAATGCCGAGCTGCTTGTCCTCCTGGAGAATGAGA GAACCCTGGATTTTCACGATTCTAATGTGAAGAATCTGTATGAAAAAGTGAAGTCCCAACTCAAAAACACAACGCAAAAGAGATCGGCAACG GATGCTTTGAATTCTATCATAAGTGCGATAATGAATGTATGGAAAGTGTGAGGAATGGGACTTACGATTACCCGAAATATTCCGAAGAGAG CAAACTGAATCGCGAGAAAGTTGACGGTGTAAAGCTGGAGTCTATGGGAATTTACCAAATTCTGGCCATTTATTCTACCGTGGCATCAAG CCTGGTTCTGCTGGTGTCCCTTGGCGCATTTCATTCTGGATGTGTTCCAATGGCAGCCTCCAGTGCCGGATATGTATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2709	ATGAAGGCTAACCTTTTGGTCCTTTTGTGCGCGCTTGCCGCGCGGCGGATGCAGACACCATTTGCATAGGATACCACGCCAATAATAGCACA GACACAGTGGATACAGTCCTTGAGAAAAATGTCACTGTAACTCATAGTGTTAACTTGCTAGAAGACTCTCATAATGGTAAATTATGTCGGC TTAAGGGAATCGCGCCACTCCAATTGGGCAAATGCAACATTGCTGGCTGGTTGTTAGGTAATCCCGAGTGCGATCCCGCTCGCTCCCTGTCC GGTCTTGGTCTTACATCGTTGAAACACCCAACAGTGAGAATGGCATCTGTTACCCCGGAGACTTCATCGACTACGAAGAGGTGCGAGAG CAGCTTTCTTCCGTCTCCTCCTTTGAACGATTCGAAATCTTCCCCAAAGAGAGGCTCATGGCCGAACCATAACACTAATGGAGTTACAGCCG CCTGCTCCCATGAGGGGAAAAGCAGTTTTTATAGGAACCTGCTGTGGCTGACAGAAAAGGAGGGCAGCTACCCCAAGCTGAAGAATTCT TACGTGAACAAGAAGGGCAAAGAAGTATTGGTGCTGTGGGCATTCATCATCCTCCGAACTCCAAGGAGCAGCAGAACCTTTACCAGAA CGAGAACGCCTACGTATCAGTTGTTACTAGCAACTATAACAGACGATTCACTCCTGAAATCGCCGAGCGGCCTAAGGTTCGGGATCAGG CTGGGAGAATGAACTATTACTGGACCCTGTTGAAGCCTGGAGACACTATTATCTTTGAGGCAAATGGAAACCTGATCGCACCTATGTATG CTTTCGCACTCAGCCGGGGCTTTGGCTCCGGGATCATCACTAGTAATGCTAGCATGCATGAGTGTAACACGAAATGTCAGCAACCCCACTG GGTGCTATAAACAGTTCCCTGCCTTATCAGAACATCCACCCTGTGACTATTGGAGAGTGTCCCAAGTACGTCAGGAGCGCAAGCTCCG GATGGTCACAGGGCTGAGGAATAACCCAAGCATTCAGAGCCGGGGTCTATTTGGGGCCATCGCGGATTCATCGAGGGAGGCTGGACT GGCATGATCGATGGCTGGTATGGCTATCATCACCAAAATGAACAGGGATCCGGCTACGCCGCAGACCAGAAATCTACACAGAATGCAAT CAACGGAATCACAAATAAAGTGAATACCGTCATCGAGAAGATGAACATACAATTTACCGCTGTGGGTAAAGAGTTTAATAAACTAGAGAAA CGGATGGAAAATCTTAATAAAAAGGTGGACGACGGGTTCCTCGATATTTGGACATATAATGCCGAGCTATTGGTGCTCCTGGAAAATGAA AGAACGCTTGATTTTCACGACTCTAACGTGAAAAATCTGTACGAAAAGGTTAAGAGTCAGCTAAAGAACAATGCCAAAGAAATCGGGAAATG GTTGCTTCGAGTTCTACCACAAATGTGATAATGAATGCATGGAATCAGTCCGAAACGGTACCTACGATTATCCTAAATATTCTGAAGAATC AAAGCTAAACCGAGAGAAGGTCGATGGCGTCAAGCTTGAGAGCATGGGTATCTACCAGATACTGGCCATCTATAGTACTGTGGCATCTTC CCTGGTGCTTCTCGTGTCCCTGGGGGCGATCTCCTTTTGGATGTGTTCAAACGGATCCCCTGCAGTGTCGGATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2710	ATGAAGGCCAACCTGCTGGTTCTGCTTTGCTGCTCTCGCCGCCGGCCGATGCTGATACTATTTGCATAGGTTATCATGCTAACAACTCCACT GATACTGTTGATACAGTTCTCGAAAAAAAACGTAACGGTCACTCACTCTGTAAACCTATTGGAAGACAGCCACAATGGGAAGTTGTGTAGG CTTAAAGGCATCGCTCCACTGCAGCTGGGCAAATGTAACATCGCAGGCTGGCTCCTGGGCAACCCGGAGTGTGATCCTTTACTGCCCGT CCGCTCCTGGTCTTACATTGTTGAGACACCCAACAGTGAAAACGGTATCTGTTATCCCCGCGATTTTATTGACTACGAGGAGTTGCGGGA ACAACTGTCTTCTGTGAGCAGTTTCGAGCGCTTCGAGATTTTTCCTAAGGAGTCTCTTGGCCCAACCATAACACAAACGGGGTGACCGC TGCCTGCTCACACGAGGGCAAGAGTAGCTTCTATAGAAATCTTCTCTGGCTTACTGAAAAAGAGGGATCTTATCCAAAGTTGAAAAACAGT TATGTGAACAAGAAGGGAAAAGAAGTGCTGGTCCTTTGGGGGATCCATCACCCACCCAACTCCAAGGAGCAGCAGAACCTGTACCAAAA CGAGAACGCATATGTTAGCGTCGTGACCAGCAACTACAATCGCAGGTTCACTCCCGAGATCGGCCGAGAGGCCTAAAGTTCGCGACCAGG CTGGACGGATGAACTACTATTGGACACTATTAAAGCCAGGCGATACCATAATATTTGAAGCAAATGGGAACTTAATTGCACCGATGTACGC CTTCGCACTGTCCCGGGGGTTCGGAAGCGGGATTATTACCTCTAACGCCTCCATGCATGAGTGCAACACCAAGTGTCAAACACCCCTGG GAGCTATTAACTCTAGCTTGCCCTATCAGAACATCCCACCCAGTCACTATCGGCGAGTGTCCTAAGTACGTTAGATCAGCCAAGCTGCGCA TGGTTACGGGGCTTCGGAACAACCCCTCAATCCAATCTCGGGGGCTTTTCGGTGCAATCGCCGGCTTTATAGAAGGCGGTTGGACCGGA ATGATTGATGGCTGGTATGGCTACCACCACCAAAACGAACAGGGAAGCGGGTATGCTGCAGACCAGAAGAGCACACAGAATGCTATCAA TGGGATCACCAACAAAGTAAACACGGTGATTGAGAAAATGAATATTCAGTTCACAGCGGTGGGCAAGGAGTTCAACAAACTGGAGAAGC GTATGGAAAATCTGAATAAAAAAGTTGACGACGGTTTCCTAGACATCTGGACATATAACGCCGAGTTGTGGTGCTCCTCGAAAACGAGC GCACACTCGACTTCCACGATTCTAACGTTAAGAATCTTTACGAAAAAGTTAAATCGCAGCTGAAAAACAACGCGAAGGAGATCGGTAACG GCTGTTTCGAGTTTTATCATAAGTGTGATAATGAATGCATGGAATCCGTGCGGAACGGTACCTACGATTATCCTAAATATTCAGAGGAGAG TAAACTCAATCGCGAGAAGGTCGATGGAGTCAAGCTTGAGAGTATGGGAATTTATCAGATTCTGGCAATCTATAGCACCGTCGCATCCAG TCTCGTCCTCCTTGTTTCACTGGGAGCTATTTCATTCTGGATGTGCTCTAACGGGTCGCTGCAGTGCAGAATCTGCATT

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2711	ATGAAGGCAAATCTTCTGGTACTTCTCTGCGCCCTCGCTGCAGCCGACGCAGATACCATTTGTATCGGCTACCACGCGAATAACTCAACG GATACCGTGGACACCGTGTTGGAGAAGAACGTTACCGTCACACATAGTGTGAATCTGCTTGAAGATTCACATAACGGAAAACTTTGTAGG CTCAAAGGCATCGCGCCACTGCAGCTGGGGAAATGCAATATTGCAGGTTGGTTACTGGGTAACCCAGAATGCGATCCTCTGTTACCTGT GCGTAGTTGGAGCTATATCGTTGAGACCCCAAATTCGGAGAATGGGATCTGCTATCCAGGGGACTTCATTGACTATGAAGAGCTGCGAG AACAGCTCAGCAGCGTATCTAGCTTCGAGAGATTTGAAATTTTCCCGAAGGAATCCAGCTGGCCAAACCACACAATGGCGTTACGG CCGCCTGTAGCCACGAAGGTAAGTCTAGCTTCTACAGAAACCTGCTGTGGCTGACAGAAAAGGAGGGGTCTTACCCGAAGTTGAAGAAT AGCTACGTCAATAAGAAAGGAAAAGAGGTCCTTGTCCTCTGGGGCATCCACCACCCTCCAAACTCGAAGGAACAGCAGAACCTTTATCAG AACGAGAACGCTTATGTCTCCGTGGTGACATCCAATTATAACAGGCGTTTCACACCAGAGATAGCCGAAAGGCCCAAGGTCCGCGACCA AGCTGGTAGGATGAATTACTATTGGACACTCCTCAAACCAGGAGACACAATTATTTTTGAAGCAAATGGGAACCTGATTGCCCCCATGTAT GCCTTTGCGCTAAGCCGCGGTTTCGGAAGCGGGCATTATCACGAGTAATGCATCAATGCACGAGTGTAACACCAAATGTCAAAACCCCCCTTG GGCGCAATTAACTCTTCCCTCCCTTACCAGAACATCCACCCCGTCACCATCGGTGAGTGCCCTAAATACGTACGGTCTGCTAAGTTGCGG ATGGTCACCGGCCTGCGAAATAACCCTAGCATTCAGTCCAGAGGGTTATTTGGCGCGATCGCAGGATTCATCGAGGGAGGGTGGACCG GCATGATAGACGGGTGGTATGGATACCATCATCAGAACGAGCAAGGCAGCGGCTACGCTGCTGACCAAAAAGAGCACGCAGAACGCGAT CAATGGAATCACGAATAAGGTTAACACGGTCATCGAAAAGATGAACATACAGTTCACACAGCTGTGGGCAAGGAGTTCAACAAGCTTGAAAA AAGAATGGAGAACTTGAACAAAAAAGTAGACGACGGCTTTCTCGATATTTGGACTTACAACGCCGAATTGCTAGTCTTGTTGGAGAATGAA CGCACCTTGGACTTCCACGACTCCAACGTCAAGAATTTATACGAAAAGGTCAAAAGCCAGCTTAAGAATAACGGCCAAGGAGATCGGCAAT GGCTGTTTCGAATTTTACCATAAATGCGATAATGAATGTATGGAAAGTGTTAGGAACGGCACATACGACTACCCTAAATACTCCGAAGAGA GCAAACTCAATCGGGAGAAGGTTGATGGAGTGAAGTTAGAGAGCATGGGAATTTACCAAATACTCGCCATCTATAGCACCGTTGCCTCAA GCCTGGTCCTCCTAGTGTCCCTGGGCGCCATTAGTTTCTGGATGTGTTCCAATGGGTCTTTGCAATGTCGCATCTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2712	ATGAAAGCTAACCTGCTGGTCCTCCTATGTGCTCTCGCTGCCGCAGATGCCGATACCATATGCATTGGATATCACGCGAACAACAGCACC GATACGGTGGATACAGTGCTGGAAAAAAACGTGACTGTGACACATTCTGTCAATCTCCTGGAAGACTCCCACAATGGCAAGCTGTGTCGT TTGAAGCGGATCGCCCCCCCTGCAGCTCGGAAAGTGCAACATAGCAGGGTGGCTGCTCGGAATCCAGAGTGCGATCCGCTGCTCCCGG TACGGAGCTGGTCTTACATTGTTGAGACACCTAACAGCGAGAATGGCATTTGTTATCCTGGAGACTTCATCGACTACGAGGAACTCCGGG AACAGCTTAGCTCCGTAAGCAGCTTCGAAAGATTTGAGATTTTCCCTAAGGAGTCATCCTGGCCCAACCATAATACAAACGGAGTGACCG CTGCCTGTTCTCATGAAGGGAAAAGTTCCTTTTACAGAAATCTCCTGTGGCTGACTGAGAAAGAAGGAAGCTATCCTAAGCTGAAGAATTC TTACGTTAATAAGAAAGGAAAAGAAGTGCTGGTCCTCTGGGGGATACATCACCCCCAAATAGCAAGGAGCAACAGAATTTATATCAGAA TGAGAACGCATACGTCTCGGTTGTGACTTCGAACTACAACAGGCGGTTTACACCCGAGATCGCAGAGCGCCCCAAGGTTAGAGACCAGG CTGGGAGGATGAATTACTATTGGACGCTTCTCAAGCCAGGGGATACCATTATTTTTGAGGCTAATGGCAATCTGATTGCCCCTATGTACG CCTTCGCTCTGTCAAGGGGATTTGGAAGCGGCATCATCACCTCCAACGCTTCCATGCATGAGTGCAACACCAAGTGTCAGACACCCTTAG GCGCAATCAACAGCAGTCTGCCCTATCAAAACATTCATCCCGTGACAATCGGCGAGTGTCCGAAATACGTTCGATCCGCGAAGTTAAGGA TGGTTACGGGCCTACGTAATAACCCTTCAATCCAGTCTCGTGGCCTCTTCGGTGCTATCGCTGGTTTCATCGAAGGAGGCTGGACAGGA ATGATCGACGGATGGTATGGATATCACCATCAGAATGAGCAGGGCAGTGGGTATGCCGCAGACCAGAAATCCACCCAGAATGCCATAAA TGGAATCACCAACAAGGTGAACACAGTTATCGAAAAGATGAACATCCAGTTCACCGCCGTGGGAAAGGAGTTTAACAAACTTGAGAAGAG AATGGAGAATCTTAATAAAAAGGTAGATGATGGGTTCCTTGATATCTGGACATATAACGCCGAGCTTCTAGTGCTCCTGGAGAACGAGAG GACTCTGGACTTTCACGACTCCAACGTCAAAAACCTATACGAAAAGGTCAAGAGTCAACTGAAAAATAACGCAAAAAGAGATAGGTAACGG ATGTTTTGAGTTCTACCACAAATGCGATAACGAGTGCATGGAATCCGTGAGGAATGGTACCTATGACTATCCAAAATATTCTGAGGAGTCC AAGCTCAACCGAGAAAAGGTGGACGGCGTAAAGCTCGAAAGCATGGGGATTTATCAGATACTTGCAATTTATTCCACTGTGGCTTCTTCC CTGGTGCTTTTGGTCAGCTTAGGGGCTATCAGCTTCTGGATGTGTTCCAACGGCTCCCTTCAGTGTAGAATTTGCATC

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Seq ID No.	Sequenza nucleotidica
2713	ATGAAGGCAAACTTGTTGTGTGCTACTCTGCGCATTAGCAGCTGCTGACGCAGATACAATTTGTATCGGGTACCACGCCAATAACTCTACA GATACAGTAGATACCGTCCTTGAAAAAAAATGTCACCGTGACCCATAGTGTAAACCTCCTAGAAGATAGCCATAACGGCAAACTGTGTCGG CTTAAGGGCATCGCGCCTCTACAGCTGGGCAAGTGTAACATTGCTGGCTGGCTCCTTGGCAATCCTGAGTGCGACCCCCTTGCTGCCAGT GAGGTCCTGGAGCTACATCGTGGAAACTCCCAATTCTGAGAATGGAATATGTTATCCGGGGGATTTCATCGACTACGAAGAGCTGCGCG AACAACTCTCATCAGTCAGCTCCTTTGAAAGATTCGAAATCTTCCCCAAGGAATCTAGCTGGCCAAACCATAACACTAATGGAGTAACAGC TGCATGTTCCCACGAGGGCAAGAGCTCTTTTTACAGGAACCTCCTATGGCTGACGGAGAAGAAGGGTCCTACCCCAAGCTGAAAAATA GCTACGTTAACAAGAAAGGAAAAGAGGTGTTGGTTCTGTGGGAATTCATCATCCTCCCAACAGTAAGGAGCAGCAGAATCTCTATCAAA ATGAAAACGCTTACGTCAGTGTGGTGACGTCTAATTACAACAGGAGATTTACACCAGAGATTGCCGAGCGGCCGAAAGTGAGAGATCAG GCAGGCAGGATGAATTATTACTGGACACTTCTGAAACCTGGAGACACAATCATTTTCGAAGCTAATGGAAACCTCATCGCACCGATGTAC GCATTCGCCTTGTCCCGGGGATTCGGCTCCGGCATCATCACCTCCAACGCTTCAATGCATGAATGTAATACTAAATGCCAGACGCCGCTT GGCGCTATTAACTCATCCTTGCCTTATCAGAATATTCATCCCGTTACCATTGGAGAGTGTCCCAAATACGTGCGTTCAGCCAAACTGCGGA TGGTCACTGGCCTGCGAAATAACCCTTCAATTCAATCTCGCGGACTGTTCGGAGCTATCGCCGGCTTCATAGAAGGGGGCTGGACCGGC ATGATTGACGGATGGTACGGTTACCATCACCAAAACGAGCAGGGTTCCGGCTATGCCGCCGACCAGAAATCAACCCAGAACGCCATAAA TGGTATTACCAACAAGGTTAATACGGTCATCGAGAAAATGAACATCCAGTTCACAGCAGTGGGAAAAGAATTTAATAAGCTCGAGAAAAGA ATGGAAAACCTGAACAAAAAAGTGGACGATGGTTTCCTCGACATATGGACCTATAATGCTGAGCTACTCGTCCTTCTGGAAAATGAGCGA ACGCTTGACTTCCACGATTCGAATGTGAAAAACCTATACGAAAAAGTGAAGTCCCAGCTCAAGAACAATGCGAAGGAGATCGGGAACGG CTGCTTTGAGTTTTACCACAAATGTGATAACGAATGCATGGAGTCTGTGCGAAATGGGACATACGACTATCCTAAGTATTCAGAAGAGTCA AAACTCAACCGGGAAAAGGTTGACGGAGTTAAGCTTGAGTCAATGGGAATTTACCAAATCCTGGCAATCTACTCTACTGTTGCCTCTTCAC TCGTCCTCTTAGTTTCACTAGGGGCTATCAGTTTCTGGATGTGTTCTAATGGTAGCCTGCAGTGTCGAATTTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2714	ATGAAAGCTAATCTCTTAGTTCTGCTCTGCGCCTTAGCGGCTGCAGATGCCGACACCATATGCATTGGCTACCACGCTAATAACTCCACC GATACAGTGCACACCGTGCTGGAAAAGAACGTCACTGTGACCCACTCAGTGAACCTGTTGGAGGATTCACACAACGGCAAGTTATGCAG ACTCAAGGGAATTGCACCACTGCAGCTGGGTAAGTGTAATATCGCTGGCTGGCTTCTCGGAAATCCCGAGTGCGACCCTCTGTTACCTG TCAGGAGCTGGAGTTATATCGTGGAAACTCCTAATAGTGAAAATGGAATATGCTATCCCGGCGACTTCATCGACTACGAGGAGCTAAGGG AACAGCTGTCAAGCGTCTCCTCCTTCGAAAGATTCGAGATCTTTCCCGAAGGAGAGTTCGTGGCCAAACCATAACACTAACGGGGTCACC GCGGCCTGTTCTCACGAGGGGAAGTCATCCTTCTACCGAAACCTTCTGTGGCTGACGGAGAAGAGGCAGCTATCCCAAACTGAAGAA TAGTTACGTGAATAAGAAGGGAAAGGAGGTACTGGTCCTCTGGGGCATCCATCATCCCCCCAACAGTAAGGAGCAGCAGAATCTTTACC AGAACGAGAAACGCTTATGTGAGCGTCGTAACCTCAAACTACAACCGCAGGTTCACTCCTGAAATTGCCGAACGGCCGAAAGTGAGGGAC CAAGCCGGCCGCATGAACTACTATTGGACGCTTCTCAAGCCCGGTGATACTATTATTTTCGAGGCAAACGGCAACTTAATCGCTCCTATG TACGCATTTGCACTGAGTCGGGGTTTTGGTTCGGGCATCATCACCTCAAATGCTTCCATGCACGAATGCAATACAAAATGCCAGACCCCA CTTGGAGCCATCAACTCCTCACTGCCTTATCAGAATATCCACCCAGTCACTATCGGGGAATGCCCGAAATATGTCAGAAGCGCTAAGCTT CGGATGGTGACCGGTCTGCGCAATAATCCGTCTATACAATCCAGGGGACTGTTTGGCGCGATAGCCGGATTTATTGAGGGGGGATGGAC TGGCATGATCGATGGGTGGTACGGGTACCATCACCAGAATGAACAGGGTTCCGGCTACGCCGCAGATCAAAAGTCCACCCAGAACGCTA TTAACGGAATCACCAACAAGGTCAATACTACTGTCATTGAGAAAATGAATATCCAGTTCACTGCCGTGGGCAAGGAGTTCAATAAGCTAGAGA AGCGTATGGAAAACCTTAACAAGAAGGTGGACGATGGATTTTTTGGATATTTGGACCTATAATGCTGAGTTGTTGGTCCTCCTGGAGAATG AAAGAACTCTGGACTTCCATGATAGCAATGTGAAAAACCTCTACGAAAAAAGTCAAATCACACAGCTTAAGAACAACGCCAAAGAAATTGGGAA TGGATGCTTTGAGTTTTACCATAAATGCGACAACGAGTGTATGGAGTCTGTCAGAAACGGCACATACGATTACCCCAAGTATTCCGAAGA ATCAAAACTGAATCGGGAAAAGGTTGATGGAGTGAAATTAGAAAGCATGGGAATCTATCAAATTCTTGCAATTTATAGCACCGTTGCTAGC TCACTGGTCCTGCTCGTTAGTTTGGGCGCCATTAGCTTCTGGATGTGTAGCAATGGGTCTCTCCAATGCAGAATTTGCATT

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Seq ID No.	Sequenza nucleotidica
2715	ATGAAAGCGAATCTGCTGTTCCTGCTGTTGCCGCCCTGGCGGCTGCTGACGCGGATACTATTTGCATCGGCTATCACGCTAATAACTCGAC AGACACCGTGGATACAGTCTTGGAGAAAAATGTGACTGTAACCCACTCGGTTAACCTTCTCGAGGACTCGCATAACGGGAAACTGTGTAG GCTGAAGGGAATCGCCACCACTCCAGCTGGGCAAGTGCAATATAGCTGGCTGGCTGCTGAGTGCGACCCTCTCCTGCCC GTCCGGTCCTGGAGCTATATAGTGGAAACACCTAACAGCGAGAATGGTATCTGCTATCCGGGGGATTTTATCGACTATGAGGAACTACGA GAACAGCTCTCCTCCGTTAGCAGCTTCGAGCGATTTGAAATCTTTCCTAAGGAGAGCAGTTGGCCTAACCACACAACACTAATGGGGTGACA GCCGCCTGTAGCCATGAGGGAAAGTCTTCTTTTTATAGAAACTTGCTGTGGTTGACTGAGAAAGAGGGGAGCTACCCGAAACTAAAGAAC TCCTACGTGAACAAGAAAGGCAAAGAGGTTTTGGTTCTGTGGGGCATCCACCATCCTCCCAATAGCAAGGAACAGCAGAATCTCTATCAG AACGAAAACGCCTACGTGTCAGTGGTGACCAGTAATTATAATCGACGCTTTACCCCCGAAATTGCAGAGCGGGCCGAAAGTCCGCGACCA GGCCGGACGCATGAATTACTATTGGACCCTGCTAAAGCCCGGGGACACTATCATATTTGAAGCCAACGGGAACCTGATTCCACCCATGT ATGCGTTTGCTCTGTCACGCGGGTTTGGTAGCGGGATTATCACTTCCAACGCTTCAATGCATGAATGTAACACTAAGTGTCAGACCCCAC TGGGCGCCATTAACAGCTCGCTGCCATACCAGAATATACACCCAGTTACTATTGGTGAATGTCCTAAGTATGTACGGTCCGCCAAGCTGC GGATGGTTACTGGCCTCAGGAACAATCCTTCAATTCAGTCTAGCGGGCTGTTCCGGAGCCATAGCTGGCTTTATTGAGGGAGGCTGGACA GGCATGATTGACGGCTGGTACGGCTACCACCATCAGAACGAGCAAGGCTCCGGCTACGCCGCGGGACCAGAAGTCAACTCAAAATGCGA TAAACGGAATCACCAACAAGGTGAACACCGTCATAGAAAAAATGAATATACAATTCACAGCCGTGGGAAAGGAGTTCAATAAGCTCGAGA AGCGTATGGAGAATCTCAATAAAAAAGTGGATGATGGGTTCCTCGATATCTGGACCTATAACGCTGAACTCTTAGTCCTCCTCGAAAACGA GCGAACGCTCGACTTCCATGATTCTAATGTAAAAAATCTTTACGAAAAAGGTTAAGTCACAGCTGAAGAACAACGCCAAGGAGATAGGAAA CGGCTGTTTCGAGTTTTATCATAAGTGTGACAACGAGTGTATGGAATCTGTCCGCAATGGCACTTATGATTACCCCAAGTACTCCGAGGA AAGTAAACTTAATAGAGAAAAAGTTGATGGCGTTAAGCTGGAGTCAATGGGGATTTATCAGATCCTAGCTATATATTCTACTGTGGCTTCT AGTCTCGTTTTTGCTGGTGAGCCTGGGAGCCATAAGCTTTTGGATGTGTAGCAATGGGTCCCTCCAGTGTCGAATCTGTATC

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Seq ID No.	Sequenza nucleotidica
2716	ATGAAAGCCAACTTGCTGGTGTTGCTCTGCGCCCTTGCCCGCCGACGCAGATACCATTTGTATTGGCTACCATGCCAATAATTCTACG GACACTGTGGATACCGTCTTGGAGAAAAATGTAACTGTAACTCACTCCGTTAATCTTCTCGAAGATTCACACAATGGCAAGCTGTGCCGC CTTAAAGGCATTGCCCCCTTGCAGCTGGGCAAGTGTAATATTGCTGGATGGCTCCTCGGCAATCCTGAGTGTGACCCCCTCCTGCCCGT TAGGTCGTGGAGCTACATTGTGGAGACCCCAAATTCGGAAAATGGGATATGTTACCCAGGCGACTTTATCGACTATGAGGAACTACGTGA GCAGCTGAGTTCTGTTTCCAGTTTTGAAAGATTTGAGATCTTTCCAAAGGAGAGCTCTTGGCCGAACCATAACACCAATGGGGTCACCGC CGCTTGCAGTCATGAAGGAAAATCAAGCTTCTACCGAAACTTGCTGTGGCTCACGGAAAAGGAGGGCTCCTACCCCAAGTTGAAGAACT CCTATGTGAACAAAAAGGGCAAAGAGGTTCTCGTGCTCTGGGGAATTCACCACCCTCCCAACACGCAAGGAGCAGCAGAACTTGTATCAG AACGAAAATGCTTACGTTAGCGTGGTGACTTCCAATTATAATCGACGCTTTACACCGGAGATTGCTGAACGCCCGAAAGTTCGGGATCAA GCCGGCCGGATGAACTATTATTGGACCCTCCTGAAACCCGGTGATACTATTATTTTTGAGGCAAACGGAAACCTGATTGCTCCCATGTAC GCCTTCGCCCTGTCCCGGGGGTTTGGCAGCGGAATTATAACTAGCAACGCTAGCATGCACGAGTGTAATACTAAGTGTCAGACCCCTCT GGGGGCAATAAACTCCAGCTTACCTTATCAGAACATCCACCCTGTTACCATAGGCGAGTGCCCGAAGTACGTTAGGTCAGCTAAGCTAAG AATGGTCACTGGTTTGAGGAATAACCCCAGCATTCAGAGTAGGGGGCTGTTTGGGGCAATTGCAGGTTTTTATCGAGGGCGGTTGGACTG GTATGATCGGACGGCTGGTATGGATATCATCATCAGAATGAGCAGGGGTCTGGGTATGCTGCGGACCAGAAGTCCACGCAAAATGCCATA AACGGAATCACGAATAAGGTTAATACCGTCATCGAAAAAATGAACATTCAGTTTACTGCGGTGGGTAAGGAATTCAATAAACTCGAAAAGA GAATGGAGAACTTAAATAAGAAAGTCGACGACGATTTTTGGATATCTGGACCTATAACGCCGAACTCCTCGTTCTGTTGGAGAACGAGC GCACCCTCGACTTCCACGATAGTAACGTGAAAAATCTGTATGAGAAGGTGAAGTCCCAGCTCAAGAACAATGCCAAGGAAATCGGAAACG GATGTTTTGAGTTCTACCACAAGTGCGACAATGAATGCATGGAGAGTGTGCGCAATGGGACGTACGACTACCCTAAATATAGTGAAGAGT CTAAGCTCAACCGGGAGAAGGTGGACGGAGTGAAGCTGGAGAGTATGGGAATTTACCAGATACTGGCTATCTACAGTACAGTTGCCAGC TCCCTCGTTCTTCTGGTGTCTCTGGGGGCCATCTCTTTCTGGATGTGTTCCAATGGCAGCCTCCAATGCCGGATCTGCATT

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Seq ID No.	Sequenza nucleotidica
2717	ATGAAAGCAAATCTTCTGGTGTTACTATGCGCATTAGCTGCCGCTGACGCCGACACCATTTGCATTGGCTATCACGCCAATAATAGCACT GACACTGTCGACACAGTTCTTGAAAAGAACGTGACTGTTACCCACTCCGTGAATCTACTCGAGGATTCTCATAACGGAAAGCTCTGTCGC CTTAAGGGTATTGCCCCTCTCCAGCTTGGAAAATGCAACATTGCTGGCTGGCTGCTTGGAAACCCTGAATGTGACCCACTCCTGCCCGTC CGGAGCTGGAGTTACATAGTGGAGACTCCAAATAGCGAGAACGGTATATGTTACCCAGGTGATTTCATTGACTATGAGGAGTTGAGAGAG CAGTTGAGCTCCGTTTCGTCTTTTGAAAGGTTCGAGATCTTCCCAAAAGAGTCAAGCTGGCCTAACCATAACACCAATGGTGTTACGGCC GCATGTAGCCATGAGGGCAAGTCGTCCTTTTATCGAAATCTCCTATGGCTCACAGAGAAGGAAGGATCTTACCCAAAGCTCAAGAACTCG TACGTAAACAAGAAGGGGAAGGAAGTCCTTGTTCTGTGGGGTATACATCACCCACCAAATTCCAAGGAACAGCAGAATTTATATCAGAAC GAAAACGCATATGTTTCTGTCGTTACATCCAACTATAACCGGAGATTCACCCCAGAGATCGCCGAAAGACCGAAGGTGCCGGGACCAGGC AGGGCGAATGAACTATTACTGGACATTGCTCAAGCCCGGAGACACCATAATTTTCGAGGCTAATGGCAACCTCATTGCCCCGATGTACGC ATTCGCTCTTTCTCGGGGATTTGGCAGTGGGATTATCACCTCGAACGCCTCCATGCATGAATGTAATACTAAATGTCAAACACCACTGGG AGCCATTAACAGTAGCCTGCCCTATCAAAATATCCACCCGGTCACTATTGGGGAGTGCCCAAAGTATGTGCGGTCTGCAAAGTTGAGAAT GGTTACCGGGCTGCGCAACAATCCAAGTATTCAGAGTAGGGGGCTATTTGGTGCAATAGCAGGCTTTATCGAAGGGGGCTGGACTGGAA TGATAGATGGCTGGTATGGATATCACCACCAGAACGAGCAGGGTAGCGGCTACGCCGCCGATCAGAAGAGCACTCAGAATGCTATCAAC GGAATCACAAATAAAGTTAATACCGTAATAGAAAAGATGAATATCCAGTTCACAGCTGTGGGTAAAGAGTTCAACAAGCTGGAAAAACGGA TGGAAAACCTGAATAAAAAGGTGGATGATGGTTTCCTCGATATATGGACTTATAACGCTGAGCTTCTGGTTCTGCTGGAAAATGAACGCAC ACTGGACTTCCACGATAGTAATGTAAAAAATCTGTATGAAAAGGTTAAATCACAACTGAAAAATAATGCTAAGGAAATTGGGAACGGGTGT TTCGAATTCTATCACAAGTGCGATAATGAGTGTATGGAGTCAGTTCGGAACGGGACCTACGATTATCCTAAGTATTCAGAAGAGTCTAAAC TGAACCGCGAAAAAGTGGATGGAGTCAAACTGGAGTCGATGGGCATCTATCAGATCCTCGCCATTTATAGCACCGTGGCATCGTCCCTG GTGCTTTTGGTTAGCCTGGGCGCCATTAGTTTCTGGATGTGTAGTAACGGGTCTCTGCAGTGTAGGATTTGTATT

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Seq ID No.	Sequenza nucleotidica
2718	ATGAAGGCAAATCTGCTCGTGTTACTCTGCGCTTTGGCCGCCGCTGACGCCGACACTATTTGCATCGGTTACCACGCCAACAACAGCAC CGATACAGTGGACACGGTATTGGAAAAAAACGTAACTGTGACACATTCAGTAAACCTGCTCGAGGACAGCCACAACGGTAAGCTGTGCC GGTTGAAAGGTATCGCACCACTGCAGCTTGGAAAATGTAATATCGCCGGGTGGCTGCTGGGCAATCCTGAGTGTGATCCTCTGCTCCCT GTACGGAGTTGGTCGTATATTGTGGAAACCCCTAACAGCGAAAACGGGATTTGTTATCCTGGCGACTTTATCGACTATGAGGAGCTCCGG GAGCAGCTGTCCAGCGTAAGTTCATTCGAGAGGTTCGAGATTTTCCCCAAAGAGAGTTCCTGGCCTAACCACACAACACAAACGGTGTGACA GCTGCCTGCAGCCACGAGGGGAAGTCCTCATTCTATAGGAATTTGCTCTGGCTGACCGAAAAGGAAGGTTCGTACCCGAAGCTTAAAAA TTCTTACGTTAACAAAAAGGGGAAGGAGGTACTCGTTCTGTGGGGATCCATCATCCCCCAAATTCTAAGGAACAGCAGAACCTATACCA GAATGAAAACGCATATGTCAGCGTGGTCACATCTAACTACAACAGACGCTTCACACCCGAAATCGCTGAGCGCCCCAAGGTACGAGATC AGGCTGGCAGGATGAACTACTATTGGACTTTACTGAAGCCGGGCGATACAATAATTTTCGAGGCTAACGGAAATCTGATCGCCCCAATGT ATGCCTTTGCTCTTTCCCGCGGCTTTGGTTCAGGGATTATTACTTCTAACGCTTCGATGCACGAGTGTAATACCAAATGCCAGACCCCGCT GGGCGCCATTAATAGCTCATTGCCTTATCAGAATATCCATCCCGTTACCATTGGCGAATGTCCCAAGTATGTGAGGAGCGCAAACTTCG GATGGTAACAGGTCTAAGGAATAACCCTAGCATTCAGTCACGGGGGCTGTTTGGGGCAATAGCAGGCTTTATTGAGGGCGGATGGACAG GCATGATCGATGGCTGGTATGGTTACCCACCATCAGAACGAGCAGGGCTCTGGATATGCAGCCGACCAGAAGAGTACACAAAATGCAATC AATGGCATTACTAACAAAGTGAACACGGTCATTGAAAAAATGAATATCCAGTTCACAGCCGTGGGAAAGGAGTTTAACAAGCTGGAAAAA CGGATGGAAAATCTAAATAAGAAAGTCGACGACGGTTTTTTGGATATCTGGACCTACAACGCTGAACTACTGGTTCTTCTGGAGAACGAA AGAACCCTGGACTTTCACGACTCTAATGTGAAGAATCTGTACGAAAAAGTGAAGTCTCAGTTGAAGAACAACGCTAAAGAGATTGGGAAT GGCTGTTTCGAATTCTACCACAAATGCGATAATGAGTGCATGGAGTCTGTCAGGAATGGTACTTACGACTATCCCAAGTATTCTGAGGAG AGTAAGCTCAACAGGGAAAAAGTCGACGGAGTCAAACTGGAGTCGATGGGCATATACCAGATTCTAGCCATCTACTCCACCGTGGCCAG TAGTTTAGTCTTGCTCGTAAGCCTTGGCGCTATCTCCTTCTGGATGTGCTCCAATGGATCCCTGCAGTGTAGAATCTGTATC

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Seq ID No.	Sequenza nucleotidica
2719	ATGAAGGCGAATCTACTGGTTTTATTGTGCGCCCTCGCTGCTGCCGACGCCGATACCATCTGCATCGGATACCATGCCAATAACTCCCACA GATACCGTGGACACTGTGCTGGAAAAGAATGTTACAGTGACACATTCAGTGAACCTGCTGGAAGATAGTCATAATGGCAAACTGTGTAGA CTAAAGGGCATCGCCCCCCCTGCAACTTGGTAAGTGTAACATCGCTGGTTGGCTTCTGGGGAACCCCGAATGCGATCCCACTGCTGCCTGT CCGCAGTTGGTCCTATATTGTCGAAACCCCCCAACTCTGAAAACGGGATTTGTTATCCAGGAGACTTCATTGACTATGAAGAATTGCGGGA ACAGCTTTCAAGTGTGAGCTCTTTCGAACGGTTTGAAATCTTTCCGAAGGAGTCCTCGTGGCCAAATCATAACACTAATGGCGTGACAGC GGCATGTAGTCACGAAGGAAAATCTTCCTTTTATAGAAACCTCCTGTGGCTGACAGAGAAGGAAGGCAGTTATCCCAAACTGAAGAACAG TTACGTCAATAAAAAGGGGAAAGAAGTACTGGTACTTTGGGGAATCCCACCATCCCCCCCAACAGCAAGGAGCAGCAGAATCTTTATCAAAA TGAGAACGCCTACGTCAGCGTGGTGACCTCGAATTACAACAGGCGGTTCACACCAGAAATCGCGGGAAAGGCCGAAGGTGCGGGATCAG GCCGGCAGGATGAACTACTATTGGACTCTCCTAAAACCAGGCGACACTATTATATTTGAAGCCAACGGCAACCTTATCGCTCCAATGTAC GCCTTCGCTTTGAGCCGTGGGTTTGGCTCCGGAATTATAACATCAAATGCAAGTATGCACGAGTGCAACACAAAGTGCCAGACACCACTC GGAGCAATCAACAGCTCCTTGCCATACCAAAACATTCATCCTGTTACCATCGGCGAATGCCCGAAGTATGTGAGGAGCGCAAAACTGAG GATGGTGACGGGCTTGCGGAACAACCCTTCTATCCAGTCCCGGGGCCTGTTTGGAGCGATCGCAGGATTCATTGAAGGGGGATGGACG GGGATGATCGATGGATGGTACGGATATCATCACCAAAATGAACAAGGGTCAGGTTATGCTGCTGATCAAAAGTCAACACAGAATGCAATC AACGGCATAACCAATAAAGTTAACACAGTGATTGAAAAAATGAATATTCAGTTTACCGCCGTGGGAAAAGAGTTCAATAAACTGGAGAAGA GGATGGAGAATTTGAACAAGAAGGTAGATGACGGCTTTCTCGACATTTGGACTTATAATGCAGAGCTATTAGTGCTCCTCGAGAATGAGA GAACTCTTGACTTTCACGACAGTAACGTAAAAAACCTCTATGAAAAGGTCAAATCACAGCTTAAGAATAATGCAAAAGAGATCGGAAACGG ATGCTTCGAATTTTACCACAAATGCGACAACGAATGTATGGAATCCGTGAGGAACGGTACCTACGATTACCCCAAGTACAGCGAGGAAAG CAAGCTGAATCGAGAAAAAGTTGACGGTGTGAAGCTGGAGTCCATGGGCATCTACCAGATTCTTGCTATCTATTCTACAGTAGCTTCCTC CCTTGTACTTCTGGTGTCCCTGGGTGCCATTTCATTCTGGATGTGCAGCAACGGTTCCTTGCAGTGTCGGATCTGCATA

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Seq ID No.	Sequenza nucleotidica
2720	ATGAAAGCTAATCTTCTCGTGTTGCTGTGCGCCTTAGCGGCCGCAGACGCGGACACAATCTGTATTGGGTACCATGCCAATAATTCCACT GACACCGTAGACACTGTACTGGAAAAGAATGTGACGGTAACCCACTCCGTTAATCTGCTGGAGGACTCTCACAACGGCAAACTCTGTCG GCTGAAAGGTATTGCACCACTTCAGCTGGGGAAGTGTAACATTGCCGGATGGCTACTAGGCAACCCTGAATGTGACCCCCTGCTGCCAG TGCGAAGCTGGAGTTACATTGTGGAAACTCCCAATAGTGAAAACGGTATCTGCTACCCTGGCGATTTCATTGATTATGAAGAGCTGAGGG AACAGCTTTCTAGTGTGTCGTCCTTCGAGAGGTTTGAGATCTTCCCCAAGGAGAGCTCATGGCCAAACCACACAATACAAACGGGGTCACTG CGGCATGTAGCCATGAGGGCAAGTCATCCTTCTATCGAAACCTCCTGTGGCTGACCGAAAAGGAAGGTAGCTACCCCAAACTTAAAAACA GTTATGTGAACAAAAAGGGCAAGGAAGTCTTAGTGCTTTGGGGCATCCACCACCCCCCAAATAGCAAAGAGCAACAGAATTTGTACCAGA ACGAAAATGCTTATGTGTCTGTAGTAACCTCTAACTATAACAGGCGTTTCACTCCCGAGATTGCCGAGCGACCGAAAGTTAGAGACCAGG CCGGACGCATGAATTACTACTGGACCCTGTTGAAACCTGGAGATACGATAATCTTTGAGGCCAACGGAAACCTGATAGCTCCTATGTATG CGTTCGCACTCAGTCGCGGGTTCGGGTCCGGGATAATCACCAGTAACGCGTCCATGCACGAGTGTAATACGAAGTGCCAGACCCCACTA GGAGCGATTAACTCGTCTCTGCCATATCAGAATATCCATCCTGTGACAATCGGAGAGTGTCCTAAATACGTCCGCTCAGCCAAACTGCGA ATGGTGACGGGCCTTCGCAACAATCCCAGTATCCAGTCTCGGGGACTCTTTGGAGCCATCGCCGGTTTTATCGAAGGCGGATGGACTGG GATGATCGATGGCTGGTACGGCTACCACCACCAAAATGAGCAAGGCTCCGGGTACGCTGCCGACCAGAAGTCAACTCAGAATGCAATTA ACGGGATCACCAACAAGGTTAACACCGTAATCGAAAAGATGAACATCCAGTTCACGGCCGTGGGGAAGGAGTTTAATAAACTTGAGAAAC GGATGGAGAACCTCAACAAAAAGGTGGACGACGGCTTTCTGGACATCTGGACCTATAATGCTGAGCTTTTGGTGCTGCTGGAAAACGAG CGCACACTGGATTTCCACGATAGTAATGTGAAGAACCTGTACGAAAAAGGTTAAGTCCCAACTCAAAAATAACGCGAAAGAAATCGGCAAT GGGTGCTTTGAATTTTATCACAAGTGTGACAACGAATGCATGGAATCTGTGCGGAATGGGACCTACGATTACCCAAAATATAGCGAAGAA TCCAAGCTGAACAGAGAGAAGGTGGACGGCGTGAAACTCGAAAGTATGGGTATCTACCAAATCCTAGCCATCTACTCTACCGTTGCCAGT AGTCTAGTGTTGCTGGTGTCGTTAGGTGCCATCTCTTTTTGGATGTGTAGCAATGGCTCTCTGCAATGTCGGATCTGTATC

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2721	ATGAAGGCCAACCTGCTTGTGCTGCTTTGCGCACTAGCCGCTGCAGACGCCGACACAATTTGTATTGGATACCATGCTAATAACTCGACC GACACAGTTGACACAGTCCTTGAGAAGAACGTGACAGTTACTCACTCCGTGAACCTGCTCGAGGACTCGCATAATGGCAAACTCTGCCGT CTGAAGGGTATCGCCCCCCTCCAACTGGGGAAATGCAATATAGCCGGCTGGCTGCTGGGAAATCCAGAGTGCGATCCACTGTTGCCTGT GCGCAGTTGGAGTTATATCGTGGAGACACCCAACTCAGAGAACGGTATCTGCTACCCTGGGGACTTCATAGATTATGAAGAGCTGCGCG AGCAGCTATCTTCCGTTAGCTCTTTCGAACGCTTTGAAATCTTTTCCTAAAGAAAGCAGCTGGCCAAATCATAACACAAACGGAGTGACAGC TGCCTGCAGTCACGAGGGTAAAAGTTCTTTTTATAGAAATCTCCTGTGGTTGACGGAGAAAGAGGGCAGCTATCCAAAGCTCAAGAATAG CTACGTCAATAAAAAAGGTAAGGAGGTGCTAGTCTTATGGGGAATCCATCACCCACCCAATTCCAAGGAACAGCAGAACCTCTATCAGAA CGAGAACGCCTATGTGTCCGTAGTGACTAGCAACTATAATCGTAGATTCACACCTGAGATTGCAGAGAGACCCAAGGTTAGAGACCAAGC CGGCCGCATGAATTATTACTGGACACTGCTTAAACCCGGGGATACTATCATCTTCGAAGCGAATGGAAACCTGATCGCTCCAATGTATGC TTTTGCTCTGTCCAGGGGTTTTGGCTCGGGGATTATCACAAGCAACGCATCTATGCACGAGTGTAATACCAAGTGTCAGACCCCCCTTGG CGCTATCAACTCTAGTCTACCGTACCAGAACATCCACCCTGTTACCATTGGTGAATGCCCGAAATACGTGCGGAGTGCCAAGCTGAGAAT GGTGACCGGCCTGAGGAACAATCCTTCCATCCAGTCCCGGGGACTTTTCGGAGCTATCGCTGGCTTCATTGAAGGTGGGTGGACCGGC ATGATCGACGGGTGGTATGGATATCACCATCAGAACGAGCAAGGAAGCGGGTATGCTGCAGACCAGAAGTCCACACAGAACGCAATAAA CGGCATCACTAACAAAGTGAACACCGTGATTGAAAAAATGAATATACAGTTTACCGCCGTAGGGAAGGAATTTAATAAACTGGAAAAGCG CATGGAAAATTTGAACAAAAAAGTCGACGATGGTTTTTTAGACATTTGGACCTATAATGCGGAACTGCTAGTACTGCTCGAGAACGAACGG ACCCTCGACTTTCACGATTCAAACGTCAAAAATCTATACGAGAAGGTGAAGTCGCAGCTGAAGAATAATGCCAAAGAAATCGGCAACGGA TGTTTCGAATTCTACCACAAATGCGACAATGAATGTATGGAATCTGTTAGAAACGGCACGTATGATTACCCCAAGTACAGCGAAGAATCTA AACTCAACCGGGAGAAAGTCGACGGAGTTAAGCTTGAGTCCATGGGAATCTATCAGATCTTGGCGATCTATTCCACCGTGGCAAGTTCCC TCGTATTGCTGGTGTCCCTTGGAGCAATTTCATTCTGGATGTGCAGTAACGGCAGCCTTCAATGCCGCATCTGTATA

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza nucleotidica
2722	ATGAAGGCAAACCTTCTTGTCCTGCTGTGCGCACTCGCCGCAGCCGACGCCGACACAATCTGCATTGGGTATCACGCTAATAATTCAACT GACACTGTGGATACCGTACTGGAAAAGAATGTTACTGTGACTCATAGTGTAAATCTGCTCGAGGACAGTCACAATGGAAAACTTTGCCGG TTAAAGGGCATCGCCACCCCTGCAGCTGGGTAAGTGCAACATCGGCGGGATGGCTGCTGGGCAACCCCGAGTGTGATCCCCTGCTTCCAG TGCGGTCTTGGTCTTACATTGTCGAAACACCCAACTCTGAAAACGGAATTTGTTACCCTGGCGACTTCATCGACTACGAAGAGCTTAGAG AGCAGCTATCGAGCGTGAGTTCTTTTGAAAGATTTGAGATCTTCCCAAAGGAAAGCTCTTGGCCCAACCATAATACTAATGGCGTCACAG CCGCCTGCTCACATGAAGGGAAGTCTTCTTTCTACAGGAATCTGTTGTGGTTGACGGAGAAGGAGGGAAGTTATCCAAAGCTTAAAAATT CCTACGTGAACAAGAAGGGTAAAGAGGTCCTGGTGCTCTGGGGCATCCACCATCCTCCGAACTCCAAAGAACAGCAGAATCTGTATCAG AACGAAAATGCATATGTCAGTGTGGTGACAAGTAATTATAACCGCCGCTTTACCCCCGAGATCGCCGAACGCCCGAAGGTACGGGACCA AGCGGGTCGGATGAACTACTATTGGACCCTGCTAAAGCCTGGGGACACTATCATCTTCGAGGCCAACGGTAACCTGATCGCTCCCATGT ATGCGTTTGCCCTGAGCAGAGGATTCGGCTCTGGAATCATAACGAGCAACGCCTCAATGCATGAATGCAACACTAAGTGTCAAACTCCCT TGGGCGCAATAAACTCATCCTTGCCATATCAGAACATCCACCCAGTCACCATCGGGGAGTGCCCTAAATATGTGCGTTCAGCCAAGTTAC GCATGGTAACGGGACTCCGGAATAACCCCAGCATTCAATCTCGAGGGCTTTTTGGAGCTATCGCAGGATTCATTGAAGGGGGGCTGGACT GGGATGATCGATGGATGGTATGGGTACCATCATCAGAACGAGCAGGGCTCCGGCTACGCAGCCGATCAGAAGAGCACTCAGAACGCCA TCAATGGCATCACAAACAAAGTCAACACTGTGATTGAAAAAATGAATATACAGTTTACCGCAGTGGGTAAGGAATTCAACAAGCTGGAGAA ACGGATGGAAAATCTAAACAAGAAAGTGGATGATGGCTTTCTCGACATCTGGACCTACAACGCCGAACTGCTGGTCCTGCTGGAAAATGA GCGCACACTGGATTTCCACGACTCGAACGTCAAGAATCTATACGAGAAAGTGAAATCCCAGCTCAAGAATAATGCCAAGGAGATCGGCAA CGGATGCTTCGAATTTTACCATAAATGCGACAACGAGTGTATGGAGTCCGTCCGAAACGGGACATACGACTATCCCAAGTATTCAGAAGA GTCAAAGCTTAACCGCGAAAAGGTGGATGGCGTTAAGCTGGAATCTATGGGTATTTACCAGATACTGGCCATTTATAGCACTGTGGCTAG CTCATTAGTGCTGCTGGTGTCGCTGGGAGCGATTTCCTTTTGGATGTGTAGCAACGGGAGTTTACAGTGCCGGATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza nucleotidica
2723	ATGAAGGCTAACCTCCTGGTGCTGCTGTGTGCCCTGGCTGCAGCGGACGCCGACACGATCTGTATCGGATACCATGCTAATAATTCTAC CGACACTGTAGACACCGTGCTGGAAAAGAATGTTACAGTGACCCATAGTGTTAATCTCCTCGAAGATTCACACAACGGCAAGCTCTGCCG TCTCAAAGGAATAGCACCTCTTCAGCTGGGCAAGTGTAACATCGCCGGGTGGCTTCTGGGCAACCCCGAATGTGATCCCCTTCTGCCAG TCCGCTCATGGTCCTATATTGTGGAAACCCCTAATTCCGAGAACGGAATTTGTTATCCCCGGAGACTTTATTGATTATGAGGAACTTAGAGA ACAACTGTCTTCGGTCTCGTCCTTTGAGAGGTTCGAGATTTTTCCCTAAGGAGAGCTCCTGGCCCAATCACACAACTACAACGGTGTGACCGC CGCCTGCTCGCATGAGGGGAAGTCCTCTTTCTACCGCAACCTCCTGTGGCTGACAGAGAAGGAGGGGTCCTATCCCAAACTAAAAAACT CATACGTGAACAAAAAGGGAAAAGAGGTCTTGGTTCTCTGGGGCATCCATCACCCACCAAACAGTAAGGAGCAGCAAAATCTGTACCAGA ATGAAAACGCATATGTTAGCGTAGTGACCTCTAACTATAACAGGCGGTTTACTCCAGAGATTGCCGAGGCGGCCCAAAGTGCGAGACCAG GCAGGAAGGATGAACTATTATTGGACTTTGTTAAAACCCGGAGACACAATTATCTTCGAGGCAAACGGGAACTTGATCGCACCCATGTAC GCCTTCGCACTGAGCAGGGGTTTCGGCTCCGGCATCATCACTTCTAATGCCTCTATGCACGAGTGTAATACGAAGTGTCAGACCCCATTG GGAGCCATCAACTCCAGTCTGCCCTATCAGAACATCCATCCGGTGACTATAGGCGAATGCCCCAAGTACGTCAGGTCCGCTAAGCTCCG CATGGTCACCGGACTTAGGAACAACCCGAGTATTCAGAGCCGAGGCCTGTTCGGAGCCATCGCAGGGTTCATAGAGGGAGGGGTGGACC GGGATGATAGATGGATGGTATGGCTACCATCATCAAAACGAACAGGGCAGCGGATATGCAGCTGATCAGAAGTCCACCCAGAACGCCAT AAACGGAATCACCAACAAAGTGAACACCGTCATAGAAAAAATGAACATACAGTTCACCGCCGTGGGCAAAGAATTCAATAAACTTGAAAAA CGGATGGAAAATTTGAATAAGAAGGTGGATGACGGCTTCCTGGATATCTGGACTTACAATGCGGAGCTGCTCGTGCTTCTGGAGAACGA GAGAACGCTCGACTTCCACGATTCTAACGTTAAGAACCTGTATGAGAAAGTTAAAAGTCAGCTCAAAAATAACGCGAAGGAAATCGGGAA CGGCTGCTTTGAATTTTACCATAAATGCGATAATGAGTGCATGGAATCCGTGCGAAACGGCACGTACGACTATCCAAAGTATTCAGAGGA ATCAAAATTGAACAGAGAAAAGGTCGATGGTGTGAAACTGGAGAGTATATCAAATCCTTGCGATCTACTCTACTGTGGCTTCT TCCCTGGTCCTGCTGGTGTCCTTGGGGCAATTTCATTTTGGATGTGTTCTAATGGGAGTTTACAGTGCAGGATCTGCATA

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Seq ID No.	Sequenza nucleotidica
2724	ATGAAAGCCAATCTTCTGGTTCTGCTCTGCGCTCTAGCTGCTGCCGATGCTGACACTATTTGTATAGGCTACCACGCAAATAATTCGACG GATACTGTCGACACGGTCCTGGAAAAAAAATGTCACAGTGACTCATTCAGTTAATCTCTTGGAGGATTCTCACAATGGAAAGTTGTGTAGAC TGAAGGGCATTGCTCCATTGCAGCTTGGGAAGTGTAATATCGCGGGCTGGTTACTGGGCAACCCTGAATGCGACCCCCTCTTGCCTGTC CGGTCCTGGTCTTATATCGTGGAGACACCAAATTCTGAGAATCTGCTATCCGGGTGACTTTATCGATTACGAGGAGCTTCGGGAG CAGCTGTCTTCAGTGTCCAGTTTTGAAAGATTTGAGATATTTCCTAAGGAGAGCTCCTGGCCAAATCATAATACCAATGGCGTGACAGCC GCATGTTCACACGAAGGAAAAAGCTCCTTCTATCGGAACCTGCTCTGGCTTACAGAAAAGGAAGGCTCTTACCCCAAACTCAAGAACAGT TACGTGAATAAGAAAGGTAAAGAGGTTCTAGTACTCTGGGGCATCCACCACCCGCCAAACAGCAAGGAGCAACAGAACCTCTATCAGAA CGAGAATGCCTACGTGTCCGTGGTCACATCAAACTATAACCGCAGGTTTACACCAGAAATTGCAGAGCGGCCTAAAGTCCGTGATCAGG CAGGCAGGATGAACTATTACTGGACTTTGCTGAAGCCGGGAGACACCATTATCTTCGAGGCGAATGGGAACCTCATTGCCCCAATGTAC GCCTTCGCGCTCTCTCGCGGCTTTGGCTCAGGAATTATCACGTCAAATGCTTCTATGCACGAGTGTAATACAAAATGTCAGACCCCTCTG GGCGCCATAAACTCTTCCCTGCCTTATCAAAATATTCACCCAGTGACTATTGGGGAGTGCCCCAAATACGTTAGAAGCGCTAAACTGCGT ATGGTAACGGGTTTGCGGAACAACCCAAGTATCCAGAGCCGCGGCCTGTTTGGCGCCATTGCTGGTTTTATTGAGGGGGGTTGGACAGG AATGATCGATGGATGGTACGGCTACCACCATCAGAATGAACAGGGGAGTGGGTACGCCGCCGACCAAAAGTCCACACAGAATGCGATCA ACGGGATCACTAACAAGGTGAACACCGTGATTGAGAAGATGAACATACAGTTTACCGCAGTCGGAAAGGAATTCAACAAACTTGAAAAAC GCATGGAGAATCTGAATAAAAAAAGTGGACGACGGATTTTTAGATATATGGACCTATAATGCCGAATTGCTGGTGCTCTTAGAAAACGAACCG AACGCTGGACTTCCACGATTCTAACGTTAAAAACCTTTATGAGAAGGTTAAGAGCCAGTTGAAGAACAACGCGGAAGGAAATCGGAAACGG ATGCTTCGAATTTTACCACACAAGTGTGACAACGAGTGTATGGAATCTGTTAGAAATGGCACCTACGATTATCCAAAGTACTCAGAAGAAGC AAACTTAACAGGGAAAAGGTGGATGGTGTGAAACTGGAGTCCATGGGTATCTACCAGATACTTGCAATCTACTCTACGGTTGCTTCAAGC TTGGTGCTGCTTGTGAGCTTGGGAGCCATCTCATTTTGGATGTGTTCAAATGGCAGCTTACAGTGTAGGATCTGCATA

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SEQ ID NO.	Sequenza di acido nucleico
2725	ATGAATACACAGATCCTTGTATTTGCCCTGATCGCAATCATTCCTACTAATGCTGACAAGATTTGCCTCGGCCACCATGCGGTTAGTAATG GGACCAAAGTGAACACACTGACGGAGAGGAGGAGTAGAGGTAGTTAACGCCACCGAGACTGTGGAGAGAACTAACATCCCACGGATTTGT TCCAAGGGTAAACGTACTGTGGATCTGGGCAGTGCGGCTTGTTGGGTACCATCACTGGACCGCCACAGTGCGACCAGTTTCTGGAGTT TTCCGCCGACCTGATTATAGAACGCCGAGAAGGCAGCGATGTCTGTTACCCCGGTAAATTCGTGAATGAAGAAGCCCTCCGCCAAATCCT GCGTGAGAGTGGGGGCATTGACAAAGAGGCGATGGGCTTTACATACAGCGGGATACCGCACCAACGGCGCGACGTCAGCCTGCCGCAG GAGTGGAAGTTCTTTCTATGCCGAGATGAAGTGGCTGTTGTCTAATACTGATGATAATGCAGCCTTCCCCCAGATGACAAAGTCGTACAAGAA CACCAGAAAGTCACCCGCACTCATTGTGTGGGGTATTCACCATTCTGTCTCTACTGCTGAGCAGACGAAACTGTATGGTTCTGGGAACAA GCTCGTGACCGTGGGGTCCAGCAACTATCAGCAGAGCTTTGTGCCCTCCCCAGGAGAGGCCACAGGTGAATGGGTTGTCAGGCCGT ATCGATTTCCACTGGCTTATGTTGAATCCAAACGACACAGTGACATTTTCTTTCAACGGCGCCTTCATTGCACCAGACAGAGCTAGCTTTC TGCGAGGGAAGAGTATGGGTATCCAGTCTGGTGTGCAGGTCGACGCTAACTCTGTGAGGGGGATTGCTACCATAGCGGGGGAACAATTATT TCAAACCTGCCCTTCCAGAATATTGACAGCAGGGCAGTGGGAAAGTGCCCCCGCTATGTGAAACAGAGATCTTTGTTGCTGGCCACCGG CATGAAGAACGTTCCCGAAATTCCTAAGGGCCGGGGCTTTTTGGGGCGATA3CCGGTTCATTGAAAACGGGTGGGAGGGGCTAATC GATGGTTGGTACGGTTTTTAGGCATCAAAACGCCCAGGGCGAAGGCACTGCGGCCGACTACAAATCCACACAGAGCGCCATCGACCAAAT CACTGGGAAACTTAACCGACTTATTGAGAAAACAAATCAACAGTTTGAGCTGATTGATAACGAATTTAATGAGGTAGAGAAGCAGATCGGC AATGTAATAAACTGGACAAGGGACAGCATTACTGAAGTCTGGAGCTACAACGCCGAGTTGCTCGTCGCGATGGAGAATCAGCATACCATC GATTTAGCCGACTCAGAGATGGATAAGCTGTATGAACGCGTAAAGAGGCAGCTGCGCGAGAACGCTGAAGAGGACGGGACTGGCTGCT TCGAAATTTTCCACAAATGCGATGATGTATGGCTTCCATCCGGAACAATACCTACGACCATTCTAAGTACCGTGAAGAGGCCATGCA GAATAGGATCCAGATTGACCCAGTGAAGCTGAGCTCGGGTTATAAAGACGTGATTTTGTGGTTCAGTTTTGGCGCCTCTTGTTTTATCCTT CTGGCAATTGTTATGGGGTTGGTTTTCATCTGCGTCAAGAACGGCAACATGCGCTGTACTATTTGTATC

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2726	ATGAATACCCAGATTCTCGTCTTCGCACTGATAGCTATAATTCCAACCAATGCCGACAAGATATGCTTGGACACCATGCGGTGTCTAAC GGCACAAAGGTGAATACTCTGACAGAGAGGAGTGGAGGTGGTTAACGCTACAGAGACTGTGGAAAGGACGAATATACCAAGGATATG CTCCAAGGGCAAGAAGACCGTCGACCTCGGCCAGTGTGGCCTGCTTGGCACTATCACAGGTCCCCCTCAATGCGATCAATTTCTGGAAT TCTCTGCTGATCTGATAATCGAGCGCCGCGAGGGGTCTGACGTATGCTATCCCGGGAAATTCGTGAATGAGGAGGCTCTGAGACAGATA TTGCGGGAGTCGGCGGGCATCGATAAAGAAGCTATGGATTCACTTACTCGGGGATCAGAACAAACGGAGCTACATCTGCGTGTCGGC GGTCTGGCAGCTCGTTTTATGCCGAGATGAAGTGGCTGCTCTCCAATACAGACAATGCCGCATTCCCACAAATGACGAAAAGCTATAAAA ATACTCGCAAGTCACCCGCACTAATCGTGTGGGCATCCACCACACGCGTGTCCACCGCAGAGCAGACCAAATTGTATGGTAGCGGCAAT AAGCTGGTTACAGTGGGATCCTCCAACTACCAACAGTCCTTCGTCCCAAGGCCCAGGGCCCGACCGCAAGTTAACGGTCAGTCCGGACG CATTGATTTTCACTGGCTGATGCTTAACCCAAACGACACAGTTACCTTTTCGTTTAACGGCGCGCTTTCATTGCCCCAGATCGGGGCTCTTTT CTGCGGGGTAAGACCATGGGAATCCAGTCGGGGGTACAGGTCGACGCGAATTGTGAAGGCGATTGTTACCATTCTGGGGGCACTATTAT ATCAAATCTTCCATTCCAGAATATTGACTCGCGCGCTGTGGGCAAATGCCCCAGGTACGTTAAGCAGCGATCACTGCTCCTCGCCACAGG TATGAAAAATGTTCCAGAGATTCCCAAGGGGCAGGGGGCTGTTCGGTGCAATCGCCGGCTTTATAGAAATGGGTGGGAGGGACTCATCG ATGGTTGGTACGGTTTTAGGCATCAAAACGCCCAGGGGGAGGGCGACGGCTGCCGATTACAAGTCTACCCAGTCAGCTATAGACCAGATC ACTGGGAAACTAAACAGGCTGATCGAGAAAACCAACCAGCAGTTCGAACTGATTGACAACGAGTTCAACGAGGTTGAAAAGCAGATTGGT AACGTGATTAACTGGACCAGAGACTCTATCACCGAGGTCTGGAGCTACAATGCAGAACTACTTGTGGCTATGGAAAACCAGCATACAATT GATCTTGCTGACTCTGAGATGGACAAGCTTTATGAGAGGGTGAAGAGACAGCTTCGGGAGAACGCTGAGGAGGATGGAACCGGTTGTTT CGAGATCTTTCACAAATGCGATGACGATTGCATGGCTAGCATTAGGAATAACACCTATGACCACTCTAAATACAGAGAGGAGGCTATGCA GAATCGCATCCAGATCGACCCAGTGAAGCTGTCCTCTGGATACAAGGACGTAATCCTGTGGTTCTCATTTGGGGCTTCGTGCTTCATCTT GCTGGCGATTGTTATGGGCTTAGTGTTTATCTGCGTTAAAAACGGGAACATGCGGTGTACAATCTGTATC

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SEQ ID NO.	Sequenza di acido nucleico
2727	ATGAACACACAGATTCTGGTCTTTGCCTTGATCGCAATAATTCCAACTAATGCCGACAAAATTTGTTTAGGTCATCACGCCGTTTCAAATG GAACTAAGGTCAACACCCTGACCGAGAGGGGCGTCGAGGTCGTGAATGCCACAGAAACTGTGGAGAGAACCAACATCCCTCGCATCTGT AGCAAGGGCAAGAAGACTGTCGATCTTGGACAGTGCGGTCTCCTGGGAACGATTACAGGCCCCCCACAGTGCGACCAATTCCTAGAATT CTCTGCCGACTTAATCATCGAAAGGCGTGAGGGATCTGACGTGTGCTATCCGGGAAAGTTCGTGAATGAGGAGGCCCTACGGCAGATTC TGCGGAAATCCGGAGGTATAGACAAAGAGGCAATGGGCTTCACCTACAGTGGATACGCACAAATGGGGCCACATCCACTTGTCGGAGA AGCGGCTCTTCCTTTTATGCCGAGATGAAGTGGCTCTTATCCAACACAGACAATGCCGCCTTCCCTCAGATGACGAAGAGCTACAAAAAC ACCAGGAAGTCTCCAGCAATCATTGTTTGGGGCATCCACCATAGCGTCTCCACCGCTGAGCAAACCAAATTATATGGGTCCGGGAATAAA TTGGGTCACAGTCGGTAGCTCCAACTACCAGCAGTCATTTGTCCCCTCACCGGGGGCTCGCCCACAAGTAAATGGTTTGTCTGGCAGAATC GACTTTCATTGGCTCATGCTCAATCCAAACGACACGGTGACTTTCAGCTTTAACGGGGCATTTATTGCCCCCGACCGAGCATGTTTTCTTA GAGGCAAAAGCATGGGGATTCAGAGCGGAGTCCAGGTCGACGCGGATTGCGAGGGGTGACTGCTACCACTCAGGGGGTACCATTATCTC CAACCTTCCTTTTCAGAATATCGATTCGAGAGCTGTGGGCAAGTGCCCTCGGTATGTTAAACAGCGATCCCTCCTTCTGGCCACTGGTAT GAAGAACGTGCCTGAGATACCCAAAGGGAGGGGCCTGTTTGGGGCTATCGCTGGATTTATTGAGAATGGTTGGGAGGGCCTTATCGACG GCTGGTACGGCTTTAGGCACCAGAACGCGCAGGGCGAAGGCCACAGCTGCCGACTACAAAAGCACCCAGAGCGCGATTGACCAGATCAC CGGCAAATTGAACAGGCTTATCGAAAAAACGAACCAACAGTTTGAGCTAATTGACAATGAGTTTAACGAGGTCGAGAGGCAGATTGGGAA CGTCATCAACTGGACAAGAGACAGCATTACCGAGGTGTGGTCTTACAATGCAGAGTTGCTAGTGGCCATGGAAAACCAACATACGATCGA CCTCGCGGATTCTGAGATGGATAAGCTCTATGAAAGGGTGAAAAGGCAGCTGCGGGAAATGCTGAGGAAGACGGAACAGGATGTTTTG AAATCTTCCACAAATGTGATGACTGTATGGCCTCTATAAGGAACAACACCTATGATCAATTCCAAGTATCGAGAAGAGGCCATGCAGAA CCGTATCCAGATTGACCCTGTAAAACTCAGTTCAGGTACAAGGATGTGATCCTGTGGTTCAGCTTTGGCGCAAGCTGTTTCATTCTTCTC GCGATTGTGATGGGGCTAGTGTTCATTTGTGTGAAAAATGGAAATATGAGATGTACCATTTGTATC

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Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2728	ATGAACACCCAGATTCTGGTCTTCGCTCTGATTGCTATTATCCCAACCAATGCAGACAAGATCTGTCTGGGGCACCATGCTGTGTCGAAC GGCACGAAAGTGAACACACTGACCGAAAGAGGAGTCGAGGTGGTGAACGCGACCGAGACAGTGGAGCGGACAAACATCCCACGTATCT GCTCCAAGGGCAAGCGTACAGTGGACTTGGGGCAATGTGGCCTCCTTGGAACGATCACAGGACCACCGCAGTGCGACCAGTTTCTGGA GTTTTCTGCCGATTTAATCATCGAAAGGCCGGGAGGGTTCCGACGTTTGTTACCCGGGGAAGTTCGTTAACGAGGAAGCCCTGAGACAGA TCCTACGTGAGAGCGGCGGTATCGACAAGGAGGCTATGGGCTTTACATATAGCGGAATTAGAACAAACGGCGCTACCAGCGCCTGCCG CCGCAGCGGTTCATCTTTTATGCCGAAATGAAGTGGCTGCTCTCCAACACCGACAACGCCGCTTTTCCACAGATGACGAAATCCTATAA GAATACCAGGAAAAGTCCAGCTCTGATTGTGTGGGGATACACCACTCTGTGTCAACAGCGGAACAGACAAAGCTCTATGGAAGCGGAA ACAAACTCGTAACGGTCGGCAGTTCCAACTATCAGCAATCCTTTGTGCCAAGTCCAGCGCGCGGTCCTCAGGTGAACGGCCTAAGTGGC AGAATCGATTTCCATTGGTTAATGCTTAATCCAAATGACACCGTGACCTTTAGCTTTAACGGCGCCTTTATTGCTCCCGACCGAGCTTCTTT CCTTAGAGGTAAGTCAATGGGTATCCAGAGCGCGTGCAGGTTGACGCAAACTGTGAAGGCGATTGTTACCACTCCGGAGGCACTATCA TTAGCAACTTGCCATTTCAGAACATAGATTCACGCGCTGTGGGAAAGTGCCCTAGGTACGTGAAGCAGAGGTCCCTGTTGCTCGCTACG GGCATGAAGAACGTGCCCAGAGATTCCCAAAGGCAGAGGGTTGTTCGGTGCCATTGCTGGTTTCATTGAGAATGGTTGGGAGGGCCTGAT CGACGGGTGGTACGGTTCCGTCACCAGAATGCTCAAGGGGAGGGTACAGCAGCCGACTATAAATCCACCCAGAGCGCAATCGATCAAA TTACCGGCAAGCTAAATAGGCTGATTGAAAAAACTAATCAGCAGTTCGAGCTCATAGACAATGAGTTCAACGAAGTGGAAAAGCAGATTG GCAACGTCATCAATTCGACCAGAGATTCCATCACCGAGGTGTGGTCTTATAATGCCGAGCTGTTGGTTGCCATGGAAAATCAGCATACAA TAGACCTGGCCGACTCCGAAATGGATAAACTGTACGAGAGGGTTAAACGCCAACTGCGTGAGAATGCAGAGGAAGACGGAACAGGTTGT TTCGAGATCTTTCACAAATGCGACGACGACTGCATGGCCTCCATAAGGAATAATACATATGATCATAGCAAATACAGGGAGGAGGCAATG CAAAACCGGATTCAGATTGATCCTGTGAAGCTGAGCAGCGGCTACAAGGACGTTATTCTTTGGTTCAGTTTCGGTGCATCATGCTTCATA CTCCTGGCAATAGTGATGGGTCTGGTGTTCATCTGCGTGAAAAACGGAAATATGAGGTGCACCATATGCATC

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SEQ ID NO.	Sequenza di acido nucleico
2729	ATGAATACCCAAATACTCGTCTTTGCTCTCATCGCTATCATTCCTACGAATGCCGACAAAATATGCCTAGGACATCACGCCGTGAGCAATG GGACAAAGGTGAATACCTTAACCGAAAGAGGCGTGGAGGTCGTGAACGCCACAGAGACTGTGGAGCGCACCAATATACCTAGAATCTGC TCAAAGGGCAAGAAAACAGTGGACCTAGGACAGTGTGGGCTTCTGGGGACGATCACTGGCCACCACAGTGCGACCAGTTCCTGGAGT TCAGCGCGGACCTGATCATCGAACGCCGAGAGGGCTCTGATGTGTGCTACCCTGGCAAGTTTGTGAACGAGGAGGCTCTTAGGCAGATT CTCAGGGAATCCGGCGGAATTGACAAGGAAGCTATGGGCTTCACTTATAGTGGAATCCGCACCAATGGGGCAACGTCCGCTTGTAGGAG ATCCGGGAGCAGTTTTTATGCAGAAATGAAATGGCTGCTTAGTAACACGGACAACGCCGCTTTTCCGCAGATGACTAAGTCCTACAAGAA CACCCGCAAATCACCAGCTCTGATTGTGTGGGGATTCACCATTCCGTGAGCACAGCCGAGCAGACAAAGTTGTATGGCTCTGGAAATA AACTCGTGACTGTGGGCAGTTCGAACTACCAGCAGTCTTTTGTGCCTTCTCCCGGAGCCCGTCCCCAGGTCAACGGGCAGTCCGGAAGA ATTGATTTCCACTGGTTGATGCTCAACCCGAATGATACAGTGACTTTTAGCTTCAACGGCGCTTTTATTGCCCCTGATCGTGCCAGCTTCC TTAGGGGCAAATCCATGGGGATTCAGTCAGGAGTTCAGGTAGATGCCAATTGTGAGGGAGATTGTTACCACTCAGGGGTACGATCATC AGCAACTTGCCATTTCAGAACATCGACAGTCGGGCAGTGGGCAAATGCCCACGTTACGTGAAGCAACGGAGTCTCCTGTTAGCCACAGG GATGAAAAATGTTCCAGAGATCCCTAAGGGCCGGGGACTGTTCGGGGCCATTGCCGGATTTATCGAGAATGGATGGGAGGGACTTATTG ATGGTTGGTACGGCTTTCGGCATCAGAATGCCCAAGGGGAGGGCACAGCTGCCGACTATAAATCAACCCAGTCTGCAATAGATCAAATC ACCGGTAAGCTGAATCGCCTTA^CGAAAAAACGAACCAACAATTCGAGCTGATCGATAACGAATTCAATGAAGTGGAGAAACAGATTGGG AATGTTATTAACTGGACAAGAGACAGCATAACCGAAGTCTGGTCCTATAATGCCGAGTTACTTGTGGCCATGGAAAACCAGCATACGATT GACTTAGCCGACTCCGAGATGGACAAGTTGTATGAGCGGGTGAAGAGACAGTTACGGGAGAACGGCCGAAGAGGACGGGACTGGTTGTT TTGAAATCTTCCATAAGTGTGACGACTGCATGGCCAGTATTCGCAATAACACCTACGACCATAGCAAGGACAGGGAAGAAGCCATGC AGAATCGTATTCAGATCCTGTCAAACTTAGTAGTGGGTACAAGGACGTTATCCTGTGGTTTTCTTTTGGGGCCTCCTGTTTCATTCT TCTGGCTATTGTAATGGGACTGGTTTTCATATGTGTGAAAAATGGTAACATGCGGTGCACTATATGTATC

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Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2730	ATGAATACTCAGATTCTAGTGTTCGCTTTGATAGCTATAATCCCAACCAACGCCGACAAAATATGCCTGGCGCACCACGCAGTATCCAAC GGGACCAAGGTCAATACCCTGACCGAACGGGGTGTGGAAGTCGTGAACGCCACAGAGACCGTTGAGAGAACAAACATCCCTAGAATTTG TAGCAAAGGGAAGAGGACTGTCGACTTGGGGCAGTGCGGGTTACTGGGAACAATCACTGGCCCACCCCAGTGTGACCAGTTCCTCGAG TTCTCTGCTGATCTTATCATTGAGAGAAGAGGGCAGTGACGTGTGTTATCCTGGAAAATTCGTAAACGAGGAGGCGCTTAGGCAGATT CTGCGCGAATCAGGAGGTATCGATAAAGAGGCAATGGGCTTTACTTACAGCGGTATCCGAACCAACGGCGCTACATCTGCATGCCGCAG GTCTGGCTCATCTTTCTATGCAGATGAAGTGGTTGCTCTCTAACACCGATAATGCGGCATTTCCTCAGATGACCAAGAGCTACAAGAA CACCAGAAAATCCCCCGCGTTGATCGTGTGTGGGGCATCCAACCATTCAGTGTCCACCGCTGAGCAGACAAAACTCTACGGATCTGGGAACA AGTTGGTGACTGTGGGGTCCTCTAACTACCAGCAATCGTTTGTGCCATCCCCCAGGGGCTAGACCCCAGGTCAACGGTCTCTCTGGCCGG ATCGACTTCCACTGGCTTATGCTTAACCCAAACGATACCGTCACCTTTAGCTTTAATGGTGCTTTCATTGCCCCCGACCGGGCAAGCTTCT TACGAGGCAAGAGTATGGGAATACAGAGTGGGGTTCAAGTGGATGCCAACTGCGAGGGCGACTGTTACCACAGCGGCGGCACCATAAT TTCAAATCTGCCGTTCCAGAATATAGACTCTCGAGCTGTTGGGAAGTGCCCCCGATACGTAAAGCAGCGCTCTCTGTTACTGGCCACCGG CATGAAAAATGTTCCTGAGATACCGAAGGGACGTGGCCTCTTCGGGGCCATCGCCGGGTTCATCGAGAACGGCTGGGAAGGACTGATC GATGGATGGTACGGATTCAGGCATCAGAATGCTCAGGGAGAAGGGACGGCTGCAGATTATAAGTCTACACAGTCCGCCATCGATCAGAT CACCGGTAAGCTTAATAGAATCATAGAGAAGACGAACCAGCAGTTCGAGCTGATCGATAACGAGTTTAATGAGGTCGAAAAGCAGATTGG CAACGTGATAAATTGGACAAGAGACAGTATTACTGAAGTGTGGTCCTACAACGCCGAGCTTTTGGTGGCCATGGAAAACCAACACACCAT CGACTTAGCAGATTCCGAGATGGATAAACTTTACGAGCGAGTAAAAAGACAGCTCAGGGAGAATGCTGAAGAAGACGGCACAGGATGTT TCGAGATTTTCCACAAGTGTGATGACGATTGCATGGCATCAATTCGCAACAACACTTACGATCATAGCAAGTATCGCGAGGAGGCCATGC AGAACCGCATCCAAATTGATCCTGTCAAGCTAAGTTCCGGGTATAAAGACGTGATTTTGTGGTTTTCTTTTGGCGCTAGCTGCTTTATTCT ACTGGCTATTGTCATGGGCTTGGTTTTCATCTGCGTGAAAAATGGCAATATGCGCTGCACTATATGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2731	ATGAATACACAAATTCTGGTCTTCGCCTTGATTGCCATTATACCAACTAATGCCGATAAGATTTGCCTCGGGCACCATGCCGTCTCCAATG GCACAAAAGTCAACACACTGACTGAACGAGGGGTCGAGGTGGTCAACGCCACTGAAACCGTGGAAAGGACCAACATCCCCCGCATTTGC AGCAAGGGTAAAAAAACGGTAGACCTGGGACAGTGTGGGCTGCTAGGTACTATTACCGGCCCCCCACAATGTGACCAATTCTTAGAGTT CTCCGCTGACTTGATAATTGAACGGAGAGAGGGTTCTGACGTGTGCTACCCTGGGAAGTTTGTAAATGAAGAAGCCCTTCGACAGATTCT CAGGGAGTCCGGCGGTATTGATAAGGAGGCCATGGGATTTACGTACAGCGGAATTCGGACTAATGGGGCCACTTCGGCCTGCCGGCGC TCTGGTTCCTCCTTTTATGCAGAGATGAAATGGCTCCTATCCAACACGGATAACGCCGCCTTCCCACAGATGACAAAATCCTACAAGAACA CTCGGAAGAGCCCAGCGCTGATTGTGTGGGTATTCACCATAGCGTGTCCACTGCCGAGCAGAAGCTGTACGGAAGTGGCAACAA ATTGGTCACTGTAGGCTCATCTAATTACCAGCAGAGCTTTGTTCCTTCCCCTGGGCCAAGGCCACAAGTGAATGGCCAAAGTGGTAGAAT CGATTTCCACTGGCTCATGTTGAATCCTAATGACACGGTAACTTTCAGTTTCAACCGGCGCTTTCATTGCACCCGACCGGGCTTCATTTCTC CGGGGGAAGTCCATGGGGATCCAGTCAGGAGTCCAGGTCGATGCTAATTGTGAAGGCGATTGTTACCACTCCGGTGGGACCATCATTAG CAATCTGCCATTTCAGAACATCGATTCCAGAGGCAGTCGGCAAGTGCCCTAGATATGTGAAGCAGAGGAGCCTGCTGCTAGCTACGGGTA TGAAAAATGTGCCAGAGATCCCAAAGGGGCGGGGTCTTTTCGGTGCCATAGCTGGATTTATCGAGAATGGCTGGGAGGGTCTGATCGAC GGATGGTACGGGTTCAGGCATCAGAATGCCCAGGGGGAGGGCACTGCCGCCGCACTATAAGTCTACACAAAGCGCTATTGACCAAATTAC CGGTAAGCTGAACAGACTGATCGAGAAGACAAACCAGCAGTTCGAGCTCATCGATAATGAATTCAACGAGGTAGAAAAGCAAATCGGCAA CGTGATTAACTGGACCAGGGATTCTATCACTGAGGTGTCGTCATACAACGCGGAGCTGCTCGTTGCCATGGAAAATCAGCACACTATTGA CCTGGCCGACAGCGAAATGGACAAGCTGTACGAAAGAGTGAAACGACAGCTGCGGGAGAACGCCGAAGAGGACGGGACTGGTTGTTTC GAAATCTTCCATAAGTGCGATGACGACTGTATGGCTTCAATCAGGAACAACACATACGACCACTCTAAGTACAGAGAGGAGGCTATGCAG AATCGTATCCAGATTGACCCTGTAAAACTCTCCTCTGGGTACAAAGACGTGATCCTGTGGTTTTCGTTCGGCGCATCCTGCTTCATCCTGC TCGCGATCGTCATGGGATTAGTGTTCATTTGCGTCAAAAATGGCAATATGAGGTGTACCATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2732	ATGAATACTCAGATCCTAGTGTTTGCTCTCATTGCTATAATCCCCACAAATGCTGACAAGATCTGCTTGGGCCATCACGCCGTGAGTAACG GCACTAAGGTGAATACGCTGACGGAACGGGGGTGTAGAAGTTGTAAACGCCACCGAAACAGTCGAAAGGACAAACATCCCGCGCATCTGC AGTAAAGGTAAAAAGACCGTTGACCTCGGCCAATGCGGACTGCTGGGGACTATCACCGGACCCCCCCCAATGTGATCAATTTCTGGAGTT CAGTGCGGACTTGATAATCGAAAGACGGGAAGGTTCCGATGTGTGCTATCCAGGCAAGTTCGTTAATGAGGAAGCACTCCGGCAAATTC TTCGGGAAAGCGGGGCATAGACAAGGAAGCCATGGCTTTACTTACAGCGGAATCCGCACAAACGGAGCAACATCCGCTTGCAGGAG AAGTGGTAGTTCTTTTTATGCCGAGATGAAATGGTTGCTGAGCAATACCGACAACGCAGCCTTTCCACAGATGACCAAGAGCTACAAAAA TACAAGAAAGTCCCCAGCTCTGATTGTGTGGGGAATACACCATAGCGTTAGCACAGCCGAACAAACAAAGCTGTACGGTTCAGGAAATAA ACTTGTGACGGTAGGATCCAGCAATTATCAGCAAATCTTTCGTGCCATCACCAGGCGCTCGGCCTCAGGTCAACGGGCAGTCGGGCCGTA TAGATTTTCATTGGCTGATGCTGAATCCTAATGATACTGTGACCTTTAGCTTTAACGGGGCGTTCATAGCCCCGGATCGGGCATCTTTTCT CAGGGGTAAAAGCATGGGTATTCAGAGTGGAGTGCAGGTTGACGGCCAATTGCGAGGGAGATTGCTATCATTCCGGCGGGACCATTATTT CCAACCTCCCCTTCCAGAACATCGACAGCCGAGCTGTCGGCAAATGCCCCCAGGTATGTGAAACAACGCAGCCTGTTGTTAGCAACAGGG ATGAAGAATGTTCCTGAAATTCCAAAAGGGCGAGGTCTGTTCGGCGCTATCGCAGGGTTCATTGAGAACGGTTGGGAGGGCCTGATCGA TGGCTGGTATGGCTTTAGGCACCAAAACGCACAGGGCGAAGGGACTGCCGCAGACTACAAATCTACACAGTCAGCGATTGATCAAATCA CTGGCAAACTGAACCGCCTCATTGAGAAGACCAACCAGCAGTTCGAACTGATAGACAATGAGTTCAATGAGGTTGAAAAGCAGATAGGTA ATGTGATAAATTGGACCAGAGATAGTATAACTGAAGTCTGGTCCTATAACGCCGAGTTACTTGTCGCTATGGAGAACCAGCACACAATTGA CCTGGCGGACAGCGAGATGGATAAGCTGTACGAACGCGTAAAAAGACAACTGCGCGAGAAGTGCGGAGGAGGACGCGCACCCGGGTGTTTC GAGATCTTTCACAAGTGTGATGATTGTATGGCCTCCATTAGAAACAACACCTATGATCACTCCAAATACCGGGAGGAAGCAATGCAG AACCGCATACAGATTGACCCCGTCAAGTTGAGTTCCGGGTATAAAGACGTGATACTCTGGTTCAGTTTTGGTGCCTCTTGCTTTATCCTGC TTGCCATCGTGATGGGACTGGTGTTTATTTGCGTTAAAAACGGGAATATGCGTTGTACGATTTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2733	ATGAATACCCAGATTCTTGTGTTCGCCCTCATTGCCATCATCCCCACCAATGCCGACACAAGATTTGCTTGGGACATCACGCTGTGAGTAATG GCACAAAAGTAAATACGTTAACCGAACGCCGGGGTTGAAGTGGTGAATGCTACAGAGACGGTAGAGCGCACAAACATCCCGAGAATTTGC TCCAAAGGCAAAAAGACTGTTGACCTTGGCCAGTGCGGGCTGCTGGGTACGATTACTGGGCCACCTCAGTGCGATCAGTTCCTAGAATT TTCAGCAGATTTAATCATCGAAAGACGTGAAGGATCAGATGTGTGTTATCCCGGAAAGTTCGTGAATGAGGAGGCTTTGAGACAGATCTT GCGTGAATCTGGGGGCATAGATAAGGAAGCCATGGGGTTTACTTATTCTGGAATCCGCACTAATGGGGCCACCAGCGCATGTAGGCGCT CCGGATCCTCATTCTATGCCGAGATGAAGTGGCTTCTCAGTAACACAGATAATGCCGCCTTCCCCCAAATGACAAAGAGCTACAAGAATA CACGGAAAAGCCCCGCCCTGATCGTATGGGGGATTCATCATTCTGTTAGCACTGCCGAGCAAACCAAACTGTACGGCTCAGGAAATAAG CTCGTGACGGTAGGGTCATCAAACTACCAGCAGAGCTTCGTACCTTCCCCCGGCGCTAGACCTCAGGTCAACGGTCAGTCCGGACGAAT TGATTTCCACTGGTTAATGCTCAACCCAAATGACACCGTCACATTCAGTTTTAACGGTGCCTTTATTGCTCCTGACAGAGCCTCTTTTCTGA GGGGCAAGTCCATGGGCATCCAGAGCGGGGTACAGGTCGACGCCAATTGCGAGGGCGACTGCTACCATTCAGGGGGGACGATCATTA GTAACTTACCCTTTCAAAACATTGATTCACGGGCCGTAGGCAAGTGTCCGAGATACGTCAAGCAGCGGAGCTTGCTGTTGGCAACTGGC ATGAAAAACGTTCCCGAAATCCCTAAGGGCCGAGGTCTTTTTGGGGCAATTGCGGGCTTCATAGAGAATGGTTGGGAGGGACTGATCGA TGGGTGGTATGGCTTCAGACATCAGAACGCACACAGGGTGAGGGTACCGCTGCTGACTATAAGAGCACCCAGAGCGCAATAGATCAGATCA CTGGCAAGCTTAACCGACTTATCGAAAAGACCAACCAGCAGTTTGAATTGATTGACAACGAATTTAACGAAGTTGAGAAGCAAATTGGGAA CGTTATTAATTGGACAAGGGATTCCATCACAGAGGTTTGGAGTTACAATGCGGAGTTATTAGTGGCAATGGAGAACCAACATACTATTGAC CTTGCGGATAGCGAGATGGACAAGCTGTACGAGAGGGTCAAGCGCCAGTTACGGGAAAACGCGGAAGAGGATGGAACTGGATGTTTCG AGATCTTCCACAAATGCGATGACGATTGCATGGCGTCGATCCGAAACAATACCTACGATCACAGTAAATACAGGGAAGAGGCAATGCAGA ACCGAATTCAGATTGATCCCGTGAAGCTCAGCTCAGGGTACAAGGACGTGATTCTGTGGTTTTCATTTGGAGCTAGCTGCTTTATACTGCT GGCTATTGTTATGGGCTTGGTATTCATCTGTGTGAAGAATGGTAACATGAGGTGTACAATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2734	ATGAATACTCAGATCCTGGTGTTTGCTCTGATAGCTATCATCCCCACCAACGCCGATAAGATTTGCCTGGGCCACCACGCAGTGAGTAAC GGGACAAAAGTCAACACTCTAACTGAGCGCGGCGTTGAAGTTGTAAATGCCACTGAAACTGTTGAGAGAACTAATATACCCCGCATTTGC TCAAAAGGCAAGAGGACTGTGGATCTCGGCCAGTGTGGGCTTCTGGGGACCATAACTGGTCCGCCCCAATGTGACCAGTTCTTGGAGTT TTCCGCAGACCTAATTATCGAGCGTCGCGAAGGCTCCGATGTGTGCTACCCCGGCAAGTTTGTCAATGAAGAAGCCCTGAGGCAGATTC TGCGAGAAAGCGCGGGGTATAGACAAAGAAGCTATGGGCTTTACTTATAGCGGAATTCGTACAAACGGCGCTACATCCGCCTGTCGACGG TCTGGTTCTAGCTTCTATGCTGAGATGAAATGGTTGCTTAGCAACACAGACAACGCCGCTTTCCCCCAGATGACTAAAAGTTATAAAAATA CCCGGAAGAGCCCCGCACTTATCGTATGGGGATCCATCACAGTGTGTCGACTGCCGAACAGACCAAGCTCTACGGGAGCGGCTCCAA GCTGGTGACAGTGGGGTCTTCTAATTACCAACAATCCTTTGTCCCTTCCCCTGGGCGCCGCCCCCAAGTGAATGGGCTAAGCGGAAGGA TTGACTTTCATTGGCTGATGCTGAATCCCAACGATACAGTGACGTTCAGCTTTAACGGGGCGTTTATTGCCCCTGACCGTGCAAGTTTTCT CCGCGGAAATCCATGGGCATCCAAAGCGGCGTCCAAGTGGATGCAAACTGCGAAGGAGACTGCTATCACTCTGGAGGAACTATTATTT CTAACCTGCCTTTCCAGAACATCGACTCAAGGGCCGTGGGGAAATGCCCGCCTATGTTAAACAGAGAAGCCTGTTGCTTGCCACAGGT ATGAAGAACGTGCCCGAGATCCCTAAGGGCAGAGGGCTGTTCGGCGCAATCGCAGGGTTCATTGAAAACGGATGGGAGGGCCTCATCG ACGGATGGTACGGTTTTCGGCACCAAAACGCACAGCGGGAGGGCACAGCGCGCGGATTATAAGAGCACTCAGAGTGCCATAGATCAGAT TACGGGGAAGCTCAATAGACTTATAGAGAAGACCAATCAGCAATTCGAGCTGATCGATAACGAGTTCAATGAGGTAGAAAAGCAGATTGG GAATGTCATCAACTGGACAAGAGATAGTATAACAGAGGTGTGGAGGCTACAACGCCGAGTTACTTGTGGCCATGGAAAACCAGCACACAAT CGACCTGGCTGATAGCGAAATGGACAAGCTGTATGAAAGAGTCAAGAGACAGCAGAAAACGCAGAGGAGGACGGAACCGGCTGC TTCGAGATTTTTCACAAATGTGACGATGATTGCATGGCGTCAATCCGGAACAACACCTATGACCACTCTAAGTATCGAGAGGAGGCGATG CAGAACCGGATACAGATCGATCCTGTTAAGCTTTCATCAGGTTACAAGGACGTAATCCTGTGGTTCTCGTTCGGCGCATCCTGCTTTATCC TTCTGGCAATTGTGATGGGGCTCGTATTCATCTGCGTGAAAAATGGCAATATGAGATGTACTATTTGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2735	ATGAATACACAGATCCTTGTGTTCGCACTGATCGCGATTATCCCCACCAACGCAGACAAGATCTGTTTAGGCCACCATGCTGTGAGCAAT GGGACAAAAGTCAACACGCTGACAGAGCGGGAGTGGAGGTGGTAAACGCTACTGAAACGGTCGAGAGAACTAACATTCCTAGAATTTG TTCAAAAGGGAAAAGGACCGTGGATCTGGGCCAGTGTGGGCTGCTGGGAACAATCACTGGGCCACCACAATGCGATCAGTTTTTAGAGT TCTCGGCCGACCTAATCATAGAGCGCAGAGAGGGCTCCGATGTATGCTATCCCGGGAAGTTTGTGAATGAAGAAGCTTTAAGGCAGATT CTTAGAGAATCCGGTGGGATTGACAAGGAGGCAATGGGGTTTACATACTACTCCGGTATTAGAACAAACGGGGGCCACCTCCGCGTGCAGGAG AAGCGGCTCCTCTTTTTATGCTGAGATGAAATGGCTGCTGTCAAACACACCGACAACGCCGCATTTCCCCAAATCACCAAGTCCTACAAGAA TACAAGAAAGTCTCCAGCCCTGATTGTTTGGGGATACACCACTCAGTGTCCACCGCTGAACAGACCAAGTTGTATGGTAGCGGAAACAA GCTGGTGACCGTCGGGTCCTCAAATTATCAGCAGTCATTTGTCCCATCTCCGGGCGCTAGGCCTCAGGTGAATGGGCTGAGTGGACGCA TTGACTTCCACTGGCTTATGCTGAATCCTAATGACACAGTTACATTTAGTTTCAACGGGGCATTTATTGCGCCAGATAGAGCCAGTTTCTT GCGCGGCAAATCTATGGGAATCCAGAGCGGCGTTCAAGTGGACGCCAACTGTGAGGGGGACTGCTACCACAGCGGCGGGACAATTATC AGCAACCTGCCATTCCAGAATATTGATTCACGGGCTGTGGGAAAGTGTCCTAGGTACGTCAAACAGCGGTCTCTGCTGTTAGCAACCGG AATGAAGAATGTACCCGAGATCCCTAAAGGCCGAGGGTTGTTCGGCGCAATTGCGGGCTTCATTGAGAATGGTTGGGAGGGTCTCATCG ATGGTTGGTACGGCTTCAGACACCAGAATGCCCCAAGGCGAAGGAACTGCAGCCGACTATAAGTCAACTCAAAGCGCAATCGACCAGATC ACAGGGAAACTGAATCGCTTGATCGAAAAGACCAACCAGCAATTCGAGCTGATCGACAATGAGTTTAACGAGGTCGAGAAGCAGATCGG AAATGTGATTAATTGGACTCGAGACTCAATTACCGAGGTTTGGAGTTACAATGCCGAACTGCTGGTGGCCATGGACGAATCAACATACCAT AGATCTCGCCGATAGCGAGATGGATAAACTGTATGAACGAGTTAAGCGACAACTGAGAGAAAACGCCGAAGAAGACGGAACCCGGTGCT TTGAAATCTTCCACAAATGCGATGATGATTGTATGGCTTCAATTCGCAACAACATCCTACGATCACAGCAAGTACCGAGAAGAGGCCATGC AAAACCGGATTCAAATCGATCCAGTGAAGCTGAGTTCTGGATATAAGGATGTGATTCTGTGGTTTTCATTTGGGGCTAGCTGTTTCATTCT TCTTGCCATCGTGATGGGTCTCGTGTTTATTTGTGTCAAGAATGGGAACATGCGCTGCACGATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2736	ATGAACACCCAAATTCTAGTTTTCGCCCTTATCGCCATCATACCGACAAACGCAGACAAAATATGTCTCGGACACCACGCGGTGAGTAAT GGCACCAAGGTGAACACTCTTACCGAGCGAGGGGTGGAGGGTGGTGAATGCAACAGAAACCGTGGAGCGCACCAACATCCCCCGGATTT GTTCAAAGGGAAAAAAGACAGTCGACCTGGGGCAGTGTGGGCTCCTGGGCACTATCACTGGGCCCCCGCAGTGCGACCAATTCCTGGA GTTTAGCGCAGACCTGATCATCGAAAGAAGGGAGGGGTCAGACGTGTGTTACCCGGGAAAGTTCGTGAACGAAGAGGCACTTCGCCAG ATATTAAGAGAGCGGCGGGATTGATAAAGAAGCTATGGGCTTCACCTATTCTGGCATTAGGACCAATGGCGCCACAAGTGCCTGTAG GAGATCAGGCTCGAGCTTCTACGCTGAGATGAAATGGCTCCTGTCGAACACAGACAACGCCGCTTTTCCTCAGATGACGAAATCCTATAA AAACACGCGGAAGTCTCCTGCGCTCATTGTGTGGGGAATTCATCACAGTGTGTCTACCGCTGAGCAGACAAAGCTTTACGGTTCCGGAA ATAAATTAGTGACAGTTGGCTCTAGTAACTATCAGCAAAGTTTCGTACCATCCCCGGGAGCGAGACCGCAGGTAAATGGACAGTCCGGG CGGATAGATTTCCATTGGCTCATGCTGAATCCTAATGACACCGTCACATTCAGCTTTAACGGGGCATTCATCGCACCCGATCGAGCTAGT TTTCTTCGCGCGAAGTCTATGGGAATTCAATCTGGCGTACAGGTGGATGCCAATTGCGAGGGTGATTGCTACCACTCTGGCGGTACCATC ATCTCGAACCTCCCTTTTCAAAACATCGATAGCAGAGCCGTGGGCAAGTGCCCTCGATATGTTAAGCAGAGAAGCCTGCTGCTCGCAACC GGCATGAAGAACGTGCCTGAGATTCCTAAGGGCCGCGGCTTATTCGGCGCCATTGCTGGCTTCATCGAAAATGGCTGGGAAGGTTTAAT CGATGGATGGTATGGGTTCCGCCATCAGAAGCGCTCAAGGTGAGGGCACTGCCGCCGATTACAAAAGCACCCAGAGTGCAATCGACCAG ATTACTGGTAAGCTTAATCGACTAATTGAGAAAACCAACCAGCAGTTCGAACTGATTGATAACGAGTTTAATGAAGTCGAGAAGCAGATTG GAAACGTTATCAATTGGACCCGAGACAGTATAACTGAGGTGTGGAGCTACAACGCCGAGCTCCTCGTGGCTATGGAGAACCAACATACA ATCGATCTTGCAGATTCTGAAATGGATAAGCTATACGAAAGAGTAAAGGCGACAGCTCCGGGAAAACGCAGAGGAAGACGGAACTGGATG TTTCGAGATTTTTCACAAGTGCGACGACATTGCATGCCAAGCATTAGAAATAACACATACGACCACTCAAAGTACCGCGAGGAGGCGAT GCAGAATAGGATACAGATCGACCCTGTAAAGCTGAGCTCTGGGTACAAGGACGTGATCTTGTGGTTTTCTTTCGGCGCATCATGCTTCAT CTTGCTGGCAATCGTGATGGGCCTGGTCTTTATTTGCGTAAAGAACGGCAATATGCGCTGTACAATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2737	ATGAATACTCAGATACTGGTGTTCGCACTCATCGCAATTATACCCACTAATGCCGATAAGATTTGTTTAGGACATCACGCCGTCAGTAACG GAACTAAGGTTAACACACTAACAGAGCGAGGCGTCGAAGTGGTTAATGCAACTGAGACGGTCGAGCGCACAAACATCCCTCGTATTTGC AGCAAAGGAAAGAAAACCGTCGATCTGGGACAGTGCGCGGACTCCTGGGGACCATAACCGGCCCTCCCCAGTGCGATCAGTTCTGGAGTT CTCAGCAGATCTTATAATCGAGCGACGGGAAGGTTCCGACGTATGTTATCCCGGTAAATTCGTCAACGAAGAAGCCCTGAGACAGATCCT GCGGGAGAGTGGAGGAATTGACAAGGAGGCCATGGGATTTACCTACAGCGGCATTAGAACGAATGGGGCCACATCTGCCTGCCGACGC AGCGGCAGCTCATTCTACGCCGAGATGAAATGGTTACTGTCCAATACCGACAACGCCGCGTTCCCGCAGATGACCAAATCTTACAAGAAC ACTCGAAAATCCCCCGCACTTATTGTGTGGGCATCCACCATAGTGTGTCAACCGCTGAGCAGACTAAACTCTACGGTTCTGGTAACAAA CTCGTGACTGTGGGAAGCTCAAACTACCAGCAAAGCTTTGTGCCCTCTCCCGGGGCCAGGCCACAGGTGAACGGACAGTCCGGACGCA TAGACTTCCACTGGCTGATGCTAAATCCGAACGACACCGTCACCTTCAGTTTTAATGGGGCTTTCATCGCCCCTGACAGAGCTAGCTTCC TGCGCGGTAAGAGCATGGGTATTCAGAGCGGGGTGCAGGTCGACGCCAACTGCGAAGGTGATTGCTATCATTCAGGGGGCACAATTAT CTCCAACCTCCCATTTCAGAACATCGATAGCCGCGCAGTCGGTAAGTGTCCACGATACGTTAAACAAAGGTCACTGCTCCTTGCCACTGG CATGAAAAACGTCCCGGAGATCCCGAAGGGCCGCGGACTCTTTGGGGCCATCGCTGGGTTCATTGAAAATGGTTGGGAGGGGCTCATT GACGGATGGTATGGCTTTAGGCACCAGAACGCCCAAGGAGAGGGGACCGCAGCCGATTATAAGAGCACACAGTCTGCCATTGACCAGA TAACCGGTAAACTTAACCGGTTAATCGAAAAAACTAACCAGCAGTTCGAATTAATCGACAACGAATTTAATGAAGTCGAGAAACAGATCGG CAACGTCATCAACTGGACCCGAGATAGCATAACTGAAGTGTGGTCCTACAACGCCGAGCTGCTCGTGGCTATGGAGAATCAGCATACCA TCGACTTGGCCGACAGTGAAATGGATAAGCTGTACGAGAGAGTTAAGCGCCAGCTGAGAGAGAACGCAGAAGAGGACGGGACCGGCTG CTTTGAGATTTTCCATAAGTGCGATGACGACTGTATGGCAAGCATTCGCAATAATACTTACGATCACTCCAAATATAGGGAGGACGCCATG CAAAACCGCATTCAGATTGATCCGGTGAAGTTGTCAAGTGGATATAAGGATGTGATTCTCTGGTTCTCCTTCGGGGCCTCCTGTTTTATTC TTCTCGCAATCGTTATGGGCTTGGTCTTCATCTGCGTAAAAAATGGGAATATGATGTACTATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2738	ATGAACACACAAATTCTTGTATTTGCCCTTATAGCAATCATTCCAACCAACGCAGACAAGATATGCCTGGGGCACCACGCCGTCTCTAACG GTACAAAGGTAAACACACTAACCGAACGCGGTGTCGAGGTAGTGAATGCAACTGAGACCGTGGAGCGGACCAACATACCAAGAATCTGC TCCAAAGGGAAGAGAACGGTGCATCTAGGACAGTGCGGGCTGCTCGGGACTATCACTGGACCACCTCAGTGTGATCAATTTTTAGAGTT CTCGGCAGACTTAATCATCGAAGGGCGGGAAGGATCTGATGTTTGCTACCCTGGCAAGTTTGTTAATGAAGAGGCGCTGCGACAGATTTT GCGCGAATCCGGTGGTATCGATAAAGAAGCAATGGGCTTCACTTATAGTGGCATTCGGACCAATGGAGCCACAAGCGCATGCCGAAGGA GCGGGTCCAGCTTTTACGCTGAAATGAAATGGCTCTTGAGTAATACAGATAACGCCGCCTTTCCTCAAATGACAAAAAGCTATAAGAATAC GCGAAAAAGCCCTGCTCTAATCGTCTGGGGTATCCACCACTCTGTGTCTACAGCCGAACAAACCAAGCTGTATGGCAGCGGCTCAAAGC TGGTAACAGTGGGATCAAGCAATTACCAGCAGAGTTTTGTGCCTAGCCCTGGAGCTAGACCGCAGGTGAACGGCCTTTCAGGTCGGATA GACTTTCACTGGCTTATGTTAAATCCAAATGACACGGTGACCTTCTCTTTCAACGGGGCATTTATCGCACCAGATAGGGCATCTTTTCTGC GGGGGAAGAGTATGGGCATCCAATCCGGAGTGCAGGTTGATGCAAATTGCGAGGGGGGATTGTTATCACTCCGGCGGTACAATAATTAGT AACCTCCCATTTCAGAATATTGATGTCGTGCCGTCGGAAAAATGTCCTCGCTATGTCAAGCAGAGATCGCTGTTACTTGCCACCGGCATG AAAAATGTGCCCGAAATCCCAAGGGCCGAGGTCTGTTCGGGGCTATCGCAGGCTTCATTGAAAATGGATGGGAAGGCCTGATCGACGG GTGGTACGGCTTCCGTCATCAGAACGCACAGGGGGAAGGGACTGCAGCGGATTATAAGTCCACCCAAGCGCTATTGACCAGATCACC GGCAAGCTCAATCGGCTCATAGAAAAAACTAATCAACAGTTTGAGTTGATAGATAATGAGTTTAACGAGGTCGAGAAGCAGATTGGGAAT GTGATCAATTGGACCAGAGACTCAATAACTGAGGTGTGGTCATACAATGCGGAGTTGTTGGTCGCTATGGAAAATCAACACACAATCGAC CTGGCTGACTCAGAAATGGATAAGCTGTACGAGCGGGTCAAGAGACAGCTGCGCGAGAATGCCGAGGAAGATGGAACAGGTTGCTTTG AAATTTTCCATAAATGCGATGATGACTGTATGGCAAGTATTCGGAACAATACTTACGATCACAGTAAGTATAGAGAAGAAGCAATGCAAAA CAGAATTCAGATTGATCCGGTGAAGCTGAGCTCAGGATACAAAGATGTTATCCTATTGGTTTTTCTTTTGGGGCCTCATGCTTTATCTTATTG GCCATAGTTATGGGGCTAGTATTTATCTGCGTAAAATCAAGGAATATGAGGTGCACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2739	ATGAATACACAGATCTTGGTTTTTGCCCTCATCGCCATTATCCCCACAAATGCCGACAAAATTTGCTTGGGCCACCACGCCGTGTCCAATG GTACAAAAGTCAATACACTGACCGAGAGGGGAGTGGAGGTGGTGAATGCCACAGAAACCGTTGAAAGAACGAATATTCCTAGAATTTGTT CTAAAGGGAAAAGAACCGTTGA˜CTCGGGGCAATGCGGTCTGTTAGGCACAATCACAGGGCCCTCCCCAGTGTGATCAATTTCTTGAGTTCA GTGCGGATCTTATCATTGAGAGACGGGAAGGGTCTGATGTCTGTTACCCCGGCAAGTTTGTGAACGAGGAAGCCCTGCGCCAGATCCTC AGAGAATCTGGGGGTATCGATAAGGAAGCTATGGGGTTTACTTATTCCGGGATCAGGACTAATGGGGCCACCAGCGCCTGCCGGCGGT CCGGCAGCTCATTCTACGCCGAGATGAAGTGGCTGCTGTCCAATACCGACAATGCGGCCTTTCCGCAGATGACCAAGAGCTATAAAAAC ACGCGCAAATCACCCGCTTTAATCGTCTGGGGGATACATCATTCAGTGAGCACTGCCGAGCAAACCAAGCTGTATGGGAGCGGCAGTAA ATTGGTTACTGTAGGTAGCTCTAACTACCAGCAGTCTTTCGTCCCAAGCCCAGGAGCCCGTCCGCAGGTGAATGGACTCAGTGGAAGGA TTGATTTTCATTGGCTAATGCTCAACCCGAACGATACTGTGACGTTTTCATTTAATGGCGCATTTATCGCGCCCGATCGAGCCAGCTTCCT CCGGGGTAAGAGTATGGGGATCCAATCAGGAGTGCAGGTCGATGCTAACTGCGAGGGAGACTGTTACCATTCCGGCGGCACTATTATCA GCAATCTGCCCTTCCAGAATATCGACTCCAGAGCCGTGGGAAAGTGTCCAAGGTACGTGAAACAGAGGAGCTTACTGCTTGCCACAGGG ATGAAGAATGTCCCCGAGATTCCCAAAGGAAGGGGCTGTTCGGAGCCATCGCAGGGTTCATTGAGAACGGGTGGGAAGGCTTAATCG ATGGCTGGTACGGCTTCAGACACCAAAATGCACAGGGCGAAGGAACCGCCGCCGATTACAAGTCAACGCAATCCGCTATAGATCAGATA ACCGGAAAGCTGAACAGACTCATCGAAAAAACACAACCAACAGTTCGAACTTATAGACAACGAATTCAACGAGGTGGAAAAACAGATCGGG AACGTTATCAATTGGACACGAGACTCAATCACAGAGGTATGGTCCTACAACGCTGAACTCCTGGTTGCGATGGAGAATCAGCACACCATT GACTTAGCCGACTCTGAGATGGATAAACTGTACGAGAGAGTGAAAAGGCAGCTCCGAGAGAACGCAGAAGAGGATGGTACAGGATGCTT CGAAATCTTTCACAAATGCGACGATGATTGTATGGCCAGCATCAGAAATAATACATATGACCATTCCAAATATCGGGAAGAAGCAATGCAA AACCGGATCCAGATCGATCCTGTTAAACTCAGCAGCGGTTACAAGGACGTGATTCTGTGGTTCTCCTTCGGCGCATCATGTTTTATTCTTC TTGCTATTGTGATGGGACTAGTATTTATATGCGTGAAGAATGGCAACATGAGATGTACCATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2740	ATGAATACCCAAATCCTTGTATTCGCTCTGATCGCAATCATTCCAACCAATGCTGATAAAATCTGCTTAGGACACCACGCTGTGAGCAATG GTACAAAGGTCAATACACTGACAGAGCCGGGCGTAGAAGTGGTCAACGCCACCGAGACGGTGGAAAGGACCAATATCCCTAGGATTTGC TCGAACGGCAAGAGAACAGTAGACCTGGGGCAATGTGGATTGTTGGGGACTATTACGGGACCGCCCCAGTGTGATCAGTTTCTGGAGTT CAGCGCTGATCTCATCATCGAGCGCCGAGAGGGATCCGACGTGTGCTACCCAGGAAATTCGTTAACGAGGAAGCATTAAGACAGATTT TACGTGAATCGGGTGGCATTGATAAAGAAGCCATGGGGTTTACTTACAGTGGAATTAGAACCAATGGAGCCACCTCGGCTTGCCGGAGA TCTGGGTCTAGCTTTTACGCAGAAATGAAGTGGCTGCTGTCTAACACGGATAATGCCGCGTTCCCGCAGATGACCAAAGTTATAAAAAT ACCAGAAAGAGCCCTGCATTAATTGTCTGGGGCATTCACCACTCTGTTTCCACGGCCGAACAGACAAAATTGTATGGAAGCGGAAACAAG CTGGTCACAGTCGGATCTAGCAACTACCAGCAGAGCTTTGTGCCCAGTCCAGGGCCCGCCCTCAGGTCAATGGGCTTTCTGGGAGAAT TGATTTTCACTGGCTGATGTTGAACCCCAACGACACTGTGACCTTTAGCTTCAATGGCGCGTTTATTGCGCCCGACAGAGCCTCCTTTTTA CGGGGGAAAAGCATGGGAATACAATCTGGTGTGCAGGTGGATGCAAATTGCGCAAGGAGACTGCTATCACTCCGGGGGTACCATTATTAG CAATCTCCCATTCCAGAACATCGACTCCAGAGCCGTTGGTAAATGCCCCAGGTATGTCAAGCAGCGTAGTCTCTTGTTGGCCACAGGAAT GAAAAACGTGCCTGAGATCCCCAAAGGGCGCGGCCTATTTGGGGCAATTGCCGGCTTTATCGAGAACGGATGGGAGGGCCTGATCGAC GGTTGGTATGGCTTTCGCCATCAGAATGCTCAGGGGGAAGGCACAGCTGCAGACTACAAGAGCACCCAGAGCGCCATCGATCAAATCAC CGGCAAGCTCAACCGGATCATCGAGAAGACAAATCAGCAATTTGAATTAATCGACAACGAGTTCAATGAGGTAGAAAAGCAGATAGGAAA CGTGATCAACTGGACCAGGATAGCATTACTGAAGTCTGGTCATACAATGCCGAACTCCTGGTGGCAATGGAGAACCAGCACACTATTGA TCTTGCCGACTCTGAGATGGACAAACTGTACGAGCGCGTGAAGCGACAGCTGAGGGAAAACGCTGAGGAAGACGGTACTGGCTGCTTT GAAATCTTCCACAAATGCGACGATTGCATGGCATCCATACGGAACAACACTTATGATCACTCAAAGTATCGGCAGGAAGCAATGCAG AATAGAATTCAAATCGATCCCGTTAAACTGAGCTCCGGCTACAAGGATGTGATCTCTGGTTTAGCTTCGGAGCATCATGCTTTATCCTGC TAGCAATTGTAATGGGTCTGGTGTTCATATGCGTAAAGAATGGCAATATGCGCTGTACTATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2725	ATGAACACGCAAATTCTAGTGTTTGCTCTAATTGCCATCATACCCACAAACGCCGATAAAATCTGCCTTGGGCATCACGCAGTAAGTAACG GTACCAAGGTGAACACGCTCACAGAGCGCGGGGGTCGAGGTCGTGAATGCCACCGAAACAGTGGAACGCACTAACATCCCTCGAATCTG TTCAAAAGGTAAGCGGACTGTGGATCTGGGACAGTGTGGCCTGCTTGGTACGATCACCGGTCCTCCCCAATGCGATCAGTTCCTGGAGT TCTCAGCAGACTTAATCATCGAGCGCAGAGAGGGTAGCGATGTCTGTTACCCCGGAAAGTTTGTGAAGGAAGAAGCCCTTCGCCAGATT CTCAGAGAGTCAGGAGCGCATTGATAAGGAAGCCATGGGTTTACCTACAGCGGTATCCGTACCAACGCAGCCACCTCTGCCTGCCGAC GCTCAGGTTCTAGCTTCTACGCTGAAATGAAATGGTTACTGAGCAATACCGATAACGCCGCATTCCCCCAGATGACAAAAAGCTACAAGA ATACCCGCAAAAGCCCTGCCCTTATAGTTTGGGGATACATCACTCCGTGTCCACCGCAGAACAGACCAAGCTGTACGGCAGCGGCAAC AAATTGGTGACCGTGGGGAGTAGTAATTATCAACAGAGCTTTGTGCCCTCGCCTGGGGCCAGACCTCAGGTCAATGGACTTAGTGGAAG GATTGATTTCCACTGGCTTATGCTCAATCCTAATGATACCGTCACATTCAGCTTCAACGGGGCGTTCATCGCACCCGATCGCGCAAGCTT CCTGCGTGGGAAGAGTATGGGCATCCAATCTGGGGTTCAAGTGGATGCAAATTGTGAGGGCGATTGTTACCACAGCGGGCGGGACGATC ATCTCCAACCTCCCCTTCCAGAATATTGATTCTCGTGCCGTTGGGAAATGTCCTAGATATGTGAAGCAGCGTTCCCTCCTGCTGGCTACA GGCATGAAGAACGTTCCGGAAATCCCCAAGGGCAGAGGACTGTTTGGCGCCATTGCAGGATTTATTGAGAATGGATGGGAGGGCCTCAT CGATGGTTGGTACGGATTCAGACACCAGAACGCTCAGGGGGAAGGAACAGCCGCCGATTATAAGTCTACCCAGTCGGCTATCGACCAAA TCACCGGAAAACTGAACAGGCTGATAGAGAAAACTAACCAGCAGTTCGAGTTGATCGACAACGAGTTCAACGAAGTGGAGAAACAGATC GGCAACGTCATTAACTGGACACGCGACTCAATTACAGAGGTGTGGTCCTACAACGCTGAGCTGCTGGTAGCAATGGAGAACCAGCATAC CATCGACCTGGCTGATTCTGAAATGGATAAGCTGTATGAACGGGTCAAGCGTCAACTGCGCGAAAACGCCGAAGAGGATGGAACAGGCT GCTTCGAAATTTTTCATAAATGCGATGACGACTGCATGGCAAGCATCCGGAACAACACATACGATCACTCAAAATACCGCGAGGAGGCTA TGCAGAATCGCATTCAGATTGATCCTGTGAAGTTATCCTCCGGCTACAAAGATGTCATCCTCTGGTTCAGTTTCGGCGCGTCTTGCTTCAT CCTCCTAGCAATCGTGATGGGTCTCGTTTTCATCTGTGTGAAGAACGGGAATATGAGATGCACTATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2725	ATGAACACGCAAATTCTAGTGTTTGCTCTAATTGCCATCATACCCACAAACGCCGATAAAATCTGCCTTGGGCATCACGCAGTAAGTAACG GTACCAAGGTGAACACGCTCACAGAGCGCCGGGGTCGAGGTCGTGAATGCCACCGAAACAGTGGAACGCACTAACATCCCTCGAATCTG TTCAAAAGGTAACGCGGACTGTGGATCTGGGACAGTGTGGCCTGCTTGGTACGATCACCGGTCCTCCCCAATGCGATCAGTTCCTGGAGT TCTCAGCAGACTTAATCATCGAGCGCAGAGAGGGTAGCGATGTCTGTTACCCCGGAAAGTTTGTGAAGGAAGAAGCCCTTCGCCAGATT CTCAGAGAGTCAGGAGCGCATTGATAAGGAAGCCATGGGTTTACCTACAGCGGTATCCGTACCAACGGAGCGCACCTCTGCCTGCCGAC GCTCAGGTTCTAGCTTCTACGCTGAAATGAAATGGTTACTGAGCAATACCGATAACGCCGCATTCCCCCAGATGACAAAAAGCTACAAGA ATACCCGCAAAAGCCCTGCCCTTATAGTTTGGGGGATACATCACTCCGTGTCCACCGCAGAACAGACCAAGCTGTACGGCAGCGGCAAC AAATTGGTGACCGTGGGGAGTAGTAATTATCAACAGAGCTTTGTGCCCTCGCCTGGGGCCAGACCTCAGGTCAATGGACTTAGTGGAAG GATTGATTTCCACTGGCTTATGCTCAATCCTAATGATACCGTCACATTCAGCTTCAACGGGGGCGTTCATCGCACCCGATCGCGCAAGCTT CCTGCGTGGGAAGAGTATGGGCATCCAATCTGGGGTTCAAGTGGATGCAAATTGTGAGGGCGATTGTTACCACAGCGGCGGGACGATC ATCTCCAACCTCCCCTTCCAGAATATTGATTCTCGTGCCGTTGGGAAATGTCCTAGATATGTGAAGCAGCGGTTCCCTCCTGCTGGCTACA GGCATGAAGAACGTTCCGGAAATCCCCCAAGGGCAGAGGACTGTTTGGCGCCATTGCAGGATTTATTGAGAATGGATGGGAGGGCCTCAT CGATGGTTGGTACGGATTCAGACACCAGAACGCTCAGGGGGAAGGAACAGCGCGCCGATTATAAGTCTACCCAGTCGGCTATCGACCAAA TCACCGGAAAACTGAACAGGCTGATAGAGAAAACTAACCAGCAGTTCGAGTTGATCGACAACGAGTTCAACGAAGTGGAGAAACAGATC GGCAACGTCATTAACTGGACACGCGACTCAATTACAGAGGTGTGGTCCTACAACGCTGAGCTGCTGGTAGCAATGGAGAACCAGCATAC CATCGACCTGGCTGATTCTGAAATGGATAAGCTGTATGAACGGGTCAAGCGTCAACTGCGCGAAAACGCCGAAGAGGATGGAACAGGCT GCTTCGAAATTTTTCATAAATGCGATGACGACTGCATGGCAAGCATCCGGAACAACACATACGATCACTCAAAATACCGCGAGGAGGCTA TGCAGAATCGCATTCAGATTGATCCTGTGAAGTTATCCTCCGGCTACAAAGATGTCATCCTCTGGTTCAGTTTCGGCGCGTCTTGCTTCAT CCTCCTAGCAATCGTGATGGGTCTCGTTTTCATCTGTGTGAAGAACGGGAATATGAGATGCACTATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2726	ATGAATACCCAGATCCTTGTGTTTGCTCTGATCGCCATCATTCCCACAAACGCCGACAAAATTTGCCTCGGTCACCATGCTGTGTCAAACG GTACTAAAGTCAACACATTGACAGAGAGGGCGTGGAGGTGGTGAATGCAACCGAGACCGTTGAGCGAACAAATATCCCTCGCATCTGC TCCAAGGGCAAGAAAACTGTGGATTTGGGCCAATGTGGGCTTTTGGGAACCATTACTGGGCCTCCTCAGTGTGATCAGTTCCTCGAGTTC TCTGCCGACCTGATTATTGAACGCCGAGAAGGTAGCGATGTCTGTTACCCAGGCAAATTCGTCAACGAAGAGGCACTTCGCCAGATACT GAGAGAGTGGAGGCATTGATAAAGAAGCTATGGGTTTACCTATTCTGGGATAAGGACCAACGGGGCCACCAGTGCTTGTAGACGTA GTGGCAGCAGCTTCTACGCGGAAATGAAATGGCTCCTGTCAAATACAGACAATGCTGCTTTTCCTCAGATGACTAAATCGTACAAAAACA CGCGGAAGAGCCCCGCCTTAATCGTGTGTGGGGAATCCACCACTCCGTGTCCACAGCGGAACAGACCAAACTTTACGGCTCCGGGAATAA GCTAGTGACCGTGGGCAGCTCCAACTATCAACAAAGTTTCGTCCCTTCCCCCGGTGCGAGACCGCAGGTCAACGGACAGTCAGGGAGG ATCGATTTCCACTGGCTGATGTTAAACCCTAATGACACTGTGACTTTCTCCTTCAATGGAGCGTTCATTGCACCGGATCGAGCGTCTTTTC TCCGGGGAAAGTCTATGGGTATCCAGTCTGGCGTGCAGGTGGATGCCAATTGCGAGGGAGATTGCTACCACTCCGGGGGCACTATCAT CTCGAATCTCCCCTTCCAGAACATCGACAGCCGGCGCCGTGGGTAAATGCCCACGGTATGTCAAGCAAAGATCCTTACTGCTCGCCACAG GGATGAAGAACGTGCCTGAGATCCCTAAGGGCCGGGGCTGTTTGGAGCCATCGCTGGGTTCATTGAAAACGGTTGGGAAGGCCTCAT TGACGGATGGTATGGCTTCAGGCACCAGAACGCTCAGGGGGAGGGGACCGCCGCCGACTACAAGAGTACGCAATCTGCTATAGATCAG ATCACTGGTAAACTCAACCGCTTGATCGAGAAAACCAATCAGCAGTTCGAGCTTATTGACAACGAGTTTAACGAGGTAGAGAAGCAGATT GGAAATGTCATCAATTGGACTAGAGACTCTATCACAGAGGTGTGGAGCTATAATGCCGAATTGTTGGTGGCAATGGAAAACCAGCACACC ATCGACCTGGCCGACAGCGAAATGGACAAGTTGTATGAACGCGTTAAACGTCAGTTGAGGGAGAACGCCGAGGAGGACGGGACGGGTT GCTTTGAAATCTTTCATAAGTGCGATGACGACTGTATGGCTTCTATCCGCAATAACACTTATGACCACAGTAAGTACCGGGAAGAAGCTAT GCAAAACAGAATACAGATCGACCCAGTTAAATTATCAAGTGGCTATAAAGATGTGATCCTCTGGTTCAGCTTTGGAGCCTCCTGTTTCATT TTATTGGCCATAGTCATGGGCCTCGTATTTATCTGCGTGAAAAATGGCAACATGCGCTGCACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2727	ATGAACACTCAGATCCTAGTGTTTGCTCTGATAGCGATCATACCCACCAATGCAGACAAAATCTGTCTGGGCCATCATGCAGTCTCTAATG GAACCAAAGTGAACACCCTAACTGAGAGGGGCGTCGAGGTGGTGAATGCGACCGAAACTGTTGAAAGGACCAATATTCCCAGAATCTGC TCAAAGGGAAAAAAAAACGGTGGACCTGGGGCAGTGTGGATTACTAGGCACGATCACCGGGCCTCCTCAGTGTGATCAATTTCTGGAGTT CAGCGCAGATCTTATTATTGAGAGAAGAGAGGGCTCTGACGTGTGCTACCCAGGCAAGTTCGTGAACGAGGAGGCTCTGCGGCAGATCC TACGTGAGAGCGGAGGCATAGACAAGGAGGGCAATGGGATTTACCTATAGCGGATACGGACAAATGGCGCAACGTCCGCATGTCGCCG GAGTGGGTCTTCCTTTTACGCGGAGATGAAGTGGCTGCTGAGCAACACCGACATGCCGCGTTTCCTCAGATGACAAAATCATATAAGAA CACCCGAAAGTCCCCAGCACTCATTGTTTGGGGGATCCACCACAGTGTAAGCACCGCCGAGCAGACTAAACTATACGGCAGCGGAAATA AACTTGTCACCGTCGGCTCCTCCAATTACCAACAGTCCTTCGTCCCTTCACCGGGTGCCAGGCCCCAGGTGAACGGACAATCCGGGCGT ATTGACTTTCACTGGCTGATGTTGAATCCAAACGACACCGTGACGTTTTCGTTCAACGGCGCATTTATTGCCCCCGATCGGGCGAGCTTC CTGCGGGGAAAATCCATGGGCATCCAGAGTGGGGTCCAAGTGGACGCAAACTGTGAGGGCGACTGCTACCACTCCGGTGGAACAATCA TTAGCAATCTTCCCTTTCAGAACATTGACTCTCGGGCCGTAGGCAAGTGTCCGCGCTACGTGAAACAGCGCTCTCTGCTATTGGCTACAG GCATGAAGAATGTACCAGAGATACCTAAGGGACGAGGCCTCTTTGGGGCCATCGCCGGCTTCATCGAGAATGGGTGGGAAGGCCTGAT TGACGGTTGGTATGGCTTTCGCCACCCAGAATGCACAGGGTGAGGGAACCGGCAGCCGATTACAAGTCCACGCAGAGTGCCATCGATCAG ATTACCGGTAAATTAAACCGGCTCATTGAGAAAACTAACCAGCAGTTCGAACTGATCGATAATGAGTTTAATGAGGTGGAGAAGCAAATTG GCAACGTGATTAATTGGACCAGGGACAGTATAACGGAAGTGTGGTCCTATAATGCAGAATTGCTGGTGGCCATGGAAAACCAGCACACG ATCGATCTAGCTGATTCTGAGATGGACAAACTGTATGAGCGTGTTAAGCGACAGCTTCGCGAAAATGCAGAGGAAGATGGCACAGGCTG CTTTGAGATATTCCACAAATGCGACGATGACTGTATGGCTTCAATACGTAATAATACATACGACCACTCAAAATACCGTGAAGAGGCCATG CAAAATCGCATCCAGATCGATCCTGTGAAACTATCATCAGGCTATAAAGACGTAATTCTTTGGTTTTCTTTCGGCGCAAGTTGCTTCATTCT TCTCGCCATTGTGATGGGACTTGTCTTCATATGTGTGAAAAACGGAAATATGCGCTGCACCATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2728	ATGAACACTCAAATTCTAGTCTTTCGCCCTGATCGCAATCATCCCTACTAATGCCGACAAGATCTGTCTGGGACACCACGCAGTTTCAAACG GGACAAAGGTGAACACCCTGACCGAGCGGGGGGGTAGAAGTGGTTAACGCAACTGAGACCGTGGAACGTACCAATATACCCAGGATATG TAGCAAGGGTAAAAAGACTGTCGATCTCGGTCAGTGTGGACTCCTGGGAACCATCACCGGACCTCCCCAGTGTGATCAGTTCCTGGAGT TCAGCGCAGATTTAATCATCGAACGTCGCGAAGGATCCGACGTCTGCTATCCGGGTAAGTTTGTAAACGAGGAGGCTCTGAGACAAATC CTCAGAGAAAAGTGGGGGCATAGACAAGGAGGCAATGGGGTTCACTTATTCTGGGATTAGGACAAATGGCGCCACTAGCGCTTGCCGCC GAAGTGGCAGTTCCTTCTACGCCGAGATGAAGTGGTTGCTTAGCAATACTGATAATGCTGCTTTCCCCCAGATGACGAAGTCTTACAAAA ATACTCGTAAGAGCCCCCGCGCTGATCGTGTGGGGGATCCACCACAGTGTGAGCACTGCCGAGCAAACCAAGCTGTATGGGTCTGGGAA TAAATTAGTGACCGTGGGCTCTAGTAACTACCAGCAGTCATTCGTTCCAAGTCCCGGCGCACGGCCTCAGGTTAATGGCCAGTCTGGCC GGATTGACTTTCATTGGCTCATCCTGAATCCCAATGACACGGTGACATTCTCCTTTAACGGAGCATTTATCGCACCAGACAGGGCTTCCTT CCTTCGCGGGAAAATCCATGGGAATTCAGAGCGGGGTCCAGGTCGATGCTAATTGTGAAGGGGATTGTTACCACTCTGGAGGCACAATTA TTAGCAATCTGCCCTTCCAAAACATCGACTCCCGTGCTGTGGGCAAATGTCCACGCTACGTCAAGCAGAGATCATTACTTCTTGCTACAG GTATGAAAAACGTGCCGGAAATCCCTAAGGGGAGAGGACTTTTCGGTGCCATAGCTGGATTCATAGAGAACGGATGGGAAGGGCTCATT GACGGCTGGTATGGCTTCAGACATCAGAACGCTCAGGGAGAGGGAACTGCTGCTGACTACAAGAGTACCCAGTCAGCTATCGACCAGAT TACTGGGAAATTGAACCGCCTGATTGAAAAGACTAACCAGCAGTTCGAGCTCATCGACAATGAATTCAATGAAGTGGAGAAGCAGATCGG TAATGTCATCAATTGGACTCGGGATTCAATTACAGAGGTGTGGTCTTACAATGCAGAGCTGCTGGTTGCCATGGAAAACCAGCATACCAT TGACCTGGCAGACAGTGAAATGGATAAACTGTACGAGAGGGTTAAACGGCAATTGCGCGAAAATGCCGAGGAAGACGGGACAGGATGTT TTGAGATCTTTCATAAATGCGATGACGACTGTATGGCTTCGATTCGAAACAATACTTACGACCACTCAAAGTATAGAGAAGAAGCAATGCA GAACCGGATTCAAATCGACCCTGTTAAGCTGTCATCCGGCTATAAGGATGTAATTCTCTGGTTCAGCTTTGGTGCATCATGTTTTATACTC CTCGCCATCGTGATGGGCCTTGTATTCATCTGCGTCAAGAACGGGAAATATGAGATGCACCATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2729	ATGAACACACAGATCCTCGTTTTTGCCTTGATCGCAATCATCCCAACAAACGCAGACAAAATCTGTCTGGGTCACCACGCCGTCAGTAAC GGGACTAAGGTGAACACCCTCAGGAGCGGGGAGTCGAGGTCGTGAATGCTACTGAGACCGTGGAGCGTACCAACATCCCCAGGATTT GCAGCAAAGGAAAGCGGACCGTAGACCTCGGGCAATGTGGGCTGTTAGGCACAATCACTGGCCCTCCCCAGTGTGACCAGTTTCTTGA GTTCTCTGCTGACTTAATCATCGAGCGTCGAGAAGGGTCAGATGTCTGCTATCCTGGCAAATTTGTGAATGAGGAAGCACTTCGGCAGAT TTTGAGAGAATCGGGCGGCATCGATAAGGAGGCTATGGGCTTCACCTACTCTGGGATTAGGACCAATGGGGCCACCAGTGCCTGTAGG CGCTCAGGCAGTTCCTTTTACGCTGAGATGAAGTGGCTACTGAGTAATACGGATAACGCCGCCTTCCCTCAGATGACTAAGAGCTACAAG AACACCAGAAAAATCTCCTGCCTTGATAGTGTGGGGAATACACCACAGCGTATCCACCGCAGAACAAACCAAGTTGTATGGGAGCGGAAA CAAGTTGGTCACCGTTGGATCATCGAATTACCAGCAGAGCTTTGTGCCTTCTCCCGGGCGCTCGGCCCCAGGTGAACGGGCTGAGTGGTC GTATCGACTTCCATTGGCTTATGCTTAACCCGAATGACACCGTAACGTTCAGCTTCAATGGCGCTTTTATTGCACCCGACCGCGCGTCATT CCTACGCGGAAAGTCCATGGGCATCCAGTCTGGTGTGCAGGTGGACGCCAATTGTGAGGGCGATTGCTATCACTCCGGAGGGACAATT ATCTCGAATCTCCCGTTCCAGAACATTGACAGCCGGGCTGTCGGGAAGTGCCCGCGCTATGTGAAACAGAGGTCCCTCCTTCTTGCAAC TGGCATGAAAAACGTTCCCGCAGTCCCAAAGGGCCGTGGACTGTTTGGAGCCATCGCTGGCTTCATAGAGAACGGCTGGGAGGGCCTG ATTAATGGTTGGTACGGCTTTACACACCAAAATGCCCAGGGAGAAGGCACCGCCGCAGACTACAAATCGACTCAGTCCGCAATTGATCA GATTACCGGGAAACTCAACCGGCTCATCGAAAAGACTAACCAGCAGTTTGAATTGATTGACAACGAGTTCAATGAGGTGGAGAAGCAGAT CGGGAATGTCATCAACTGGACACGGACTCAATAACCGAAGTGTGGTCATACAATGCGGAGCTGCTTGTCGCCATGGAAAATCAGCACA CAATCGACCTAGCAGACTCTGAAATGGACAAGCTGTATGAGAGAGTGAAGCGCAATTACGTGAAAATGCGGAGGAGGACGGAACTGGC TGCTTCGAGATCTTCCACAAGTGTGATGACGATTGCATGGCCTCTATCCGCAACAACACTTACGATCATAGCAAATACAGGGAGGAAGCC ATGCAGAACCGGATCCAGATTGATCCTGTGAAGCTGTCTAGTGGCTATAAAGACGTAATCCTCTGGTTCAGCTTCGGCGCAAGCTGCTTC ATCCTTCTCGCCATAGTGATGGGCTTAGTGTTTATATGCGTGAAGAACGGGAACATGCGCTGTACCATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2730	ATGAATACTCAAATCCTCGTCTTTGCACTCATAGCAATTATCCCTACCAACGCTGATAAGATTTGTTTGGGGCATCACGCCGTCTCCAACG GGACTAAGGTAAATACATTGACCGGAAAGAGGGGTGGAAGTTGTGAATGCCACTGAGACTGTGGAGCGGACCAACATCCCCCGTATATGT TCAAAAGGAAAACGCACACAGTCGACTTGGGTCAGTGCGGGACTCCTGGGGACTATTACCGGGCCACCTCAGTGCGACCAATTTCTGGAATT CAGCGCGGACCTGATCATTGAGCGCCGAGAGGGAAGTGACGTATGCTACCCTGGGAAGTTTGTTAATGAGGAAGCACTAAGGCAAATAC TGCGGGAATCGGGCGGAATTGATAAGGAAGCTATGGGCTTCACGTACAGCGGAATTAGAACCAACGGGGCTACGAGTGCGTGTAGACG GTCCGGTAGTTCCTTTTACGCCGAAATGAAATGGCTCCTAAGCAATACGGACAACGCCGCATTTCCTCAGATCACAAAATCATACAAGAA CACTAGGAAGAGTCCCGCCCTTATTGTGTGGGAATTCATCACAGTGTGAGTACTGCCGAACAGACTAAGCTCTATGGCTCAGGAAATAA GCTCGTCACCGTTGGGTCCAGTAACTATCAGCAGTCTTTTGTCCCGTCACCTGGCGCCAGACCTCAAGTCAACGGCTTGAGTGGACGTA TCGATTTTCATTGGCTGATGCTGAACCCAAATGACACTGTCACTTTTAGCTTCAATGGGGCTTTTATCGCTCCAGATCGGGCATCCTTCCT GCGTGGGAAATCCATGGGAATTCAATCAGGTGTCCAGGTGGATGCTAATTGCGAGGGGGACTGCTATCACTCAGGGGGGACTATTATAT CCAATCTGCCCTTTCAGAACATCGATTCCAGGGCGGTGGGCAAATGTCCTAGATATGTAAAACAGAGGTCTCTGCTTCTGGCGACAGGCA TGAAGAATGTTCCTGAAATCCCCAAGGGCAGGGGCCTGTTCGGGGCCATTGCAGGCTTATCGAGAACGGCTGGGAGGGGCTAATCGA CGGCTGGTACGGCTTTCGACATCAGAACGCTCAGGGTGAAGGCACGGCTGCCGATTATAAGTCGACGCAGTCAGCCATTGATCAAATCA CTGGCAAACTTAATCGCCTCATAGAGAAGACCAATCAGCAGTTTGAACTCATCGATAACGAGTTCAACGAGGTGGAAAAACAAATTGGTA ACGTCATCAATTGGACCAGGGACAGTATTACAGAGGTTTGGTCCTACAACGCCGAATTGTTGGTGGCAATGGAAAATCAGCATACTATCG ACCTGGCTGACAGCGAAATGGACAAGCTCTATGAACGGGTAAAGAGGCAGTTACGGGAGAACGCTGAGGAGGACGGCACTGGGTGTTT CGAGATCTTTCATAAATGCGATGACTGCATGGCTTCTATCCGTAATAACACGTATGATCACTCCAAGTATCGGGAAGAGGCCATGCA GAACCGGATCCAAATCGATCCCGTAAAGTTGTCATCTGCGTGAAGAATGGAAACATGAGGTGTACCATCTGTATC CTAGCTATCGTAATGGGGTTGGTTCATCTGCGTGAAGAATGGAAACATGAGGTGTACCATCTGTATC

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2731	ATGAACACGCCAGATCCTCGTCTTCGCTCTAATCGCCATAATCCCCACTAATGCCGACACAAAATTTGTCTCGGACACCACGCCGTTAGCAAC GGGACAAAAGTTAACACACTTACTGAGAGAGGGGTCGAGGTTGTAAATGCTACAGAAACCGTGGAGAGGACTAATATTCCAAGAATTTGT TCAAAGGGAAAAAAGACAGTGGATCTTGGCCAGTGCGGGCTGCTGGGGACAATCACAGGACCACACCCCAGTGCGACCAATTTCTGGAATT CTCTGCAGACCTGATTATTGAACGCCGTGAGGGGAGTGACGTTTGCTATCCCCGGGAAGTTTGTTAACGAAGAGGCTCTTAGACAAATCCT CCGCGAATCTGGGGGGGATCGATAAAGAGGCCATGGGGTTTACCTACTCCGGCATTAGGACTAATGGAGCTACCTCCGCCTGTAGGAGGT CTGGAAGCTCATTTTACGGCAGAAATGAAATGGTTGCTCAGCAACACCGACAATGCAGCGTTTCCGCAAATGACCAAGAGTTACAAGAACA CCCGAAAGTCTCCTGCGTTGATGTGTGGGGCATTCACCATTCAGTTTCCACTGCAGAGCAGACAAAACTGTACGGTTCAGGAAACAAGC TGGTAACCGTGGGATCTTCCAACTATCAGCAGAGCTTCGTGCCCTCGCCCGGAGCCCGCCCTCAGGTGAACGGACAGAGTGGAAGGAT CGACTTCCACTGGCTGATGTTGAATCCCAACGATACCGTGACTTTCTCTTTCAACGGTGCATTTATAGCCCCTGACCGCGCTTCCTTTCTC CGAGGAAAAAGCATGGGCATCCAGTCTGGAGTGCAGGTTGACGCAAATTGCGAAGGCGACTGTTACCATAGTGGCGGCACAATAATTTC TAACCTTCCCTTTCAAAATATTGACAGCCGCGCAGTAGGTAAGTGTCCTAGATACGTGAAGCAGAGGAGCCTACTGCTCGCCACTGGCAT GAAAAATGTGCCGGAGATCCCTAAGGGCAGAGGGCTGTTCGGCGCCATCGCCGGCTTCATCGAAAATGGATGGGAGGGGTTGATAGAC GGTTGGTACGGCTTCCGGCATCAGAACGCCCAGGGTGAGGGGACCGCCGCTGATTATAAAAGTACCCAGTCTGCTATCGATCAGATCAC CGGGAAGCTCAACCGTCTTATTGAGAAGACCAATCAGCAATTCGAACTCATCGACAACGAGTTTAACGAGGTTGAAAAGCAAATTGGAAA TGTGATTAATTGGACACGGGATTCAATAACCGAAGTCTGGTCGTACAACGCAGAGCTACTTGTGGCAATGGAGAACCAGCACACCATAGA CCTTGCCGACTCCGAAATGGATAAGTTGTATGAAAGAGTGAAACGCCAGCTGCGGGAGAATGCCGAGGAAGATGGGACAGGATGTTTTG AGATCTTTCACAAGTGCGACGATGATTGCATGGCCTCCATTCGAAACAATACTTATGACCATAGCAAATACAGAGAGGAGGCCATGCAGA ACCGGATTCAAATCGATCCTGTTAAGTTATCTTCAGGTTACAAGGATGTCATCCTTTGGTTCTCGTTTGGAGCCAGCTGCTTCATATTGCT GGCTATCGTGATGGGTCTGGTGTTATCTGCGTTAAGAACGGCAATATGAGATGTACGATCTGTATT

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2732	ATGAACACTCAGATTCTGGTCTTTGCCCTGATTGCTATCATCCCAACCAACGCAGACAAGATCTGTCTGGGACACCATGCCGTATCTAAC GGAACCAAGGTTAACACGTTGACCGAGCGCGGCGTTGAAGTCGTCAATGCCACTGAGACCGTGGAGCGAACAAACATTCCCAGAATCTG TAGCAAGGGCAAACGGACTGTGGACCTGGGCCAGTGTGGGTTGTTGGGAACAATCACAGGACCTCCACAGTGTGATCAGTTCCTGGAGT TTAGTGCAGACCTTATCATCGAACGCAGAGAAGGTTCCGACGTCTGTTACCCTGGGAAATTTGTAAATGAGGAGGCCTTGAGACAGATCC TTAGGGAATCTGGAGGAATCGACAAGGAGCGCCATGGGCTTTACCTATAGCGGAATAAGGACCAATGGCGCCACTTCCGCCTGTAGGAGA AGCGGTTCATCATTCTATGCAGAGATGAAGTGGTTGTTAAGTAACACGGATAATGCTGCGTTTCCACAGATGACCAAGTCCTACAAGAATA CCCGAAAATCCCCCGCACTCATTGTCTGGGGAATACACCACAGCGTCTCAACAGCTGAGCAAACAAAACTCTATGGATCCGGGAATAAGC TCGTGACCGTAGGCTCATCAAACTACCAGCAGTCGTTCGTGCCATCTCCAGGGGCCCGGCCTCAGGTCAACGGTCTGTCAGGACGCATT GATTTTCACTGGCTGATGCTTAATCCCAACGATACCGTCACATTCTCCTTCAATGGGGCGTTTATTGCGCCTGACAGAGCTAGCTTTTTGC GAGGTAAGTCTATGGGCATACAGTCTGGGGTGCAAGTGGACGCGAATTGCGAGGGGGACTGCTATCATTCCGGAGGGCACCATCATCTC CAACCTCCCATTTCAAAATATCGACAGTAGGGCGGTGGGGAAGTGCCCCCGTTACGTAAAACAGCGCTCCCTCCTGCTGGCCACAGGGA TGAAGAATGTTCCAGAAATACCAAAAGGAAGGGGTCTGTTTGGTGCCATCGCAGGCTTCATCGAAAACGGATGGGAGGGGCTGATTGAT GGTTGGTACGGATTTAGACACCAGAATGCCCAGGGCGAAGGAACTGCCGCTGATTATAAGAGCACACAGTCAGCTATAGACCAGATCAC TGGGAAGCTAAACAGAATCATTGAAAAGACGAACCAGCAGTTCGAACTAATCGACAATGAGTTCAACGAGGTGGAAAAGCAGATTGGGAA CGTGATAAATTGGACACGCGACTCCATAACGGAAGTGTGGAGCTACAATGCGGAGCTGCTGGTGGCTATGGAGAATCAGCACACCATCG ACCTTGCGGATAGTGAATGGATAAACTCTACGAGCGTGTTAAGCGGCAATTGCGGGAGAACGCCGAGGAGGATGGGACCGGGTGCTT CGAGATTTTCCACAAATGTGATGACTGTATGGCCTCCATACGCAATAATAACCTACGACCATAGCAAATATCGGGAGGAAGCCATGCA GAACCGAATCCAAATAGACCCAGTGAAGCTGAGTTCCGGCTATAAAGATGTGATTCTCTGGTTTAGCTTTGGAGCAAGCTGTTTTATCCTG TTAGCGATTGTGATGGGTTTAGTGTTCATTTGTGTGAAAAACGGTAACATGCGATGCACCATTTGTATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2733	ATGAATACCCAGATCCTTGTCTTTGCCCTGATAGCCATTATTCCCACCAACGCAGATAAAATTTGCCTCGGCACCACGCTGTGAGCAAC GGCACAAAGGTGAATACTCTGACAGAACGGGGTGTAGAGGTGGTTAATGCAACAGAGACAGTGGAGCGCACAAACATCCCCAGAATCTG CTCTAAGGGCAAGCGGACTGTGGATTTAGGGCAATGTGGACTGCTAGGTACTATCACCGGGCCTCCACAGTGTGACCAGTTTTTGGAGT TCTCTGCCGATCTTATCATCGAGCGTCGAGAGGGGAGTGATGTGTGCTACCCAGGCAAATTTGTGAACGAGGAAGCCCTTCGGCAGATC CTGAGAGAGTCCGGCCGGCATCGACAAAGAGGCCATGGGTTTTACCTATTCAGGAATCCGAACCAACGGAGCCACCTCCGCCTGTAGGC GGAGTGGGTCTAGCTTTTATGCAGAAATGAAATGGTTGCTGTCCAACACCGATAATGCAGCTTTCCCACAGATAACAAAGTCTTACAAAAA TACGCGCAAGTCCCCAGCGCTAATTGTGTGGGGCATTCATCACACAGCGTGTCTACTGCGGAGCAGACCAAGCTGTACGGGAGGCGGGAAT AAATTGGTCACAGTCGGGAGCTCGAACTACCAGCAAAGCTTCGTTCCTAGCCCCGGGGCAAGGCCTCAGGTGAACGGACTGAGCGGCA GAATTGACTTCCACTGGTTGATGCTTAATCCTAACGATACAGTGACCTTTAGCTTCAATGGAGCGTTCATTGCCCCTGATCGCGCCTCCTT TCTCCGGGGGAAAAGTATGGGGATTCAATCCGGGGTGCAGGTTGACGCTAATTGTGAGGGTGATTGCTACCACTCCGGGGGCACCATTA TAAGCAATTTACCGTTTCAGAATATTGACTCTCGAGCCGTGGGGAAATGTCCCCGGTACGTCAAGCAAAGGTCTTTGCTGCTGGCTACCG GCATGAAAAACGTACCCGAGATCCCAAAAGGACGCGGCCTCTTCGGTGCAATCGCCGGCTTTATAGAGAATGGATGGGAAGGGCTTATT GACGGGTGGTATGGGTTCCGCCATCAGAATGCGCAAGGCGAAGGAACTGCCGCCGATTACAAGAGTACACAGTCCGCCATCGATCAAAT TACTGGCAAACTAAATAGACTCATCGAGAAGACAAACCAGCAGTTTGAACTCATTGACAACGAATTCAACGAGGTAGAGAAACAGATTGG CAACGTCATCAATTGGACACGGGACAGTATCACAGAAGTCTGGTCCTACAACGCAGAGCTTCTCGTTGCTATGGAAAATCAGCACACCAT TGACCTGGCTGACTCCGAGATGGACAAGTTGTATGAGCGTGTGAAAAGGCAGTTGCGTGAAAACGCCGAGGAAGACGGCACAGGTTGTT TTGAGATCTTTCACAAATGCGACGACGATTGTATGGCAAGCATAAGAAACAATACTTATGACCACAGTAAATATCGAGAGGAAGCCATGCA GAACAGAATCCAAATCGACCCTGTGAAACTAAGCTCAGGCTACAAGGACGTGATCCTCTGGTTCTCCTTTGGTGCTTCCTGCTTTATTCTC CTTGCCATCGTCATGGGCCTCGTGTTCATCTGCGTTAAGAACGGTAATATGCCGTGTACTATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2734	ATGAATACCCAGATTCTCGTTTTTGCCCTAATAGCTATCATTCCTACAAATGCCGATAAAATTTGCTTGGGCCATCATGCCGTGAGCAACG GGACTAAGGTTAACACCCTGACTGAGCGGGGCGTAGAGGTGGTTAACGCCACAGAGACGGCGAACGGACGTGAACATTCCAAGAATTTGT TCAAAGGGCAAGAAAACGGTGGACCTCGGGCAATGTGGTCTGCTAGGCACTATAACAGGACCTCCTCAGTGCGATCAGTTTCTGGAATT CAGTGCAGATCTGATCATCGAGCGTCGAGAGGGATCAGATGTCTGTTATCCTGGGAAGTTCGTCAATGAGGAGGCACTGAGACAGATAC TCAGAGAGAGCGGAGGCATTGATAAGGAAGCTATGGGTTTTACCTATTCTGGTATTAGAACTAACGGAGCCACAAGTGCCTGTCGTCGGT CGGGCTCTTCGTTTTACGCTGAGATGAAGTGGCTGCTGAGTAATACTGACAATGCAGCGTTCCCCCAGATGACTAAGAGTTATAAAAACA CCCGTAAAAGCCCAGCACTGATCGTGTGGGGAATTCATCATTCAGTCTCTACAGCCGAGCAGACCAAGCTCTACGGGTCTGGCAACAAG CTCGTTACAGTAGGATCTAGCAACTATCAACAGAGCTTTGTACCATCCCCTGGAGCTCGTCCACAAGTGAACGGTCAGTCGGGCCGTATC GACTTTCACTGGCTGATGCTGAATCCTAATGACACGGTGACTTTCAGTTTCAATGGAGCCTTCATCGCACCAGACCGCGCCAAGCTTTCTA CGCGGGAAGAGTATGGGATTCAGTCCCGCGTTCAAGTGGACGCCAATTGCGAAGGGGACTGTTACCATAGCGGCGGCACCATCATTA GTAACCTCCCATTTCAAAACATCGATTCTCGCGCCGTGGGGAAATGTCCTAGATACGTGAAACAGCGCAGCCTGCTCCTCGCAACTGGCA TGAAGAATGTTCCAGAGATTCCGAAGGGCGGGTCTCTTTGGCGCCATCGCCCGGTTCATCGAAAACGGGTGGGAGGGACTGATCGA TGGCTGGTATGGCTTCCGACATCAAAACGCACAGGGTGAGGGCACAGCTGCCGATTATAAATCCACGCAGAGCGCAATCGATCAGATCA CCGGCAAACTGAACAGGCTGATCGAGAAAACTAATCAGCAGTTCGAGCTTATCGATAATGAATTCAATGAAGTGGAGAAGCAGATTGGGA ATGTGATTAATTGGACTCGGGACTCTATTACTGAAGTGTGGAGTTACAACGCCGAGCTCTTGGTTGCTATGGAGAATCAGCATACAATTGA CTTGGCAGATTCCGAGATGGATAAGCTCTACGAGGCGTGTCAAGCGGCAACTGAGAGAGAACGCCGAAGAGGATGGGACGGGGTGCTTC GAGATTTTCCATAAGTCGCGACGATGATTGTATGGCCAGTATCAGAAATAATACATATGACCATAGCAAATACAGAGAGGAAGCAATGCAGA ACCGGATCCAGATTGATCCGGTGAAGCTCTCTAGCGGATATAAGGATGTTATCCTGTGGTTTTCTTTTGGAGCCTCCTGTTTCATTCTGCT GGCCATTGTAATGGGACTAGTCTTCATATGTGTAAAAAACGGCAATATGAGGTGCACTATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2735	ATGAACACAGATCCTGGTATTCGCGCTCATCGCAATTATACCAACAAATGCCGATAAGATATGCTTGGGACATCACGCCGTATCCAAC GGTACCAAAGTGAATACACTGACCGAACGTGGCGTAGAGGTGGTGAACGCCACTGAGACGGTTGAGCGCACCAACATCCCCCGCATCT GCTCCAAGGGAAAACGCACCGTCGACCTGGGACAGTGTGGGCTGCTCGGCACAATCACGGGTCCTCCTCAGTGTGACCAATTCTTGGA GTTCAGCGCAGATCTAATTATAGAGAGGCGGGAGGGAAGCGATGTGTGCTATCCTGGCAAATTTGTCAACGAGGAAGCCCTTCGCCAGA TTCTTCGGGAGTCCGGCGGAATCGATAAAGAGGCTATGGGGTTTACATATAGTGGAATCCGCACCAATGGCGCCACGTCGGCCTGTAGG AGGAGCGGATCCAGTTTCTATGCCGAGATGAAATGGCTCCTCAGTAATACTGATAATGCTGCGTTCCCCCAGATAACCAAATCGTACAAA AATACACGGAAGTCTCCCGCGCTGATTGTATGGGCATACACCACTCCGTATCGACTGCCGAACAGACTAAGCTCTACGGCTCTGGGAA CAAGTTAGTGACCGTCGGCTCGAGCAATTACCAGCAGAGTTTTGTCCCATCACCAGGGGCAAGACCTCAGGTGAACGGGCTTTCAGGGA GGATTGACTTCCACTGGCTGATGCTGAACCCAAATGACACTGTCACCTTTTCGTTCAACGGGGCATTTATCGCCCCAGACAGGGCCTCAT TCCTTAGAGGCAAATCTATGGGCATTCAAAGCGGGGTTCAGGTGGACGCGAACTGTGAGGGCGACTGTTATCATAGCGGTGGCACTATT ATCTCCAACCTGCCCTTTCAGAATATAGACAGTAGAGCCGTGGGTAAGTGCCCACGGTATGTGAAGCAAAGGTCCCTGCTCCTCGCTAC GGGGATGAAGAATGTGCCAGACATTCCTAAGGGTCGCGGCCTGTTCGGAGCAATAGCCGGTTTTATAGAAAATGGTTGGGAAGGATTAA TAGATGGGTGGTACGGGTTTAGGCACCAGAATGCTCAGGGAGAGGGTACGGCAGCTGATTATAAGTCTACACAATCTGCCATCGACCAG ATCACCGGAAAGCTCAACAGACTTATCGAAAAAACTAACCAGCAGTTCGAATTGATCGACAATGAATTTAATGAAGTGGAGAAGCAGATAG GTAACGTGATTAACTGGACTCGGGACTCAATCACTGAAGTTTGGAGTTACAACGCAGAGCTCCTGGTCGCCATGGAGAACCAGCATACC ATAGATCTCGCTGACAGTGAGATGAAACTGTACGAAAGAGTGAAGCGTCAGGCTCAGAGAGAATGCGGAGGAAGATGGGACCGGAT GCTTCGAAATTTTTCACAAGTGTGACGACTGTATGGCCAGCATAAGGAATAACACTTATGATCATTCTAAGTATCGTGAGGAGGCAAT GCAGAACAGGATTCAAATTGATCCGGTTAAGCTTTCTTCAGGATACAAGGACGTCATTCTGTGGTTCTCCTTCGGGGCATCTTGCTTTATT TTACTTGCAATCGTGATGGGGTTAGTCTTTATCTGCGTGAAAAATGGGAACATGAGGTGTACTATCTGCATC

SEQ ID NO.	Sequenza di acido nucleico
2736	ATGAATACACAGATCCTGGTCTTTGCTCTGATCGCAATTATTCCTACGAATGCAGACAAGATTTGCCTTGGACACCACGCCGTATCTAACG GCACCAAAGTCAATACCCTGACCGAGCGGGGCGTTGAAGTTGTTAATGCCACCGAAACAGTAGAACGCACTAATATACCACGCATTTGCT CGAAAGGGAAAAAGACCGTTGACCTCGGCCAGTGCGGCCTGCTTGGCACAATCACAGGACCACCACAGTGTGACCAATTTCTCGAATTT TCCGCTGATCTGATAATAGAGAGCGCGGGAAGGGAGCGACGTGTGTTATCCAGGGAAGTTCGTTAACGAGGAAGCACTTAGGCAAATACT GCGGGAAAGCGCGGTGGCATCGATAAAGAGGCGCATGGGCTTTACCTACAGTGGTATTAGGACAAACGGCGCGGACATCCGCGTGTAGGAGA AGCGGCTCATCCTTCTACGCTGAAATGAAGTGGCTGTTAAGTAATACCGATAATGCGGCTTTCCCGCAAATGACTAAGAGTTACAAAAACA CTAGAAAGTCTCCAGCTCTGATTGTTTGGGGATTCATCATTCTGTGAGTACAGCCGAACAGACCAAGTTGTACGGCTCCGGAAACAAGC TGGTGACTGTAGGCTCTTCTAATTATCAACAGTCTTTTGTACCTAGTCCGGGTGCCCCGCCCACAGGTAAACGGGCAGTCAGGCAGAATCG ATTTCCACTGGCTCATGCTGAATCCAAACGATACCGTCACCTTCAGTTTCAATGGAGCATTTATAGCACCGGACCGGCGGTCATTCCTAC GGGGTAAATCCATGGGCATTCAGAGCGGGGTTCAAGTAGATGCCAACTGTGAGGGCGACTGCTATCACTCTGGCGGTACGATCATAAGC AACCTTCCGTTTCAAAATATCGACAGCCGTGCTGTTGGCAAATGCCCCCCGTTACGTGAAGCAGAGAAGCCTTCTGTTGGCTACTGGAATG AAGAATGTGCCCGAGATTCCTAAGGGAAGAGGCCTCTTCGGAGCGATCGCTGGATTTTATAGAAAATGGCTGGGAAGGACTAATCGACGG CTGGTATGGGTTTAGACACCAGAACGCACAGGGGGAGGGCACTGCTGCGGATTATATAAGTCGACACAGTCCGCGATCGACCAGATCACC GGTAAACTCAATCGGCTCATTGAGAAGACAAACCAACAGTTCGAGTTGATCGATAATGAATTTAATGAAGTGGAAAAGCAGATAGGAAATG TGATCAACTGGACACGGGACAGCATTACCGAAGTATGGAGTTACAATGCAGAGCTGCTGGTTGCTATGGAGAACCAGCACACGATTGATT TGGCCGATTCGGAAATGGACAAGCTTTACGAGCGGGTGAAAAGGCAACTCCGCGAAAATGCTGAAGAGGATGGGACTGGCTGTTTCGA GATTTTTCACAAGTGCGACGACGATTGCATGGCCAGCATAAGGAATAATACATATGACCACTCCAAATACAGGGAAGAAGGCAATGCAGAA CAGAATCCAGATCGACCCTGTGAAGTTGAGTAGTGGATACAAGGATGTCATCCTGTGGTTTTCTTTTGGCGCCTCATGCTTCATTCTGCTG GCAATTGTAATGGGCCTGGTGTTCATTTGTGTGAAAAACGGAAATATGAGGTGTACAATCTGTATC

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2737	ATGAACACGCAAATTTTGGTCTTCGCATTGATTGCAATTATTCCTACGAACGCAGACAAGATCTGTCTAGGACACCACGCTGTGTCAAACG GAACAAAAGTGAACACGCTGACCGAGCGGGGGGTCGAAGTGGTGAATGCAACTGAAACTGTAGAACGAACTAACATCCCAAGAATTTGT AGCAAAGGAAAGAAGACAGTTGACCTGGGTCAGTGCGGACTGCTCGGTACCATCACCGGTCCGCCGCAGTGCGACCAATTTTTAGAGTT CTCTGCAGACTTAATCATCGAGCGCAGAGAGGGCTCAGATGTCTGCTACCCCGGTAAGTTCGTGAACGAGGAGGCGCTTCGTCAGATTC TGCGAAAGAGTGGCGGGATCGACAAGGAGGCTATGGGCTTCACTTACTCAGGCATTCGTACGAATGGCGCCACATCCACCTGCAGGCG GAGCGGGTCTAGTTTTTACGGCCGAGATGAAGTGGTTGTTATCGAACACCGACAATGCGGCCTTCCCCCAGATGACAAAATCATACAAAAA TACGCGCAAGTCACCCGCTATAATTGTGTGGGCATTCACCACAGCGTCTCTACGGCCGAACAGACGAAATTATACGGGTCTGGGAACA AACTGGTGACAGTCGGCAGCAGTAACTACCAGCAATCTTTCGTGCCATCGCCAGGAGCCCGCCCGCAGGTCAATGGGTTATCTGGACGG ATAGACTTCCATTGGCTGATGCTTAACCCAAACGACACTGTTACCTTTAGCTTCAATGGGGCTTTTATCGCGCCTGATAGAGCTTGCTTCC TGAGAGGAAAGTCAATGGGAATCCAGTCAGGTGTGCAGGTGGACGCGGATTGTGAAGGTGATTGCTACCACAGTGGGGGGACAATCATT AGTAATCTGCCATTCCAGAATATTGATTCACGTGCAGTAGGAAAATGTCCACGATATGTTAAGCAAAGGTCGTTGCTACTCGCTACTGGTA TGAAAAACGTACCAGAAATACCTAAGGGAAGGGGACTATTTGGTGCAATTGCAGGGTTCATCGAGAACGGCTGGGAGGGCCTCATAGAC GGATGGTATGGTTTCCGGCACCAGAACGCACAGGGCGAAGGCACAGCAGCCGCGATTACAAGTCCACACAGAGCGCAATCGACCAGATCA CAGGCAAACTCAATAGGCTCATAGAAAAGACCAATCAGCAGTTTGAGCTCATTGACAACGAATTCAATGAAGTGGAGCGGCAGATAGGAA ACGTGATAAATTGGACCCGGGATAGCATTACGGAGGTCTGGTCCTATAACGCGGAGCTGCTGGTGGCCATGGAGAATCAGCACACCATT GACCTGGCCGATAGCGAAATGGATAAGCTGTATGAGCGCGTGAAGAGGCAGCTGCGGGAGAACGCTGAAGAGGACGGCACGGGCTGT TTTGAGATTTTCCACAAGTGTGATGACGACTGCATGGCCTCCATCCGAAACAACAACCTATGACCATTCCAAATACCGGGAAGAGGCAATG CAAAATAGAATACAGATCGATCCTGTGAAGCTGTCCAGCGGCTATAAAGACGTTATTCTGTGGTTCTCTTTCGGGGCATCCTGTTTTATAC TCTTAGCTATCGTTATGGGCCTGGTCTTTATTTGCGTGAAGAACGGCAACATGCGGTGCACGATTTGCATC

SEQ ID NO.	Sequenza di acido nucleico
2738	ATGAACACCCAGATCCTGGTTTTCGCTTTAATCGCGATTATACCCACAAACGCTGATAAGATCTGCCTTGGGCATCATGCCGTGAGTAATG GTACAAAGGTCAATACACTCACTGAGAGAGGCGTCGAGGTCGTGAATGCTACTGAAACCGTCGAGAGAACAAATATACCCAGGATTTGCA GTAAAGGCAAGAAAACAGTAGATCTCGGTCAGTGCGGGTTGCTCGGGACCATCACTGGGCCACCTCAGTGCGACCAATTCTTGGAGTTT TCCGCCGACCTCATTATTGAGCGCCGGGAAGGCAGTGACGTCTGTTACCCCGGGAAATTCGTTAATGAGGAGGCCCTGAGACAGATCCT CCGCGAGAGCGGGGGGAATTGACAAGGAGGCCATGGGGTTCACCTATTCTGGAATTAGGACTAACGGCGCCACATCCGCGTGTCGCCGG TCTGGGTCATCTTTCTACGCCGAGATGAAATGGTTGCTCAGCAATACCGATAACGCCGCCTTTCCTCAGATGACCAAGTCATACAAAAAC ACACGAAAGTCACCCGCACTGATAGTGTGGGCATACACCACAGCGTTTCAACTGCCGAACAGACAAAATTGTACGGATCTGGCAATAA GCTGGTCACCGTGGGCTCCAGTAACTACCAGCAAAGCTTCGTCCCCTCCCCCGGTGCTAGGCCACAAGTCAATGGCCAGTCCGGTAGAA TCGACTTCCATTGGCTAATGCTAAACCCCAATGACACTGTGACATTTTCTTTTAACGGAGCATTCATCGCCCCGGATAGGGCCAGCTTTCT CAGGGGCAAATCAATGGGGATTCAGAGTGGGGTGCAAGTTGATGCTAATTGTGAGGGTGATTGCTATCATTCAGGGGGAACCATTATCA GCAATTTGCCCTTCCAGAACATAGACTCACGCGCCGTCGGTAAGTGCCCTCGCTATGTCAAGCAAGGTCCCTGCTGCTGGCCACTGGA ATGAAGAACGTGCCCGAGATCCCCAAAGGGCAGGGGCTTATTCGGGGCCATTGCAGGTTTCATCGAAAACGGCTGGGAAGGACTAATAGA TGGGTGGTACGGCTTTCGTCACCAGAACGCACAAGGGAGGGGACAGCTGCTGATTATAAAAGTACTCAGAGCGCTATCGACCAGATTA CAGGTAAGCTGAATCGGTTAATCGAGAAGACCAACCAGCAGTTCGAACTTATTGACAATGAGTTCAATGAGGTGGAGAAGCAGATTGGCA ATGTGATTAATTGGACGCGGGATAGTATTACCGAGGTCTGGTCCTATAACGCCGAGTTGCTAGTGGCAATGGAAAACCAGCACACGATAG ATCTTGCAGACAGCGAAATGGATAAGTTGTACGAAAGGGTGAAACGGCAACTAAGGGAAAACGCTGAGGAAGATGGGACAGGATGCTTC GAGATCTTCCACAAATGTGACGATGACTGTATGGCCAGTATTAGAAATAACACATATGACCATTCCAAATATCGGGAAGAGGCTATGCAAA ATCGCATCCAGATTGATCCCGTAAAACTCTCCTCGGGATACAAAGACGTGATCCTGTGGTTCTCCTTCGGAGCCTCTTGTTTCATCCTACT CGCCATCGTTATGGGTTAGTGTTCATCTGTGTGAAGAATGGCAATATGAGGTGTACAATCTGCATT

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2739	ATGAATACCCAGATCCTTGTTTTTGGCCCTCATCGCCATAATTCCCACCAACGCAGATAAAATCTGTCTCGGCCACCACGCAGTGAGCAAT GGCACTAAGGTCAATACCCTCACTGAACGAGGTGTCGAGGTTGTCAACGCCACTGAAACGGTAGAGAGAACGAACATCCCCCGCATATG CAGTAAAGGCAAGAAAACTGTGGATCTCGGACAGTGCGGCCTGCTGGGCACCATTACCGGCCCCGCCCCAGTGCGATCAATTCCTGGAAT TTTCTGCAGACCTCATCATCGAACGTCCGGAAGGGAGTGACGTGTGTTACCCCGGGAAATTCGTAAATGAGGAGGCTCTTCGCCAGATT CTGAGGGAAAGTGGGGGTATTCATAAGGAAGCAATGGGCTTTACCTATTCCGGAATTAGAACCAATGGCGCCACCTCCGCATGTAGACG GTCTGGTTCATCATTCTACGCTCAGATGAAGTGGCTGCTGTCCAACACTGACAACGCTGCATTTCCTCAGATGACTAAAAGTTACAAAAAC ACTCGCAAATCCCCCTGCCCTTATTGTTTGGGGCATTCATCATAGTGTAAGTACAGCCGAACAAACCAAACTGTATGGCTCAGGGAATAAAT TAGTTACCGTGGGTTCATCCAACTACCAGCAGTCTTTCGTCCCTTCTCCAGGCGCTCGCCCACAAGTTAATGGGCAATCTGGGCGAATCG ATTTCCACTGGTTGATGCTGAACCCCAACGACACCGTTACCTTCAGTTTTAACGGCGCATTTATTGCCCCCGACCGCGCAAGTTTTCTGA GGGGCAAATCAATGGGGATCCAATCTGGCGTCCAGGTGGATGCCAACTGCGAAGGCGACTGTTATCATTCCGGTGGAACAATAATCTCT AATTTGCCGTTTCAGAACATTGATTCAAGAGCCGTGGGCAAGTGCCCACGGTACGTAAAACAGCGCTCCTTACTCCTTGCTACAGGGATG AAGAACGTGCCGGGAGATCCCCTAAGGCCGAGGACTCTTTGGTGCTATTGCAGGGTTTATAGAAAATGGCTGGGAGGGACTGATTGATGG GTGGTACGGATTCCGACACCAGAATGCCCAAGGCGAGGGTACCGCTGCAGACTACAAAGTACCCAGAGTGCTATCGACCAGATCACC GGGAAGTTAAATCGTTTGATAGAAAAAACAAATCAACAATTCGAGCTGATTGACAATGAGTTCAACGAGGTGGAGAAACAAATAGGAAAC GTAATCAATTGGACTCGTGACAGTATAACCGAAGTCTGGAGCTACAATGCCGAGCTACTCGTCGCTATGGAAAATCAGCATACAATCGAT CTGGCGGACAGGCGAGATGGATAAGCTGTACGAACGCGTGAAGAGACAACTGAGAGAAAACGCCGAGGAAGATGGCACAGGCTGCTTCG AGATTTTCCATAAGTGCGATGACGATTGCATGGCGAGTATTAGGAATAACACATATGATCACTCAAAGTATCGCGAGGAGGCGATGCAAA ACAGGATCCAGATTGACCCCGTGAAATTGTCTTCTGGCTACAAGGACGTGATACTCTGGTTTTCCTTCGGGGCCTCCTGTTTCATTCTGCT GGCGATTGTGATGGGGCTGGTGTTTATATGTGTGAAAAATGGGAATATGAGATGTACTATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2740	ATGAACACCCAGATCCTTGTGTTCGCACTGATAGCGATTATACCAACCAACGCCGACAAGATCTGCTTAGGGCACCACGCTGTAAGTAAT GGTACTAAGGTGAATACGCTGACTGAAAGAGGTGTGGAAGTGGTGAACGCCACAGAAACCGTAGAAAGGACCAACATCCCCAGAATCTG CAGCAAGGGGAAGCGGACCGTAGACCTGGGACAATGTGGACTTCTGGGAACAATTACTGGCCCTCCACAGTGCGACCAGTTCTTGGAG TTTAGCGCCGACCTCATTATCGAGCGACGGCGAAGGCAGCGATGTATGTTATCCAGCGCAAATTTGTGAACGAAGAAGCTCTCAGGCAGATT CTGCGGGAATCCGGCGCATTGATAAAGAGGCTATGGGCTTTACCTACAGCGGGATCCGTACAAACGGGGCAACCTCTGCCTGTCGGA GATCTGGCTCAAGCTTTTATGCCGAGATGAAATGGCTCCTGTCTAATACTGACAATGCTGCTTTCCCACAGATGACGAAGTCCTATAAAAA CACCCGGAAGTCCCCCGCCTTAATTGTATGGGCATCCATCATTCCGTTAGCACAGCCGAACAGACCAAGCTTTATGGATCTGGAAACAA GCTGGTGACCGTGGGCTCAAGTAACTATCAACAGTCATTCGTGCCTTCACCTGGAGCCCGCCCGCAGGTCAATGGCCTTAGCGGACGGA TTGACTTTCATTGGCTTATGCTGAATCCCAATGATACAGTGACGTTCAGCTTCAACGGCGCCTTCATAGCCCCCGACCGTGCCAGTTTTCT TCGGGGAAAGAGCATGGGGATCCAAAGTGGCGTGCAGGTGGACGCCAATTGCGAAGGCGATTGCTATCATTCAGGCGGAACAATTATCA GTAACCTGCCGTTTCAGAATATTGACAGTCGAGCAGTTGGGAAGTGTCCAAGGTACGTGAAACAGCGCAGCCTCCTTTTAGCCACAGGC ATGAAGAATGTCCCAGAGATTCCGAAGGCGCCGTGGGCTGTTTGGTGCTATTGCAGGTTTTATCGAAAATGGCTGGGAAGGACTTATTGAC GGCTGGTATGGGTTTAGGCATCAGAATGCCCAGGGTGAAGGCACTGCCGCCGACTATAAGAGCACGCAAAGCGCGATCGATCAGATTA CTGGCAAGTTAAATAGACTGATCGAAAAAACCAACCAACAGTTTGAGTTGATTGATAACGAGTTTAATGAGGTCGAAAAGCAGATTGGGAA CGTGATAAACTGGACCCCGGGACAGCATAACCGAAGTATGGAGCTACAATGCAGAGCTGCTTGTGGCTATGGAGAATCAGGCACACAATCG ATCTGCGCAGACAGTGAGATGGACAAACTCTACGAGAGGGTCAAGCGGCAGCTCCGGGAAAATGCCGAGGAAGATGGTACCGGATGCTT TGAGATTTTCCATAAGTGTGACGATGATTGTATGGCCTCCATTCGCAATAACACCTATGATCACTCAAAGTATAGGGAGGAGGCAATGCAA AATCGCATCCAGATCGACCCCGTGAAGCTTAGCTCCGGATATAAGGACGTGATCTTGTGGTTCTCTTTTGGTGCCTCCTGCTTCATCCTTC TGGCCATTGTGATGGGATTGGTATTTATTTGCGTGAAGAATGGCAATATGCGATGCACAATTTGCATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2741	ATGAATACACAGATACTGGTGTTTGCGCTGATTGCCATTATTCCAACAAATGCTGATAAAATCTGCCTGGGGCATCACGCAGTTTCAAATG GCACCAAAGTGAACACACTTACCGAGCGAGGCGTGGAGGTGGTGAATGCCACTGAAACAGTGGAGCGTACCAATATCCCTCGTATCTGT AGCAAGGGTAAACGGACTGTCGATCTGGGCCAGTGTGGTTTACTGGGGACAATTACAGGCCCCCCTCAGTGTGATCAGTTCTTAGAGTT TTCAGCTGATCTGATCATAGAACGGAGAGGAAGGCAGCGACGTGTGTTACCCTGGCAAGTTCGTGAATGAGGAGGCCCTGCGCCAAATCC TGAGAGAGTCTGGGGGGATAGATAAAGAAGCGATGGGGTTCACTTATTCTGGCATCCGAACCAATGGCGCTACGAGCGCATGCCGCAG ATCTGGCTCTAGCTTTTACGCTGAGATGAAATGGCTCCTCTCTAATACGGACAATGCTGCATTTCCCCAGATGACCAAATCTTACAAGAAT ACCCGTAAGTCCCCAGCTCTCATCGTGTGTGGGGAATCCACCACTCTGTGAGTACTGCCGAGGCAGACAAAGCTCTACGGCTCTGGAAATAA GTTGGTGACCGTAGGTTCATCCAATTATCAACAGTCATTCGTGCCTAGTCCCGGTGCTCGGCCCCAAGTGAACGGCCTCTCCGGGAGGA TTGACTTCCATTGGCTGATGCTGAACCCTAACGATACAGTGACATTTTCATTTAACGGCGCGTTTATAGCTCCTGACCGAGCTTCCTTTCT CCGAGGTAAGAGCATGGGCATCCAGAGTGGGGTACAAGTCGATGCGAATTGCGAGGGCGATTGTTACCACAGTGGTGGCACTATCATTT CCAACCTTCCTTTTCAGAACATTGACTCACGGGCGGTCGGCAAATGTCCTCGCTACGTGAAGCAAGGTCCCTTCTGCTGGCCACAGGG ATGAAAAACGTGCCTGAGATCCCCAAGGGGCGGGGTCTCTTTGGGGCCATCGCAGGATTTATAGAAAATGGGTGGGAGGGACTCATTAA TGGCTGGTACGGATTTAGACACCAGAACGCCCAAGGGGAGGGCACTGCCGCCGATTATAAATCCACTCAGAGCGCTATCGATCAAATAA CAGGTAAACTGAATCGGTTAATTGAGAAAACCAATCAACAGTTTGAACTGATAGATAACGAGTTTAATGAAGTGGAGAAGCAGATTGGAAA CGTGATCAACTGGACCAGAGACTCCATTACTGAGGTTTGGTCGTATAACGCGGAGCTGCTCGTCGCTATGGAGAATCAACATACCATCGA CCTGGCTGATAGTGAGATGGACAAGCTGTACGAGCGCGTTAAAAGACAGCTGCGTGAGAAGCTGAAGAGGATGGTACAGGATGTTTTG AGATCTTTCACAAGTGTGATGACGACTGCATGGCTAGTATCCGAAACAATACATACGACCACAGCAAATATAGAGAAGAGGCCATGCAAA ATCGTATACAAATTGATCCCGTGAAACTATCCTCCGGCTACAAGGATGTGATCTTGTGGTTTTCCTTTGCGCATCTTGCTTCATCCTGCT GGCAATTGTAATGGGATTGGTCTTTATCTGCGTGAAGAACGGCAATATGCGGTGTACTATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2742	ATGAACACTCAGATCCTCGTGTTTGCCTTGATCGCCATCATACCAACGAATGCAGATCTGCCTGGGACACCATGCTGTATCAAAT GGCACTAAGGTGAACACCCTGACTGAGCGGGGCGTTGAAGTGGTGAACGCCACTGAAACGGTGGAAAGGACCAATATCCCCAGAATTT GCTCAAAGGGCAAAAAAACTGTTGACCTCGGCCAGTGCGGCCTCTTAGGGACGATAACCGGTCCCCCTCAGTGTGATCAGTTCCTGGAG TTCTCAGCCGATCTGATCATTGAAAGAAGAGAAGGCTCGGACGTGTGTTATCCGGGCAAGTTCGTGAACGAAGAAGCCCTGCGCCAGAT CCTCCGCGAAAGCGGGGGGCATCGACAAGGAAGCCATGGGTTTCACCTACTCTGGAATTCGCACCAACGGGGCCACTTCCGCATGCCGA CGGTCCGGTTCGAGCTTTTACGCTGAGATGAAGTGGCTTTTATCAAACACAGATAACGCGGCTTTCCCGCAGATGACCAAGTCCTATAAG AACACAAGAAAGTCTCCGGCCCTGATTGTCTGGGGGATCCACCATAGTGTTTCTACTGCGGAGCAGACAAAACTTTATGGTAGCGGGAA CAAACTGGTCACCGTCGGCTCCTCCAATTACCAGCAGAGTTTTGTTCCCTCCCCCGGGCACGACCCCAAGTCAATGGGCAAAGTGGCA GGATAGATTTCCACTGGTTGATGCTCAACCCCAATGACACCGTGACATTTAGCTTTAACGGAGCTTTTATCGCACCAGACCGGGCATCAT TCCTGCGTGGCAAGAGTATGGGTATTCAAAGTGGGGTTCAGGTAGACGCAAACTGCGAGGGCGACTGTTATCACAGTGGGGGGACCATT ATCAGCAACCTACCGTTTCAGAATATCGATAGTAGGGCAGTGGGGAAATGCCCTCGATATGTGAAGCAACGGTCCCTGCTCCTGGCTAC GGGAATGAAAAACGTCCCAGAGATTCCCAAGGGCCGGGGCCTTTTCGGCGCGATTGCTGGCTTTATTGAGAATGGGTGGGAGGGATTAA TCGACGGGTGGTATGGCTTTAGGCACCAGAACGCTCAGGGCGAAGGTACGGGCCGCAGATTACAAGTCCACCCAGTCCGCCATCGACCA GATTACAGGCAAGCTCAACCGTTTAATTGAGAAAACCAATCAGCAGTTCGAGCTCATCGATAACGAGTTCAATGAGGTGGAGAAACAGAT TGGCAACGTGATAAACTGGACTAGGGACTCAATCACACAGAGGTCTGGAGCTATAATGCCGAGCTGCTAGTTGCCATGGAAAACCAGCATA CAATCGATCTTGCCGACTCCGAAATGGACAAACTATATGAGAGAGTCAAACGTCAGCTAAGAGAGAATGCAGAAGAGGATGGCACGGGT TGCTTCGAAATTTTCCACAAGTGTGACGACGACTGCATGGCCAGCATTAGAAACAACACATACGATCATAGCAAGTATAGGGAGGAGGCG ATGCAGAACAGGATTCAGATTGATCCCGTCAAGCTCTCTTCTGGCTATAAGGATGTCATTCTGTGGTTTTCTTTCGGCGCCTCATGTTTCA TCCTGCTTGCAATCGTGATGGGATTAGTTTTCATTTGTGTAAAGAACGGCAATATGCGGTGTACAATCTGCATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2743	ATGAATACTCAAATCCTGGTCTTCGCCCTTATTGCGATCATACCTACCAACGCCGATAAGATCTGCTTGGGGCACCATGCCGTCTCAAAC GGCACCAAGGTCAACACACTCTTACAGAACGCGGGTGTAGAAGTGGTTAATGCCACTGAGACTGTCGAACGAACAAACATCCCTCGAATCTG CAGCAAAGGGAAACGGACTGTCGATCTTGGCCAGTGTGGGCTCCTGGGTACCATAACGGGGCCTCCCCAGTGCGACCAATTCTTAGAGT TCTCGGCCGATTTAATAATAGAACGCAGAGAGGGATCAGACGTATGTTACCCGGGCAAAATTCGTCAATGAGGAGGCACTCCGGCAGATC CTGAGGGAGAGCGGCGGAATTGACAAAGAGGCCATGGGATTCACTTATAGTGGGATTCGTACCAATGGCGCTACAAGTGCCTGCCGTAG ATCCGGGTCGAGTTTTTATGCCGAAATGAAGTGGCTACTGTCCAATACAGATAACGCTGCGTTCCCTCAGATGACTAAGTCTTACAAGAAT ACCAGGAAAAGCCCTGCCCTTATTGTGTGGGGAATTCACCATTCGGTGAGCACCGCGGAACAAACAAAACTGTACGGCAGTGGGAACAA GCTCGTGACGGTAGGGTCCTCTAACTACCAACAAAGTTTCGTCCCATCCCCAGGAGCTAGACCTCAGGTGAACGGGTTAAGCGGGCGAA TTGATTTCCATTGGCTGATGCTGAACCCCAACGACACAGTGACATTTAGCTTCAATGGCGCCTTCATAGCTCCAGACAGAGCTTCCTTTCT GAGAGGCAAAAGTATGGGAATTCAGTCTGGAGTCCAAGTGGATGCCAACTGCGAGGGGGACTGTTATCATTCTGGCGGGACCATTATCT CTAACCTACCATTCCAGAATATAGACAGTAGGGCCGTAGGGAAGTGTCCCCGCTATGTAAAGCAGCGGAGTCTGCTGCTGGCAACAGGT ATGAAGAACGTGCCCGAAATCCCCAAGGGCCGCGGACTCTTTGGGGCTATCGCTGGGTTCATTGAGAACGGATGGGAAGGCCTCATCG ATGGGTGGTATGGTTTTCGTCACCAGAACGCTCAGGGGGAAGGCACCGCCGCTGACTATAAATCTACTCAATCGGCCATCGACCAGATT ACAGGGAAGCTGAATCGTCTAATCGAGAAAACCAATCAGCAATTCGAGCTTATTGACAATGAGTTCAATGAAGTGGAGAAACAGATTGGA AATGTTATAAACTGGACCCGGGACAGCATAACTGAGGTGTGGAGTTACAACGCGGAGCTCCTCGTTGCCATGGAGAACCAGGCACACCAT AGATCTGGCCGATAGCGAAATGGACAAGCTGTACGAGGCGGGTTAAGCGTCAACTGCGAGAGAATGCCGAAGAAGATGGCACCGGATGC TTTGAAATATTCCACAAATGCGATGATGACTGTATGGCTTCTATACGTAATAACACTTACGATCATAGCAAGTACCGAGAGGAGGCTATGC AAAACAGGATACAGATCGACCCCGTGAAACTTTCATCAGGCTATAAGGACGTTATACTGTGGTTCTCGTTCGGGGCAAGTTGCTTCATTCT GCTCGCCATTGTCATGGGCCTGGTTTTTATCTGTGTGAAGAACGGCAATATGCGGTGTACCATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2744	ATGAATACCCAGATCTTGGTTTTCGCACTGATCGCAATTATCCCAACAAACGCAGACAAAATTTGTCTTGGTCATCATGCCGTTTCCAACG GGACTAAAGTTAACACCCTCACGGAACGCGGAGTAGAGGTGGTCAACGCTACAGAAACCGTGGAGCGTACGAACATCCCTCGCATATGT TCCAAAGGAAAGAAGACTGTCGATCTGGGACAGTGCCGGCTATTAGGGACCATCACCGGCCTCCTCAGTGCGATCAATTCCTTGAGTT TTCCGCGGATCTCATAATAGAGCGCAGGGAGGGTTCCGACGTCTGTTACCCTGGCAAGTTTGTGAATGAGGAAGCCTTACGGCAAATCT TGAGGAAGTCTGGCGGTATTGACAAGCAAGCGATGGGTTTTACTTATTCCCGCATCAGGACAAATGGGGCTACTTCTACTTGTCGGAGG AGTGGAAGCAGCTTCTATGCCGAGATGAAGTGGCTTCTGAGCAACACTGACAATGCCGCCTTTCCCCAGATGACAAAATCATACAAAAAC ACACGCAAATCGCCCGCAATCATTGTCTGGGGCATTCATCATTCTGTCTCAACCGCCGAGCAGACTAAACTCTATGGCTCAGGAAATAAA TTAGTGACCGTGGGATCCAGCAATTACCAGCAAAGTTTCGTGCCTTCCCCAGGCGCAAGACCGCAGGTTAACGGCCTCTCTGGACGCAT CGACTTTCATTGGCTCATGCTTAACCCCAATGATACAGTGACATTCTCCTTCAATGGAGCTTTTATCGCTCCGGACCGTGCTTGTTTCCTT CGAGGCAAGTCCATGGGAATTCAAAGTGGCGTTCAGGTTGACGCCGACTGCGAAGGTGACTGCTATCATAGCGGAGGCACTATCATCAG CAATCTTCCATTCCAGAACATTGACTCGCGAGCCGTGGGAAAGTGCCCAAGGTATGTCAAGCAGAGGAGCCTGCTGCTGGCTACCGGCA TGAAAAACGTCCCCGAAATTCCAAAAGGCCGTGGTTTGTTTGGCGCCATTGCCGGTTTTATCGAGAACGGATGGGAGGGACTGATTGAC GGCTGGTACGGCTTCAGACACCAGAACCGCGCAGGGAGAAGGACGGCGGCCGATTATAAGAGCACTCAGAGCGCTATCGATCAGATTA CCGGTAAATTGAATAGACTGATCGAAAAGACCAACCAGCAATTTGAACTCATTGACAATGAGTTCAACGAGGTGGAACGGCAGATAGGAA ATGTCATTAACTGGACACGAGATTCTATTACTGAGGTGTGGAGTTACAACGCGGAGCTCCTAGTCGCCATGGAGAACCAGCATACAATCG ACCTGGCCGACAGCGAAATGGACAAGCTGTATGAAAGAGTAAAGAGGCAGCTGCGGGAGAACGCCGAGGAGGATGGAACCGGTTGTTT TGAGATCTTTCACAAATGCGACGATGACTGCATGGCAAGCATCCGGAACAACACTTATGACCACAGCAAGTATAGGGAGGAGGCCATGC AGAATAGAATCCAGATCGACCCAGTCAAGTTAAGCAGTGGCTACAAAGATGTTATCCTCTGGTTCTCTTTTGGAGCCTCATGTTTCATTCT TCTAGCAATCGTGATGGGTCTCGTCTTTATTTGTGTCAAAAATGGAAATATGCGCTGTACCATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2745	ATGAACACTCAGATCCTTGTCTTTGCGCTAATTGCAATTATTCCAACGAATGCAGACAAAATCTGCCTGGGCCATCACGCTGTTTCCAACG GAACAAAGGTGAACACACTCACGGAAAGGGGCGTCGAAGTGGTGAATGCCACGGAGACTGTTGAGAGGACCAACATCCCCAGGATCTG TAGCAAGGAAAGCGGACAGTTGACCTGGGCCAGTGTGGCCTTCTTGGTACCATCACCGGACCTCCCCCAATGCGACCAGTTTCTGGAGT TTAGCGCAGACCTTATCATCGAGCGCGCGAGGGGAGCGACGTCTGTTACCCGGGCAAGTTCGTAAATGAAGAGGCGCTAAGGCAGAT CCTTAGGGAATCCGGGGGTATAGACAAAGAGGCAATGGGCTTTACCTACAGCGGAATCCGGACTAATGGCGCCACCTCCGCTTGTAGGC GTTCAGGATCTAGTTTCTACGCTGAGATGAAGTGGTTGTTGAGTAATACCGATAATGCGGCCTTCCCTCAGATGACCAAATCCTATAAAAA TACAAGAAAAAGCCCAGCCCTGATCGTATGGGGGATCCACCATTCTGTATCTACCGCAGAACAGACTAAGCTCTACGGGTCTGGGTCCA AATTGGTAACTGTAGCGAGCTCTAATTATCAACAGAGCTTTGTTCCGAGTCCTGGCGCCAGGCCCCAGGTGAACGGTCTGTCCGGGAGA ATTGATTTTCACTGGCTCATGCTCAATCCTAATGATACGGTTACCTTCAGCTTTAATGGAGCGTTCATCGCACCCGATAGGGCTTCATTTTT ACGTGGCAAGTCCATGGGAATCCAGTCAGGAGTCCAGGTCGACGCTAATTGCGAGGGTGATTGCTACCACAGCGGAGGAACTATCATTT CGAACCTCCCCTTTCAGAATATTGATTCTAGGGCCGTCGGTAAATGTCCAAGATATGTGAAGCAAAGGTCTTTGCTACTCGCCACTGGAA TGAAAAACGTGCCTGAAATCCCTAAAGGCCGGGGCCTGTTTGGCGCAATCGCTGGATTTATCGAGAATGGTTGGGAGGGACTGATTGAC GGCTGGTATGGATTCCGGCACCAAAACGCTCAGGGGGAAGGCACTGCTGCCGATTACAAGTCCACTCAATCCGCGATTGACCAAAATAAC CGGTAAGCTGAATAGGCTGATCGAGAAGACAAATCAGCAGTTTGAGCTCATCGATAACGAGTTTAATGAAGTAGAAAAGCAGATTGGGAA CGTTATTAATTGGACAAGAGATAGTATAACCGAGGTGTGGAGCTATAATGCGCAGCTCCTGGTGGCCATGGAAAATCAGCATACAATAGA CCTCGCCGATAGCGAAATGGATAAATTATACGAGAGAGTGAAGCGGCAGCTGTGGGAAAACGCTGAGGAGGACGGAACTGGCTGTTTT GAGATCTTTCATAAGTGCGATGATGACTGTATGGCCAGCATTCGGAACAACACCTACGATCATTCTAAGTATAGGGAGGAGGCAATGCAG AACCGAATCCAAATAGATCCTGTTAAGCTGTCTAGCGGATATAAAGACGTGATACTTTGGTTCAGCTTCGGGGCCAGCTGTTTCATTCTGC TTGCTATCGTCATGGGACTTGTATTTATCTGCGTGAAGTCCAGAAACATGAGGTGCACTATATGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2746	ATGAACACTCAAATCCTGGTGTTCGCGCTGATCGCCATCATACCTACCAATGCTGACAAAATCTGCTTGGGCACCACGCCGTTAGCAAT GGAACCAAAGTGAACACGTTGACGGAAAGAGGAGTGGTGAATGCCACGGAAACAGTGGAGCGGACAAACATCCCCCGGATCT GTAGTAAAGGGAAAAAGACGGTTGATCTCGGCCAGTGCGGCCTCCTGGGACAATAACCGGGCCTCCTCAATGTGACCAGTTCCTGGAA TTCTCAGCCGATTTAATCATAGAGCGGCGGGAGGGGAGTGATGTGTGTTATCCAGGGAAATTCGTGAATGAAGAAGCCTTGAGACAGAT CCTTCGCGAAAGTGGAGGAATCGACAAGGAGGCCATGGGCTTTACTTATAGTGGAATCAGAACCAACGGCGCCACGTCCGCATGCCGA CGCAGCGGTTCTAGCTTCTATGCCGAAATGAAGTGGCTGCTCTCCAATACCGATAATGCAGCCTTCCCCCCAAATGACGAAATCTTACAAG AATACCCGCAAAAGTCCTGCTTTGATTGTCTGGGGCATCCACCACAGCGTCTCTACTGCCGAACACAAACAAAGTTATACGGATCAGGCAAC AAACTGGTCACCGTAGGTTCCAGCAACTACCAACACAGTCATTTGTCCCGAGCCCTGGAGCCCGCCCACAGGTGAACGGGCAGTCCGGCC GAATTGACTTTCACTGGCTGATGCTCAACCCGAACGATACTGTGACCTTCAGCTTCAATGGCGCGTTCATTGCACCTGACCGTGCATCAT TCTTGAGGGGCAAAAGCATGGGGATCCAGTCTGGAGTCCAGGTCGACGCAAATTGCGAAGGAGATTGTTATCACAGCGGGGGCACGAT TATCTCAAATCTCCCCTTTCAAAATATAGATAGCCGAGCAGTTGGCAAATGCCCTCGCTACGTGAAACAAAGGAGGCCTGCTCCTGGCTAC CGGGATGAAGAACGTACCTGAAATCCCCAAGGGACGCGGACTTTTCGGCGCTATTGCTGGGTTCATAGAAAACGGCTGGGAAGGGTTGA TCGACGGCTGGTATGGCTTCAGACACCAGAATGCTCAGGGAGAAGGCACAGCGCCGACTACAAATCAACCCAGTCTGCCATCGATCAG ATTACAGGAAAGCTGAATCGGCTCATCGAGAAAACTAACCAGCAGTTCGAACTCATCGACAATGAGTTTAACGAGGTCGAAAAACAGATT GGTAATGTGATCAACTGGACTAGGGACTCCATTACAGAGGTTTGGTCCTATAATGCCGAGCTTTTGGTTGCCATGGAAAACCCAACATACC ATCGACCTGGCCGATAGCGAGATGGACAAGTTGTACGAGAGGGTAAAAAGGCAGCTCAGAGAAAACGCCGAGGAAGATGGAACCGGTT GTTTCGAAATTTTTCATAAGTGCGATGACGACTGTATGGCTTCAATTCGAAACAATACTTACGATCACAGCAAGTACCGCGAAGAGGCCAT GCAGAATAGGATTCAGATTGATCCTGTTAAGTTGTCATCCGGCTATAAGGATGTAATCTTATGGTTTAGTTTCGGCGCTAGCTGCTTCATA CTGCTGGCAATCGTGATGGGGCTGGTATTTATATGCGTCAAAAATGGGAATATGCGCTGTACCATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2747	ATGAATACTCAAATCTTGGTCTTTGCACTGATCGCCATTATTCCTACTAACGCCGATAAAATTTGCTTGGGTCATCACGCCGTGTCAAATG GCACTAAAGTTAATACCTTAACAGAGCGCGGAGTAGAGGTGGTGAATGCAACGGAGACTGTTGAGCGGACCAATATACCCCGCATTTGT AGTAAAGGCAAGAAAACAGTGGACCTGGGCCAATGCGGGTTGCTTGGGACGATCACCGGCCCCCCGCAGTGCGATCAGTTCTTAGAATT CTCCGCTGACCTAATCATCGAAAGACGGGAGGGCAGCGATGTGTGTTATCCTGGCAAATTCGTCAACGAGGAAGCCCTCAGCGATTC TTCGCAAGTCAGGGGGTATTGATAAGGAGGCGATGGGATTCACATACTCCGGAATTCGAACAAACGGCGCTACAAGTACTTGTAGGAGG AGCGGGAGTTCATTCTACGCAGAGATGAAGTGGCTGCTCAGCAACACCGACAACGAGCGTTCCCACAGATGACCAAAAGCTATAAAAA TACCCGAAAGAGTCCCGCAATCATCGTATGGGGAATTCATCACAGTGTCTCTACCGCTGAGCAGACCAAGTTGTATGGCTCCGGCAACAA GCTCGTTACCGTTGGCAGCTCAAATTACCAACAGTCCTTCGTCCCCTCCCCAGGGGCAAGGCCCCAAGTCAACGGCCTGTCCGGCAGAA TTGACTTCCACTGGCTCATGCTAAACCCCAATGATACGGTCACCTTCAGTTTTATGGGCATTCATCGCACCCGACAGAGCCTGTTTTCT GCGAGGTAAATCAATGGGTATACAATCCGGGGTCCAGGTCGACGCTGACTGCGAGGGCGACTGCTATCATTCGGGAGGCACCATTATTT CCAACCTGCCTTTCCAGAACATTGATTCCAGAGCCGTGGGCAAGTGTCCTCGGTACGTGAAACAACGATCTCTGCTTCTGGCTACCGGAA TGAAGAACGTGCCCGAGATCCCCCAAGGGACGAGGCCTGTTCGGGGCCATTGCCGGATTTATTGAGAATGGCTGGGAGGGTCTCATCGA TGGATGGTACGGCTTCAGGCACCAGAACGCACAAGGTGAAGGCACAGCTGCTGATTACAAATCCACCCAGAGTGCAATTGACCAGATCA CCGGAAAACTCAATAGACTGATTGAAAAAACCAACCAACAGTTTGAATTGATTGATAATGAGTTTAACGAAGTCGAACGGCAGATTGGTAA TGTGATCAATTGGACCCGGGATTCCATTACAGAGGTTTGGTCCTACAACGCCGAGCTGCTCGTCGCAATGGAAAATCAGCACACCATAGA TCTGGCCGACTCCGAGATGGACAAGCTTTACGAAAGGGTGAAGAGACAGCTCAGGGAGAACGCCGAAGAGGACGGAACAGGGTGTTTC GAAATCTTCCATAAGTGCGACGATGATTGTATGGCTTCTATCCGGAACAACACCTATGATCACTCCAAATATAGAGAGGAAGCAATGCAGA ACAGGATTCAAATCGACCCTGTCAAACTCTCAAGTGGGTACAAGGACGTAATCCTATGGTTCAGCTTTGGCGCCAGCTGTTTTATTCTGCT GGCAATCGTGATGGGTTTGGTGTTTATCTGCGTCAAGAATGGCAACATGAGGTGTACCATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2748	ATGAATACACAGATCCTGGTCTTCGCCCTTATCGCTATCATCCCCACAAACGCCGGACAAGATATGCCTGGGCCACCACGCCGTTAGCAAC GGCACCAAAGTAAACACTCTCACTGAAAGGGGTGTGGAAGTTGTGAACGCAACAGAAACCGTAGAACGCACGAACATTCCAAGAATTTG CTCAAAGGGGAAACGTACAGTCGATCTAGGACAGTGCGGCCTGCTCGGCACGCATAACCGCGGCCCCCCCAATGCGATCAATTTCTGGAGT TCTCTGCCGATCTTATCATCGAGCGTCGGGAAGGGAGCGATGTGTGCTACCCCGGCAAATTTGTGAACGAGGAGGCCCTCAGACAGATC TTAAGAGAGTCTGGAGGGATTGACAAAGAGGCCATGGGGTTCACATACTCCGGCATACGTACGAATGGGGCCACGAGTGCTTGTCGGA GGAGCGGTTCAAGTTTCTACGCGGAGATGAAATGGCTGCTGAGCAATACCGATAACGCCGCCTTCCCCCAGATGACCAAAAGTTATAAAA ATACAAGGAAATCACCCGCCCTTATCGTTTGGGAATTCATCACTCCGTCAGTACCGCCGAACAGACTAAGCTCTATGGATCGGGTTCAA AGCTAGTGACCGTGGGCTCAAGCAATTACCAGCAATCCTTTGTACCAAGCCCTGGGGCCCGTCCCCAAGTGAACGGATTAAGCGGTAGG ATTGACTTCCATTGGTTGATGCTCAATCCGAATGATACGGTGACCTTCAGTTTCAACGGGGCGTTCATAGCTCCTGATCGCGCGAGCTTC CTCCGGGGAAAATCGATGGGAATTCAGTCAGGCGTTCAGGTGGACGCCAATTGTGAAGGAGACTGCTACCATAGCGGAGGGACTATAAT TTCCAATCTGCCTTTTCAGAACATTGACTCCCGCGCTGTGGGGAAGTGTCCCCGGTACGTGAAGCAACGCTCCCTGCTTCTCGCCACAG GCATGAAGAACGTACCTGAGATTCCTAAGGCCGGGGGCTTTTCGGCGCGATTGCTGGATTCATCGAAAACGGCTGGGAAGGTTTAATA GATGGCTGGTATGGCTTCAGGCACCAGAATGCACAGGGCGAGGGGACCGCGGCCGACTATAAGTCTACCCAAAGTGCTATTGATCAGAT AACCGGAAAGCTTAACCGCCTGATCGAGAAAACCAATCAACAGTTTGAACTTATCGACAACGAATTCAACGAGGTTGAGAAGCAGATTGG GAACGTCATTAATTGGACCCGAGATTCGATCACAGAGGTGTGGAGCTACAACGCCGAGCTGCTGGTCGCGATGGAAAATCAGCATACAA TCGACTTGGCCGATAGTGAGATGGACAAACTATACGAGAGAGTGAAACGGCAGCTGAGGGAGAACGCCGAAGAGGACGGCACCGGGTG CTTTGAGATTTTTCACAAGTGCGATGACGATTGTATGGCTTCCATCAGGAATAATACTTACGACCACAGTAAGTATCGCGAAGAGGCTATG CAAAACCGCATTCAGATCGACCCCGTCAAACTCTCATCGGGCTATAAAGATGTGATACTCTGGTTTTCTTTTGGTGCATCATGCTTCATTC TTTTGGCAATAGTGATGGGGCTGGTGTTCATCTGCGTAAAGAACGGTAACATGAGATGCACTATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2749	ATGAATACACAGATCTTAGTGTTTGCTTTAATAGCTATTATTCCAACCAATGCCGATAAAATCTGTCTGGGACACCACGCCGTGAGCAATG GGACGAAAGTGAACACTCTTACCGAACGAGGAGTCGAGGTTGTCAATGCTACGGAAACTGTGGAAAGGACCAACATCCCAAGGATCTGC AGCAAAGGCAAAAAAAACTGTAGATCTGGGGCAGTGTGGACTGCTGGGGACCCTTACCGGACCCCCCCAGTGCGACCAGTTCTTGGAGTT TTCCGCCGATCTGATTATTGAGCGGCGCGAGGGGTCTGATGTGTGCTATCCTGGTAAATTTGTCAACGAAGAGGCGCTGCGACAAATTCT CCGCAAAAGTGGGGGAATCGACAAGGAAGCCATGGGCTTCACATACTCTGGCATTCGAACAAATGGGGCCACTTCCACATGCAGGCGGT CTGGGTCTTCATTTTATGCCGAGATGAAGTGGCTTCTTTCTAATACTGACAACGCCGCCTTCCCCCAAATGACCAAGTCCTACAAAAACAC CCGGAAGTCCCCAGCCATTATCGTCTGGGAATCCATCACAGCGGTTTCTACAGCCGAACAGACCAAGCTCTACGGATCAGGAAACAAAC TGGTTACAGTGGGTAGCAGCAACTATCAGCAGTCGTTCGTTCCTTCTCCCTGGGGCGCGGCCGCAAGTAAACGGGCTCAGTGGGCGTATC GATTTCCACTGGCTGATGCTGAACCCAAACGACACAGTCACCTTCAGCTTTAATACTGACAACGCCGCCTTCCCCCTGATAGGGCCTGCTTTCTG CGGGGAAAATCCATGGCATCCAAAGCGGAGTGCAGGTCGACGCCGATTGCGAAGGGGACTGCTACCATTCTGGTGGGACCATCATCT CCAACCTCCCATTTCAGAACATTGACTCCCGGGCGGTCGGAAAATGCCCACGTTACGTGAAGCAGCGCAGTCTCTTACTCGCCACTGGG ATGAAGAACGTGCCCGAAATTCCAAAGGGGCGTGGTCTGTTTGGGGCGATTGCCGGCTTCATTGAGAACGGCTGGGAGGGGCTTATCG ACGGCTGGTACGGATTCCGTCACCAGAATGCCCAGGGTGAGGGCACCGCAGTAGACTATAAAAGCACACAGAGCGCCATTGACCAAAT CACTGGGAAGCTGAATCGCCTGATTGAGAAAACTAACCAGCAGTTTGAACTCATAGATAATGAATTTAACGAAGTCGAAAGGCAGATTGG CAACGTAATTAATTGGACTCGCGACTCAATCACTGAGGTCTGGAGTTACAATGCAGAACTGCTTGTCGCTATGGAGAACCACGCATACCAT TGACCTGGCTGATAGCGAGATGGATAAACTGTACGAAAGGGTGAAGCGACAGCTCCGCGAGAACGCAGAGGAGGACGGGACCGGCTGT TTCGAGATCTTTCACAAGTGTGACGACGACTGTATGGCTTCGATTCGGAACAACACCTATGACCACTCCAAATATAGGGAAGAGGCTATG CAGAATAGGATCCAAATCGATCCTGTGAAGCTGAGCTCCGGCTACAAAGACG~AATCCTGTGGTTCTCTTTTGGCGCCTCGTGTTTTATC CTACTCGCCATCGTCATGGGTTTAGTTTTTATCTGCGTAAAAAATGGAAATATGAGATGTACTACTATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2750	ATGAACACGCAGATCCTTGTCTTCGCCCTGATTGCCATTATACCCACTAACGCCGATAAAATTTGCTTGGGCCACCACGCCGTGTCCAAT GGAACAAAAGTGAATACTTTGACCGAGAGCGGGTGTCGAAGTCGTCAACGCCACCGAGACTGTCGAACGGACAAATATACCGCGTATCTG TTCTAAAGGGAAGCGAACCGTGGACCTGGGTCAATGCGGACTGCTGGGGACTATTACAGGGCCCCCTCAGTGCGATCAGTTTCTGGAAT TTAGCGCTGACCTCATTATTGAAAGGAGGGAGGGATCAGATGTGTGTTACCCAGGTAAGTTTGTCAATGAGGAAGCCCTCCGACAGATTC TCAGGGAATCTGGAGGCATTGATAAAGAGGCTATGGGGTTCACCTATTCAGGCATCAGGACCAATGGGGCTACCAGCGCTTGCCGCCG GAGCGGATCATCTTTTTATGCCGAGATGAAATGGCTACTGTCAAACACCGACAACGCCGCATTCCCACAGATGACCAAGAGTTACAAGAA TACACGCAAGTCACCCGCCCTCATCGTCTGGGGCATCCATCATTCCGTGAGCACAGCCGAGCAGACGAAGCTCTACGGATCGGGCAGC AAGCTCGTAACCGTCGGGAGCTCTAACTATCAGCAATCTTTTGTGCCCTCCCCCGGAGCCCGGCCACAGGTCAATGGACTATCCCGGGCG CATCGATTTCCACTGGCTGATGTTGAACCCGAACGACACCGTGACATTTTCATTCAATGGGGCATTCATCGCGCCAGACCGCGCGTCCTT TCTGAGGGGAAAGTCCATGGGTATCCAGTCTGGTGTACAGGTGGATGCCAACTGTGAGGGTGACTGCTACCATAGTGGAGGAACAATTA TCTCCAACTTGCCATTCCAAAACATCGACAGTAGAGCTGTTGGTAAATGTCCCAGGTACGTGAAGCAAAGGTCATTGCTGCTGGCCACTG GGATGAAGAATGTGCCCGAAATTCCAAAAGGAAGGGGCTTTTCGGGGCAATCGCCGGCTTCATTGAGAATGGCTGGGAAGGCCTCATC GACGGGTGGTACGGGTTTAGGCATCAAAACGCGCAGGGGGAGGGGACAGCTGCTGATTACAAGAGTACACAGAGCGCAATCGACCAGA TCACCGGGAAACTAAATCGCCTCATCGAGAAGACTAATCAGCAGTTCGAACTGATCGACACAACGAGTTCAACGAGGTCGAAAAACAGATTG GTAACGTCATTAACTGGACCAGAGATTCCATAACCGAAGTCTGGTCCTATAACGCAGAACTGCTGGTAGCCATGGAGAACCAGCACACTA TCGACCTGGCAGACTCGGAAATGGATAAACTGTACGAGAGGGTGAAGCGGCAGCTCCGGGAGAACGCTGAAGAAGATGGTACCGGCTG TTTCGAAATTTTTCACAAATGTGACGATGATTGTATGGCCTCTATACGCAACAATACCTACGATCACTCCAAATACAGGCAGGAGGCTATG CAGAATCGTATCCAGATCGATCCGGTAAACTGAGTAGCGGATATAAGGATGTGATCCTGTGGTTCAGCTTCGGGGCTAGTTGCTTTATT CTGTTGGCAATTGTGATGGGCCTGGTGTTCATTTGCGTCAAAAATGGCAACATGCGCTGCACCATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2751	ATGAACACCCAAATATTAGTGTTCGCATTGATTGCGATTATCCCAACCAACGCAGATAAGATCTGCTTGGGACATCACGCTGTCAGCAAC GGGACCAAGGTGAACACGTTGACAGAGAGCGGGCGTAGAAGTGGTCAACGCCACTGAGACAGTGGAACGCACCAACATACCGCGGATCT GCTCCAAGGGAAAGCGCACGGTGGATCTTGGCCAGTGCGGCCTGCTGGGTACGATAACTGGACCTCCCCAGTGCGACCAGTTCCTGGA GTTCTCCGCCGACCTCATCATCGAAAGGAGAGAAGGTAGCGATGTCTGCTACCCAGGGAAATTCGTTAACGAAGAGGCCCTTAGACAAA TCCTGAGAGAATCTGGCGGGATCGATAAGGAGGCAATGGGATTTACTTACTCAGGAATTAGGACTAACGGGGCTACCTCTGCGTGCCGA CGGTCCGGTTCGAGCTTCTATGCCGAGATGAAATGGCTTTTGAGCAACACCGATAATGCTGCTTTTCCCCAGATGACTAAGTCCTATAAG AATACCAGAAAAAGCCCCGCCTTAATTGTGTGGGCATCCACCACTCAGTGAGTACAGCCGAACAAACGAAACTGTACGGCTCTGGTTC CAAGTTGGTCACAGTCGGATCCTCAAATTATCAGCAGAGCTTCGTACCCTCTCGGGTGCGAGACCACAGGTGAACGGCCTGAGTGGTC GGATTGACTTCCACTGGCTCATGCTGAACCCCAACGATACCGTAACTTTCTCTTTCAACGGAGCCTTTATAGCTCCTGATAGAGCTTCTTT TCTGCGTGGGAAGTCCATGGGGATCCAGAGCGGGCGTGCAGGTGGACGCGAACTGTGAGGGTGACTGCTATCACTCAGGAGGAACAATT ATCTCGAATCTTCCTTTTCAAAACATCGACTCCCGAGCCGTCGGAAAATGCCCTCGCTATGTGAAACAGCGGAGCTTGTTGCTCGCCACG GGGATGAAGAACGTCCCTGAAATACCGAAGGGCGCGGGCCTGTTTGGAGCAATCGCAGGATTTATCGAGAACGGGTGGGAAGGGCTTA TTGATGGGTGGTATGGCTTCCGCCACCAAAACGCTCAAGGCGAGGGGACTGCTGCTGATTATAAATCGACACAGTCTGCTATTGACCAG ATTACAGGAAAGCTCAACCGATTGATAGAAAAGACTAACCAGCAGTTTGAGCTGATCGATAATGAATTTAACGAGGTGGAGAAGCAGATC GGGAATGTGATCAACTGGACCAGAGATTCCATCACTGAAGTTTGGAGTTTACAACGCCGAGCTCCTGGTGGCTATGGAAAATCAGCATACC ATCGACCTCGCTGACAGTGAGATGGACAAGCTCTATGAAAGAGTTAAGCGACAGCTGCGAGAGAATGCCGAGGAGATGGTACAGGCT GCTTTGAGATTTTCCACAAGTGTGATGATGACTGTATGGCCTCAATACGGAATAATACATATGATCACTCCAAGTATCGGGAGGAAGCCAT GCAGAACCGTATCCAGATCGACCCTGTGAAACTGAGCTCTGGATACAAGGATGTCATACTCTGGTTCTCATTCGGTGCTTCTTGTTTTATT CTGCTGGCCATTGTGATGGGCCTCGTGTTTATATGCGTAAAGTCCCGCAACATGAGATGCACCATCTGTATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2752	ATGAATACTCAGATACTGGTATTCGCTCTCATTGCTATTATTCCTACGAACGCAGATAAGATTTGCCTAGGCCATCATGCTGTCTCTAACG GCACTAACGTCAACACACCCTGACCGAGCGCGGAGTGGACGTAGTTAACGCAACTGAAACAGTCGAACGCACCAATATTCCCAGAATCTGC TCGAAGGGAAAGAAGACCGTCGATCTGGGGCAATGTGGGCTTCTCGGCACCATCACGGGCCCTCCACAGTGTGACCAGTTTCTGGAATT TTCCGCCGACCTGATCATAGAGCGCCGGGAAGGATCCGATGTGTGTTATCCCCGGGAAGTTCGTGAACGAGGAAGCACTGCGACAGATC CTGAGGGAGTCCGGCGGGATTGACAAGGAGGCCATGGGCTTCACTTATAGCGGTATACGTACCAACCAGTGCTTGCAGGC GATCCGGGTCCTCCTTCTACGCTGAGATGAAGTGGCTCCTCTCCAATACAGACAACGCGCGCCTTTCCACAGATGACTAAAAGTTATAAGA ACACACGCAAGTCCCCCCGCGCTGATCGTGTGTGGGGGATTCATCATAGCGTGAGCACCGCGGAGCAGACAAAACTCTACGGAAGCGGTAA CAAGCTGGTAACAGTGGGATCTTCTAACTACCAACAGAGTTTCGTGTGCCTTCCCCAGGTGCGCGCGCCCCCAGGTAAACGGACAGAGTGGGA GAATCGACTTCCACTGGCTGATGCTGAATCCCCAACGATACTGTCACCTTTAGTTTTAATGGTGCATTTATCGCCCCTGATAGAGCATCCTT CTTACGGGGGAAGAGTATGGGGATTCAGTCAGGCGTGCAGGTTGACGCTAACTGCGAGGGCGATTGTTACCACTCGGGCGGGGACTATA ATCTCGAACCTTCCCTTTCAAAACATAGATAGCCGGGCCGTGGGCAAATGTCCGAGATACGTGAAACAGAGGAGTCTGTTGCTGGCTAC GGGCATGAAGAACGTGCCAGAAATTCCTAAGGGCCGCGTCTGTTCGGAGCAATCGCAGGGTTCATCGAGAATGGCTGGGAAGGGCTG ATCGATGGTTGGTATGGATTCAGACACCAGAACGCGCAGGGGGAGGGAACAGCCCGCTGACTATAAATCCACACACAGAGCGCTATAGATCA AATCACAGGGAAACTTAACAGGCTGATCGAGAAAACAAACCAGCAGTTTGAGTTGATTGATAATGAGTTCAACGAGGTGGAGAAGCAAAT CGGCAACGTCATCAATTGGACTCGCGATTCTATCACTGAGGTATGGAGCTACAATGCAGAGCTGCTCGTAGCGATGGAGAATCAGCATA CAATTGATCTGGCCGACTCCGAAATGGACAAGCTGTATCAGCGCGTAAAGAGACAACTTAGAGAAAATGCCGAGGAAGATGGCACTGGC TGCTTCGAAATCTTTCATAAATGCGATGATGACTGTATGGCATCTATCAGAAACAACACTTATGACCACTCCAAGTATAGGGAAGAAGCTA TGCAGAATAGAATCCAGATCGATCCCGTAAAACTTAGTTCCGGGTACAAGGACGTTATTCTTTGGTTTTCTTTCGGCGCAAGCTGTTTCAT CCTTCTTGCAATCGTAATGGGTCTCGTCTTCATCTGCGTTAAAAATGGCAACATGCGTTGCACAATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2753	ATGAATACCCAGATCCTGGTCTTTGCGCTGATCGCTATTATCCCAACTAACGCCGATAAAATCTGCCTGGGCCACCACGCTGTCAGCAAT GGCACAAAGGTAAATACCCTAACAGAGCGGGGGGTGGAAGTCGTTAATGCTACTGAGACCGTGGAACGAACAAATATTCCTAGGATCTG TTCCAAGGGCAAGCGCACTGTGGACTTGGGTCAGTGCGGCTTACTTGGTACAATCACTGGGCCGCCACAGTGCGACCAGTTTCTCGAGT TCTCGGCCGATCTGATCATAGAAGAAGGAGGGCAGCGACGTGTGCTACCCCGGCAAGTTTGTTAACGAGGAGGCACTGCGGCAGAT CCTGAGAGAAAGCCGCAGCATCGACAAAGAGGCAATGGGGTTCACCTACTCTGCCATTAGGACTAACGGTGCAACTTCTGCCTGCCCGGA GAAGCGGTTCTTCCTTCTACGCCGAAATGAAGTGGCTGCTGTCCAATACTGACAACGCTGCCTTTCCTCTGAGATGACAAAGAGTTACAAAA ACACACGGAAAAGCCCCAGCTCTGATCGTGTGGGGCATCCACCATAGTGTAAGCACAGCTGAACAGACGAAGCTGTACGGGTCTGGCAAT AAACTTGTCACAGTTGGATCGTCCAATTACCAACAGAGCTTCGTCCCCAGTCCAGGTGAGACCTCAGGTTAACGGCCTCTCGGGGAG AATCGACTTCCACTGGCTGATGCTTAACCCCAACGACACAGTAACCTTCTCCTTTAACGGCGCCTTTATTGCTCCTGATAGGGCCTCCTTT TTGAGAGGAAAAAGTATGGGCATCCAAAGCGGGGTGCAGGTGGACGCCAACTGTGAAGGCGACTGCTACCACTCGGGGGGCACCATAA TATCCAACCTACCTTTTCAGAATATTGACTCTCGGGCCGTGGGGAAGTGTCCTCGTTACGTGAAGCAGCGAAGCCTCCTACTCGCAACCG GCATGAAGAACGTCCCAGAGATCCCAAAGGGTCGGGGCCTGTTCGGTGCCATTGCCGGGTTTATAGAAAACGGGTGGGAAGGCCTGAT CGATGGCTGGTATGGCTTCCGCCATCAGAACGCACAGGGTGAGGGCACAGCAGACTATAAAAGCACTCAATCGGCCATCGACCAG ATCACGGGGAAGTTAAATAGGCTGATTGAAAAGACAAACCAACAATTCGAACTTATTGATAACGAGTTTAACGAAGTGGAGAAGCAGATA GGAAACGTTATCAATTGGACCGCGAGATTCCATAACAGAAGTTTGGTCATATAATGCCGAGCTCCTAGTCGCCATGGAAAATCAGCACACT ATTGATCTGGCTGATTCCGAGATGGATAAATTATATGAGAGAGTGAAGCGCCAGCTTAGGGAAAACGCCGAAGAGGACGGAACTGGGTG TTTTCGAGATCTTTCATAAATGCGATGATGACTGCATGGCCTCTATTCGGAATAACACATACGATCACTCCAAGTATCGGGAGGAGGCGAT GCAGAACAGAATTCAGATTGATCCAGTGAAGCTGTCCAGCGGATACAAAGACGTGATACTATGGTTCAGCTTTGGTGCTAGTTGCTTTAT CCTGTTGGCGATCGTCATGGGCCTGGTATTCATTTGCGTGAAGAATGGTAACATGCGCTGCACCATATGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2754	ATGAACACACAGATACTGGTGTTCGCACTGATAGCCATAATACCTACCAATGCTGATAAAATTTGTCTTGGTCACCATGCCGTCAGCAATG GAACAAAAGTCAATACTCTGACAGAGAGGGGAGTCGAAGTGGTGAACGCAACAGAGACGGTAGAACGGACAAACATTCCAAGAATCTGT TCCAAAGGTAAGAGGACGGTCGATCTCGGACAGTGCGGCCTATTAGGAACTATTACTGGTCCTCCGCAGTGCGACCAGTTTCTGGAATTT AGCGCAGACTTGATTATAGAGCGGCGAGAAGGGTCCGATGTATGCTATCCCGGCAAATTCGTGAATGAGGAGGCCCTGCGACAGATTTT GAGAGAAAGCGGGGGGGGATTGATAAAGAAGCGATGGGGTTTACATATTCAGGCATCAGGACCAATGGCGCTACCTCAGCTTGCCGAAGAA GTGGTAGCTCTTTTTATGCCGAAATGAAGTGGCTTCTTTCAAACACTGATAACGCAGCCTTCCCACAGATGACCAAGAGCTACAAGAATAC TCGTAAATCACCAGCCCTAATTGTGTGGGGTATCCACCATTCAGTCTCTACCGCAGAACAAACAAAACTGTACGGCAGCGGGAACAAGCT AGTGACCGTTGGATCCAGCAATACCAGCAAAGCTTTGTCCCTTCCCCCGGCGCACGTCCACAGGTAAACGGCTTGAGCGGGAGAATTG ATTTCCACTGGCTAATGCTAAATCCCAACGATACCGTTACTTTTAGCTTCAATGGGGCTTTCATTGCCCCAGATAGAGCCTCTTTCCTGAG AGGTAAAAGTATGGGCATCCAACCCGGGGTGCAGGTGGATGCGAATTGTGAAGGCGATTGTTACCACAGCGGGGGGACCATTATTTCCA ACTTACCCTTCCAAAACATCGATTCGCGAGTGGGCAAATGTCCCCGGTATGTCAAGCAGAGGTCGCTGTTGCTGGCCACCCGCATG AAAAATGTCCCTGAGATTCCAAAAGGTCGCGGTTTGTTTGGCGCTATTGCGGGATTTATCGAGAACGGCTGGGAGGGGCTGATTGACGG GTGGTACGGGTTCAGACACCAGAACGCTCAGGGCGAGGGAACCGCTGCGGATTATAAAAGCACGCAGTCGGCCATAGACCAGATCACA GGCAAGCTCAATAGGCTCATCGAGAAGACGAATCAGCAATTCGAATTGATAGATAACGAATTCAACGAGGTGGAGAAACAGATTGGGAAT GTGATCAATTGGACAAGGGATTCAATTACGGAAGTGTGGTCCTATAACGCCGAGCTGCTCGTGGCCATGGAGAATCAGCATACAATCGAT CTGGGCGACAGTGAGATGGATAAACTCTACGAACGTGTGAAGCGGCAGCTACGCGAGAACGCCGAGGAAGATGGGACAGGCTGTTTTG AGATCTTCCACAAGTGCGACGACGACTGTATGGCGTCAATCCGCAATAACACATACGACCACAGCAAGTACCGAGAGGAAGCGCATGCAA AACAGGATCCAAATCGATCCTGTAAAGCTTTCCTCTGGGTATAAAGACGTCATTCTTTGGTTCTCTTTTGGAGCCAGTTGCTTCATCCTTCT AGCCATTGTGATGGGGCTGGTATTCATCTGCGTGAAAAATGGGAATATGCGATGTACCATATGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2755	ATGAATACCCAGATCCTCGTTTTTTGCTCTGATCGCAATTATTCCCACTAATGCAGACAAAATCTGTCTCGGTCATCATGCTGTGTCTAATG GAACGAAGGTCAATACCCTGACCGAACGCGGTGTCGAAGTGGTCAATGCGACAGAAACTGTAGAACGAACCAATATCCCTAGGATTTGTT CCAAGGGGAAGAAGACTGTTGACTTGGGGCAATGCGGGCTCCTAGGCACCATTACGGGCCCCCCCCAATGTGACCAGTTCCTAGAGTTT AGCGCAGATCTGATCATCGAAAGAAGGGAAGGCTCCGATGTGTGCTATCCCGGGAAGTTCGTGAATGAAGAGGCGCTGAGGCAGATTCT CAGAGAGAGCGGCGGTATTGAGAAAGAAGCTATGGGATTTACATATAGCGGGATTCGCGCAAACGGCGCAACTAGTGCGTGTCGACGC AGCGGTTCTTCTTTCTATGCCGAGATGAAGTGGTTACTAAGCAACACCGATAAACGCCGCGTTCCCCCAGATGACCAAGTCTTATAAGAAC ACACGCAAATCCCCCGCGCTCATTGTGTGGGGAATTCACCACAGCGTCTCTACTGCAGAGCAGACAAAACTGTACGGTTCAGGGAATAA GCTCGTAACTGTAGGGTCAAGTAACTACCAGCAGTCCTTTGTCCCTTCTCCAGGGGCTCGGCCTCAGGTCAATGGGCTGAGCGGCCGGA TCGATTTCCACTGGCTGATGCTGAATCCCAACGACACCGTGACTTTCTCTTTCAACGGGCCTTTATCGCCCCAGATCGGGCCAGCTTTC TGAGAGGGAAGTCAATGGGAATCCAGTCTGGAGTCCAGGTGGATGCGAACTGTGAAGGGGATTGCTACCACAGCGGCGGGACTATCAT CTCCAACCTTCCATTCCAAAACATTGACTCTCGGCGCCGTTGGCAAGTGTCCACGATACGTCAAGCAGAGGTCTCTGCTCCTGGCTACCGG AATGAAGAATGTGCCCGAGATACCCAAAGGCCGTGGCCTGTTCGGCGCGATAGCTGGCTTTATTGAAAACGGATGGGAGGGATTGATAG ACGGCTGGTACGGCTTTCGCCATCAGAACGCGCAGGGCGAAGGAACCGCGCGCGATTATAAATCAACACAGTCAGCTATCGACCAGATA ACCGGCAAGCTGAACCGATTAATTGAAAAAACAAACCAGCAGTTTGAACTGATCGATAATGAATTCAACGAAGTGGAAAAACAGATTGGG AATGTTATAAATTGGACTCGCGACTCCATCACTGAAGTTTGGTCTTACAATGCCGAATTACTGGTTGCCATGGAAAATCAACACACTATCG ATCTCGCGACAGCGAAATGGACAAGCTTTACGAACGCGTTAAACGGCAGCTTCGTGAGAATGCGGAAGAGGATGGAACGGGCTGCTT CGAGATCTTCCATAAATGCGACGACGATTGTATGGCCTCAATTAGGAATAACACCTACGATCACAGCAAGTACCGGGAGGAGGCCATGC AGAACCGCATTCAAATTGATCCCGTCAAACTCTCGAGCGGGTATAAAGATGTGATCTTGTGGTTCTCTTTTGGTGCTTCCTGCTTTATCCT ACTGGCCATTGTCATGGGACTGGTGTTCATCTGCGTCAAAAACGGGAACATGCGCTGTACCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2756	ATGAACACCCAGATCCTTGTCTTTGCTCTGATTGCTATCATCCCTACAAATGCGGACAAGATTTGTCTGGGTCATCATGCAGTATCCAACG GAACCAAAGTCAACACACCCTAACCGAACGCGGCGTAGAAGTGGTCAACGCCACCGAGACCGTGGAACGCACAAATATTCCTAGGATCTGC TCAAAAGGTAAAAAGACAGTGGATTTGGGCCAGTGTGGTCTGCTGGGGACTATAACTGGCCCCCCCCCAATGCGATCAGTTCCTTGAATTT AGCGCCGATCTCATTATAGAACGGCGGGAGGGCAGCGATGTTTGCTATCCAGGAAAGTTTGTCAATGAAGAAGCACTAAGGCAGATTCT GAGAGAATCTGGAGGAATCGACAAGGAGCGCCATGGGATTCACGTACTCCGGCATTCGCACAAATGGGGCCACCTCAGCTTGTAGGCGC AGTGGCAGCAGCTTTTACGCGGAGATGAAGTGGTTGCTTTCCAATACAGATAACGCTGCATTCCCCCAGATGACAAAAAGCTACAAGAAT ACACGAAAATCCCCCCGCTCTGATAGTGTGGGGGATCCCACCATAGTGTGTCAACCGCCGAGCAAACGAAGTTGTATGGCTCCGGAAACAA ATTGGTGACTGTCGGTTCATCCAACTACCAGCAGTCTTTTGTGCCTTCTCCCGGGGCCCGACCTCAGGTAAATGGTCAGAGCGGTCGGA TCGACTTCCACTGGCTCATGCTGAATCCCAACGACACAGTTACTTTTTCATTCAATGGGGCATTCATTGCGCCAGACAGGGCCTCCTTTCT AAGGGGTAAGTCGATGGGAATACAGTCTGGCGTGCAAGTAGATGCAAATTGCGAAGGGGACTGCTATCACTCTGGGGGCACGATCATCA GTAACCTGCCTTTTCAGAACATCGACAGCCGAGCAGTAGGAAAATGCCCACGCTACGTGAAGCAGCGCTCACTGCTCTTAGCCACCGGG ATGAAGAACGTCCCAGAAATTCCTAAAGGAAGGGGGCTGTTCGGCGCAATTGCTGGGTTTATTGAGAATGGATGGGAGGGTCTGATCGA TGGCTGGTACGGTTTCAGACACCAGAACGCCCAAGGCGAAGGCACAGCCGCTGACTATAAGAGTACTCAAAGTGCAATTGACCAGATTA CCGGCAAGTTGAATCGTCTGATTGAAAAGACAAATCAGCAGTTCGAACTGATAGATAATGAGGTTGAGAAACAGATAGGCA ACGTGATTAACTGGACCAGGGACTCAATCACAGAAGTGTGGAGCTACAACGCGGAATTACTAGTGGCAATGGAAAATCAGCATACTATCG ACCTTGCAGATTCTGAAATGGACAAACTGTATGAAAGAGTGAAACGCCAGCTCCGTGAAAATGCCGAAGAGGACGGGACCGGTTGTTTT GAGATTTTCCATAAGTGTGACGACGATTGTATGGCAAGCATCCGTAATAATACATACGATCATTCGAAGTATCGCGAGGAGGCAATGCAG AACAGGATACAAATCGATCCTGTAAAACTGAGTAGTGGGTATAAAGATGTGATTTTGTGGTTCTCATTTGGCGCCTCTTGTTTCATCCTCC TCGCTATCGTGATGGGACTGGTGTTTATCTGCGTGAAGAATGGTAACATGCGGTGCACTATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2757	ATGAATACCCAGATCCTAGTGTTTGCCCTTATTGCCATCATACCGACAAACGCCGACAAGATATGCCTAGGACATCACGCTGTCTCAAAC GGTACCAAGGTTAACACGTTGACGGAGCGAGGAGTTGAGGTGGTGAACGCTACTGAGACCGTGGAACGCACTAACATTCCCCGCATTTG TAGTAAAGGCAAGAGAACTGTCGACCTGGGACAGTGCGGCCTCTTAGGGACCATCACAGGACCCCCGCAGTGTGACCAGTTCCTCGAAT TTTCTGCTGACCTGATCATTGAGCGGAGAGGGGAGCGATGTGTGCTACCCCGGAAAATTCGTAAATGAAGAAGCACTGCGACAGATT CTGCGGGAGAGTGGCGGAATTGATAAGGAAGCTATGGGTTTACATACAGCGGGATCAGGACTAACGGAGCGACCAGCGCTTGCAGGC GGTCAGGAAGTTCTTTCTATGCAGAAATGAAGTGGCTGCTGTCCAACACGGACAATGCTGCTTTCCCCCAGATGACTAAATCCTACAAAA ATACTCGAAAATCTCCCGCCCTTATTGTTTGGGGATCCATCACAGCGTGTCGACCGCCGAACAGACAAAGCTCTATGGAAGCGGTAACA AGCTTGTGACCGTTGGATCTTCCAATTATCAGCAGTCCTTTGTCCCCTCTCCTGGTGCCAGACCCCAGGTTAATGGCCTAAGCGGGCGCA TCGACTTTCATTGGCTCATGCTGAACCCTAATGATACCGTTACGTTTAGTTTTAATGGCGCCTTCATTGCCCCTGACAGAGCATCTTTCCT GCGAGGGAAGTCAATGGGCATCCAGAGCGGTGTACAGGTGGACGCCAATTGTGAGGGCGATTGTTATCACTCCGGGGGAACAATTATTA GTAATCTGCCCTTCCAGAATATAGATTCGAGGGCGGTAGGTAAGTGTCCTCGCTACGTTAAACAACGCTCTCTTCTTTTGGCCACTGGGA TGAAGAACGTACCTGAAATACCTAAGGGTCGCGGGCTCTTTGGCGCGATCGCAGGCTTCATTGAAAACGGCTGGGAGGGTTTAATCAAC GGGTGGTACGGTTTCCGACACCAGAACGCTCAGGGGGAAGGTACCGCTGCAGATTACAAGTCCACTCAATCAGCTATTGATCAGATCAC GGGCAAGCTGAACAGGCTCATCGAAAAGACCAATCAGCAATTCGAACTCATCGATAACGAGTTCAACGAGGTGGAGAAGCAAATTGGAA ATGTAATAAATTGGACGCGCGATTCTATTACAGAAGTGTGGTCCTACAACGCGSAACTCTTAGTGGCAATGGAGAACCAGCATACTATTG ACCTGGCTGACTCAGAAATGGATAAGCTGTACGAAAGGGTGAAAAGACAGTTGAGGGAAATGCTGAGGAAGATGGGACGGGATGCTTT GAGATTTTCCATAAGTGCGATGATGACTGCATGGCAAGCATCCGTAACAACACATATGACCATTCTAAGTACCGGGAGGAAGCCATGCAA AATCGCATACAGATCGACCCTGTGAAGCTCAGTTCTGGCTACAAAGATGTGATCCTGTGGTTTTCGTTCGGAGCCAGCTGCTTTATCCTA CTTGCAATAGTCATGGGTCTTGTGTTCATATGCGTAAAGAATGGCAACATGAGGTGTACCATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2758	ATGAACACCCAGATTCTGGTGTTTGCCCTGATTGCTATAATTCCAACCAATGCGGACAAAATCTGCCTGGGCACCACGCCGTGTCGAAC GGCACGAAAGTGAATACCTTAACGGAAAGAGGCGTTGAAGTTGTGAATGCAACAGAAACTGTAGAAAGAACTAATATTCCTAGAATCTGTT CTAAGGGGAAAAAAACGGTGGACTTAGGCCAGTGTGGTCTGCTAGGGACTATCACCGGCCCCCCTCAATGTGACCAGTTCCTGGAGTTC AGCGCCGACCTCATTATAGAAAGAAGAGAAGGATCAGACGTGTGCTACCCTGGCAAAATTCGTAAACGAGGAGGCCCTCCGGCAGATCCT CCGCGAATCCGGTGGAATCGACAAGGAAGCCATGGGATTTACCTATTCTGGTATTCGGACCAACGGCGCCACGAGTGCTTGTCGGCGGT CAGGGTCTTCCTTTACGCAGAGATGAAGTGGCTCCTGTCCAATACTGACAATGCCGCATTCCCTCAAATGACTAAGTCCTATAAAAATAC CAGAAAATCTCCTGCACTTATCCTGTGGGGCATTCATCACTCTGTCAGTACTGCCGAGCAGACCAAGCTATACGGGAGGCGGTAACAAGCT TGTGACAGTAGGGTCATCCAAC^ATCAGCAAAGCTTTGTACCGTCCCCTGGGGCACGTCCCCAGGTGAACGGCCAGTCCGGGCGGATC GACTTCCACTGGTTGATGCTGAATCCTAACGATACCGTGACCTTCTCTTTCAACGGGGCATTTATCGCACCAGACAGGGCTTCCTTTCTG CGCGGAAAGTCCATGGGCATCCAGTCCGGCGTGCAGGTCGATGCAAACTGCGAGAGGGTGATTGCTACCATTCTGGGGGGACAATAATCT CTAATCTGCCTTTTCAGAACATTGACAGTCGAGCGGTGGGCAAGTGTCCCAGGTACGTGAAACAACGCTCCCTTCTGTTGGCAACAGGG ATGAAGAACGTGCCTGAGATCCCGAAAGGCCGTGGATTATTTGGCGCTATTGCTGGCTTCATTGAGAATGGATGGAGGCTTAATCGA CGGTTGGTACGGCTTCCGGCATCAGAATGCACAGGGCGAAGGAACAGCTGCCGACTATAAATCCACCCAGTCCGCAATCGATCAGATAA CCGGCAAGCTGAACCGGCTCATTGAGAAAACAAATCAGCAGTTCGAGCTCATAGACAATGAGTTTAACGAGGTAGAGAAACAGATTGGTA ATGTCATTAACTGGACACGGGA^AGCATCACGGAAGTTTGGAGCTATAATGCTGAGCTCTTGGTCGCTATGGAGAACCAGCATACGATTG ACTTGGCAGACTCTGAGATGGATAAGCTTTATGAGCGCGTGAAGAGGCAACTTAGAGAGAACGCTGAGGTACTGGGTGCTTC GAGATATTCCATAAGTGCGACGATGACTGCATGGCCAGCATTAGAAACAACACATATGATCACTCCAAGTATCGTGAAGAAGCCATGCAG AATCGGATTCAGATTGATCCAGTGAAGCTGTCCTCCGGCTACAAGGATGTGATCCTGTGGTTCTCGTTCGGTGCTAGCTGCTTCATATTG TTAGCTATCGTTATGGGCCTCGTGTTCATCTGCGTGAAGAACGGTAACATGCGTTGCACTATCTGCATA

SEQ ID NO.	Sequenza di acido nucleico
2759	ATGAACACTCAAATTCTGGTGTTCGCACTCATTGCCATCATACCAACTAACGCTGACAAGATATGCTTGGGCCATCACGCCGTGAGCAAT GGGACAAAGGTAAACACCCTCACAGAAAGAGGCGTCGAAGTGGTTAATGCTACAGAGACAGTCGAGAGGACAAACATCCCCCGTATTTG TTCCAAGGGTAAGAAAACTGTTGATCTGGGCCAGTGTGGGTTGTTAGGAACCATCACCGGACCCCCGCAATGTGATCAATTCCTGGAATT TTCTGCGGATCTGATTATTGAGAGGCGCGAAGGCAGCGATGTGTGTTATCCCGGAAAGTTTGTTAACGAAGAAGCACTGCGGCAGATTCT GCGAGAATCCGGTGGCATCGACAAAGAGGCTATGGGCTTTACTTATTCCGGCATCAGGACGAATGGAGCCACCTCTGCCTGCCGCCGG TCAGGGAGTTCCTTCTATGCAGAGATGAAGTGGCTGCTCTCCAATACAGATAATGCCGCATTCCCTCAGATGACGAAATCTTATAAAAACA CACGGAAGAGTCCCGCACTGATCGTCTGGGGAATTCACCACTCCGTGAGCACTGCAGAGCAAACCAAGCTGTACGGGTCAGGGAACAA GTTAGTGACAGTCGGAAGCTCTAATTATCAACAGTCGTTCGTGCCAAGTCCTGGGGCCCGACCGCAGGTGAATGGTCAGTCAGGGCGTA TCGATTTCCACTGGTTAATGCTGAATCCAAACGACACCGTGACCTTCTCCTTTAATGGCGCCTTTATTGCACCCGATAGAGCTTCCTTTTTA AGAGGAAAATCCATGGGAATTCAAAGTGGTGTGCAGGTAGATGCGAATTGCGAGGGAGATTGTTATCACTCCGGTGGGACCATTATCTC CAACCTCCCTTTCCAGAACATCGACTCGCGAGCTGTGGGCAAGTGCCCAAGATACGTTAAGCAGAGATCGCTTCTGTTGGCCACCGGAA TGAAGAACGTTCCTGAAATTCCTAAGGGCCGCGGATTATTCGGCGCCATTGCAGGCTTTATAGAAAACGGTTGGGAGGGCCTTATCGAT GGATGGTATGGCTTCAGACACCAGAATGCACAAGGGGAGGGGACTGCCGCCGACTATAAGTCGACCCAGAGCGCAATTGATCAGATTAC TGGGAAGCTTAATAGACTCATCGAGAAAACAAACCAACAGTTCGAACTCATTGACAACGAGTTTAATGAGGTTGAGAAGCAGATCGGTAA TGTCATCAACTGGACAAGAGACAGCATCACTGAGGTGTGGTCCTATAATGCTGAGCTGCTGGTAGCTATGGAGAACCAACACACAATTGA TCTCGCGCGACTCAGAGATGGACAAGTTGTACGAGCGCGTCAAGAGGCAATTAAGAGAAAACGCCGAGGAGGATGGGACCGGCTGTTTT GAGATCTTCCATAAATGCGATGATGACTGTATGGCTAGCATCCGAAACAACACTTATGACCACTCCAAATATCGGGAAGAAGCAATGCAG AATCGAATTCAAATTGACCCAGTTAAACTCAGTTCCGGATATAAGGACGTTATCCTCTGGTTCAGCTTCGGAGCATCTTGCTTTATACTGC TGGCAATCGTTATGGGACTCGTGTTCATCTGTGTCAAGAACGGTAACATGAGATGTACTATCTGCATT

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2760	ATGAACACACAAATCTTGGTCTTTGCTCTCATTGCAATAATACCGACAAATGCCGATAAAATCTGTCTAGGACACCACGCTGTATCCAATG GAACAAAGGTCAATACCTTGACAGAGCGCGGCGTAGAGGTGGTAAATGCCACAGAGACAGTCGAGCGAACAAATATTCCCCGCATATGT TCCAAAGGTAAAAAGACCGTTGACCTCGGCAGTGCGGATTACTGGGAACAATCACGGGCCCCCCACAGTGTGACCAATTTCTGGAGTT CAGTGCCGATTTAATCATAGAGCGCAGGGAAGGTTCCGACGTCTGTTATCCTGGCAAGTTTGTAAACGAGGAGGCTTACGGCAAATACT GAGGGAGTCAGGCGGCATCGAGAAGGAAGCCATGGGCTTCACCTATTCCGGAATTCGGGCGAACGGCGCGCAACCTCGGCCTGCCGACG GAGCGGAAGCTCATTTTACGCCGAGATGAAGTGGCTGCTTTCCAACACACTGACAACGCAGCTTTCCCCTCAAATGACAAAGTCGTATAAGAA CACAAGAAAATCTCCTGCCCTCATTGTTTGGGGCATACACCATTCCGTGTCAACAGCAGAACAGACAAAACTCTACGGCTCGGGTAACAA GCTCGTGACAGTCGGTTCCAGTAATTACCAGCAGTCCTTTGTACCTTCCCCCGGTGCACGGCCCCAGGTGAACGGCCTCTCTGGCAGGA TTGATTTCCACTGGCTGATGCTGAATCCTAACGATACAGTCACTTTTAGCTTTAATGGAGCTTTCATTGCACCCGACCGCGCCAGCTTTTT GAGGGGAAAATCCATGGGGATCCAATCCGGAGTGCAGGTGGATGCTAACTGCGAAGGCGATTGTTATCATAGTGGGGGGACCATAATCA GTAACCTCCCTTTTCAGAATATCGACTCCCGCGCAGTAGGAAAATGCCCTAGGTACGTGAAACAGCGCTCCTTACTGCTCGCCACGGGC ATGAAGAATGTTCCTGAGATACCAAAAGGCGGGGGCCTGTTTGGGGCTATTGCGGGATTCATTGAAAACGGGTGGGAGGGGTTGATCGA TGGCTGGTACGGGTTCAGGCACCAGAATGCCCAGGGTGAAGGAACAGCAGCCGACTACAAGTCTACGCAGTCTGCTATCGATCAGATTA CCGGCAAGCTAAACCGCTTAATTGAAAAAACCAACCAACAGTTCGAACTGATCGACAATGAGTTTAACGAAGTGGAAAAGCAGATAGGGA ACGTGATTAATTGGACCAGAGACAGTATTACCGAGGTGTGGTCGTATAATGCCGAACTGTTGGTAGCTATGGAGAACCAGCACACGATAG ATCTGGCAGACAGTGAAATGGATAAGCTGTATGAGAGAGTAAAGCGGCAACTCCGGGAAAATGCAGAAGAGGATGGCACAGGATGCTTC GAGATATTCCATAAGTGTGATGACGATTGTATGGCCAGCATCAGAAACAATACCTACGACCACTCAAAATACCGCGAAGAGGCCATGCAG AATAGGATTCAAATTGACCCAGTGAAGCTCTCCTCGGGATACAAAGATGTGATCTTGTGGTTCAGCTTCGGCGCCTCCTGTGTTTTATCCTCC TGGCGATAGTGATGGGACTCGTCTTTATTTGCGTTAAGAACGGGAAACATGAGGTGCACCATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2761	ATGAACACCCAGATCCTAGTGTTTGCACTTATCGCCATCATCCCGACTAATGCGGACAAGATCTGCCTGGGCCATCACGCTGTGTCTAAT GGAACCAAGGTGAATACGCTGACGGAACGAGGAGTGGAGGTGGTAAATGCTACGGAAACAGTCGAGAGAACCAACATCCCACGGATCT GCTCTAAGGGAAAAAAGACCGTTGATCTGGGCCAATGCGGTCTACTCGGTACCATTACCGGACCACACCAATGCGACCAGTTTCTCGAAT TCAGCGCCGACTTGATCATAGAAAGGCGCGAGGGATCGGATGTGTGCTACCCTGGCAAATTCGTGAATGAGGAGGCCCTCCGCCAGAT CCTTAGAGAATCAGGTGGCATCGATAAGGAAGCTATGGGCTTCACATACTCGGGCATAAGAACAAATGGCGCTACCAGCGCCTGTCGAC GCTCGGGCAGCTCCTTTTATGCCGAGATGAAGTGGTTGCTCAGTAACACAGATAACGCAGCCTTCCCACAGATGACAAAGTCTTACAAGA ATACCCGTAAAAGCCCAGCCCTTATTGTGTGGGAATACACCATAGCGTGAGCACGGCAGAGCAGACGAAACTGTATGGTAGCGGGAAC AAACTCGTTACGGTCGGGAGCTCAAACTACCAGCAGTCTTTTGTACCTTCACCGGGCGCTCGCCCACAGGTTAACGGTCAGTCGGGAG AATCGATTTCCACTGGCTGATGCTGAACCCAAATGACACCGTCACCTTCTCCTTCAACGGAGCCTTCATTGCCCCAGATCGCGCCTCTTTT CTTAGAGGCAAGTCCATGGGCATCCAATCAGGCGTCCAGGTCGATGCCAATTGTGAAGGCGACTGTTATCATTCCGGAGGCACAATTATA AGCAACCTGCCCTTCCAGAACATCGACAGTCGAGCTGTCGGTAAGTGCCCTCGTTACGTGAAGCAGCGGAGTCTCCTCTTAGCTACAGG AATGAAAAATGTCCCAGAGATCCCTAAAGGACGCGGTCTCTTTGGGCCATAGCTGGATTCATCGAAAACGGCTGGGAAGGCCTGATCG ACGGCTGGTACGGCTTCAGACACCAGAATGCACAAGGGAAGGAACCGCTGCTGATTATAAGAGTACCCAGTCAGCTATCGACCAAATA ACCGGTAAGCTTAACCGACTGATTGAGAAAACAAACCAGCAATTTGAGCTCATTGATAATGAGTTTAATGAGGTGGAAAAGCAGATTGGC AATGTCATTAACTGGACCCGGCGACTCGATTACAGAAGTGTGGTCTTATAACGCCGAGTTACTTGTCGCCATGGAAAATCAGCACACCATC GACTTGGCCGACTCTGAAATGGACAAACTGTACGAGCGAGTCAAGCGACAACTGAGGGAGAACGCCGAGGAAGACGGGACCGGTTGTT TTGAGATATTTCACAAATGCGACGATGACTGCATGGCCTCGATCAGGAACAATACTTACGACCACTCCAAGTACAGGGAAGAAGCGATGC AAAACAGGATACAGATAGATCCTGTTAAGCTCTCCAGTGGGTATAAAGACGTGATCCTGTGGTTCAGCTTCGGAGCATCCTGTTTTATCCT TTTGGCCATCGTAATGGGATTAGTCTTCATCTGCGTGAAGAATGGGAACATGCGGTGCAACCATCTGTATA

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2762	ATGAATACCCAGATATTGGTATTTGCCCTGATAGCGATCATTCCAACTAACGCAGATAAGATATGCCTCGGCCACCACGCTGTGTCGAAT GGGACTAAGGTGAATACCCTGACTGAAAGAGGTGTCGAGGTGGTCAACGCTACCGAAACAGTGGAAAGGACCAACATACCGAGAATCTG CAGCAAAGGTAAAAAGACTGTAGACCTCGGCCAGTGCGGCGCCTTCTGGGCGACCATTACTGCGACCTCCCCAATGCGATCAGTTCCTGGAGT TCTCTGCCGACCTCATCATTGAGCGGAGAGGAAGCGATGTGTGCTACCCCGGCAAATTTGTGATGAGGAGGCTCTGAGACAGATT TTGAGGGAGAGTGGCGGGATCGAAAAGGAGGCAATGGGGTTTACCTACTCAGGAATCAGGGCCAACGGAGCAACCTCTGCATGCAGAA GGTCCGGGTCCTCCTTCTACGCAGAGATGAAATGGCTGTTAAGCAATACGGATAATGCCGCCTTCCCTCAGATGACTAAGTCCTATAAAA ATACCCGTAAGAGTCCAGCACTCATAGTCTGGGGCATTCACCATTCCGTCTCTACAGCAGAGCAGACTAAACTCTATGGAAGCGGGAACA AACTCGTGACCGTCGGCTCGAGCAACTATCAACAATCTTTCGTTCCATCTCCCGGAGCCCAGACCCCAGGTGAACGGGCTATCGGGACGG ATCGACTTCCACTGGCTGATGTTAAACCCCAATGATACGGTCACCTTTAGCTTCAATGGTGCATTCATCGCTCCAGACCGGGGCCTCGTTT CTCAGAGGAAAATCTATGGGAATCCAGAGTGGTGTGCAGGTGGACGCCAACTGCGAGGGTGATTGTTATCATTCTGGGGGCACTATCAT CTCAAACCTCCCATTCCAGAACATAGATTCAAGAGCAGTTGGAAAGTGTCCAAGATATGTGAAGCAGCGCTCTCTGCTTTTGGCCACCGG CATGAAAAATGTTCCTGAGATACCGAAAGGACGGGGCCTATTTGGCGCGATCGCAGGATTCATCGAAAATGGATGGGAGGGACTGATCG ACGGTTGGTATGGCTTCCGCCACCAGAATGCCCAGGGGGAAGGTACCGCAGCTGACTATAAATCAACGCAGTCCGCCATCGATCAGATA ACTGGCAAACTGAATAGGCTAATAGAAAAGACTAACCAGCAGTTTGAGCTGATTGACAATGAATTCAACGAAGTGGAGAAGCAGATTGGC AACGTTATTAACTGGACCCGGGACTCCATCACGGAGGTGTGGTCTTACAACGCAGAGTTACTAGTAGCAATGGAGAATCAGCACACTATA GACCTAGCCGATAGTGAAATGGACAAACTATATGAGAGTCAAACGCCAACTGCGGGAGAAGCGCCGAAGAATGGAACAGGATGTTT CGAGATTTTCCACAAATGTGATGATTGCATGGCGTCTATCCGCAATAATACTTACGATCATTCAAAGTACCGCGAAGAGGCCATGCA GAACCGAATCCAGATTGATCCCGTGAAGCTTTCCTCCGGATACAAAGATGTAATCCTGTGGTTCTCATTCGGCGCTTCCTGTTTCATCTTA CTGGCAATCGTCATGGGGCTGGTTTTCATTTGCGTCAAAAACGGCAATATGAGATGTACTATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2763	ATGAACACCCAGATCCTGGTTTTTTGCCTTGATCGCAATTATTCCTACCAATGCGGACAAAATTTGCCTTGGCACCACGCCGTTTCCAATG GCACAAAGGTCAACACTTTGACCGAACGGGGAGTGGAAGTGGTGAACGCTACAGAAACCGTTGAGCGGACTAACATTCCCAGGATCTGT AGTAAGGGCAAGCGCACCCTGGACCTGGGCCAGTGCGGATTGTTAGGCACCATCACCGGCCCACCCCAGTGCGACCAGTTCCTGGAAT TTAGTGCAGATTTAATCATAGAACGAAGAGAGGGTTCTGATGTGTGTTACCCGGGGAAATTCGTGAACGAAGAGGCCCTCCGCCAGATTT TGAGAGAGAGCGGAGGCATAGATAAAGAAGCAATGGGCTTTACCTATAGCGGGATCCGGACTAATGGAGCTACCTCTGCATGTCGGCGT AGTGGAAGTTCTTTCTATGCTGAGATGAAATGGCTCCTTTCTAACACAGACAATGCTGCATTTCCACAAATGACAAAATCCTATAAAAATAC TCGGAAATCCCCCAGCCCTGATCGTTTGGGAATCCACCATTCAGTTTCGACTGCAGAACAGACTAAATTGTATGGGTCCGGGTCTAAGCT GGTAACAGTTGGAAGTTCCAATTACCAGCAAAGCTTCGTCCCCTCGCCAGGTGCACGCCCACAGGTGAACGGGCTAAGCGGGCGTATTG ATTTCCACTGGTTAATGCTGAATCCAAACGACACTGTCACGTTCAGCTTTAACGGAGCGCTTCATCGCTCCTGACCGCGCCAGTTTCCTGC GAGGTAAATCAATGGGCATCCAGTCAGGTGTTCAGGTAGATGCCAACTGTGAGGGGGATTGCTATCATTCTGGGGGGACTATTATTAGTA ACCTGCCCTTCCAGAATATAGATTCTCGGGCCGTCGGCAAGTGTCCAAGGTACGTTAAACAGCGCAGTCTGTTACTTGCCACTGGAATGA AGAACGTTCCCGAGATCCCAAAGGGCCGAGGTCTGTTCGGGGCCATCGCCGGCTTTATCGAGAATGGATGGGAAGGGTTGATTGATGG ATGGTATGGTTTCCGTCACCAAAATGCCCAGGGAGAGGGGACAGCTGCTGACTATAAGTCCACCCAGAGTGCAATAGACCAAATCACAG GGAAACTGAATAGACTTATCGAAAAGACCAACCAGCAGTTTGAGTTGATTGATAACGAATTCAATGAAGTCGAGAAACAGATTGGGAATGT CATTAATTGGACACGAGACTCCATCACAGAGGTGTGGTCCTACAATGCCGAATTGTTGGTGGCCATGGAGAATCAACATACTATCGATCT GGCAGACTCAGAAATGGACAAGCTGTATGAGCGAGTGAAGAGGCAGCTGAGAGAGAACGCCGAAGAAGATGGAACCGGGTGCTTTGAG ATTTTTCATAAGTGTGACGACGATTGTATGGCAAGTATCCGCAATAATACCTACGACCACTCCAAGTATAGAGAGGAAGCCATGCAGAAC CGGATTCAGATTGATCCAGTGAAACTCAGTTCCGGCTATAAAGACGTGATCCTGTGGTTAGCTTCGGCGCCTCCTGTTTCATCCTGTTG GCCATTGTCATGGGGCTGGTCTTTATCTGTGTCAAGTCCCGAAACATGCGATGCACAATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2764	ATGAACACTCAAATTCTAGTGTTCGCACTGATTGCCATTATCCCAACTAACGCCGACAAAATCTGTTTGGGCCACCATGCTGTTAGCAACG GTACCAAAGTGAATACCCTGACCGAAAGAGGCGGTTGAAGTAGTAAACGGCCACTGAAACCGTTGAGAGGACAAACATTCCACGGATTTGTA GCAAAGGAAAGAAAACTGTCGATCTGGGGCAATGTGGACTGCTGGGCACCATCACTGGCCCTCCCCAGTGTGACCAGTTTCTGGAGTTT TCCGCAGATTTAATCATAGAGCGCAGAGAAGGAAGTGACGTGTGCTACCCTGGGAAATTCGTTAATGAAGAAGCCCTCCGGCAGATCCT AAGAGAATCTGGGGGTATCGAAAAGGAGGCAATGGGATTCACGTACTCGGGGATCCGTGCTAACGGAGCAACTTCCGCATGCCGGAGG TCAGGGTCATCTTTTTATGCTGAAATGAAATGGTTGCTGTCAAATACCGATAACGCGCGGTTCCCGCAAATGACAAAGAGCTACAAAAATA CCCGCAAGAGTCCCGCGCTCATCGTGTGGGGCATCCATCATAGCGTGTCCACTGCTGAGCAGACCAAACTTTATGGTAGTGGGAACAAG CTGGTCACGGTCGGATCAAGCAATTACCAGCAGTCCTTCGTACCAAGCCCGGGGGCCCGGCCCCAGGTGAACGGCCTGTCAGGACGCA TCGACTTTCACTGGTTGATGTTGAACCCGAATGATACAGTGACTTTTTTCATTCAACGGCGCTTTTATCGCACCAGACAGGGCCTCCTTTCT CCGCGGGAAGAGCATGGCATCCAGAGTGGTGTGCAGGTTGACGCGAATTGCGAGGGAGACTGTTATCACTCAGGCGGAACAATTATC AGCAATCTTCCTTTCCAAAACATTGATTCGAGAGCCGTCGGGAAGTGCCCCAGGTACGTCAAGCAGCGAAGTCTGCTTTTAGCTACAGGA ATGAAGAACGTGCCCGAGATACCCAAAGGCAGGGGACTGTTCGGCGCAATCGGCTGGCTTTATTGAGAACGGATGGGAAGGTCTGATCG ATGGCTGGTATGGATTTAGGCACCAGAACGCTCAGGGCGAGGGCACTGCAGCCGATTATAAGAGCACGCAGTCTGCCATAGACCAAATC ACCGGGAAACTCAACAGGCTGATCGAGAAGACCAACCAGCAAATTTGAGCTCATTGACAATGAATTTAATGAAGTGGAGAAGCAGATCGGC AATGTTATTAATTGGACACGAGACTCTATTACTGAAGTGTGGTCTTACAATGCCGAGCTGCTTGTTGCAATGGAGAATCAGCATACAATCG ATCTGGCCGATTCAGAGATGGACAAGCTGTACGAAAGGGTGAAACGGCAGCTACGGGAGAACGCTGAGGAGGATGGCACAGGGTGCTT TGAGATTTTCCATAAGTGCGACGATTGTATGGCGAGTATACGCAATAACACCTACGATCATTCAAAGTATCGCGAGGAAGCCATGCA GAACCGCATTCAGATCGATCCCGTGAAGTTGTCCTCTGGCTACAAAGACGTCATTCTGTGGTTCAGCTTTGGAGCATCCTGTTTCATCCTC CTGGCAATCGTGATGGGACTCGTGTTTATCTGCGTCAAAAACGGCAATATGAGGTGCACCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2765	ATGAATACACAGATCTTGGTTTTCGCTCTGATCGCCATCATACCGACCAATGCTGACAAAATCTGTCTGGGTCACCATGCAGTGAGCAAC GGTACCAAAGTCAATACATTGACCGAGCGTGGCGTCGAAGTTGTTAATGCCACAGAAACAGTCGAGCGAACCAATATTCCGAGAATTTGC TCCAAGGGGAAGAAGACCGTGGACCTAGGCCAGTGTGGACTGCTGGGTACAATTACTGGGCCACCACAGTGTGATCAGTTCCTGGAGTT CAGCGCAGATCTGATCATCGAACGGAGAGAGGGATCAGATGTATGCTATCCTGGTAAATTCGTAAACGAAGAGGCCCTGCGACAGATTC TAAGAAAAAGCGGAGGCATCGATAAGGAAGCTATGGGGTTCACATATTCAGGCATCAGAACTAATGGTGCCACTTCCACTTGCCGACGAA GCGGGAGTAGCTTCTACGCAGAAATGAAATGGCTTCTATCAAACACGGACAACGCGGCCTTTCCTCAGATGACCAAATCCTATAAGAACA CCAGAAAAAGCCCCGCAATCATCGTATGGGAATTCATCACTCTGTGAGTACCGCCGAGCAGACAAAGCTTTACGGCTCCGGAAACAAG CTGGTGACCGTTGGGAGTAGCAATTACCAGCAGTCTTTCGTACCATCCCCCGGTGCGAGACCCCAAGTTAACGGCCTTTCAGGACGCAT TGATTTCCACTGGCTGATGTTGAATCCGAACGACACCGTGACGTTCTCCTTCAACGGGGCATTCATTGCACCCGATAGAGCCTGTTTCCT CAGGGGAAAATCCATGGGCATACAGAGCGGGGTGCAGGTGGAGCCGACTGTGAGGGAGACTGCTACCACTCTGGTGGTACGATCATA AGCAACCTCCCATTCCAGAATATCGATTCTAGGGCGGTGGGTAAATGTCCAAGATATGTGAAGCAGCGGTCTCTTCTGCTGGCCACCGG CATGAAAAACGTTCCTGAGATTCCCAAAGGCAGAGGGCTGTTCGGCGCAATCGCCGGCTTTATAGAAAACGGATGGGAGGGCCTGATCG ATGGGTGGTACGGATTCAGACACCAGAATGCCCAGGGCGAAGGTACAGCTGCAGATTACAAAAGCACACAGTCAGCCATTGACCAAATC ACAGGCAAACTGAATCGCCTCA^TGAGAAAACGAATCAGCAGTTCGAGCTCATTGATAACGAGTTCAACGAGGTCGAAAGACAAATTGGT AATGTGATCAACTGGACGAGGGACTCAATCACTGAGGTGTGGTCTTATAATGCAGAGCTGTTGGTGGCTATGGAGAATCAACACACAATT GACCTGGCGGATTCTGAAATGGATAAACTGTACGAACGAGTCAAGCGTCAGCTGAGGGAGAAGCGCTGAGGAAGACGGGACTGGATGCT TCGAAATTTTCCATAAATGCGATGACGATTGCATGGCCTCTATCCGAAACAATACATACGATCATAGTAAGTACAGAGAAGAGGCCATGCA GAACAGAATCCAGATTGACCCGGTGAAACTGTCATCGGGATACAAGGACGTCATCCTCTGGTTTTCTTTTGGTGCCTCTTGCTTCATATTA CTGGCAATTGTTATGGGACTGG^CTTCATATGTGTTAAGAATGGTAACATGCGGTGTACAATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2766	ATGAACACTCAAATCCTCGTTTTCGCTCTGATTGCTATTATTCCTACTAATGCCGATAAGATTTGTCTGGGCCACCATGCAGTTTCCAATGG AACCAAGGTTAACACCCTGACGGAGCGTGGTGTTGAGGTGGTTAATGCAACTGAAACTGTTGAGCGTACCAATATCCCTAGAATATGCAG TAAGGGGAAAAAAAACTGTGGACCTCGGCCAATGTGGCCTGCTGGCACCATCACAGGGCCGCCCCAATGTGATCAATTTTTAGAATTTA GCGCAGACCTGATTATCGAGCGCCGAGAAGGTAGCGACGTGTGCTACCCTGGCAAGTTTGTGAATGAGGAAGCCCTGAGACAAATTCTT AGGGAGTCAGGAGGCATCGACAAGGAAGCCATGGGCTTTACCTATAGCGGGATCAGAACAAATGGCGCAACTTCAGCCTGTAGGCGCT CGGGGTCCTCTTTCTACGCAGAGATGAAATGGCTGCTCAGCAATACAGACAATGCTGCTTTCCCTCAGATGACCAAGTCCTACAAAAATA CCCGGAAGTCGCCCCGCTTTGATCGTTTGGGGAATTCACCATTCTGTCAGCACGGCCGAGCAGACTAAGCTATACGGGTCCGGTAACAAA CTGGTGACAGTCGGCAGCAGCAATTACCAGCAGTCTTTCGTGCCCTCCCCAGGGCGCAAGGCCCCAGGTAAATGGTCAGTCTGGACGCAT AGATTTTCACTGGCTCATGCTCAACCCCAATGACACAGTTACCTTTTCCTTCAATGGAGCCTTTATCGCCCCCGGATCGCGCCAGTTTTCTG CGGGGTAAATCCATGGGGATCCAGTCAGGGGTGCAGGTCGACGCTAACTGCGAGGGAGATTGTTACCACTCAGGAGGAACCATCATCA GCAATTTGCCCTTCCAGAATATCGATTCTAGGGCAAGTGTCCAAGGTACGTAAAGCAGCGATCCCTCCTGCTGGCCACCGGT ATGAAAAATGTGCCAGAGATCCCTAAAGGTAGGGGGCTCTTCGGGGCTATCGCGGCTTCATCGAGAATGGGTGGGAGGGACTCATCG ATGGATGGTACGGCTTCAGACACCAGAACGCACAAGGCGAGGGGACAGCAGCTGATTATAAATCCACCCAGTCCGCTATCGACCAGATT ACAGGGAAACTGAATCGGCTCATCGAGAAGACCAACCAGCAGTTCGAGCTGATTGACAATGAGTTCAATGAGGTTGAAAAGCAGATTGG CAACGTCATCAATTGGACTCGTGACAGCATCACCGAGGTTTGGTCCTACAACGCCGAGCTGCTCGTCGGCCATGGAGAATCAACACACTAT AGACTTGGCCGACTCAGAAATGGATAAGCTATATGAGAGAGTTAAGCGGACAGTTACGCGAGAACGCAGAAGAAGACGGTACCGGATGCT TTGAAATCTTTCACAAATGCGACGACGACTGTATGGCATCAATAAGAAACAACACCTACGATCACTCAAAGTACCGCGAGGAGGCCATGC AAAACCGGATCCAAATAGACCCCGTTAAGTTGTCCAGCGGGTATAAGGACGTGATTTTGTGGTTCTCTTTTGGGGCCTCCTGTTTCATTCT TCTGGCTATCGTGATGGGCCTGGTGTTCATATGTGTTAAGAATGGTAACATGAGATGTACTATCTGTATT

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2767	ATGAATACACAAATTCTGGTCTTCGCTCTGATCGCCATAATTCCCACCAACGCTGATAAGATCTGTCTGGGCCACCACGCCGTCTCCAAT GGTACTAAAGTAAACACTCTCACTGAGCGCGGCGTTGAAGTGGTCAATGCTACCGAGACTGTGGAGCGGACAAACATCCCAAGGATTTG CTCTAAGGGAAAGAGAGAACTGTGGACTTGGCCAGTGTGGATTACTGGGCACAATTACAGGCCCTCCCCAGTGCGATCAGTTCTTGGAGT TTAGTGCCGACCTAATAATTGAACGCAGAGAGGGATCTGACGTGTGCTATCCAGGGAAATTTGTTAATGAAGAGGCACTCCGCCAGATTC TGCGAGAGTCCGGCGCGGATCGACAAAGAGGCCATGGGATTCACGTATTCGGGCATCAGGACCAATGGCGCGACCTCCGCGTGTCGACG GAGCGCGCAGTAGCTTTTATGCTGAGATGAAGTGGCTCCTCAGTAACACCGACAACGCTGCTTTCCCTCAGATGACCAAGTCATACAAGAA TACCCGGAAATCCCCTGCACTTATCGTGTGGGGAATCCATCATTCCGTTAGTACCGCCGAGCAAACTAAACTGTACGGGAGTGGCAACAA GCTTGTGACTGTGGGCTCATCGAATTATCAACAGTCGTTCGTCCCATCACCAGGCGCTAGGCCACAGGTTAATGGACTGTCGGGGCGCA TCGATTTTCACTGGTTAATGTTAAACCCTAATGACACCGTTACGTTTAGCTTCAATGGTGCCTTTATCGCCCCCGACCGGGCCAGCTTCCT CCGTGGAAAGTCCATGGGAATTCAGTCAGGCGTACAAGTGGATGCCAACTGTGAAGGCGATTGCTACCATTCTGGAGGAACCATTATTA GCAACCTGCCCTTCCAGAACATTGATAGCAGGGCAGTAGGTAAATGTCCCCGGTATGTGAAACAAAGAAGCCTGCTGCTCGCCACTGGC ATGAAAAACGTCCCTGAGATCCCGAAAGGTAGAGGCTTGTTCGGGGCAATTGCCGGGTTCATTGAAAACGGATGGGAAGGACTGATTGA CGGATGGTATGGGTTCCGGCACCAAAATGCTCAGGGAGAAGGGACCGCAGCCGATTATAAGTCAACCCAAAGCGCCATTGACCAGATTA CCGGAAAGCTTAACCGGCTCATCGAAAAGACAAATCAGCAGTTTGAGCTGATCGACAACGAATTTAATGAGGTGGAGAAGCAGATCGGA AACGTGATTAATTGGACTAGGGACAGCATCACCGAGGTCTGGTCTTATAACGCCGAACTGCTGGTAGCGATGGAAAATCAACACACCATC GACCTGGCTGACTCAGAGATGGATAAGCTGTATGAAAGGGTCAAACGTCAGCTTCGTGAAAATGCTGAAGAGGATGGCACAGGTTGCTT CGAAATCTTCCATAAGTGTGATGATTGTATGGCTAGTATTAGGAACAACACATACGACCATTCCAAATATCGGGAGGAAGCTATGCAA AACCGGATCCAAATCGACCCAGTTAAACTGTCTTCCGGCTACAAAGATGTTATTCTCTGGTTCAGTTTTGGTGCATCCTGCTTTATACTCCT TGCCATCGTAATGGGCCTGGTGTTTATCTGCGTCAAGAACGGAAACATGCGATGCACGATCTGTATC

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2768	ATGAACACTCAGATCCTCGTATTCGCCTTGATCGCTATTATTCCAACTAACGCCGATAAAATCTGCCTTGGCCACCATGCCGTTAGCAACG GTACTAAAGTGAATACTCTTACAGAGGGGCGTCGAGGTCGTAAATGCCACTGAAACAGTTGAGCGAACAAACATTCCTCGAATTTGTT CTAAGGGAAAAAGAACAGTCGACCTCGGCCAGTGCGGATTGCTGGGAACCATTACGGGGCCTCCCCAGTGCGATCAGTTTCTGGAGTTT TCCGCCGACCTGATCATAGAGCGGCGCGAGGGTTCCGACGTGTGCTACCCAGGAAAATTTGTCAACGAAGAAGCACTACGACAGATCTT GAGAGAGCGGAGGGATTGACAAGGAAGCAATGGGATTCACTTATAGCGGCATCAGGACTAATGGTGCGACCTCTGCTTGCAGACGTT CCGGGTCATCCTTCTACGCAGAGATGAAGTGGTTACTAAGCAATACCGATAACGCAGCTTTTCCCCAGATGACCAAGTCCTACAAGAATA CACGGAAAAGCCCCGCTTTGATCGTTTGGGGTATCCATCACTCTGTGAGCACCGCAGAACAGACAAAGTTGTACGGATCGGGAAGTAAG CTTGTCACCGTGGGCTCGTCCAACTACCAACAGTCTTTTGTACCTTCTCCCAGGGGCTCGTCCACAAGTCAACGGCCTGTCTGGGAGAATC GACTTTCACTGGCTCATGTTAAATCCCAATGACACAGTCACCTTCTCCTTTAATGGCGCCTTCATTGCACCCGACCGTGCCTCATTCCTGA GAGGTAAGTCCATGGGAATTCAGAGCCGGTGTCCAGGTCGACGCTAACTGCGAGGGGGACTGCTATCACTCCGGGGGGACAATTATCAG TAATTTGCCCTTTCAGAATATTGATTCAAGAGCTGTTGGAAAGTGCCCACGCTACGTAAAGCAGAGAAGCCTCCTATTGGCCACAGGAAT GAAGAACGTGCCGGAGATCCCCAAGGGTCGCGGTTTGTTTGGCGCCATCGCTGGCTTTATTGAAAACGGATGGGAGGGTTTGATTGATG GCTGGTATGGGTTCAGGCATCATGAACGCCCAGGGAGAAGGTACCGCAGCAGACTACAAGAGCACACAGTCCGCCATTGACCAGATTACT GGTAAGCTGAACAGATTGATCGAAAAGACTAACCAGCAGTTTGAGCTGATTGACAATGAATTCAACGAAGTGGAAAAGCAGATCGGGAAT GTGATCAATTGGACCCCGGGATTCAATCACCGAGGTGTGGAGCTATAATGCCGAGCTGCTCGTAGCCATGGAGAATCAACATACAATAGAT CTCGCTGACTCCGAAATGGATAAGCTCTACGAGCGCGTAAAACGGCAGCTGCGCGAAAACGCTGAAGAAGATGGAACTGGATGCTTCGA GATCTTTCATAAGTGCGACGATGATTGTATGGCCTCCATTAGAAATAATACCTATGACCATAGGCAAGTACAGGGAAGAGGCCATGCAAAAT AGAATCCAGATCGATCCCGTCAAACTAAGTTCGGGGTATAAGGATGTGATCCTATGGTTTTCCTTTGGTGCTAGCTGTTTCATTCTGTTAG CCATCGTCATGGGGCTTGTGTTCATATGTGTGAAAAATGGTAACATGCGGTGCACAATTTGTATA

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2769	ATGAATACACAGATCTTAGTATTTGCGCTAATCGCTATTATCCCTACCAATGCTGATAAGATCTGTCTGGGCCACCACGCCGTTTCCAATG GCACTAAAGTGAACACTCTCACTGAGCGCGGCGTCGAGGTGGTCAACGCCACCGAGACAGTTGAGAGAACAAACATACCTCGCATCTGT AGTAAAGGCAAGAAGACTGTCGATCTGGGCCAGTGTGGGCTGCTGGGAACGATAACCGGTCCCCCTCAGTGTGATCAGTTTCTGGAATT CTCTGCAGACCTGATTATCGAAAGACGAGAAGGAGCGACGTGTGTTACCCCGGAAAGTTTGTTAATGAGGAAGCACTGCGCCAGATCC TTCGGGAATCTGGGGGCATCGATAAGGAAGCGATGGGCTTCACTTATAGTGGGATTCGCACCAACGGGGCTACGTCCGCTTGCCGGCG GAGCGGTTCGTCTTTTTACGCGGAAATGAAGTGGCTGCTCAGCAATACCGATAACGCCGCCTTCCCGCAGATGACAAAAGCTATAAGAA TACCCGGAAAAGTCCGGCACTCATAGTGTGGGGATCCACCATAGCGTTAGCACGGCGGAGCAGACAAAGCTCTATGGGAGTGGAAAT AAGCTGGTGACCGTCGGCTCTTCAAATTACCAGCAATCATTTGTGCCCTCTCCGGGCGCCCGTCCTCAAGTGAACGGACAGTCAGGAAG GATTGACTTCCACTGGCTCATGTTGAACCCTAATGACACAGTGACATTTTCGTTTAACGGAGCATTCATCGCCCCTGACAGAGCTAGTTTC CTCAGAGGGAAGAGTATGGGGATCCAGAGCGGGGGTACAGGTGGATGCAAACTGTGAGGGGGACTGCTATCATTCTGGTGGGACCATCA TTTCGAACCTGCCATTCCAGAACATTGACTCTCGCGCTGTTGGCAAATGTCCTAGGTACGTTAAGCAAAGATCATTGCTGCTCGCAACGG GCATGAAAAACGTGCCGGAAATCCCTAAAGGTCGGGGTCTCTTCGGCGCCATCGCCGGATTCATTGAGAATGGCTGGGAGGGACTCATC GACGGGTGGTATGGGTTCCGGCATCAGAACGCACAGGGCGAGGGGACTGCCGCTGACTACAAATCGACCCAGTCCGCTATTGACCAGA TCACCGGCAAACTCAACCGGCTGATCGAGAAGACTAACCAACAGTTTGAACTCATCGATAATGAGTTCAACGAGGTAGAAAACAAATTG GAAACGTGATCAATTGGACACGCGATTCTATTACTGACGGTCTGGAGTTATAACGCAGAGCTGCTGGTGGCTATGGAAAACCAGCACACCA TTGATCTAGCTGACTCGGAAATGGATAAGCTGTACGAAAGGGTGAAACGCCAGCTACGCGAAAATGCCGAGGAAGACGGTACAGGATGC TTCGAGATATTCCACAAGTGCGACGACGACTGCATGGCCAGCATCCGCAATAACACATATGACCATTCTAAATACCGGGGAGGAAGCCATG CAGAATCGAATCCAGATCGACCCTGTCAAATTAAGCAGTGGGTACAAGGACGTGATCCTGTGGTTTAGCTTCGGAGCTAGTTGTTTTATAT TACTCGCCATCGTTATGGGATTGGTATTTATCTGCGTCAAGAATGGAAACATGCGCTGCACTATCTGCATC

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2770	ATGAACACCCAGATACTCGTCTTTGCCCTCATTGCCATAATCCCGACTAATGCGGATAAGATTTGTCTAGGGCATCACGCTGTATCAAACG GCACGAAAGTCAACACCTTGACCGAAAGGGGCGTAGAGGTGGTAAACGCTACAGAAACAGTCGAGCGGACAAATATCCCAAGGATTTGC AGCAAGGGTAAAAAGACTGTAGACTTAGGACAGTGCGGCTTACTCGGCACAATCACAGGCCCCCCCCAATGTGATCAGTTCCTTGAATTC AGTGCAGATCTGATAATCGAAAGGAGGGAGGGATCTGACGTGTGTTACCCAGGCAAATTCGTCAACGAGGAAGCACTCAGACAGATCTT AAGAAAGTCCGGCGGGATAGACAAAGAAGCTATGGGTTTTACGTACAGTGGGATAAGAACCAATGGCGCCACTAGCACCTGTAGGAGGA GTGGGTCGTCCTTCTATGCTGAAATGAAGTGGCTGCTGTCCAATACTGACAATGCAGCCTTTCCTCAGATGACAAAGAGCTACAAGAATA CAAGGAAAAGCCCGGGAATTATAGTATGGGGAATCCACCATTCAGTCAGCACCGCTGAACAAACTAAGCTGTATGGCTCCGGCAATAAG CTCGTCACAGTGGGGGGCTCAAATTATCAGCAGTCATTCGTGCCAAGCCCAGGGGCGCGGCCGCAAGTTAACGGCCTCTCCGGAAGAA TTGATTTTCATTGGTTAATGCTTAATCCTAACGACACGGTTACCTTCAGCTTTAACGGCGCTTTCATCGCTCCCGACAGGGCTTGTTTTCTC CGCGGCAAGTCTATGGGAATCCAGTCCGGGGTCGCAGGTCGACGCGGATTGTGAAGGAGACTGCTACCACAGTGGGGGCACTATAATCT CAAATCTGCCATTCCAGAATATCGACAGTCGCGCCGTGGGGAAGTGTCCGAGATACGTTAAGCAACGATCACTGCTACTGGCCACCGGT ATGAAAAATGTGCCAGAGATTCCCAAAGGGAGAGGCCTGTTTGGTGCCATCGGCCGGGTTTATCGAGAACGGGGTGGGAAGGCTTGATTGA CGGCTGGTACGGATTCGGCACCAAAACGCCCCAAGGGGAAGGTACCGCTGCCGATTACAAGAGCACCCAAGTGCCATTGACCAGATTA CGGGGAAACTGAACAGACTGATCGAGAAAACGAATCAACAATTCGAACTGATAGATAACGAATTTAACGAAGTCGAGCGACAGATCGGGA ATGTGATCAACTGGACTAGGGATTCTATTACCGAGGTATGGAGCTATAATGCTGAGCTTCTTGTGGCAATGGAAAATCAACACACAATAGA TTTAGCGGATAGTGAGATGGACAAGCTCTACGAACGGGTAAAAAGACAGTTGAGAGAGAATGCCGAGGAGGACGGGACAGGCTGTTTTG AAATCTTCCATAAGTGTGACGATGATTGTATGGCGAGCATCCGAAACAATACTTACGATCACAGCAAATACCGTGAGGAGGGCGATGCAGA ATAGAATCCAGATAGATCCGGTTAAACTGTCCAGCGGGTACAAGGATGTGATCCTGTGGTTCTCATTCGGCGCTTCATGTTTCATTTTGCT GGCAATTGTGATGGGACTCGTGTTCATATGTGTGAAAAACGGCAATATGCGCTGCACTATTTGCATC

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2771	ATGAATACACAGATCCTAGTGTTCGCACTCATAGCTATAATCCCTACAAATGCCGACAAGATATGTCTTGGCCACCACGCTGTGTCAAACG GGACAAAAGTTAACACCTTGACAGAGCGGGGCGTCGAGGTCGTTAACGCCACCGAGACTGTGGAAAGAACAAATATACCCCGGATTTGT TCAAAAGGGAAGAGAACTGTCGACCTGGGCAGTGCGGGACTCCTGGGGACTATCACTGGACCTCCACAATGCGACCAGTTCCTCGAGTT CTCTGCCGATCTCATCATTGAGAGGCGAGAGGGGTCCGATGTGTGTTACCCAGGGAAATTTGTGAATGAGGAAGCCCTTCGGCAGATAC TTCGTGAAAGCGGGGGCATCGATAAAGAGGCCATGGGTTTTACGTATTCTGGAATTCGCACCAACGGGGCCACAAGTGCATGTCGGAGG AGCGGATCATCATTCTATGCAGAGATGAAATGGCTGCTTTCTAACACCGATAATGCCGCTTTCCCGCAGATGACACAAAAAGTTATAAAAATA CCAGGAAATCCCCCGCTCTAATTGTGTGGGGGATTCATCACAGCGTTTCCACTGCCGAACAGACTAAGCTGTACGGTTCGGGCAGCAAG CTGGTGACAGTGGGTTCATCAAACTACCAACAGTCCTTCGTGCCTTCTCCAGGCGCGGCCGCCGCAGGTTAACGGACTCTCTGGCACGAAT CGACTTTCATTGGTTGATGCTGAATCCCAACGACACCGTCACCTTCTCCTTTAACGGTGCATTTATCGCCCCAGATCGTGCTTCATTTCTA CGCGGCAAAAGCATGGGGATTCAGTCCGGCGTCCAGGTAGATGCAAACTGTGAGGGCGACTGTTACCACTCAGGCGGAACAATTATTAG CAACCTGCCATTTCAGAATATTGACTCTCGCGCCGTGGGGAAATGCCCAAGATATGTCAAGCAGCGGAGCCTGCTCCTGGCCACTGGGA TGAAGAATGTGCCAGAAATACCAAAGGGTAGAGGTCTGTTCGGCGCCATCGCTGGCTTTATAGAGAATGGATGGGAGGGACTGATCGAT GGCTGGTACGGATTCAGACATCAAAACGCCCAAGGTGAAGGAACCGCTCGCCGATTACAAGTCTACCCAAAGTGCTATAGATCAGATAAC CGGCAAGCTTAATAGGCTCATTGAGAAAACAAATCAGCAGTTCGAGCTGATCGACAACGAGGTTCAACGAGGTGGAGAAGCAGATTGGAA ACGTGATTAATTGGACGCGCGATAGCATCACAGAGGTGTGGTCCTATAACGCAGAGCTGCTGGTGGCTATGGAGAACCAGCACACTATC GATCTGGCCGACTCCGAAATGGACAAGCTGTACGAGAGGGTGAAGCGGCAGTTGCGAGAGAATGCCGAGGAGGACGGGACAGGCTGC TTTGAGATCTTTCACAAGTGCGACGATGATTGTATGGCTTCAATCCGCAATAACACATACGATCATTCCAAATACAGGGACGGAAGCTATGC AGAACCGAATCCAGATAGATCCAGTGAAGCTCTCTAGTGGCTACAAGGACGTGATTCTGTGGTTCAGTTTCGGTGCTAGCTGTTTTATTCT GCTTGCAATAGTAATGGGGTTGGTGTTTATCTGTGTTAAGTCACGGAACATGCGCTGCACCATATGCATC

SEQ ID NO.	Sequenza di acido nucleico
2772	ATGAACACACAGATCCTAGTTTTCGCGCTGATCGCAATCATACCTACAAATGCTGACAAGATTTGCCTAGGACATCACGCCGTGTCTAATG GAACCAAAGTAAACACTCTGACTGAGCGCGGGGTAGAGGTCGTGAATGCAACAGAAACGGTAGAGCGGACAAATATCCCTAGGATATGC AGTAAAGGCAAGCGTACAGTAGATCTCGGCCAGTGTGGCCTACTCGGAACAATCACCGGTCCTCCCCAGTGCGACCAGTTCCTTGAATT CAGTGCTGATCTGATCATTGAAAGGCGGGAGGGGTCCGATGTATGTTACCCTGGGAAGTTTGTCAATGAAGAGGCACTGCGCCAAATCC TGAGAGAGTCAGGAGGCATAGACAAAGAGGCTATGGGATTTACATACAGTGGGATAAGAACTAACGGCGCGACCAGCGCCTGCAGGAG GTCCGGGTCGTCTTTCTATGCCGAAATGAAATGGCTCCTTTCTAATACAGATAACGCAGCCTTTCCCCAGATCACTCTAAATCATACAAGAAT ACTAGGAAGTCACCCGCACTCATCGTTTGGGCATACATCACTCGGTCAGCACCGCCGAACAGACTAAATTATACGGTTCAGGGAACAA GCTCGTAACCGTGGGCTCGTCTAACTATCAACAGAGTTTCGTTCCGTCCCCCGGGGCGAGACCGCAGGTGAATGGCCTCTCCGGGCGA ATCGATTTTCATTGGCTGATGCTGAACCCCAACGATACCGTAACCTTTTCGTTCAACGGGGCTTTCATCGCTCCGGATAGAGCATCATTTC TGCGCGGGAAGTCCATGGGCATTCAGAGCGGTGTTCAAGTCGACGCCAACTGTGAGGAGACTGTTATCACAGCGGGGGGACCATCAT CAGCAACCTCCCGTTTCAGAATATTGACTCAAGGGCGGTCGGAAAGTGTCCACGTTACGTCAAGCAGCGGAGTCTCCTGTTAGCGACAG GCATGAAGAATGTCCCTGAAATTCCTAAAGGCCGGGGCCTATTTGGTGCCATCGCCGGTTTCATCGAGAACGGGTGGGAAGGTCTGATC GATGGTTGGTATGGCTTCCGCCACCAGAATGCGCAAGGGGAAGGAACCGCGGCGGACTACAAAAGTACTCAGTCCGCAATCGATCAGA TCACAGGTAAGTTGAATAGGCTTATCGAGAAGACAAACCAGCAGTTTGAGCTTATAGACAACGAATTCAATGAGGTGGAAAAGCAAATTG GAAATGTAATCAATTGGACCAGCGATAGCATCACCGAAGTGTCGAGCCTACAATGCCGAGCTGTTGGTGGCAATGGAACCAACATACA ATCGACCTAGCCGATAGTGAGATGGACAAGCTGTATGAGCGGGTGAAGCGGCAGCTGAGGGAAAATGCGGAGGAAGACGGAACTGGGT GTTTCGAGATTTTCCACAAGTGTGATGACGATTGTATGGCCTCAATTCGGAACAACACATACGATCATTCCAAGTATCGAGAAGAGGCCAT GCAAAACCGGATTCAGATTGACCCCGTCAAGTTATCCTCCGGGTACAAGGACGTTATTCTCTGGTTTAGCTTTGGAGCCAGTTGCTTCATT CTGTTGGCAATTGTGATGGGTCTTGTATTCATCTGTGTGAAAAATGGGAATATGCGCTGCACCATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2773	ATGAACACGCAAATCTTGGTGTTCGCACTGATCGCCATTATTCCAACCAATGCTGACAAGATTTGCCTTGGTCACCACGCGGTTAGCAAC GGGACCAAAGTGAACACACCCTGACCGAGCGAGGGGGTGGAGGTAGTGAACGCAACCGAGACAGTGGAGAGAACTAATATACCCCGGATCT GTAGCAAGGGTAAGAGAACGGTGGATCTTGGGCAGTGTGGCTTGTTGGGGACTATCACAGGCCCTCCTCAGTGCGACCAGTTCTTGGAA TTTTCTGCCGACCTTATCATTGAGCGCAGAGAGGGGTCAGATGTCTGTTATCCTGGAAAAATTTGTGAACGAAGAGGCTCTTCGGCAGATA CTGCGCGAATCAGGCGGCATTGACAAAGAAGCCATGGGGTTTACCTATAGCGAATCAGGACTAACGGCGCCACCTCCGCCTGCAGGA GGAGTGGGAGCAGCTTCTACGCTGAAATGAAGTGGTTGCTCTCTAACACAGACAATGCTGCATTCCCTCAGATTACCAAGAGTTATAAGA ACACACGCAAATCTCCCGCGCTGATCGTGTGGGGCATTCATCACAGCGTTAGCACGGCCGAGCAGACAAAACTGTACGGCTCGGGAAAT AAACTTGTGACGGTTGGCAGCAGCAACTATCAGCAGTCCTTCGTTCCTTCTCCAGGCGCGCGGCCCCCAGGTGAATGGGTTGTCTGGGAG AATCGACTTTCACTGGCTAATGCTTAATCCTAACGACACGGTGACTTTCTCATTTTAACGGAGCTTTCATCGCACCAGACCGCGCATCCTTT CTGAGAGGGAAATCGATGGGCATCCAATCCGGGGTGCAGGTCGATGCGAACGCGTGCCGACTATAAATCTACACAGAGCGCCATTGATCAG TCAGCAACCTGCCTTTCCAGAATATCGACTCCCGGGCAGTAGGAAAGTGCCCACGATATGTGAAGCAGAGGAGCTTGCTGCTGGCTACA ATAACTGGCAAGTTAAACCGGCTCATCGAGAAGACTAATCAGCAATTTGAGCTTATCGATAACGAATTCAATGAAGTAGAGAAACAAATCG GGCATGAAGAATGTCCCAGAAATCCCCAAGGGAGAGGTCTATTTGGGGCCATCGCTGGCTTTATAGAGAACGGGTGGGAAGGTCTGAT GGAATGTGATCAACTGGACTCGAGATTCAATAACGGAGGTATGGTCCTACAACGCCGAACTGCTCGTTGCTATGGAGAACCAGCACACC ATCGATCTGGCAGACAGCGAGATGGATAAGCTCTACGAGAGAGTCAAGCGACAGTTACGTGAAAATGCCGAAGAAGATGGAACCGGTTG CTTTGAGATATTTCATAAATGCGATGATTGCATGGCTTCGATTCGGAATAACACATATGACCACAGCAAGTACAGGGAAGAAGCGATG CAAAACCGCATTCAGATCGACCCAGTCAAACTAAGCTCTGGATACAAAGACGTTATACTGTGGTTCTCCTTTGGAGCCAGCTGCTTCATCGC TGCTCGCCATAGTGATGGGACTGGTGTTTATCTGCGTGAAAAACGGAAACATGAGGTGTACCATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2774	ATGAACACACAGATTCTCGTCTTCGCACTCATTGCCATCATCCCTACAAACGCCGGACAAAATTTGCCTTGGCACACCACGCCGTGAGCAAC GGCACAAAAGTCAACACATTGACAGAGCGAGGCGTAGAGGTCGTTAATGCCACCGAAACGGTAGAAAGGACGAACATTCCTAGGATATG TAGTAAAGGAAAAGCGTACTGTAGATTTAGGACAGTGTGGCTTGCTGGGAACTATCACAGGACCCCCACAATGCGACCAGTTCCTAGAGTT TAGCGCCGATCTGATAATTGAACGTAGGGAGGGAAGCGACGTATGCTACCCAGGGAAATTTGTGAAGGAGGAGGCCCTCCGACAGATTC TGAGAGAGTCCGGGGGGAATCGACAAGGAAGCCATGGGATTCACCTATTCGGGCATAAGAACCAACGGCGCAACATCCGCTTGCCCGGAG GTCCGGGAGTAGTTTTTATGCTGAGATGAAGTGGCTGCTTTCCAACACCGATAACGCCGCCTTTCCTCAGATGACGAAATCCTATAAGAA TACAAGAAAAAGCCCCGGCACTCATCGTGTGGGGCATCCATCACAGCGTCTCCACGGCAGAGCAGACTAAACTCTACGGATCTGGAAATA AACTGGTAACAGTGGGGTCAAGTAACTACCAACAGTCGTTCGTGCCATCCCCTGGCGCTCAGGTTAACGGGCTGTCCGGTAGG ATTGATTTCCATTGGCTGATGTTAAACCCAAACGACACCGTGACCTTCAGTTTTAACGGCGCTTTTATTGCTCCCGACAGGGCAAGTTTCT TGAGGGGCAAGAGCATGGGAATCCAGTCTGGTGTGCAGGTCGATGCCAACTGTGAGGGAGATTGTTATCATAGCGGAGGTACGATTATC TCTAATCTACCTTTTCAAAATATCGACTCCAGGGCGGTCGGGAAATGTCCTCGCTACGTCAAGCAGAGGTCACTGCTTCTGGCAACCGGA ATGAAGAACGTGCCCGAAATCCCAAAGGGCAGAGGTCTGTTTGGCGCTATAGCCGGGTTCATTGAGAACGGATGGGAGGGTTTAATAGA CGGGTGGTATGGATTCCGCCACACAAAATGCCCAGGGGGAAGGGACAGCTGCCGATTACAAGTCAACACAGAGCGCGATCGATCAGATC ACAGGAAAGTTGAACAGGTTGA^AGAGAAAACAAATCAACAGTTTGAGCTGATCGATAATGAGTTCAATGAGGTCGAGAAGCAAATTGGG AACGTAATAAATTGGACACGAGATTCCATAACTGAAGTGTGGTCTTACAATGCTGAACTGCTCGTGGCGATGGAAAACCAACACACGATT GATTTGGCCGATTCCGAGATGGATAAACTGTATGAACGTGTGAAGCGTCAACTTCGTGAAAATGCCGAAGAGGACGGTACCGGATGCTT CGAGATCTTCCACAAGTGTGATGATTGCATGGCCAGTATCAGGAATAACACATATGACCATTCCAAATACCGCGAAGAGGCCATGCA GAATCGTATTCAGATTGACCCCGTTAAGCTGAGTTCCGGTTACAAAGATGTCATTCTCTGGTTTTCTTTTGGCGCCTCATGTTTCATTCTGC TAGCCATTGTGATGGGGCTTGTCTTTATCTGTGTCAAGAACGGTAACATGAGGTGTACCATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2775	ATGAATACCCAGATTCTGGTGTTCGCGTTAATAGCCATTATCCCAACTAACGCTGATAAGATATGTCTGGGCCATCACGCTGTGAGCAATG GAACTAAGGTGAACACTCTGACCGAGAGGGGTGTGGAGGTAGTGAATGCTACCGAGACAGTAGAGCGGACTAACATTCCCAGGATTTGC TCTAAGGGCAAGCGCACCGTCGACCTGGGACAGTGCGGGTTGCTAGGTACGATAACTGGTCCACCACAATGTGATCAATTCTTGGAATT TTCTGCTGACCTCATTATAGAGAGGAGGGAGGGCTCCGATGTGTGCTACCCCGGGAAATTCGTCAACGAAGAAGCACTGCGTCAGATTT TGAGAGAATCGGGGGGTATTGACAAGGAGGCCATGGGTTTTACCTACTCCGGCATTCGTACTAACGGAGCCACCAGTGCCTGCAGGCG GAGCGGGAGTAGCTTCTACGCTGAGATGAAATGGCTTCTAAGCAACACTGATAACGCCGCTTTCCCCCAGATGACTAAATCTTACAAAAA CACACGGAAGAGTCCCGCTCTGATAGTATGGGAATACACCATTCAGTCTCTACAGCCGAGCAGACTAAGCTTTATGGAAGCGGGAACA AACTGGTGACCGTCGGTTCATCTAATTACCAGCAGTCTTTCGTGCCCTCTCCTGGGCCAGGCCCCAGGTGAATGGGCTGTCTGGCCGC ATTGATTTCCACTGGTTAATGCTGAATCCCAATGATACCGTGACCTTTTCTTTCAATGGCGCTTTCATTGCTCCTGATAGAGCCTCATTTCT GAGAGGGAAGTCGATGGGGATACAGTCTGGGGTCCAGGTCGACGCTAATTGCGAAGGCGATTGCTACCACTCTGGGGGGACAATTATA AGTAATTTGCCGTTCCAGAATATCGATAGTAGAGCTGTGGGGAAATGCCCCCGCTACGTAAAGCAGCGTTCCCTTTTGCTTGCCACAGGT ATGAAAAACGTGCCCGAAATTCCAAAAGGAAGAGGACTATTTGGTGCCATTGCGGGGTTCATCGAAAACGGATGGGAGGGCCTGATCGA TGGGTGGTACGGCTTCAGACATCAAAAATGCTCAGGGGGAAGGAACTGCAGCGGACTATAAATCTACCCAGTCTGCCATCGATCAGATCA CTGGCAAACTAAATCGACTTATCGAGAAAACAAACCAGCAGTTTGAGGCTTATCGATAACGAGTTCAACGAGGTAGAAAAGCAGATTGGAA ACGTCATTAACTGGACTCGGGATTCAATCACAGAAGTATGGAGTTACAACGCTGAGCTTTTAGTGGCCATGGAAAATCAGCATACGATTG ATCTCGCCGACTCCGAGATGGATAAGCTGTACGAACGTGTGAAGCGCCAGCTCAGAGAGGAATGCAGAGGAGGACGGACTGGCTGCTT CGAGATCTTTCATAAATGTGACGATGACTGCATGGCAAGCATTCGAAATAACACATACGATCATAGTAAGTATCGGGAGGCAGGCTATGCA AAATCGGATTCAAATTGATCCGGTGAAGCTGTCGAGTGGCTACAAGGATGTGATTTTTATGGTTTTCATTCGGGGCCTCCTGCTTCATCCTA CTGGCCATAGTGATGGGCCTGGTGTTTATCTGCGTGAAAAATGGTAATATGCGGTGCACCATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2776	ATGAATACTCAAATTTTAGTTTTCGCTCTTATTGCCATCATTCCAACTAACGCTGATAAAATCTGCCTGGGCCACCACGCCGTCAGCAATG GGACCAAGGTAAACACACTCACCGAACGCGGCGTGGAAGTAGTGAATGCGACCGAAACTGTTGAGCGCACCAACATTCCACGAATATGT TCCAAGGGTAAGAAAACCGTGGATCTGGGGCAATGTGGCCTTCTGGGGACGATAACAGGACCACCCCAGTGTGACCAGTTTCTGGAGTT TTCCGCAGACCTGATCATCGAACGTAGGGAGGGAAGCGACGTCTGTTATCCCGGCAAGTTCGTTAATGAGGAGGCCCTTCGACAAATCC TGCGCGAAAGCGGTGGGATAGACAAAGAAGCCATGGGCTTCACATACAGCGGGATCAGAACCAACGGCGCCACAAGTGCCTGCAGGCG ATCTGGCTCGTCCTTCTACGCGGAGATGAAGTGGCTGCTGTCAAACACCGACAATGCCGCTTTTCCCCAGATGACAAAAAGCTACAAAAA CACCCGAAAAAGCCCTGCATTAATAGTCTGGGGCATCCACCACAGCGTGTCTACCGCCGAACAAACGAAGCTGTATGGTTCCGGAAACA AACTAGTGACGGTGGGCTCATCAAATTATCAGCAGTCCTTCGTGCCTTCCCCAGGGCCAGGCCTCAGGTGAATGGACAATCCGGCGCGA ATTGATTTTCATTGGCTCATGTTGAACCCCAACGACACTGTAACGTTTTCTTTCAACGGTGCGTTTATCGCTCCAGATAGGGCCTCCTTCC TCCGAGGAAAAAGTATGGGTATCCAGAGTGGCGTGCAGGTGGATGCCAATTGCCGAGGGTGACTGCTACCACTCTGGCGGTACAATTATC TCTAATCTGCCCTTCCAGAACATAGACAGCCGTGCGGTCGGGAAGTGCCCCCGCTACGTTAAGCAACGGTCTTTATTGCTTGCCACTGGT ATGAAGAACGTGCCAGAGATACCAAAAGGGAGAGGCTCTTTGGCGCCATCGCTGGATTTATAGAGAACGGGTGGGAGGGCCTGATTG ACGGGTGGTACGGATTCCGCCATCAGAACGCCCAAGGTGAAGGCACCGGCGCCGACTACAAGAGCACCCAGAGCGCCATTGATCAGAT CACGGGAAAACTGAATAGGCTGATTGAAAAGACAAATCAGCAGTTCGAGCTGATAGACAACGAATTTAACGAAGTAGAAAAACAAATCGG CAACGTGATCAACTGGACAAGAGACTCCATCACTGAAGTGTGGAGCTATAATGCCGAGTTACTCGTGGCAATGGAGAATCAGCATACTAT TGATCTGGCCGATTCGGAAATGGACAAGCTGTACGAACGCGTCAAGCGGCAACTGCGGAGAATGCCGAGGAGGACGGTACCGGTTGT TTCGAGATTTTTCATAAATGTGATGACGACTGCATGGCCTCAATTAGAAACAACACATATGATCACAGCAAGTATCGGGAAGAAGCTATGC AAAACCGGATTCAGATCGACCCAGTTAAGCTGAGTAGCGGGTATAAGGACGTAATCCTCTGGTTTTCTTTCGGCGCCTCCTGTTTTTATTTT ATTAGCGATCGTGATGGGTCTGGTGTTTATCTGCGTCAAAAATGGTAATATGAGGTGTACTATATGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2777	ATGAACACTCAGATTCTAGTATTTGCACTTATTGCCATCATACCAACCAACGCTGACAAGATCTGTCTCGGCCATCATGCGGTCAGTAACG GTACAAAGGTCAATACACTGACAGAACGTGGGGTAGAGGTCGTAAACGCAACCGAGACCGTGGAGAGAACCAATATTCCTCGAATATGT TCCAAAGGCAAGAGGACTGTTGATTTAGGACAGTGCGGGCTGCTGGGAACTATAACAGGGCCCCCACAATGTGATCAATTCCTCGAGTT CTCAGCCGACCTCATTATCGAGAGACGCGAGGGATCTGATGTGTGCTACCCTGGCAAATTCGTGAACGAGGAGGCCCTGCGCCAGATCT TGCGGGAAAGCCGGTGGAATCGATAAGGAGGCCATGGGGTTTACTTATAGCGGCATAAGGACCAACGGCGCCACCTCTGCATGCAGGAG GAGCGGCAGTAGCTTCTACGCAGAGATGAAATGGCTGCTGTCTAATACCGACAATGCCGCGTTCCCTCAAATGACTAAAAGCTACAAGAA TACGCGCAAGTCTCCAGCCCTGATCGTGTGGGGCATCCATCACACAGTGTCTCAACTGCAGAACAGACCAAACTTTACGGTTCAGGCAACAA ACTCGTCACCGTCGGCTCTTCTAATTATCAACAGAGTTTCGTGCCTAGCCCAGCGCGACCCCAGGTGAACGGTCTTTCCGGTCGGA TCGATTTTCACTGGCTCATGCTCAACCCGAACGATACTGTGACTTTCAGTTTCAACGGGGCCTTCATTGCTCCGGATCGGGCATCATTTCT GAGGGGCAAGTCTATGGGCATCCAGTCCGGCGTGCAGGTGGAACGCTAACTGCGAAGGTGATTGTTACCACTCGGGTGGCACAATCATTT CTAATCTACCCTTCCAGAACATTGACTCAAGAGCTGTCGGGAAGTGTCCACGATACGTGAAGCAGAGATCCCTGCTCCTCGCCACAGGG ATGAAGAATGTCCCAGAGATTCCTAAAGGCGCGGCCTGTTCGGAGCTATAGCGGGGTTCATTGAGAATGGGTGGGAAGGCCTAATTGA CGGTTGGTATGGTTTTAGGCATCAGAATGCCCAGGGCGAGGGTACCGCGCGCATTATAAAAGTACTCAGTCTGCCATCGATCAAATCAC CGGGAAGCTAAACCGGTTGATCGAAAAAACTAACCAGCAGTTTGAGCTGATTGACAACGAATTTAACGAGGTGGAGAAACAGATCGGCAA CGTAATTAATTGGACGCGGATAGCATCACAGAAGTCTGGAGCTATAATGCAGAGCTCCTGGTGGCGATGGAATCAGCACACTATCG ACTTGGCTGATTCGGAAATGGATAAGCTGTATGAGAGGGTGAAACGTCAGCTGCGGGAGAATGCCGAAGAAGATGGTACCGGGTGTTTC GAAATATTCCATAAATGTGACGATGATTGTATGGCCAGCATCCGAAATAACACATATGACCATTCTAAATACAGAGAAGAGGCCATGCAGA ATCGAATACAAATCGACCCTGTGAAACTGTCCTCCGGATATAAAGATGTTATCCTTTGGTTTAGCTTCGGCGCCTCTTGCTTTATACTGTT GGCAATCGTGATGGGCTTGGTATTTATTTGTGTCAAGAATGGCAATATGCGCTGTACGATCTGCATT

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2778	ATGAACACCCAGATCTTGGTGTTTGCTCTTATTGCAATCATCCCTACTAACGCCGATAAAATCTGTCTGGGTCACCATGCCGTCAGTAATG GAACCAAGGTAAACACACTGACGGAGAGGGGCGTGGAGGTGGTTAACGCAACCGAAACAGTTGAGCGGACGAATATCCCCCGGATATG TAGTAAGGGAAAGAAAACTGTCGATCTGGGACAGTGCGGCCTACTAGGAACCATCACTGGGCCTCCCCAGTGTGACCAGTTCCTGGAAT TTTCTGCCGACCTGATTATCGAACGCCCGTGAGGGATCCGACGTGTGCTATCCAGGTAAATTCGTGAATGAAGAAGCACTTAGGCAGATCC TTCGTGAATCTGGGGGCATCGATAAGGAAGCTATGGGGTTTACTTATTCCCGTATTAGGACCAACGGGGCAACAAGCGCCTGCAGACGA AGTGGTTCGTCATTTTACGCCGGATGAAATGGCTGTTGTCCAACACTGACAATGCTGCTTTTCCCCAAATGACCAAAAGCTATAAAAACA CTCGGAAATCACCCGCCCTCATCGTATGGGGATCCACCATTCTGTTTCTACTGCAGAACAGACAAAACTGTACGGGAGCGGCAATAAG CTGGTGACCGTGGGGTCCTCCAATTATCAACAGTCTTTTGTCCCCGTCCCCAGGAGCGAGACCACAGGTCAATGGACAGTCAGGCCGAAT CGACTTCCACTGGCTTATGCTTAATCCAAACGACACCGTCACCTTTAGTTTCAATGGCGCCTTCATCGCCCCAGACAGAGCCTCATTCCT GCGCGGGAAATCGATGGGCATTCAGTCGGGAGTCCAAGTGGACGCAAACTGCGAAGGTGACTGTTACCATAGTGGGGCACAATCATC AGTAACCTGCCCTTTCAGAACATAGATTCCCGCGCCGTAGGAAAGTGTCCCCGGTATGTGAAACAGAGATCATTGTTGCTGGCAACAGG GATGAAAAATGTACCCGAAATTCCCAAAGGGCGAGGGCTGTTTGGAGCCATTGCCGGTTTTATCGAGAACGGGTGGGAGGGCCTGATCG ATGGGTGGTACGGTTTCAGACACCAGAACGCCCAGGGCGAAGGGACCGCTGCAGATTACAAGTCGACCCAATCCGCGATAGATCAGAT CACTGGTAAACTCAATCGACTCATTGAAAAGACAAATCAACAGTTCGAGCTGATTGATAACGAGTTCAACGAAGTCGAAAAGCAGATAGG GAACGTGATCAATTGGACACGCGACTCCATCACCGAAGTGTGGAGTTACAATGCAGAGCTGTTGGTAGCGATGGAGAACCAGCATACTA TTGACCTGGCCGATTCAGAAATGGACAAGCTGTACGAGCGCGTCAAGCGGCAACTGCGAGAGAATGCTGAAGAGGATGGAACCGGATG CTTCGAAATCTTCCACAAGTGCGATGACGACTGCATGGCCTCCATCAGGAACAATACATACGATCACTCAAAGTACCGGGAGGAGGCCAT GCAGAACCGTATTCAGATCGACCCCGTAAAACTGAGCTCCGGCTACAAGGATGTAATCTTGTGGTTCAGCTTCGGCGCTTCATGCTTTAT TTTACTGGCCATCGTCATGGGACTTGTCTTTATCTGTGTTAAGAACGGGAATATGCGGGTGCACCATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2779	ATGAATACACAGATACTGGTGTTTGCCCTCATTGCAATCATTCCAACCAATGCCGACAAGATTTGCCTGGGCCATCACGCTGTGTCCAAC GGCACCAAGGTGAACACACCCTTACAGAACGCGGGGTGGAGGTGGTCAACGCAACCGAGACCGTGGAGAGAACCAATATTCCAAGGATCT GCTCGAAGGGAAAGAAGACCGTAGATCTGGGACAGTGTGGGCTGCTCGGCACAATAACCGGCCCCCCGCAGTGTGATCAGTTCTTGGA GTTCAGCGCTGATCTGATTATCGAGCGGAGGGAGGGATCCGACGTCTGTTACCCCGGGAAGTTCGTGAATGAAGAAGCTCTTAGACAGA TCCTTCGCGAATCTGGCGGAATTGACAAGGAAGCTATGGGCTTCACTTATTCTGGAATAAGAACCAACGGCGCAACCTCCGCCTGTAGG CGCAGCGGATCCAGCTTTTATGCCGAGATGAAATGGTTGTTGTCCAATACTGACAATGCCGCTTTCCCCCAGATGACCAAGTCCTACAAG AATACTCGAAAAAGCCCAGCTTTGATCGTCTGGGGCATCCACCATTCTGTCTCCACCGCGGAGCAGACCAAGCTTTATGGCTCTGGTAAC AAGCTGGTGACTGTGGGAAGCAGCAATTACCAGCAAAGTTTCGTGCCTAGTCCCGGGGCCCGCCCACAGGTAAACGGCCAGTCAGGGA GAATAGACTTCCACTGGCTGATGCTGAACCCTAATGACACGGTGACATTTAGCTTTAATGGTGCTTTCATCGCTCCCGATCGCGCCAGTTT TCTCAGAGGGAAGTCGATGGGAATCCAATCCGGTGTCCAAGTGGACGCCAATTGTGAGGGAGACTGCTATCATAGCGGGGGAACAATCA TATCTAATCTTCCATTTCAGAACATTGATTCTCGAGCAGTTGGAAAGTGCCCCCGGTACGTGAAGCAACGAAGCCTGCTCCTTGCAACCG GCATGAAGAATGTGCCCGAGATCCCCAAAGGGACGGGGCCTATTCGGGGCCATCGAGAATGGTTGGGAGGGACTAAT CGATGGATGGTATGGCTTTCGGCACCAGAACGCTCAGGGCGAAGGAACCGCAGCAGACTACAAATCAACACAGTCCGCCATAGACCAG ATCACAGGTAAACTCAACCGCCTGATAGAGAAAACAAATCAGCAATTTGAACTATCGACAATGAGTTCAACGAAGTGGAGAAACAAATAG GAAACGTAATTAACTGGACCAGGGACTCAATCACCGAAGTGTGGAGCTATAAIGCCGAGCTCCTGGTGGCTATGGAGAATCAGCATACTA TCGACTTAGCTGACAGCGAGATGGACAAGCTGTATGAACGGGTCAAACGGCAGCTTAGGGAGAATGCTGAAGAGGATGGCACTGGCTG CTTCGAGATCTTCCACAAATGCGATGATGACTGTATGGCCTCTATTAGGAATAATACGTACGACCATTCTAAATACAGGGAGGAGGCTATG CAGAACCGGATTCAGATTGATCCAGTTAAGCTGTCTAGCGGTTATAAAGATGTGATTTTGTGGTTCTCCTTTGGCGCCAGCTGTTTCATCT TGCTAGCAATAGTTATGGGCCTAGTGTTTATCTGCGTGAAGAACGGCAATATGAGATGTACAATCTGCATC

SEQ ID NO.	Sequenza di acido nucleico
2780	ATGAACACACAGATCCTGGTATTTGCTCTTATCGCTATCATCCCGACCAACGCCGATAAGATCTGTCTTGGCCACCACGCCGTTTCGAAT GGCACCAAGGTGAATACTCTTACCGAACGAGGAGTTGTGAAGTTGTTGAACGCCACCGAAACAGTTGAACGCACCAACATCCCGAGGATCTG TTCCAAAGGCAAGAAAACGGTTGACCTGGGCCAGTGTTGGACTGTTGGGACTATCACCGGGCCCCCACAGTGTGATCAGTTCCTGGAGT TTTCTGCTGACCTGATTATTGAAAGACGGGAGGGGTCAGACGTGTGTTACCCCGGCAAGTTCGTCAATGAGGAAGCTCTTCGACAGATTT TAAGGGAATCGGCGGAATTGACAAGGAAGCCATGGGGTTCACCTACTCTGCGATTCGTACCAACGGTGCTACCTCCGCTTGTCGAAGG TCTGGCAGTAGCTTCTACGCGGAGATGAAATGGCTCCTGTCAAACACAGACAATGCCGCGTTCCCTCAAATGACTAAGTCATACAAAAAC ACTCGTAAGTCCCCGGCTCTCATAGTGTGGGGCATCCACCATAGTGTGAGCACAGCGGAGCAGACCAAATTGTACGAAGCGGCAACAA GCTTGTGACTGTGGGTTCCTCCAACTACCAACAGAGTTTCGTGCCAAGCCCGGGCGCTCCGCCCTCAGGTCAACGGCCAGTCCGGCAGA ATTGACTTCCACTGGCTCATGCTCAACCCAAACGACACAGTTACATTTAGTTTCAATGGAGCGGTTCATAGCACCTGATCGCGCTTCTTTTC TGAGAGGAAAATCCATGGGGATTCAGAGTGGTGTGCAAGTAGATGCTAACTGCGAGGGCGACTGTTACCACTCTGGCGGTACTATCATC TCCAACCTCCCATTTCAAAACATAGATTCTCGTGCGGTGGGCAAATGTCCGAGCGTACGTGAAACAGCGATCACTCCTGCTAGCCACCGGA ATGAAAAACGTGCCCGAGATCCCGAAGGGCCGGGGCCTGTTCGGTGCCATCGCAGGGTTTATCGAAAACGGGTGGGAAGGCCTGATCG ATGGGTGGTATGGGTTTCGGCATCAGAACGCACAGGGAGAAGGAACAGCTGCTGACTACAAAAGCACACAGTCTGCCATCGACCAAATT ACAGGTAAACTCAATAGGCTCATTGAGAAGACCAATCAGCAGTTCGAGCTCATTGACAATGAGTTTAACGAGGTCGAAAAGCAAATCGGG AATGTAATAAATTGGACCCGCGACAGTATCACAGAAGTCTGGAGTTACAACGCAGAGCTGCTCGTGGCTATGGAGAACCAGCACACAATT GACTTGGCTGACTCCGAAATGGATAAGTTGTACGAACGAGTAAAGCGCCAGCTGCGCGAGAACGCTGAAGAGGACGGGACGGGGTGTT TCGAAATTTTCCACAAATGTGACGATGATTGCATGGCCTCTATCCGCAACAATACCTACGACCACAGCAAGTACCGCGAGGAGGCCATGC AGAACCGCATCCAAATCGACCCTGTGAAGTTGTCTTCCGGATACAAGGATGTGATCCTGTGGTTCTCCTTTGGGCCAGTTGCTTTATCC TTCTCGCAATTGTGATGGGACTCGTCTTTATCTGCGTGAAAAACGGTAACATGCGCTGTACAATTTGTATA

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SEQ ID NO.	Sequenza di acido nucleico
2781	ATGAACACCCAGATCCTAGTCTTTGCTCTGATTGCGATCATCCCCACCAATGCGGATAAGATCTGCCTCGGACACCACGCCGTCTCTAAT GGCACGAAAGTCAACACCTTAACAGAAAGGGGGGTGGAGGTGGTTAATGCCACCGAGACAGTCGAACGAACGAATATTCCCAGAATTTG TTCTAAAGGAAAACGCACCGTGGACTTAGGGCAGTCGCGGCCTCCTCGGCACTATTACCGGCCCTCCACAGTGTGACCAGTTCTTAGAGT TCAGCGCCGACCTGATCATAGAGCGAAGGGAAGGGTCTGACGTGTGCTATCCTGGCAAATTTGTGAATGAGGAGGCCTTGAGACAGATT CTTAGGGAGTCGGGCGGTATAGACAAGGAAGCTATGGGCTTTACATACAGTGGGATCCGGACAAATGGCGCGACAAGCGCATGTAGGA GAAGCGGAAGCAGCTTTTACGCTGAGATGAAGTGGCTACTCTCCAATACCGATAATGCCGCCTTCCCACAAATGACAAAATCCTATAAGA ACACCAGGAAGTCCCCAGCCCTCATCGTCTGGGGAATTCACCACTCCGTCTCTACAGCAGAACAAACTAAACTCTACGGTTCCGGAAATA AGCTCGTTACTGTCGGCAGCTCCAATTACCAGCAGTCATTCGTCCCAAGTCCCGGAGCAAGACCTCAGGTTAATGGCCTCAGCGGAAGA ATCGACTTCCACTGGTTGATGTTAAACCCGAACGACACAGTGACATTCTCCTTCAACGGAGCCTTCATCGCACCGGATCGGGCCTCTTTTT TAAGGGGAAAGAGCATGGGCATTCAGTCCGGGGTGCAGGTCGATGCTAACTGTGAAGGCGATTGTTATCATAGCGGAGGCACCATCATC TCAAATCTGCCTTTTCAGAACATTGACTCCAGAGCTGTAGGAAAGTGTCCTCGCTATGTGAAACAAAGGTCTCTTCTGCTGGCAACTGGAA TGAAGAATGTGCCAGAGATTCCTAAGGGTCGGGACTATTTGGAGCCATAGCCGGCTTTATAGAAAATGGATGGGAGGGCCTGATAGAC GGTTGGTACGGGTTCCGCCATCAGAATGCCCAAGGTGAGGGTACGGCCGCAGACTATAAGTCTACACAGAGCGCCATTGATCAGATAAC CGGAAAGCTGAACCGTCTGATAGAGAAAACCAACCAGCAATTTGAACTTATTGATAACGAGTTCAACGAGGTTGAGAAGCAGATCGGCAA TGTTATTAACTGGACAAGAGATTCGATCACCGAAGTTTGGTCATACAACGCCGAACTGCTGGTAGCCATGGAGAACCAGCACACAATCGA CCTCGCAGATAGTGAGATGGACAAACTGTACGAGCGTGTGAAGAGACAGCTGAGAGAGAACGCGGAGCGAAGACGCGGCACTGGCTGTTTC GAGATTTTCCATAAGTGCGATGACGATTGCATGGCCTCCATTAGGAATAATACCTATGACCATTCCAAATACCGTGAAGAAGCCATGCAAA ACCGGATCCAGATTGACCCCGTCAAGCTTTCGTCAGGGTATAAAGATGTGATCCTGTGGTTCTCTTTCGGCGCCAGTTGCTTCATCCTGC TCGCAATCGTGATGGGACTCGTGTTCATATGTGTCAAAAACGGCAACATGCGCTGTACGATCTGCATA

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2782	ATGAACACTCAGATCCTTGTCTTTGCCCTAATAGCAATAATTCCAACAAATGCCGATAAAATCTGTTTGGGTCATCACGCCGTCTCAAACG GAACAAAGGTGAACACACTGACAGAACGGGGTGTCGAGGTGGTCAATGCCACCGAAACTGTCGAACGCACTAATATTCCCAGAATATGC TCGAAGGGTAAGAGGACGGTAGACTTGGGCCAGTGTGGCCTGCTTGGTACCATCACTGGCCCTCCCCAGTGTGACCAATTCCTGGAGTT TAGCGCGGACCTGATAATTGAGAGACGTGAGGGTAGCGATGTTTGCTATCCTGGAAAGTTCGTCAATGAAGAGGCCCTGAGGCAGATCC TACGAGAATCCGGCCGGGATCGATAAAGAAGCTATGGGATTTACCTACTCCGGGATCAGGACAAACGGGGCAACTTCGGCATGTCGGCG GTCTGGCAGCTCATTTTATGCTGAGATGAAATGGTTGCTCTCAAACACCGATAACGCCGCTTTCCCACAAATCACCAAGTCCTACAAGAAC ACAAGGAAGTCCCCCCGCTTTGATTGTCTGGGGCATCCACCACAGCGTGTCAACTGCTGAGCAGACCAAGTTATACGGCTCAGGCAAACAA ACTCGTTACCGTGGGATCTTCGAATTATCAACAGAGTTTTTGTGCCATCCCCTGGTGCTAGGCCGCAAGTTAATGGTCTTAGTGGGCGTAT AGACTTCCACTGGCTTATGCTGATCCGAACGATACCGTCACCTTTTCATTCAACGGTGCTTTCATAGCCCCCGATCGCGCCTCTTTCCTC AGCGCGAAGTCTATGGGTATTCAGTCAGGTGTGCAGGTGGATGCGAATTGTGAGGGAGATTGTTACCACTCCGGGGGGCACCATAATAAG CAATCTTCCCTTTCAAAATATCGACTCTCGGGCGGTCGGAAAATGTCCGCGCTATGTGAAGCAGCGGGAGTCTCCTGCTGGCAACAGGGA TGAAAAATGTGCCCGAGATTCCTAAAGGAAGAGGTTTGTTTGGTGCGATCGCTGGTTTTATCGAGAATGGGTGGGAGGGCTTAATCGAC GGTTGGTATGGGTTTAGACACCAGAACGCCCAGGAGAGGGTACCGCAGCCGACTATAAGAGTACACAGAGCGCAATCGACCAGATCA CAGGCAAACTCAACCGCCTAATGAGAAAACTAACCAGCAATTCGAGTTAATCGACAATGAGTTCAACGAGGTAGAAAAGCAAATAGGCA ACGTCATTAATTGGACCCGGGACAGTATAACAGAGGTCTGGAGCTATAATGCCGAGCTGTTGGTGGCCATGGAAAACCAGCACACGATC GACCTGGCAGACAGCGAAATGCACAAGCTGTACGAGAGAGTTAAGCGCCAGTTGCGCGAGAACGCCGAGGAAGATGGCACCGGGTGC TTCGAAATCTTTCACAAGTGCGATGACGACTGCATGGCTTCTATTCGAAATAATACTTATGATCATAGCAAGTATAGAGAAGAAGCCATGC AGAATAGGATCCAGATCGACCCAGTAAAGTTGTCTTCTGGCTACAAGGATGTGATACTGTGGTTCTCCTTTGGGGCTAGTTGCTTTATTTT GCTGGCTATTGTTATGGGTCTGGTGTTCATTTGTGTGAAGAATGGGAACATGCGCTGCACGATATGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2783	ATGAATACCCAGATCCTGGTGTTCGCACTGATCGCCATTATACCCACCAACGCCGACAAGATCTGCCTTGGCCACCACGCTGTTTCTAAT GGAACGAAGGTCAATACTCTGACCGAGAGGGGGGTGGAAGTCGTGAACGCTACAGAGACTGTTGAAAGGACAAATATTCCGCGCATTTG CAGCAAAGGGAAGCGAACCGTGATTTGGGCCAATGTGGCCTCCTTGGCACTATTACAGGCCCACCTCAGTGTGATCAGTTTCTGGAAT TCTCCGCTGACCTCATTATAGAACGGAGAGAAGGATCAGACGTTTGTTACCCTGGCAAATTCGTGAATGAGGAGGCCTTGAGACAGATAC TCAGGGAGTCCGGCGGCATCGACAAGGAAGCAATGGGTTTCACCTACAGCCGCATTCGCACCAACGGCGCCACCTCCGCCTGCCGCCG CAGCGGGTCTAGCTTTTATGCCGAAATGAAATGGCTCTTAAGTAATACAGACAACGCTGCCTTTCCCCAGATGACAAAATCATACAAGAAC ACAAGAAAATCACCCGCACTTATAGTTTGGGGATCCATCACTCCGTGTCCACCGCTGAGCAGACTAAGTTGTACGGGAGTGGAAACAAA CTGGTTACCGTGGGTAGTTCTAACTATCAGCAGTCCTTTGTGCCTTCGCCCGGAGCTCGCCCACAGGTTAACGGTCTGAGCCGTCGCAT CGACTTCCACTGGCTAATGCTGAACCCTAACGATACCGTGACATTCTCTTTTAATGGAGCTTTCATCGCCCCCGACCGCGCTTCCTTTTTG AGGGGGAAGTCCATGGGTATCCAGAGCGGAGTGCAGGTGGACGCCAATTGCCGAGGGAGATTGTTATCATTCTGGCGGCACCATTATCTC TAATTTACCGTTTCAGAATATCGACTCAAGAGCAGTGGGCAAGTGCCCTCGATACGTGAAGCAGCGCAGCCTGCTTCTTGCTACAGGAAT GAAAAACGTCCCGGAGATTCCCAAGGGGCGGGGCCTGTTCGGCGCCATCGCAGGCTTCATAGAGAACGGTTGGGAGGGACTGATTGAT GGATGGTACGGGTTCCGCCATCAGAACGCCCAGGGCGAAGGAACCGCTGCGGACTACAAGTCCACCCAGTCCGCAATCGACCAGATAA CGGGCAAGTTGAATAGGCTCATCGAAAAAACGAACCAACAATTCGAGCTTATTGATAACGAGTTTAACGAAGTAGAAAAGCAGATTGGGA ATGTGATAAACTGGACCAGAGATAGCATCACCGAGGTGTGGAGCTATAATGCAGAACTGCTAGTAGCTATGGAAAATCAGCACACAATCG ACTTAGCCGATAGTGAGATGGACAAATTGTATGAGCGAGTAAAAAGACAATTAAGAGAAAACGCAGAGGAGGATGGCACCGGTTGTTTCG AAATCTTTCACAAATGTGATGACGACTGTATGGCCTCAATTCGGAACAACACCACGACGCACAGCAAATACAGAGAAGAGGCCATGCAGA ATCGCATACAGATAGATCCAGTCAAACTGTCATCTGGGTACAAGGACGTTATATTATGGTTCTCTTTCGGGGCAAGCTGCTTCATCCTTCT GGCTATCGTGATGGGCTTGGTCTTCATCTGCGTCAAGAATGGAAACATGCCGCTGCACCATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2784	ATGAATACCCAGATCCTGGTTTTCGCCCTGATCGCTATCATTCCTACTAACGCAGATAAGATCTGCCTGGGCACCATGCAGTCAGCAAC GGGACCAAGGTGAACACACTGACTGAGCGTGGAGTCGAGGTCGTCAATGCGACTGAGACAGTAGAGCGGACGAACATACCCAGAATCT GCAGCAAAGGGAAACGGACGGTAGACCTCGGCCAGTGCGGTCTCCTGGGTACATCACAGGTCCACCCCAATGCGATCAGTTTCTGGA GTTCTCCGCCGACCTCATCATCGAACGGCGCGAGGGGTCCGATGTCTGCTACCCTGGTAAATTCGTCAATGAAGAGGCTCTCCGTCAGA TTCTTCGGGAATCAGGGGGGATTGACAAGGAAGCTATGGGATTTACATACTCCGGTATACGAACCAACGGAGCTACCAGTGCTTGCCGA CGGTCAGGGTCATCATTCTACGCCGAGATGAAATGGCTTCTCTCGAACACTGATAATGCTGCGTTTCCACAAATTACCAAAAGCTACAAAA ACACCCGGAAGTCCCCTGCACTGATCGTGTGGGGAATTCACCACAGCGTCTCTACGGCTGAACAGACCAAACTGTACGGATCAGGCAAC AAGTTGGTGACTGTCGGGTCATCCAATTATCAGCAGAGTTTCGTTCCCAGCCCTGGCGCAAGACCTCAGGTGAACGGCTTGTCCGGGAG GATTGATTTTCACTGGCTCATGCTGAATCCTAATGACACTGTTACCTTTCTTT`AATGGGGCTTTTATTGCACCGGACCGAGCAAGTTTTC TACGCGGAAAGTCCATGGGGATACAGAGTGGGGTGCAGGTGGATGCTAATTGCGAGGGCGATTGTTATCACAGCGGCGGCACCATAAT ATCAAACCTGCCCTTCCAGAACATCGACTCCAGGGCCGTGGGCAAGTGTCCAAGATACGTCAAACAAAGATCTCTGCTGCTGGCCACTG GGATGAAAAACGTCCCAGAAATCCCAAAAGGGAGGGGGCTCTTCGGAGCCATAGCCGGGTTTATCGAAAATGGATGGGAAGGTCTGATA GACGGGTGGTACGGTTTCAGACATCAGAACGCACAGGGCGAGGGAACAGCCGCCGACTACAAGAGCACCCAGAGTGCAATCGATCAGA TCACTGGTAAGCTTAATAGGCTGATCGAAAAGACTAATCAACAATTTGAGCTGATAGACAATGAATTCAACGAAGTTGAAAAGCAGATAGG TAATGTAATCAATTGGACCCGAGATTCAATAACTGAAGTCTGGAGCTACAATGCCGAACTGTTGGTGGCTATGGAGAACCAACATACGATT GACCTGGCCGACTCCGAGATGGACAAGCTGTATGAGCGGGTAAAGAGACAGCTGAGGGAGAATGCCGAGGAAGATGGCCACCGGATGTT TCGAGATTTTTCACAAGTGTGATGACGACTGCATGGCGTCTATCCGGAATAACACCTACGACCACTCAAAATATCGGGAAGAAGCGATGC AGAATCGAATTCAGATCGACCCAGTCAAACTGTCGAGTGGCTATAAAGATGTGATACTGTGGTTTAGCTTCGGGCATCTTGTTTCATTCT GCTGGCTATTGTGATGGGCCTCGTGTTCATTTGCGTTAAGAATGGGAATATGCGATGCACCATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2785	ATGAATACTCAAATACTTGTCTTTGCACTAATCGCTATCATACCCACTAATGCCGATAAAATCTGCTTAGGACACCATGCTGTGTCCAACG GAACTAAAGTGAACACTCTGACGGAGCGAGCGAGGCGTCGAAGTTGTCAACGCAACCGAGACTGTGGAGCGCACGAATATCCCCCGAATCTGC TCGAAAGGAAAGAAGACTGTTGACCTTGGTCAATGCGGATTACTGGGAACCATCACAGGACCCCCCCAATGCGACCAGTTTCTGGAATTT AGTGCTGATCTTATAATCGAGCGCCGGGAAGGTAGCGACGTTTGTTATCCGGGAAAGTTTGTAAACGAGGAGGCTCTGAGACAGATCCT GCGCGAGTCAGGGGGGATCGACAAGGAGGCCATGGGCTTTACCTACTCTGGAATCAGAACAAATGGCGCTACTTCCGCTTGTCGGCGC TCTGGAAGCAGCTTCTATGCTGAAATGAAATGGCTGCTGTCCAACACCGACAATGCAGGCCTTTCCTCAGATGACTAAATCTTACAAAAATA CCCGGAAATCCCCCAGCTCTGATAGTGTGGGGTATCCATCACTCAGTCAGTACTGCTGAACAAACCAAGTTATATGGCTCCGGCAATAAGC TAGTAACCGTGGGAAGCTCCAACTACCAACAGTCTTTCGTGCCCTCACCCGGCGCAAGACCCCAGGTGAACGGCCAGTCAGGTCGCATT GATTTCCACTGGTTGATGCTTAACCCAAATGACACCGTTACCTTTTCCTTCAATGGCGCCTTTTATAGCGCCCGACAGAGCTTCATTCCTTA GAGGCAAGTCTATGGGTATCCAATCCGGAGTCCAGGTAGACGCAAACTGTGAGGAGACTGCTATCATTCCGGTGGAACCATCATATCG AATTTGCCTTTCCAGAACATCGATAGCCGGGCGGTCGGCAAGTGCCCTAGATACGTTAAACAAGGAGCCTGCTCTTAGCAACAGGTATG AAGAACGTCCCAGAGATTCCAAAGGGCCGAGGACTGTTCGGTGCAATAGCTGGCTTTATCGAGAATGGGTGGGAGGGGCTCATCGATG GTTGGTATGGGTTCAGACACCAGAATGCCCAGGGCGAAGGAACCGCTGCTGACTACAAAGCACACAGAGCGCTATAGATCAGATAACA GGCAAGCTTAACCCGCTGATCGAGAAAACGAATCAGCAGTTCGAACTCATTGATAATGAGTTCAACGAAGTGGAGAAGCAGATTGGTAAT GTCATCAACTGGACTAGAGATAGTATAACAGAAGTGTGGTCTTATAACGCCGAACTCCTGGTCGCAATGGAAAATCAACATACCATTGAC CTGGCTGATTCGGAGATGGACAAACTTTATGAGCGGGTGAAGAGGCAGCTCCGAGAGAATGCAGAAGAGGACGGCACAGGGTGCTTTG AGATCTTCCATAAGTGCGACGATGATTGCATGGCTTCCATCAGGAATAATACTATGACCACTCCAAGTACCGGGAGGAAGCCATGCAAA ATCGGATCCAAATAGATCCAGTGAAGCTTTCGTCAGGATATAAGGACGTGATCTTGTGGTTTAGCTTCGGGGCCTCTTGTTTCATCCTCCT GGCGATTGTCATGGGACTTGTATTCATTTGTGTGAAGAACGGAAACATGCGCTGCACCATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2786	ATGAACACACAGATCCTTGTGTTCGCCCTTATCGCAATAATTCCCACACAACGCCGACAAAATATGCCTGGGTCACCACGCCGTAAGCAAT GGCACCAAAGTTAACACCCTCACCGAGCGTGGGGTGGAGGTGGTGAACGCCACCGAGACCGTTGAAAGGACAAACATTCCACGAATTT GTAGTAAGGGCAAACGGACTGTAGATCTGGGTCAGTGTGGGCTGCTGGGCACTATCACCGGCCCACCACAGTGCGACCAATTCCTAGAA TTCTCAGCTGATTTAATCATCGAAAGGCGCGAGGGGTCTGACGTCTGTTACCCGGGAAAATTTGTGAACGAAGAGGCCCTGCGACAGAT TCTGCGTGAGTCCGGGGGGAATCGACAAAGAGGCGATGGGATTTACCTATTCAGGCATACGGACCAATGGAGCTACTTCTGCATGCCGGA GGAGCGGCTCGTCTTTCTACGCTGAAATGAAGTGGTTGCTGAGTAATACCGACAACGCAGCCTTCCCCCAGATGACAAAGAGCTACAAG AACACACGCAAGTCACCCGCACTCATAGTCTGGGGGATTCATCACTCAGTCAGTACCGCGGAGCAGACCAAGCTCTACGGTAGCGGCAA CAAGCTGGTCACAGTTGGTTCTAGTAATTACCAGCAGTCCTTTGTTCCCTCCCCGGCGCCCGTCCCCAAGTCAACGGGCTCTCGGGCA GAATCGACTTCCACTGGCTCATGTTGAACCCCAACGATACTGTGACATTCTCTTTTAATGGTGCTTTTATCGCGCCGGACAGGGCCTCTTT CTTACGCGGCAAGAGCATGGGTATACAGTCTGGAGTCCAGGTTGATGCTAATGCGAAGGCGACTGTTATCATTCAGGAGGCACCATCA TATCAAACCTGCCCTTCCAAAATATAGATAGTCGGGCTGTGGGTAAATGCCCTAGGTACGTCAAGCAGAGAAGTCTTCTGCTCGCCACTG GCATGAAAAACGTACCAGAGATTCCTAAAGGAAGAGGCCTATTTGGAGCAATTGCCGGCTTTATCGAGAATGGGTGGGAAGGCCTTATAA ACGGGTGGTATGGCTTCAGGCACCAGAACGCCCAGGGGGAGGGTACCGGCGCCGATTACAAGAGCACTCAGAGTGCCATAGACCAGAT TACTGGAAAATTAAATAGACTGATTGAGAAAACAAACCAGCAGTTTGAACTGATTGACAATGAATTCAATGAGGTGGAGAAGCAGATTGGG AACGTGATCAATTGGACCCGGGACTCTATTACTGAGGTATGGAGCTATAACGCTGAGCTTTTGGTGGCCATGGAGAACCAACATACGATT GATCTGGCAGATAGCGAAATGGATAAGCTTTATGAGCGTGTTAAGAGGCAGCTCCGCGAAAATGCCGAAGAGGATGGTACGGGATGCTT CGAGATTTTCCATAAATGCGACGACGATTGCATGGCTAGCATTAGGAACAACACCTATGACCACAGTAAATATAGAGAGGAGGCCATGCA AAATCGCATTCAGATAGACCCTGTCAAGTTGAGCTCGGGGTATAAGGACGTCATACTTTGGTTTAGTTTTGGGGCGAGCTGTTTTATTTTG CTGGCCATAGTTATGGGTCTGGTCTTTATTTGTGTAAAGAACGGGAATATGCGTTGCACCATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2787	ATGAACACCCAAATATTAGTGTTCGCCCTCATAGCAATCATTCCCACAAATGCTGATAAGATTTGCCTTGGTCATCATGCTGTGAGTAACG GGACCAAGGTGAACACTCTTACGGAGCGCGGGGTTGAAGTTGTTAACGCTACCGAGACCGTTGAAAGAACCAACATCCCACGAATCTGC AGCAAGGGGAAGCGGACCGTGGACTTGGGACAGTGTGGGTTGTTGGGGACTATCACCGGGCCCCCTCAGTGCGACCAGTTCCTCGAAT TCAGCGCCGATCTGATCATAGAGCGACGGGAGGGGAGTGACGTTTGCTACCCCGGTAAATTCGTGAAGGAAGAAGCCCTGAGACAGATT CTACGGGAGTCTGGCGGCATACATAAAGAGGCTATGGGTTTCACATATAGCGGCATCCGCACAAACGGAGCCACTTCTGCCTGCAGGAG ATCTGGCTCCTCTTTTTACGCTGAAATGAAATGGTTACTGTCCAACACCGACAATGCCGCCTTTCCCCAAATGACCAAGTCATACAAGAAT ACCCGGAAATCCCCAGCTTTGA^CGTTTGGGGTATCCATCACTCAGTTTCTACCGCGGAGCAGACTAAACTCTATGGCTCTGGAAATAAG CTGGTGACAGTGGGCTCTTCCAATTATCAGCAGTCGTTGTTCCGTCCCCTGGCGCTAGACCACAGGTGAACGGCCTGTCCGGGCGAAT CGATTTCCACTGGCTGATGCTGAACCCGAACGACACCGTCACATTTAGCTTCAATGGAGCCTTCATTGCTCCCGATCGAGCTTCTTTCCT GCGGGGCAAATCAATGGGCATACAATCGGGTGTGCAGGTGGACGCCAATTGTGAGGGAGACTGTTACCATTCAGGCGGCACCATTATTA GCAATCTACCATTCCAGAATATAGACTCCCGGGCTGTTGGCAAGTGCCCCCGGTATGTTAAACAGCGGTCCCTGCTCCTGGCTACCGGT ATGAAGAATGTTCCGGAAATCCCGAAGGGGCGCGGACTCTTCGGCGCTATCGCGGGTTTTATCGAGAACGGGTGGGAGGGCCTTATCG ATGGGTGGTACGGCTTCCGGCACCAGAATGCCCAGGGAGAAGGCACCGCGCCGCGACTATAAGTCAACACAGTCCGCAATTGACCAAAT CACCGGTAAGCTGAATCGCTTAATTGAGAAAACCAACCAACAATTCGAACTGATTGATAACGAATTCAACGAGGTCGAAAAGCAGATCGG GAATGTGATCAACTGGACCCGCGATAGCATTACCGAGGTCTGGTCTTACAACGCAGAACTTCTCGTTGCGATGGAGAATCAACACACTAT TGATCTGGCTGACTCCGAGATGGACAAGCTGTACGAGGCGTGAAGCGCCAGCTGCGGGAAAATGCAGAAGAGGATGGCACTGGCTGC TTCGAGATCTTCCACAAGTGCGATGATTGCATGGCATCGATCAGGAACAATACATACGACCACTCGAAGTACAGAGAGGAGGCTATG CAGAACCGAATACAGATAGATCCAGTTAAACTATCATCCGGGTACAAGGACGTTATCCTGTGGTTCTCATTTGGAGCATCCTGCTTCATTC TTCTCGCAATCGTCATGGGACTGGTTTTCATCTGTGTGAAGAACGGCAACATGCGGTGCACCATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2788	ATGAATACCCAGATATTAGTATTTGCCCTTATAGCCATCATCCCTACTAACGCGGACAAAATCTGCCTGGGACACCATGCCGTTTCTAACG GTACAAAAGTCAACACCTTAACGGAACGGGGGGTGGAAGTGGTTAATGCTACAGAGACCGTTGAACGCACCAACATCCCCCGCATTTGC TCCAAAGGGAAGAAAACTGTGGACCTAGGTCAGTGTGGCCTGTTGGGTACTATCACCGGCCCACCTCAATGCGACCAGTTTCTGGAGTT CAGCGCCGATCTGATCATCGAAAGAAGAGAGGGTAGCGACGTTTGTTATCCTGGAAAGTTTGTTAATGAAGAGGCTCTGAGACAGATTTT GCGAGAATCCGGGGGAATCGACAAGGAAGCCATGGGCTTTACATACTCTGGTATTAGGACCAACGGTGCCACTTCTGCCTGCAGACGGA GCGGTAGTTCTTTTTACGCCGAAATGAAATGGCTATTGTCTAATACGGATAACGCTGCATTTCCTCAGATGACGAAATCATACAAAAATAC AAGGAAAAGCCCCCGCTCTGATTGTGTGGGTATCCACCACTCCGTATCCACAGCAGAACAAACAAAGCTGTATGGATCTGGTAACAAGCT CGTGACGGTGGGCTCTAGCAACTATCAGCAGAGTTTTGTGCCATCACCTGGCGCAAGACCCCAGGTCAACGGCCAGTCCGGCCGAATC GACTTCCACTGGCTTATGCTAAACCCCAACGACACGGTGACTTTCAGTTTTAACGGCGCCTTTATCGCTCCTGATCGCGCTTCTTTCCTTA GGGGTAAATCTATGGGGATACAATCAGGAGTGCAGGTAGACGCTAACTGCGAAGGAGACTGCTATCACTCTGGAGGAACGATAATCTCC AATTTACCCTTCCAGAACATAGACAGTCGGGCCGTCGGGAAATGCCCCCAGGTACGTGAAGCAGCGGTCTCTTCTGCTCGCGACTGGCAT GAAAAACGTTCCCGAGATACCCAAGGGAAGGGGCCTGTTCGGCGCAATTGCTGGGTTCATTGAAAACGGCTGGGAGGGCCTTATTGATG GTTGGTACGGATTCAGACACCAGAATGCACAGGGCGAGGGCACAGCCCGCCGATTATAAGTCAACGCAGTCAGCGATAGACCAGATAACC GGGAAATTGAACCGTCTGATTGAGAAAACAAACCAGCAATTCGAATTGATTGATAACGAGTTTAATGAGGTGGAAAAGCAGATTGGAAAC GTCATTAACTGGACACGAGATTCAATTACAGAGGTGTGGAGCTATAACGCGGAGTTGCTGGTCGCTATGGAAAACCAACATACTATAGAT CTTGCCGATTCCGAGATGGACAAACTCTATGAGAGAGTCAAACGACAATTAAGGGAAAACGCCGAGAGGAAGATGGCACCGGATGCTTCGA AATCTTCCATAAGTGCGATGACGACTGTATGGCATCTATTCGCAACAACACGTACGATCACTCGAAATATCGGGAAGAGGCCATGCAGAA TAGGATCCAGATTGACCCTGTCAAATTGAGCAGCGGCTACAAGGATGTTATTCTGTGGTTCAGTTTCGGCGCCTCCTGTTTCATCTTACTC GCTATTGTCATGGGCTTAGTGTTCATCTGTGTCAAGAATGGCAATATGCGGTGCACTATATGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2789	ATGAACACTCAGATTCTGGTGTTCGCCCTAATTGCCATTATTCCCACCAATGCCGACAAAATTTGCCTGGGCCATCATGCCGTCTCGAAC GGTACCAAAGTCAATACCCTGACAGAGCGCGGCGTGGAGGTGGTGAATGCAACTGAGACCGTCGAGAGGACTAATATCCCCAGAATTTG CTCAAAGGGAAAGAAAACAGTGGATCTGGGTCAGTGCGGTCTCTTAGGGACTATCACTGGTCCTCCTCAGTGCGACCAGTTTCTGGAATT TAGTGCTGATCTGATTATCGAGCGGCGCGAAGGGTCCGACGTTTGCTACCCCGAAAGTTTGTTAACGAGGAAGCCTTGCGGCAAATCC TGCGGAAGTCCGGCGGCATCGACAAGGAGGCCATGGGCTTTACATACTCTGGCATCCGCACCAACGGAGCTACCAGCACCTGTAGGAG GTCTGGTAGTTCATTCTATGCTGAGATGAAGTGGCTGCTCAGTAATACCGACAATGCTGCTTTTCCTCAGATGACAAAATCATACAAGAAC ACGAGAAAAAGCCCAGCTATTATTGTATGGGGATTCATCATTCTGTCAGTACCGCTGAGCAGACTAAGCTTTACGGTAGCGGAAATAAG CTTGTCACAGTGGGGTCCAGCAATTACCAGCAGTCGTTTGTTCCCTCCCCAGGAGCACGCCCCCAAGTCAACGGTCTATCGGGGAGGAT CGACTTCCATTGGCTGATGCTCAATCCTAACGACACCGTGACATTCTCTTTCAATGGCGCCTTTATCGCACCGGACCGTGCCTGTTTTTTA CGCGGTAAGTCAATGGGGATACAATCTGGAGTCCAGGTGGACGCCGACTGTGAAGGGGACTGCTATCATTCGGGTGGTACTATTATCAG CAATCTGCCCTTCCAAAACATAGACTCAAGAGCTGTTGGAAAGTGCCCGAGATACGTGAAGCAAAGGTCACTCTTGCTTGCAACCGGGAT GAAGAACGTGCCTGAGATCCCGAAGGGCCGAGGGCTGTTTGGTGCTATAGCTGGCTTCATCGAGAATGGATGGGAGGGTTTAATTGACG GCTGGTATGGATTTCGGCACCAGAATGCACAGGGAGAAGGGACCGGCCGCCGATTACAAAAGTACGCAGAGTGCTATCGATCAGATTACC GGTAAATTGAATAGGCTGATTGAAAAAACTAACCAGCAGTTCGAGCTGATTGATAACGAGTTCAACGAGGTCGAGAGACAGATTGGGAAC GTCATTAATTGGACGAGAGACTCAATCACGGAGGTCTGGAGCTACAATGCTGAGCTGTTAGTAGCAATGGAAAATCAGCACACTATTGAC CTCGCCGACTCCGAGATGGACAAACTGTACGAACGGGTGAAGCGGCAACTTCGCGAAAACGCTGAGGAAGACGGCACGGGATGTTTCG AAATCTTCCATAAATGCGACGATGACTGCATGGCCTCTATCCGTAATAACACA~ATGACCATAGTAAGTATAGGGAGGAAGCCATGCAGA ATCGAATCCAGATCGACCCCGTGAAGCTGAGCTCCGGCTACAAAGACGTCATCTCTGGTTTAGCTTTGGGGCGTCTTGTTTCATTCTCC TCGCGATCGTGATGGGTCTTGTCTTCATTTGCGTGAAAAACGGGAATATGAGGTGTACCATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2790	ATGAATACCCAAATACTTGTGTTTGCCTTGATTGCCATAATTCCTACCAATGCCGACAAAATCTGCCTGGGCCATCATGCCGTTAGTAATG GGACTAAGGTGAACACCCTGACNGAACGTGGCGTGGAGGTGGTCAACGCAACAGAAACCGTCGAGAGGACCAACATTCCTCGGATATG TTCGAAGGGAAAGAAGACGGTGGACCTGGGGCAATGCGGGCTGCTCGGCACCATTACGGGTCCACCTCAGTGTGATCAGTTTCTCGAG TTTTCTGCAGACCTCATCATTGAACGTAGAGAGGGCTCAGACGTGTGTTACCCAGGCAAATTTGTTAACGAGGAAGCCCTGCGCCAGATC CTGCGGAATCTGGCGGCATTGACAAAGAGAGCTATGGGATTCACGTACTCTGGTATCCGTACCAACGGCGCCACGTCCGCCTGTAGAAG GTCAGGCTCATCTTTTTACGCCGAGATGAAATGGCTCCTGTCTAATACGGACAATGCCGCATTTCCTCAGATGACCAAAAGTTACAAAAAC ACCCGGAAGAGTCCAGCTCTGATTGTGTGGGCATCCATCACAGCGTGTCAACTGCGGAACAGACCAAGCTGTATGGGTCCGGCAATAA ACTGGTGACTGTGGGTTCCAGCAATTACCAGCAATCCTTTGTGCCCAGCCCTGGCGCTAGACCGCAAGTGAACGGGCAGAGCGGGAGG ATTGACTTCCACTGGCTGATGCTCAATCCCAACGATACCGTAACCTTTTCATTTAACGGCGCTTTCATCGCCCCCGATAGAGCTAGTTTCC TACGGGGAAAAAGCATGGGTATTCAAAGTGGTGTGCAGGTAGACGCAAATTGTGAAGGCGACTGTTACCATTCGGGTGGGACCATTATC TCCAACCTGCCCTTCCAGAACATTGATTCACGCGCCGTGGGAAAGTGCCCTAGGTATGTTAAACAGAGAAGCCTGCTGTTGGCCACAGG GATGAAGAATGTGCCAGAGATTCCAAAGGGACGGGGACTCTTTGGTGCGATCGCAGGCTTCATCGAGAACGGTTGGGAAGGGCTGATA GATGGATGGTACGGTTTCCGTCXCCAGAACGCCCAAGGAGAGGGGACAGCGCGCGGACTACAAATCAACGCAGTCTGCCATTGACCAAAT CACTGGCAAACTGAACCGGCTTATCGAGAAAACCAACCAGCAGTTTGAACTGATAGATAATGAATTCAACGAGGTTGAGAAGCAAATTGG GAACGTCATAAATTGGACTAGAGACTCTATCACAGAGGTGTGGTCATATAATGCAGACGCTGTTGGTGGCAATGGAAAACCAGCACACTAT CGACCTAGCAGATTCTGAGATGGACAAGCTATATGAACGCGTTAAGCGGCAGCTGCGGGAAAACGCAGAAGAAGACGGTACAGGTTGTT TCGAGATATTTCACAAATGCGACGATGATTGTATGGCATCGATCAGAAATAATACGTATGACCACTCCAAATACCGAGAAGAGGCTATGCA GAACCGAATCCAGATTGATCCTGTAAAGCTCAGTTCTGGCTACAAGGACGTCATTCTCTGGTTTAGCTTTGGAGCCTCCTGTTTCATTCTT TTGGCCATCGTTATGGGCCTCGTGTTTATTTGCGTGAAAAATGGTAATATGCGGTGTACCATATGTATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2791	ATGAATACCCAAATTCTGGTTTTTTGCGCTGATCGCGATCATACCGACCAACGCGGATAAAATTTGTCTCGGGCATCACGCCGTGAGCAAT GGGACCAAGGTAAACACACTGACGGAGCGGGCGGGTGGAGGTGGTGAACGCCACAGAGACGGTCGAGCGGACAAATATTCCTCGGATAT GCTCCAAGGGCAAGAAGACTGTTGATTTAGGCCAGTGCGGCCTCCTCGGCACCATCACCGGACCGCCCCAGTGCGACCAGTTCCTGGA GTTTTCCGCTGACCTGATCATCGAAAGGAGAGAGGAAGCGATGTGTGTTACCCTGGAAAGTTTGTTAATGAGGAGGCCCTAAGACAGA TTCTGCGGGAATCCGGCGGCATCGAGAAGGAGGCCATGGGATTTACTTACAGCGGGATTAGAGCGAACGGAGCTACATCTGCCTGTCG CAGGAGTGGATCTTCCTTCTACGCTGAGATGAAATGGCTGCTCTCGAATACGGACAACGCCGCGGTTTCCTCAAATGACTAAATCTTACAA AAACACTCGGAAGTCCCCCCGCGCTCATTGTGTGGGGAATCCACCACACAGTGTGAGTACAGCCGAGCAGACTAAACTGTATGGCAGTGGGA ATAAGCTGGTCACAGTTGGGTCCTCCAACTACCAGCAGAGCTTCGTTCCCAGTCCGGGCGCACGCCCGCAGGTTAATGGCCTTAGCGGT AGAATCGATTTCCACTGGCTGATGCTGAATCCTAACGATACTGTGACTTTCAGCTTCAATGGCGCTTTTATTGCACCCGACAGAGCTTCTT TTCTGCGTGGCAAATCCATGGGCATTCAGTCCGGCGTGCAGGTGGACGCCCAACTGCGAAGGCGATTGTTACCACTCTGGGGGCACCAT CATCTCCAACCTCCCTTTTCAAACATAGACAGTCGCGCTGTGGGAAAATGTCCAAGGTACGTTAAACAACGGTCTCTGCTACTGGCTAC CGGCATGAAGAATGTGCCCGAAATCCCCAAGGGACGGGGCTTATTTGGCGCGATTGCCGGATTTATTGAAAATGGCTGGGAGGGCCTCA TTGACGGATGGTACGGTTTTCGACACCAGAACGCTCAGGGTGAAGGGACCGCTGCAGACTACAAATCCACGCAGTCCGCTATCGATCAG ATTACAGGAAAGCTGAACAGAC`AATCGAGAAGACTAATCAGCAGTTCGAGCTAATCGATAATGAGTTCAACGAGGTCGAAAAGCAGATT GGGAACGTCATCAACTGGACTCGCGATAGCATCACGGAGGTATGGTCTTATAATGCAGAGTTGCTGGTGGCCATGGAAAATCAGCATAC AATCGACTTGGCTGACTCTGAGATGGATAAATTGTATGAGAGGGTAAAAAGGCAGTTGAGAGAGAACGCGGGAGGAAGATGGCACTGGTT GCTTCGAGATCTTTCACAAGTGTGACGACGATTGCATGGCCAGTATTAGAAATAATACATATGACCACACAGCAAGTACAGGGAGGAGGCCA TGCAGAATCGTATCCAAATCGATCCCGTGAAATTGTCAAGCGGATATAAAGACGTTATACTATGGTTCTCCTTTGGGGCTAGTTGTTTCAT TCTCCTGGCGATCGTCATGGGCCTGGTTTTCATCTGCGTTAAGAATGGGAATATGAGATGTACTATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2792	ATGAATACCCAGATTCTGGTGTTCGCTCTCATTGCAATAATCCCGACTAACGCTGATAAAATCTGTCTTGGCCACCACGCTGTGAGTAATG GAACGAAAGTCAATACGCTCACTGAGCGCGGAGTCGAAGTTGTTAACGCTACCGAGACCGTGGAGCGGACAAACATACCGCGGATTTGC TCAAAGGGCAAAAAGACAGTGGATCTGGGTCAGTGCGGCCTTCTCGGCACAATCACCGGGCCCCCACAGTGTGACCAATTTCTCGAGTT TTCAGCTGATTTGATAATTGAGCGCCGGGAGGGCAGTGATGTATGCTATCCAGGGAAGTTCGTGAATGAAGAGGCCCTCCGCCAAATTC TCCGGGAATCTGGCGGGATTGACAAGGAAGCCATGGGGTTCACTTACTCTGGAATTCGGACTAATGGTGCTACCAGTGCTTGCCGTAGA AGTGGTAGCAGTTTCTATGCCGAAATGAAATGGTTGTTAAGCAATACCGATAACGCAGCATTTCCCCAGATGACAAAGTCGTACAAAAACA CCAGGAAAAGTCCTGCTCTGATCGTGTGGGGTATCCATCACTCTGTGAGTACAGCAGAACAGACTAAACTGTATGGATCAGGCAATAAGT TGGTGACAGTAGGCTCTTCGAATTACCAACAGTCATTTGTCCCCAGCCCGGGAGCCCGGCCACAGGTCAACGGCCAAAGCGGACGCAT CGATTTCCACTGGCTTATGCTGAATCCTAATGACACCGTCACATTTTCCTTCAATGGGGCCTTTATTGCCCCAGATCGTGCATCCTTTCTG AGAGGGAAATCCATGGGTATACAGAGCGCGGGTGCAGGTGGACGCAAACTGTGAGGGAGATTGTTACCATTCTGGCGGTACGATCATCA GCAACTTGCCATTCCAGAATATAGACTCCCGGGCAGTCGGTAAGTGTCCCCGGTACGTCAAACAAAGAAGCTTGCTGCTGGCCACCGGG ATGAAAAATGTTCCCGAGATCCCCAAGGGGCGTGGCCTCTTTGGCGCAATCGCAGGTTTATCGAGAATGGGTGGGAAGGGGCTGATCG ACGGCTGGTATGGATTCAGGCACCAAAAACGCACAGGGAGAAGGGACAGCCGCCGACTACAAAAGCACACAGAGTGCGATCGATCAAAT CACAGGTAAATTGAACCGACTGATTGAGAAGACAAACCAACAGTTTGAGCTCATAGATAATGAGTTCAACGAGGTGGAGAAGCAGATAGG AAATGTGATCAACTGGACAAGGGATTCCATCACTGAAGTCTGGTCCTATAATGCCGAGCTGTTGGTTGCCATGGAAAACCAGCATACCAT TGACCTCGCCGATTCCGAAATGGATAAGCTGTACGAAAGGGTGAAGCGGCACTTGCGGGAGAACGCAGAAGAAGATGGAACAGGATGC TTTGAGATATTTCACAAATGCGATGATGATTGCATGGCCTCGATACGCAACAATACCTATGACCATAGCAAGTACCGAGAGGAGGCGATG CAAAACAGGATCCAGATTGACCCAGTGAAGCTCAGCAGTGGGTACAAGGATGTCATTTTGTGGTTTAGCTTTGGAGCCTCATGCTTCATA CTCCTCGCCATCGTCATGGGGTTGGTATTTATCTGCGTCAAGAACGGCAAATATGAGGTGTACTATCTGCATC

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2793	ATGAATACTCAGATTCTGGTGTTTGCGCTTATCGCTATTATACCCACTAATGCCGACAAAATCTGTCTGGGCCATCACGCCGTTAGCAACG GCACCAAAGTGAACACACTCACAGAACGTGGTGTGGAAGTCGTCAATGCCACCGAGACAGTTGAGGCGCACCAATATTCCTAGAATCTGTT CCAAAGGCAAAAAAACTGTCGATCTAGGCCAATGCGGACTGCTCGGAACTATTACTGGCACCACCGCAGTGCGATCAGTTCCTCGAGTTC AGCGCAGACCTGATCATAGAGAGGAGAGAAGGTAGCGACGTTTGTTACCCTGGAAAATTTGTCAACGAGGAGGCGCTTCGACAGATTCT CAGAGAGAGTGGAGGTATAGATAAGGAGGCCATGGGTTTCACGTATTCAGGTATCAGAACGAATGGGGCAACCAGTGCCTGTCGCCGGT CAGGCAGCAGCTTCTATGCAGAGATGAAGTGGCTCCTGTCAAACACAGACAATGCTGCATTCCCACAGATGACCAAGAGCTACAAGAAC ACGCGAAAGTCACCTGCATTAATAGTCTGGGGTATCCACCACTCTGTCTCCACTGCCGAACAGACCAAACTTTACGGATCTGGAAATAAG CTGGTCACTGTGGGGTCTTCTAATTATCAGCAGAGTTTTGTACCCTCGCCCGGGGCCCGGCCCCAGGTAAACGGACAGTCCGGACGGAT TGACTTTCACTGGCTCATGCTTAACCCAAACGACACAGTGACCTTCAGTTTTAACGGCGCTTTCATCGCTCCCGACAGGGCCTCATTCCT GAGGGGAAAGTCGATGGGAATCCAGAGCGGGGTTCAGGTTGATGCAAATTGCGAAGGGGATTGTTACCATTCCGGCGGAACCATTATCT CCAACCTGCCATTTCAGAATATAGATAGCCGCGCCGTGGGAAAGTGCCCTAGGTACGTCAAACAGCGGTCTCTGCTCCTGGCTACAGGC ATGAAAAATGTTCCGGAAATCCCAAAGGGGCGGGGACTCTTCGGAGCCATCGCAGGCTTCATCGAAAACGGCTGGGAGGGGTTAATCG ATGGATGGTATGGCTTCCGCCATCAGAACGCACAGGGGGAGGGCACCGCGGCCGATTATAAGAGTACCCAGAGCGCAATAGATCAGAT AACTGGTAAGTTGAATCGGTTAATTGAAAAAACTAACCAGCAGTTCGAACTAATCGATAATGAGTTCAATGAAGTCGAGAAACAGATAGGC AACGTTATCAATTGGACCAGGGACAGCATAACAGAAGTGTGGTCCTATAACGCCGAACTCCTCGTTGCCATGGAGAACCAGCATACCATT GACCTGGCTGATTCAGAGATGGATAAACTATACGAACGGGTCAAGCGTCAATTGAGAGAATGCGGAAGAGGACGGGACTGGGTGCTT CGAAATCTTCCATAAGTGTGATCACGATTGTATGGCGTCCATTCGCAATAACACCTACGATCATTCAAAATACCGTGAAGAGCGCGATGCA GAATAGGATTCAGATCGACCCAGTGAAGCTCAGTAGTGGATATAAAGACGTAATTCTCTGGTTCTCTTTCGGAGCTAGCTGCTTCATTCTT CTGGCCATCGTGATGGGACTCGTTTTCATATGTGTTAAAAATGGCAACATGCGTTGCACAATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2794	ATGAACACTCAGATTTTAGTTTTCGCTCTAATTGCCATTATTCCTACAAATGCTGATAAAATATGCCTGGGACACCATGCTGTCTCCAACGG TACCAAAGTCAATACTCTTACGGAGAGGGGGGTGGAGGTAGTGAACGCCACCGAGACAGTCGAACGTACAAATATACCTCGGATTTGCT CCAAGGGAAAGAAGACAGTGGATCTGGGGCAATGTGGTCTGCTGGGAACTATCACAGGCCCACCGCAGTGCGACCAGTTTCTTGAGTTT TCAGCCGACCTGATCATCGAGCGACGCCGAGGGCAGCGACGTGTGTTACCCCGGGAAGTTCGTAAACGAGGAAGCTCTCCGCCAGATCC TGCGCGAGAGTGGAGGTATTGATAAGGAGGCCATGGGCTTTACATATTCTGGCATCCGGACCAATGGGGCCACAAGCGCCTGTAGGAG ATCTGGATCCAGTTTTTACGCCGAAATGAAATGGCTGCTGAGCAACACAGACAATGCCGCCTTTCCTCAGATGACAAAGAGCTACAAAAA CACAAGGAAGTCACCCGCCCTTATTGTCTGGGTATCCATCACTCTGTCAGTACAGCTGAGCAGACCAAGCTGTATGGTTCTGGCAATAA ATTGGTTACCGTCGGGAGCAGTAACTATCAACAATCATTTGTTCCAAGTCCAGGAGCCCGGCCCCAGGTCAATGGTCAAAGTGGAAGGA TTGACTTTCACTGGTTAATGCTTAATCCCAACGATACCGTGACCTTCTCATTTTAATGGGGCCTTTATTGCTCCGGACCGTGCCAGCTTTCT CCGCGGTAAGTCCATGGGCATCCAGTCCGGCGTACAAGTGGATGCCAATTGCGAAGGCGACTGTTACCACTCTGGCGGCACCATCATCT CAACCTTCCGTTCCAGAACATAGATAGTCGGGCCGTGGGCAAGTGCCCTAGGTATGTGAAGCAGCGCTCATTACTGTTGGCTACTGGC ATGAAAAATGTGCCAGAGATCCCTAAAGGTCGTGGTCTTTTTGGAGCTATCGCTGGGTTCATTGAAAATGGATGGGAGGGGCTGATCGAC GGTTGGTACGGATTCCGGCATCAGAATGCACAGGGCGAAGGCACAGCCGCTGATTACAAGAGCACCCAGTCAGCTATTGACCAGATCAC AGGGAAGCTGAACCGGCTAATCGAGAAAACAAACCAACAATTTGAACTTATCGATAACGAATTTAATGAGGTGGAGAAACAGATAGGCAA CGTGATCAACTGGACACGGGATAGTATCACTGAGGTGTGGAGTTACAATGCCGAACTCTTGGTGGCTATGGAGAATCAGCATACTATCGA TCTAGCGGACTCTGAGATGGACAAACTCTATGAACGAGTGAAGAGGCAGCTTCGCGAGAACGCTGAGGAAGATGGGACAGGGTGTTTTG AAATTTTTCATAAGTGTGATGATTGCATGGCATCTATCCGGAATAACACATACGACCATTCCAAGTACCGTGAAGAGGCTATGCAAAA CCGAATTCAGATAGACCCAGTGAAGCTCTCTTCCGGATACAAGGATGTAATTCTGTGGTTTTTCATTCGGTGCATCCTCGTTCATCCTGCTT GCAATCGTGATGGGTTTAGTGTTCATCTGTGTGAAGAATGGGAATATGAGGTGTACAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2795	ATGAACACGCAGATCCTGGTGTTCGCACTGATTGCAATTATTCCCACCAATGCCGATAAGATCTGTTTAGGACATCACGCCGTGTCCAAC GGTACGAAGGTGAACACATTGACCGAGCGGGGAGTCGAAGTGGTAAATGCAACCGAGACTGTTGAACGCACACAAATATCCCAAGAATTTG TTCAAAGGGTAAAAAAACCGTGGACCTCGGACAGTGCGGGCTGCTTGGAACGATTACAGGACCTCCACAATGCGACCAGTTCCTGGAAT TTTCCGCTGACCTCATCATAGAACGACGGGAAGGGTCCGACGTGTGTTATCCGGGAAAGTTCGTTAACGAGGAGGCTCTGAGGCAGATC TTGAGGGAGAGTGGTGGCATCCACAAGGAGCGATGGGCTTCACATACAGTGGCATCAGAACTAACGGAGCCACCAGCGCATGTCGAC GGTCTGGTAGCAGTTTTTATGCAGAGATGAAGTGGTTGCTGAGCAATACAGATAATGCCGCATTCCCCCAAATGACAAAGTCCTATAAGA ACACGCGGAAAAGTCCTGCCCTAATTGTGTGGGGAATCCACCACTCTGTTAGTACCGCTGAGCAGACCAAGTTATACGGCAGCGGGAAC AAGTTGGTGACAGTTGGATCTAGTAACTACCAGCAAAGCTTCGTTCCTAGCCCCGGGGGCACGTCCCCAGGTGAACGGGCAGAGTGGCC GGATCGATTTTCATTGGCTGATGCTCAATCCAAACGACACTGTCACATTCAGTTTTAACGGAGCCTTTATCGCCCCTGATAGAGCCTCATT CCTTAGGGGAAAAAGTATGGGAATCCAGTCTGGTGTACAGGTGGATGCCAACTGTGAAGGTGACTGTTATCATTCAGGTGGAACCATCAT ATCAAACCTGCCCTTCCAAAATATTGACTCAAGAGCAGTGGGCAAGTGCCCCCGATATGTGAAGCAGCGATCCCTGCTGCTCGCAACTG GCATGAAGAATGTCCCGGAAATCCCTAAGGGCGGGGCCTTTTCGGGGCAATCGCAGGCTTCATCGAAAATGGATGGGAGGGCCTGAT CGACGGATGGTACGGTTTCCGGCATCAGAATGCTCAGGGGGAGGGGACCGCGGCTGACTATAAGTCGACACAATCTGCCATAGATCAG ATCACGGGAAAACTGAACAGACTGATAGAGAAGACTAATCAGCAGTTCGAACTGATCGATAACGAGTTCAATGAGGTTGAAAGCAAATC GGGAACGTAATCAACTGGACACGAGACAGCATTACTGAGGTGTGGTCCTACAATGCGGAATTGCTGGTGGCTATGGAAAATCAACACAC AATCGATCTTGCCGATTCAGAGATGGACAAGCTTTACGAGAGAGTAAAGCGACAACTGCGCGAGAATGCTGAGGAGGACGGGACTGGGT GCTTCGAGATCTTTCACAAGTGTGACGACGACTGCATGGCCTCTATCCGGAATAATACTTATGACCATAGCAAATATAGAGAGGAGGCCA TGCAAAACCGGATCCAGATTGATCCAGTCAAGCTCTCCAGCGGTTATAAGGATGTGATTTTGTGGTTCAGTTTTGGCGCTTCATGCTTCAT ACTCTTGGCCATCGTGATGGGCTGGTGTTTATTTGTGTGAAGAACGGAAACATGCGGTGTACAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2796	ATGAATACCCAGATCCTCGTTTTCGCTCTGATCGCAATCATTCCCACAACGCAGATAAAATCTGTCTGGGCATCACGCTGTGAGCAAC GGCACAAAAGTTAACACCTTAACCGAGCGCGGCGTGGAGGTGGTTAATGCTACGGAGACCGTCGAACGGACCAATATCCCCAGGATCTG TAGTAAAGGCAAGAAGACAGTCGACCTGGGGCAGTGTGGGCTCCTCGGGAC`ATCACAGGACCCCCTCAGTGTGATCAGTTCCTCGAGT TCTCAGCGGACCTTATTATAGAACGCCGAGAGGGTTCTGATGTGTGTTACCCCGGCAAATTTGTGAACGAGGAGGCTCTGAGGCAAATTC TGCGCGAAAGCGGCGGCATTGAAAAGGAAGCTATGGGGTTTACATACTCCGCAATAAGAGCCAATGGCGCGACTTCTGCTTGTCGAAGG TCCGGAAGCTCCTTTTATGCGGAAATGAAATGGCTATTGAGCAATACCGACAATGCTGCCTTCCCCCAGATGACCAAGAGTTATAAAAATA CCCGAAAAAGCCCCCGCGCTTATCGTTTGGGCATCCATCATTCTGTTTCTACAGCCGAACAGACTAAGCTTTATGGCAGCGCGGAATAAGC TCGTGACCGTCGGCTCAAGTAACTATCAGCAGTCATTCGTGCCTTCCCCGGGGCTAGACCTCAAGTGAATGGATTATCCGGACGAATC GACTTCCATTGGTTGATGTTAAACCCTAATGATACTGTGACCTTCTCCTTCAACGGGGCCTTCATTGCTCCAGATCGTGCTAGTTTCCTGC GGGGCAAGTCCATGGGTATTCAATCCGGAGTCCAGGTCGACGCAAACTGTGAGGGGGATTGCTACCACTCCGGAGGCACAATTATTTCT AATCTGCCATTTCAGAACATTGACTCCCGCGCGTGGGGAAATGTCCAAGGTATGTGAAACAACGGAGCCTACTGCTCGCCACCGGAAT GAAGAACGTTCCTGAAATACCTAAAGGTCGGGGTTTGTTTGGGGCTATAGCCGGCTTCATAGAAAACGGATGGGAAGGCCTGATCGATG GCTGGTATGGCTTTAGGCATCAAAATGCACAGGGGGAGGGCACTGCGGCTGACTATAAGAGCACCCAGTCAGCGATTGACCAGATTACT GGCAAGCTGAATAGACTTATAGAAAAGACAAATCAGCAATTCGAGCTGATAGACAACGAATTCAATGAGGTGGAGAAACAAATTGGTAAC GTCATTAACTGGACTCGTGACTCTATTACGGAAGTGTGGAGTTACAATGCTGAGCTCCTCGTCGCCATGGAAAACCAACACACTATAGAT TTGGCCGATAGCGAGATGGACAAGCTGTACGAGAGGGTAAAACGCCAGTTGTGAGAAAACGCCGAGGAAGATGGCACCGGTTGCTTTG AGATTTTCCACAAGTGCGATGATGACTGCATGGCAAGCATCAGAAATAACACATACGATCATAGTAAATACAGGGAGGAAGCCATGCAAA ACCGCATTCAGATCGATCCCGTCAAGCTCTCTTCGGGGTACAAAGATGTCATCCTTTGGTTCTCATTCGGCGCATCTTGCTTTATCCTGCT GGCTATAGTGATGGGGCTCGTGTTTATTTGCGTCAAAAATGGAAACATGCGCTGTACCATCTGTATT

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2797	ATGAATACTCAGATCCTGGTGTTTGCGCTCATTGCGATCATCCCAACCAACGCCGACAAAATATGTCTGGGACATCACGCCGTTTCCAAC GGGACGAAGGTGAACACGTTGACAGAGCGCGGAGTGGAGGTCGTGAATGCTACTGAGACCGTGGAGAGGACTAATATCCCGAGGATCT GCAGTAAGGGCAAGAAGACTGTCGACTTAGGACAGTGTGGCCTGTTAGGCACAATCACAGGCCCCCCTCAATGTGACCAATTTCTGGAG TTTTCTGCCGACCTCATAATCGAGCGCAGGGAAGGCTCCGACGTGTGCTATCCGGGAAAGTTCGTCAACGAGGAAGCCCTCAGACAGAT CCTTCGCGAATCCGGCGGCATAGATAAGGAAGCTATGGGTTTCACATATTCAGGAATCCGCACGAATGGCGCAACTTCCGCTTGCCGGC GATCAGGATCCTCTTTCTACGCAGAGATGAAGTGGCTGCTGAGCAATACCGACAATGCCGCCTTCCCCCAAATGACAAAGTCATACAAGA ATACTCGTAAATCACCTGCCCTGATTGTGTGGGAATCCATCACTCAGTGTCCACAGCGGAGCAGACCAAGCTGTACGGAAGCGGTAAC AAGCTTGTTACCGTTGGCTCTAGCAATTATCAGCAGAGCTTTGTTCCTTCACCTGGAGCCAGACCTCAAGTAAATGGGCAAAGCGGTAGA ATCGACTTTCACTGGCTGAATGCTGAATCCCAATGACACAGTCACCTTTTCGTTTAACGGCGCGTTTATAGCACCCGATAGGGCCAGTTTTT TGAGAGGAAAGTCAATGGGAATCCAAAGCGCCGTGCAAGTCGATGCCAATTGTGAGGGCGACTGTTACCATAGTGGGGGAACCATTATA AGTAATTTACCCTTTCAGAATATTGACTCAAGGGCTGTGGGAAAATGTCCCAGGTATGTCAAGCAGAGAAGCCTGCTGCTGGCCACCGGT ATGAAGAACGTACCCGAGATTCCAAAAGGCAGAGGACTGTTTGGAGCAATTGCTGGGTTCATCGAGAACGGGGTGGGAGGGGCTTATTGA TGGCTGGTACGGATTTAGACATCAAAATGCACAGGGGGAAGGCACTGCCGCTGATTATAAAAGTACGCAGTCCGCGATAGACCAGATTA CCGGAAAGTTGAACCGGCTGATCGAGAAAACTAATCAGCAGTTTGAGTTGATCGACAACGAATTTAACGAGGTGGAGAAACAAATCGGCA ATGTGATTAACTGGACTAGAGACTCCATTACCGAGGTGTGGTCATATAACGGCGAATTGCTCGTGGCCATGGAAAACCAGCACACCATCG ATCTCGCTGATAGCGAGATGGACAAACTCTACGAAAGGGTCAAGAGACAACTCCGAGAGAACGCCGAGGAAGACGGGACTGGGTGTTTT GAGATCTTTCATAAATGTGATGACGACTGTATGGCTTCTATCCGGAATAACACATACGACCACTCCAAATATCGGGAGGAAGCTATGCAAA ATCGTATTCAAATTGATCCCGTCAAGCTGAGCTCCGGGTATAAGGACGTTATCCTCTGGTTCTCCTTTGGCGCTTCCTGTTTCATCCTTCT GGCTATTGTCATGGGGCTCGTTTTCATATGCGTTAAGAACGGGAATATGCGGTGTACGATCTGTATA

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2798	ATGAACACACAGATATTGGTGTTTGCTTTGATTGCAATCATTCCTACAAACGCGGATAAAATCTGCCTGGGCCACCATGCTGTGAGTAACG GCACCAAAGTGAATACTTTAACTGAACGCGGTGTCGAGGTTGTGAACGCGACTGAAACGGTGGAGCGCACGAATATTCCCCGGATCTGC AGCAAAGGCAAAAAGACTGTCGACCTTGGTCAGTGCGGGCTACTTGGGACTATCACTGGACCCCCACAGTGTGATCAATTCCTGGAATTT TCAGCCGATTTGATTATTGAGCGGAGAGAGGGATCCGACGTGTGCTATCCAGGCAAGTTTGTGAACGAGGAGGCATTGCGGCAGATTCT CAGGGAATCTGGAGGCATTGATAAGGAAGCTATGGGTTTCACCTATAGCGGTATCCGGACCAACGGAGCTACCAGCGCGTGCCGGAGG AGCGGTAGCTCCTTTTACGCGGAGATGAAGTGGTTGCTCTCTAACACGGACAACGCCGCCTTCCCACAGATGACCAAGAGCTACAAGAA CACCCGCAAATCACCTGCCTTAATTGTGTGGGCATTCATCATAGTGTCTCTACGGCCGAGCAGACAAAACTGTATGGATCTGGCAATAA GCTTGTCACCGTCGGCAGCTCCAATTACCAGCAGTCTTTCGTACCCAGTCCCGGTGCAAGGCCACACGGTCAACGGACAGTCGGGCGCG ATTGACTTCCACTGGCTGATGCTCAACCCTAATGATACTGTAACCTTCAGCTTCAATGGCGCATTCATAGCTCCCGATCGGGCATCATTCC TGCGAGGTAAATCTATGGGGATCCAGTCCGGCGTGCAGGTGGATGCCAACTGCGAGGGCGATTGCTATCACAGTGGTGGGACAATCAT CTCTAATTTACCCTTCCAGAATATTGATAGCCGAGCTGTGGGGAAATGCCCAAGGTACGTCAAGCAGCGTTCGCTTCTGTTAGCCACTGG CATGAAAAATGTGCCCAGAGATACCCAAAGGCAGGGGGTTATTTGGAGCAATTGCCGGTTTTATTGAAAATGGCTGGGAGGGACTCATCG ACGGCTGGTATGGCTCAGACACCAAAATGCCCAGGGTGAAGGTACCGGCCGCCGACTACAAGTCCACTCAAAGTGCAATTGACCAAATA ACTGGAAAGCTGAACCGGCTGATCGAAAAGACAAATCAGCAGTTTGAGTTAATCGATAACGAGTTCAACGAGGTCGAGAAGCAGATTGGA AATGTCATTAACTGGACAAGGGATTCCATCACTGAGGTGTGGAGCTACAACGCCGAGCTGCTCGTCGCAATGGAGAACCAGCATACTATT GACCTGGCAGACTCTGAAATGGATAAATTATACGAACGCGTGAAACGCCAGCTCAGAGAAAATGCTGAAGAGGACGGGACCGGTTGTTT TGAGATTTTTCACAAGTGCGACGATTGCATGGCCTCCATTAGGAACAATACATACGACCATAGTAAGTATCGAGAGGAAGCCATGCA GAACAGGATACAGATAGACCCTGTTAAACTGTCCTCCGGGTACAAGGATGTGATCCTTTGGTTTTCTTTTGGGGCATCCTGCTTTATTCTG CTGGCAATCGTCATGGGCCTTGTTTTTATCTGCGTAAAGAATGGAAATATGAGATGCACAATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2799	ATGAACACCCAGATCCTTGTATTCGCATTAATAGCTATCATTCCAACAAACGCGGACAAAATTTGCCTGGGGCACCATGCAGTCTCCAACG GCACTAAGGTGAATACGCTCACCGAGCGCGGGGCGTGGAGGTTGTTAATGCGACGGAGACGGTTGAGCGGACGAATATCCCCCGAATTTG TTCGAAGGGAAAACGGACAGTGGACCTGGGTCAGTGTGGGTTGCTGGGTACCATTACAGGCCCCCCCCAGTGTGATCAGTTTCTGGAAT TTTCCGCCGACCTTATTATCGAGCGGAGGGAAGGGTCCGATGTCTGTTACCCAGGGAAGTTCGTTAACGAGAGGCTTTGCGCCAGATA CTCCGGGAGAGTGGTGGTATTGACAAGGAGGCCATGGGGTTCACCTACAGCGGCATCAGGACTAATGGAGCCACCTCGGCCTGTAGAA GAAGTGGATCTTCTTTCTATGCCGAGATGAAATGGTTGCTATCTAACACTGACAACGCCGCCTTTCCACAGATGACTAAAAGTTACAAAAA TACACGGAAAAAGCCCAGCCTTAATAGTCTGGGGCATCCATCATAGTGTGTCCACCGCCGAACAGACTAAACTATATGGGTCCGGAAGCA AGCTTGTGACGGTGGGCTCTTCCAACTACCAGCAGAGTTTTGTGCCCTCCCCCGGAGCACGGCCTCAGGTCAACGGCTTGAGCGGACG TCTAATCTCCCATTTCAGAATATCGATTCACGGGCAGTTGGCAAGTGCCCGAGATACGTCAAGCAGCGATCTCTCCTTCTCGCAACCGGA ATGAAAAACGTCCCAGAGATTCCTAAAGGCAGGGGCCTGTTCGGCGCCATCGCCGGATTTATTGAGAACGGGTGGGAGGGGCTGATAG ATGGCTGGTACGGCTTTCGGCATCAGAATGCACAGGGCGAGGGTACGGCTGCGGACTACAAAAGTACTCAAAGCGCAATCGACCAGATT ACAGGAAAGCTGAACCGGTTAATTGAAAAGACAAACCAGCAATTCGAGCTCATCGACAATGAGTTTAATGAAGTGGAGAAGCAGATCGGC AATGTAATCAACTGGACCAGAGATAGTATCACTGAAGTGTGGTCCTACAACGCCGAGCTTCTGGTGGCTATGGAGAACCAGCATACTATC GATCTTGCGGATAGCGAGATGGATAAGCTGTACGAGCGTGTTAAGCGACAGCTAAGAGAGAACGCGGAGGAGGACGGTACTGGGTGTT TCGAAATTTTTCACAAGTGCGATGACGATTGTATGGCGTCTATCCGCAATAATACTTATGATCATAGTAAGTATCGGGAAGAAGCTATGCA GAACCGCATCCAAATCGACCCCGTGAAGCTTTCAAGCGGTTACAAAGACGTTATCTTGTGGTTCAGCTTCGGGGCGTCTTGCTTTATCCT GCTGGCGATTGTAATGGGCTTGGTCTTTATCTGTGTGAAGTCCAGAAATATGAGATGCACCATTTGTATC

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Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2800	ATGAATACCCAAATCCTCGTGTTCGCTTTAATCGCAATCATCCCGACCAATGCCGACAAGATCTGCCTGGGTCACCACGCTGTCTCCAAC GGCACTAAGGTGAACACCTTAACAGAGAGAGGCGTGGAAGTAGTTAATGCTACCGAAACCGTGGAAAGGACCAACATTCCGCGGATATG TTCTAAGGGAAAACGCACCGTAGATCTCGGCCAGTGTGGACTGCTGGGCACAATCACCGGTCCTCCACAATGTGATCAGTTTCTTGAGTT CTCGGCCGACCTCATCATCGAAAGGAGGGAAGGATCTGATGTGTGTTATCCCGGGAAGTTCGTGAAAGAAGAGGCCCTGCGTCAGATAT TGCGAGAGAGTGGCGGGATAGATAAGGAAGCAATGGGCTTCACATACAGCGGCATCAGAACAAATGGCGCGACATCCGCCTGTAGAAG GTCTGGGTCTAGCTTCTACGCAGAGATGAAATGGCTGCTCAGTAACACGGACAATGCGGCCTTCCCCCAGATGACTAAAAGCTATAAAAA TACAAGGAAGAGCCCCGCCTTGATAGTGTGGGGAATCCATCATAGTGTGAGTACCGCTGAACAGACGAAGCTATACGGATCAGGCAACA AGCTGGTTACTGTCGGCAGTTCTAACTACCAGCAAATCCTTTGTGCCTTCTCCCGGCGCCCGCCACAAGTGAATGGACTATCTGGCAGAA TTGATTTCCACTGGCTGATGCTGAACCCCCAATGACACTGTGACTTTCAGCTTTACGGAGCCTTTATCGCCCCCGATAGAGCCAGTTTCCT GAGGGGCAAATCCATGGGCATCCAGTCAGGCGTGCAGGTCGATGCCAACTGCGAGGGGAGATTGTTACCATTCCGGTGGCACCATAATTA GTAACTTACCATTCCAGAATATTGACAGCAGAGCCGTTGGGAAATGCCCCAGGTATGTCAAGCAGAGGTCCCTACTACTGGCCACAGGC ATGAAGAATGTTCCTGAAATTCCTAAAGGCCGTGGTCTTTTCGGAGCAATCGCAGGATTCATCGAAAACGGCTGGGAAGGACTGATTGAT GGGTGGTATGGTTTTAGGCACCAAAATGCACACAGCTGCAGATTACAAGAGCACTCAGTCAGCTATTGATCAGATTAC CGGAAAGCTTAACAGGCTCATCGAAAAGACTAATCAGCAGTTTGAACTGATCGACAACGAATTCAACGAAGTAGAGAAACAGATTGGGAA CGTGATTAATTGGACCCGAGACTCTATCACAGAGGTGTGGAGTTACAACGCAGAGTTGCTGGTAGCAATGGAAAACCAGCACACAATCG ATCTCGCAGACAGTGAGATGGATAAACTTTACGAAAGGGTCAAACGTCAGTTAAGAGAGAACGCGCGAAGAGGATGGCACCGGTTGCTTT GAAATTTTCCACAAATGCGATGACGACTGCATGGCGTCTATCAGAAATAACACTTACGACCATAGTAAGTATCGGGAGGAGGCTATGCAG AACCGAATTCAGATCGATCGAGTAAAGCTCAGCAGCGGCTACAAGGACGTCA˙CCTTTGGTTCTCTTTCGGGGCCAGTTGCTTCATCCTT CTCGCTATAGTCATGGGCCTCGTGTTTATCTGCGTAAAAAATGGGAACATGAGGTGCACCATTTGCATA

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SEQ ID NO.	Sequenza di acido nucleico
2801	ATGAATACACAGATATTGGTCTTCGCTCTCATCGCTATCATTCCCACCAACGCTGACAAAATCTGTTTAGGCCACCATGCCGTATCCAATG GCACTAAGGTCAACACACACTTACTGAGCGAGGCGTAGAGGTCGTCAACGCTACAGAAACTGTTGAGCGAACCAACATCCCCCAGGATTTGC TCTAAGGGGAAAAAGACTGTAGACCTTGGGCAGTGTGGCCTGCTGGGGACTATCACCGGGCCACCTCAATGTGACCAATTTCTGGAGTT CTCAGCTGATCTGATTATCGAGAGGCGCGAGGGATCTGATGTCTGTTACCCAGGTAAGTTCGTCAATGAGGAGGCGCTCCGCCAGATCC TCCGCCGAGAGTGGCGGGGATCGATAAAGAGGCCATGGGCTTCACTTACTCCGGCATCAGGACCAATGGCGCTACATCCGCCTGTAGACG GAGCGGATCCAGCTTTTACGCCGAAATGAAGTGGCTGCTGTCCAACACAGACAACGCTGCTTTTCCACAGATGACAAAGTCTTATAAAAA TACCCGCAAATCTCCTGCCCTGATTGTGTGGGGCATTCACCACTCAGTGTCCACTGCCGAGCAGACTAAGTTGTACGGAAGTGGCAACA AGCTGGTGACCGGTCCGGCTCTTCAAACTATCAACAGAGCTTTGTACCTTCCCCAGGGGCCCGGCCACAGGTGAACGGGCAGTCAGGAAG GATTGATTTCCACTGGCTGATGCTGAATCCAAATGATACTGTCACCTTCAGCTTTAATGGAGCTTTTATTGCCCCGGATCGCGCATCCTTC CTGCGCGGGAAGAGTATGGGGATCCAGTCCGGGGTACAAGTCGACGCTAACTGCGAAGGCGATTGCTACCATAGCGGAGGAACCATCA TTAGTAACCTCCCCTTTCAGAATATTGATTCCCGTGCCGTTGGGAAATGTCCCAGATACGTCAAGCAGAGGTCCTTGCTGCTCGCAACCG GCATGAAGAATGTGCCAGAGATTCCAAAGGGGAGAGGTCTTTTCGGTGCTATCGGCGGCTTTATCGAGAACGGCTGGGAAGGGCTGATC GATGGCTGGTACGGATTCCGGCATCAAAACGCGCAGGGAGAGGGAACTGCGGCCGACTACAAGTCAACTCAGTCTGCCATCGATCAGA TTACTGGTAAGCTTAACCGTCTCATCGAGAAAACCAACCAACAATTTGAATTAATTGATAACGAGTTTAACGAAGTGGAGAAGCAAATTGG GAATGTCATAAACTGGACACGGGATTCTATCACCGAGGTATGGTCTTACAACGCGGAGTTGCTGGTCGCCATGGAGAACCAACATACCAT CGATCTGGCTGACAGTGAAATGGACAAGCTGTATGAGCGGGTGAAACGGCAGCTCCGGGAGAATGCAGAGGAAGACGGTACTGGCTGT TTCGAGATCTTCCATAAGTGCGACGATGACTGTATGGCCTCGATTAGGAACAACACCTATGATCACAGCAAGTATCGCGAAGCGATG CAGAACCGGATTCAGATCGACCCAGTTAAACTCTCGTCGGGCTACAAGGATGTAATCCTGTGGTTTAGCTTCGGAGCGTCGTGTTTCATC TTGTTGGCGATAGTAATGGGCCTTGTTTTTATCTGCGTGAAGAACGGAAATATGAGATGCACTATCTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2802	ATGAACACGCAGATCCTAGTGTTCGCACTTATCGCCATCATCCCTACCAATGCTGACAAAATTTGCCTGGGACATCATGCGGTTTCTAATG GAACCAAGGTGAATACCCTAACAGAACGGGCGGTGGAAGTTGTCAATGCCACAGAAACGGTTGAGCGTACTAACATTCCCCGCATTTGC TCCAAAGGAAAAAAAACTGTGGATCTGGCCAGTGTGGACTTCTGGGCACTATTACCGGCCCTCCTCAGTGCGACCAGTTCCTGGAGTT CTCTGCGGACCTTATTATTGAGAGACGTGAGGGATCTGATGTGTGTTATCCAGGGAAGTTCGTAAACGAAGAGGCTCTTAGACAAATCCT GCGGAAGAGCGGTGGCATAGATAAAGAGGCAATGGGGTTTACATACAGCGGCATAAGGACCAACGGCGCCACATCCACTTGCAGGCGG TCCGGGTCGTCATTTTACGCCGAGATGAAATGGTTGTTAAGTAATACAGACAACGCAGCCTTTCCGCAGATGACTAAATCTTATAAAAACA CACGAAAATCTCCGGCGATCATGTATGGGGCATACACCACAGTGTTAGCACTGCCGAGCAGACGAAACTATATGGCTCCGGAAATAAAC TGGTCACCGTAGGATCCTCCAACTACCAGCAGAGCTTCGTGCCCTCGCCTGGGCGCACGGCCACAAGTTAATGGTCTCAGCGGTCGGATT GACTTTCACTGGCTCATGCTTAATCCTAATGACACAGTAACCTTCTCCTTTAACGGCGCCTTCATAGCTCCCGACAGGGCATGTTTTCTGC GCGGGAAGAGTATGGGGATCCAGTCCGGGGTCCAGGTAGATGCAGACTGCGAAGGGGACTGCTACCACAGTGGGGGTACCATCATTAG TAACCTTCCCTTTCAGAATATTGACAGCAGGGCCGTCGGGAAGTGCCCCCGCTACGTGAAGCAGCGGTCTTTGCTCCTGGCTACCGGTA TGAAGAACGTGCCCCGAGATACCAAAAGGCAGGGGGCTCTTTGGTGCCATCGCCGGCTTTATCGAAAATGGATGGGAGGGCCTCATCGA CGGTTGGTACGGTTTCAGGCACCAGAATGCCCAGGGGGAAGGAACAGCTGCAGATTACAAGTCAACCCAGTCTGCTATTGACCAGATAA CAGGGAAACTGAACCGATTAATTGAGAAAACTAATCAACAGTTCGAGCTGATTGATAACGAGTTTAACGAGGTGGAACGCCAAATCGGGA ACGTGATTAACTGGACAAGGGATTCAATCACAGAGGTTTGGAGTTTATAATGCCGAACTGCTGGTCGCCATGGAGAACCAGCACACTATCG ATCTAGCTGATTCTGAGATGGACAAGCTCTATGAGCGCGTCAAGCGTCAGCTCCGCGAAAACGCTGAAGAAGATGGCACTGGCTGTTTC GAGATCTTCCACAAGTGTGACGACGACTGCATGGCCTCCATAAGGAATAACACTTATGATCACAGCAAGTATCGAGAGGAGGCCATGCA GAACCGCATTCAGATTGATCCCGTTAAGTTAAGTTCTGGTATAAAGATGTCATTCTTTGGTTCTCTTTTGGTGCTTCATGTTTTATACTGC TGGCTATCGTCATGGGACTCGTGTTCATCTGCGTCAAAAATGGGAATATGCGGTGTACCATATGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2803	ATGAATACGCAGATCCTGGTGTTCGCTCTAATCGCTATTATCCCTACAAACGCAGATAAGATCTGTTTAGGCCACCATGCAGTTTCTAATG GCACTAAGGTCAACACTCTCACTGAACGCGGGGTGGAGGTAGTCAACGCTACAGAGACAGTTGAACGAACAAACATCCCCAGGATTTGC TCTAAGGGTAAAAAAACAGTGGACCTGGGACAGTGCGGACTGCTCGGGACCATTACTGGGCCACCTCAGTGTGACCAGTTCTTGGAGTT TTCCGCCGATCTAATCATCGAAAGACGAGAAGGATCCGATGTGTGCTATCCTGGCAAGTTTGTGAATGAGGAAGCACTGCGGCAGATCTT GCGGGAGTCTGGCGGAATTGATAAGGAAGCAATGGGTTTTACCTACTCCGGTATTCGGACAAATGGAGCTACATCCGCATGTCGGCGGT CCGGAAGCAGTTTCTACGCCGAGATGAAGTGGCTATTGTCAAACACAGATAACGCTGCCTTCCCCCAGATGACTAAGAGCTATAAGAACA CCCGGAAGAGCCCTGCCCTGATCGTCTGGGCATTCATCATTCGGTCAGTACAGCCGAACAAACTAAGTTGTACGGCTCCGGAAACAAG TTGGTTACAGTGGGGTCTTCCAACTACCAGCAGAGCTTTGTACCTTCCCCCGGAGCCCGACCCCAGGTCAACGGCCAGTCTGGAAGAAT TGATTTTCATTGGCTAAATGCTGAATCCTAATGATACTGTGACATTTTCATTCAATGGAGCCTTCATAGCACCTGATAGGGCCTCTTTCCTGC GGGGAAAAAGCATGGGTATTCAGAGTGGCGTTCAGGTGGATGCTAATTGCGAGGGGACTGCTATCATAGTGGTGGGACCATTATTAGC AACCTCCCCTTTCAGAATATAGATAGGCAGGGCTGTCGGCAAATGTCCAAGGTACGTTAAGCAGCGGAGTCTACTGTTGGCCACCGGTAT GAAAAACGTCCCCGAGATCCCTAAGGGACGCGGCCTGTTCGGCGCCATCGCCGGATTTATCGAGAACGGGTGGGAAGGCTTGATCGAT GGGTGGTATGGATTCCGACATCAGAACGCCCAGGGCGAAGGTACTGCTGCCGACTATAAATCTACGCAGAGCGCAATAGACCAGATTAC GGGGAAACTGAACAGGCTGATCGAGAAGACCAATCAGCAGTTTGAGCTGATTGACAATGAATTCAACGAAGTTGAGAAACAGATCGGTAA CGTGATAAATTGGACTAGAGATAGTATCACCGAGGTATGGAGCTACAACGCCGAGCTGCTTGTCGCTATGGAAAACCAGCACACCATCG ACCTTGCTGACAGTGAGATGGATAAACTCTATGAACGAGTGAAGAGACAGTTGCGGGAAAACGCCGAAGAGGACGGTACCGGGTGCTTT GAGATATTTCACAAGTGCGATGATGACTGTATGGCTAGTATCCGCAATAATACATATGACCATAGTAAGTACAGAGAAGAAGCCATGCAAA ACAGAATACAAATTGACCCCGTGAAGTTAAGCTCAGGATACAAAGATGTCATCCTTTGGTTCTCCTTCGGCGCATCATGCTTTATACTTCT CGCAATCGTGATGGGTCTGGTTTTTATATGCGTCAAGAACGGCAATATGCGCTGTACGATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2804	ATGAACACCCAGATTCTGGTTTTTGCATTGATCGCCATTATTCCGACTAATGCCGACAAAATCTGTTTGGGACACCACGCCGTGAGCAAC GGCACGAAAGTCAACACACTCACAGAACGAGGCGTGGAAGTTGTCAACGCAACCGAGACGGTTGAGCGCACCAACATCCCAAGGATCT GCTCTAAGGGCAAGAAGACCGTGGACCTTGGGCAGTGTGGCCTGCTGGGGATAATAACCGGTCCACCACAATGTGATCAATTCCTGGA GTTTTCAGCCGACCTCATCATAGAACGCCGGGAAGGTTCTGACGTGTGCTACCCGGGCAAATTTGTCAACGAGGAGGCTCTCAGGCAGA TCCTGAGGGAGTCAGGCGGAATTGACAAGGAAGCCATGGGTTTCACGTACAGCGGTATTCGGACCAATGGGCTACATCAGCCTGTCG CAGATCTGGAAGTTCTTTTTACGCTGAAATGAAGTGGCTGCTGTCAAATACCGTAACGCTGCATTTCCCCAGATGACAAAAAGTTATAAG AATACCAGGAAGTCCCCCGCCTTGATCGTGTGTGGGGCATACACCACTCAGTGATGTACAGCCGAGCAGACCAAGTTGTATGGATCGGGTAA CAAACTAGTCACCGTGGGCTCCAGCAATTATCAGCAGAGTTTTGTCCCCAGCCCCGGGGCTAGACCGCAAGTCAATGGTCAGTCCGGCC GTATCGATTTTCACTGGCTGATGCTAAATCCCAATGACACTGTAACCTTTTCCTTTAATGGGGCATTCATTGCACCCGACAGGGCATCCTT TTTGCGGGGTAAGAGTATGGGTATCCAGAGTGGCGTCCAGGTGGATGCAAACTGCGAGGGTGACTGCTACCATTCAGGAGGCACGATTA TATCAAATCTGCCCTTTCAGAACATTGACAGTCGCGCCGTTGGCAAATGTCCAAGGTACGTGAAGCAGAGAAGCCTCCTGCTCGCCACTG GCATGAAAAATGTGCCCGAGATTCCCAAAGGCCGGGGTCTTTTTGGCGCAATAGCTGGTTTTATCGAGAATGGTTGGGAAGGACTCATC GACGGCTGGTACGGATTTCGGCACCAAAACGCCCAAGGGGAAGGAACCGCCGCAGATTACAAGAGCACACGCAGTCAGCTATCGACCAGA TCACCGGCAAGCTTAATCGGCTTATTGAAAAACCAATCAACAATTCGAGCTGATTGACAATGAATTTAATGAAGTGGAGAAACAAATTGG GAACGTGATCAATTGGACCAGAGACAGCATAACTGAAGTGTGGAGTTATAACGCAGAACTGCTGGTCGCTATGGAAAATCAACACACTAT TGATCTGGCCGATAGCGAAATGGACAAGCTATACGAAAGGGTTAAACGGCAGTGTTCGCGAGAACGCCGAGGAGGACGGCACCGGCTGC TTCGAGATTTTCCACAAGTGTGATGACGATTGTATGGCCTCCATCAGAAACAACACCTACGACCATAGCAAGTATAGAGAAGAAGCCATG CAGAATCGCATCCAGATCGACCCCGTTAAGCTTTCATCCGGCTATAAGGACGTTATCTTATGGTTCTCTTTTGGAGCATCATGCTTTATCC TCCTGGCTATCGTTATGGGCCTTGTTTTCATCTGCGTTAAAAACGGGAATATGCGCTGCACCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2805	ATGAATACACAGATCTTAGTGTTTGCTCTTATAGCAATCATACCCACAAACGCCGATAAGATCTGTCTGGGGCACCATGCCGTGAGCAAC GGAACTAAGGTTAACACATTAACTGAGAGAGGTGTGGAGGTAGTTAACGCGACCGAGACTGTAGAGCGGACTAATATCCCTCGCATTTG CAGTAAGGGCAAAAAGACCGTTGACCTTGGTCAGTGTGGGCTGCTTGGAACCATCACCGGACCTCCTCAGTGTGACCAGTTCCTCGAAT TTTCCGCTGACCTGATTATTGAGAGAAGGGAAGGGAGTGACGTGTGTTATCCTGCGCAAATTCGTCAATGAAGAAGCGCTACGCCAGATCC TTAGAGAGAGTGGGGGAATCGATAAGGAGGCAATGGGCTTTACATACAGTGGCATAAGAACCAATGGCGCGACAAGTGCCTGCCGCCG GAGCGGCTCAAGTTTCTATGCTGAGATGAAATGGTTACTCAGTAATACTGATAATGCCGCATTTCCACAGATGACTAAATCTTATAAAAATA CACGGAAATCACCCGCACTGATTGTATGGGGTATCCACCACAGCGTCTCCACAGCGGAGCAAACAAAACTGTACGGCAGTGGGAACAAA TTGGTTACTGTTGGGTCCTCGAATTATCAGCAGTCTTTCGTCCCTAGCCCTGGAGCTCGCCCCCCAAGTTAACGGTCAGAGCGCGCAGGATA GATTTCCACTGGTTAATGCTAAACCCTAATGACACCGTAACCTTTTCGTTTAATGGAGCATTCATTGCGCCTGACCGCGCGGAGCTTCTTAA GGGGAAAGTCAATGGGAATTCAATCTGGGGTCCAAGTCGACGCAAATTGTGAGGGCGACTGCTACCACTCAGGAGGAACTATCATCTCG AACCTGCCTTTTCAAAACATCGATAGCAGAGCCGTTGGCAAGTGCCCTCGCTATGTGAAACAGCGCGCTCACTTCTCTTAGCGACGGGAATG AAGAACGTTCCGGAGATCCCAAAGGGTCGTGGCTTGTTTGGCGCAATAGCAGGGTTCATAGAGAACGGATGGGAAGGTCTGATTGACGG TTGGTATGGCTTCATCACCAGAATGCTCAGGGAGAAGGAACCGCAGCCGATTATAAATCAACACAGAGCGCCATAGATCAGATCACAG GAAAGTTAAATCGCCTGATCGAGAAGACGAATCAGCAGTTCGAGCTGATCGACAACGAGTTCAACGAAGTCGAGAAACAAATTGGCAAC GTGATCAACTGGACGAGGGATAGCATTACGGAGGTGTGGTCTTATAACGCTGAACTACTTGTGGCAATGGAGAACCAGCATACAATCGA CCTCGCTGACTCAGAAATGGATAAGCTGTACGAGAGAGTTAAACGGCAGTTGAGAGAAAACGCAGAGGAGGATGGCACAGGCTGCTTTG AAATTTTTCACAAGTGCGATGATGACTGCATGGCTTCCATTCGGAACAATACGTATGACCACTCTAAATACAGGGAAGAGGCCATGCAGA ATCGCATCCAGATCGATCCTGTAAAGTTGTCCTCAGGCTATAAAGATGTGATCCTCTGGTTTTCCTTTGGGGCATCATGTTTCATTCTGCT CGCCATCGTGATGGGGCTGGTGTTCATTTGTGTTAAGAACGGGAATATGCGGTGCACTATCTGTATT

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2806	ATGAATACGCAGATACTCGTGTTTGCCCTGATCGCCATAATCCCTACGAACGCAGATAAGATCTGCCTCGGACACCACGCTGTTAGCAAC GGAACCAAGGTTAACACTTTGACGGAGAGGGGAGTGGAGGTCGTTAATGCCACCGAAACCGTGGAACGTACCAACATCCCCCGGATCT GTTCCAAAGGTAAAAAAGACTGTGATCTGGACAGTGCGGCTTACTGGGAACTATTACTGGGCCCCCGCAGTGTGACCAATTCCTGGAA TTCTCTGCAGATCTTATTATTGAGCGGAGGGAGGGAGCGACGTCTGCTATCCGGGGAAGTTCGTCAACGAGGAGGCCTTGAGACAGAT CCTGAGAGAATCTGGGGGCATCGATAAAGAAGCCATGGGATTTACTTATAGCGGCATAAGAACCAATGGCGCCACATCCGCCTGCCGTA GGAGTGGCTCAAGTTTTTTATGCAGAAATGAAATGGCTACTCAGCAATACTGACAACGCTGCCTTCCCCCAGATGACAAAGAGCTATAAGA ATACCAGGAAGTCACCAGCCCTGATCGTTTGGGGCATACACCATTCCGTATCTACCGCGGAGGCAAACAAGCTTTATGGCTCTGGGAATA AGCTTGTAACTGTTGGCAGTAGTAATTATCAGCAGAGCTTTGTTCCATCCCCTGGCGCCCGGCCCCAGGTGAATGGTCAAAGCGGCAGG ATAGACTTTCACTGGCTGATGCTCAACCCCAACGATACTGTGACATTCTCCTTTAACGGAGCCTTCATTGCTCCCGACCGCGCCTCTTTCC TCAGGGGCAAAAGTATGGGGATTCAGTCAGGTGTTCAGGTGGACGCAAACTGCGAAGGCGATTGCTACCACTCGGGGGGGCAATCAT ATCCAACCTGCCCTTCCAGAACATTGACGTCGCGCCGTGGGTAAATGCCCACGGTACGTGAAACAGCGGTCCCTGCTACTGGCTACTG GGATGAAAAACGTCCCTGAGATTCCCAAAGGCCGGGACTGTTTGGCGCTATCGCGGGGTTCATAGAGAATGGGTGGGAGGGCTTGAT CGACGGGTGGTACGGTTTTTAGACATCAGAACGCGCAAGGGGAGGGGACTGCTGCAGATTACAAGTCGACACAGTCCGCAATCGACCAG ATCACCGGTAAATTGAACCGGCTGATAGAAAAGACCAACCAGCAGTTTGAGTTGATAGACAATGAATTCAATGAGGTCGAAAAACAGATC GGTAATGTGATTAATTGGACTCCGGATTCAATTACGGAAGTATGGTCTTACAACGCGGAGTTGTTAGTTGCAATGGAAAACCAGCACACG ATCGATCTTGCAGACTCTGAAATGGATAAATTATACGAGCGGGTCAAACGCCAGCTTCGGGAAAACGCCGAAGAGGATGGTACTGGATG TTTTTGAGATCTTTCATAAATGCGACGATTGTATGGCCAGCATTCGGAACAATACTTACGACCATTCAAAGTACCGGGAGGAAGCCAT GCAGAATAGAATCCAGATTGATCCAGTGAAACTCAGCTCGGGATACAAAGATGTGATTCTGTGGTTCTCCTTCGGGGCCTCTTGCTTCAT ACTGCTGGCTATCGTAATGGGGTTGTCTTCATATGTGTGAAAAACGGGAATATGAGATGCACCATTTGTATC

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2807	ATGAATACTCAGATACTCGTTTTTTGCTTTGATAGCCATCATTCCAACTAACGCTGACAAAATCTGCCTAGGACACCATGCAGTGTCAAATG GCACAAAGGTGAATACTTTGACGGAGAGGGGCGTGGAGGTGGTGAACGCAACAGAGACAGTGGAGCGCACCAACATTCCACGCATTTG TAGTAAAGGAAAGAAGACAGTCGACCTCGGCCAGTGCGGGCTACTGGGTACGATTACTGGACCCCCCCCAGTGTGATCAGTTTCTTGAGT TTAGCGCGGATCTGATAATTGAGCGCCGGGAGGGTTCCGATGTCTGTTACCCGGAAAGTTTGTGAACGAAGAAGCCCTTAGGCAAATC CTGCGCGAGAGCGGCGGAATTGAGAAGGAAGCTATGGGGTTCACGTATAGCGGTATTCGGGCTAACGGAGCCACTAGTGCATGTCGCC GCAGCGGCTCCTCATTCTACGCTGAGATGAAGTGGCTGCTGTCCAATACCGACAATGCTGCTTTTCCGCAGATGACTAAGTCATACAAAA ACACTAGAAAGTCGCCCCGCTTTGATTGTTTGGGGCATCCACCACAGCGTGAG`ACAGCTGAGCAGACAAAGCTATATGGTTCAGGGAATA AATTAGTTACCGTGGCAGCTCTAACTACCAGCAGTCCTTTGTGCCCTCTCCCGGCGCTCGGCCTCAGGTAAATGGGCTTAGCGGCCGG ATCGACTTTCATTGGCTGATGCTCAACCCTAATGACACAGTGACGTTCTCTTTCAATGGCGCGTTCATTGCCCCCGACAGGGCTTCTTTCCC TACGGGGGAAAAGCATGGGTATTCAGTCAGGTGTTCAAGTAGACGCAAACTGTGAAGGAGACTGTTACCACAGCGGGGGCACAATCATT TCAAATCTTCCTTTCCAGAACATAGATAGCCGGGCAGTCGGTAATGTGCCCTCGGTATGTGAAACAAAGATCCCTGTTGCTAGCAACAGGC ATGAAAAACGTCCCAGAGATCCCTAAGGGACGCGGGACTTTTCGGCGCGATCGCGGGATTTATCGAGAACGGCTGGGAAGGGCCTAATCG ATGGATGGTATGGGTTTAGGCATCAGAATGCTCAGGGGGGAGGGAACGGCTGCAGATTATAAATCTACTCAGTCTGCTATCGACCAAATCA CTGGGAAGCTCAATAGGCTGATTGAAAAAACAAATCAACAGTTCGAGCTGATAGACAATGAGTTCAACGAGGTAGAGAAGCAGATAGGTA ACGTAATTAATTGGACTCGCGACTCCATTACAGAAGTGTGGTCCTACAATGCTGAGCTGCTTGTGGCAATGGAAAACCAGCACACCATAG ACCTGGCTGATTCAGAAATGGATAAACTGTATGAGAGGGTGAAGAGGCAGCTCCGGGAAAACGCTGAGGAAGACGGCACAGGTTGCTTC GAAATTTTTCATAAGTGCGATGACGACTGTATGGCTTCAATTCGAAACAATACATACGACCACTCCAAGTATCGAGAGGAAGGCCATGCAGA ATCGTATCCAAATTGATCCCGTTAAACTATCATCCGGATATAAAGACGTCATCTTGTGGTTTTCCTTCGGGGCCTCTTGTTTCATCCTCCTC GCAATCGTTATGGGATTGGTGTTTATCTGCGTGAAAAACGGCAACATGCGGTGCACAATATGCATT

SEQ ID NO.	Sequenza di acido nucleico
2808	ATGAACACCCAGATCTTGGTGTTCGCCCTCATTGCTATTATACCAACTAATGCGGACAAAATCTGCCTTGGACACCATGCCGTATCCAATG GAACCAAGGTCAATACACTGACGGAGAGAGGGAGTGGAAGTAGTGAACGCCACGGAAACAGTGGAAAGGACAAATATCCCTAGGATTTGC TCCAAAGGCAAAAGAACAGTGGACCTGGGGCAATGCGGGCTTTTGGGTACTATTACAGGACCACCTCAGTGCGACCAATTCCTTGAGTT CAGCGCTGATCTGATTATAGAGAGGCGCGACGGGAGTGATGTTTGCTACCCCGGTAAGTTCGTAAATGAGAGGCTCTGCGGCAGATCT TACGCGAAAGCGGGGGCATTGATAAGGAAGCTATGGGGTTTACCTACAGCGGCATTCGCACTAATGGCGCGACATCTGCCTGTCGCCGT TCCGGGTCATCTTTCTATGCAGAGATGAAATGGCTGCTCTCCAATACTGATAATGCTGCTTTCCCTCAAATGACAAAGTCTTACAAGAATA CAAGGAAGTCTCCCGCACTGATTGTGTGGGGCATCCACCACAGCGTCTCAACCGCTGAGCAGACTAAACTGTATGGTTCTGGGAACAAG CTCGTGACCGTCGGATCGTCTAATTATCAGCAGAGCTTCGTCCCATCACCTGGCGCCAGACCCCAAGTGAACGGTCTGTCCGGCAGAAT TGATTTCCACTGGCTGATGCTGAATCCCAATGACACGGTCACATTCTCATTTAATGGCGCATTCATTGCCCCGGATAGAGCTTCCTTTCTC AGGGGCAAGTCTATGGGAATTCAGAGCGGTGTCCAGGTGGACGCGAATTGCGAAGGGGACTGCTATCACTCCGGCCGGCACCATCATTT CTAACCTCCCTTTTCAGAATATTGACAGTCGCGCCGTCGGGAAATGCCCTCGCTACGTGAAGCAGAGATCACTGCTCTTGGCCACAGGAA TGAAGAACGTGCCCGAGATCCCGAAAGGGAGAGGGCTCTTCGGAGCCATCGCTGGGTTCATTGAAAACGGATGGGAAGGCCTGATAGA CGGCTGGTACGGCTTCCCGGCACCAAAACGCCCAGGGGGAAGCAGCCGCTGACTATAAATCTACACAGAGCGCGATAGACCAGATC ACCGGCAAATTAAATCGTCTCATCGAAAAAACAAATCAGCAGTTTGAGCTTATCGATAATGAATTCAACGAGGTTGAAAAGCAAATCGGGA ATGTTATAAATTGGACCCGAGACTCCATTACCGAGGTGTGGAGCTATAACGCCGAGCTGTTGGTGGCCATGGAGAACCAACATACAATTG ATTTGGCCGACTCCGAGATGGACAAGCTGTATGAGCGGGTTAAACGGCAACTGCGTGAGAATGCAGAAGAAGACGGCACTGGCTGCTTC GAAATCTTCCACAAGTGCGATGATGATTGCATGGCTTCAATACGCAATAACACATACGATCACAGCAAATACAGGGAGGAAGCTATGCAG AATCGCATCCAGATTGATCCAGTGAAGCTGTCATCCGGATACAAAGATGTTATATTATGGTTCTCCTTTGGGCTTCCTGTTTCATCCTGC TGGCAATCGTGATGGCCTAGTGTTCATATGCGTCAAGAATGGAAACATGAGATGCACCATCTGTATC

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2809	ATGAATACCCAGATACTTGTATTTGCCCTTATCGCCATAATCCCCACTAACGCCGACAAGATTTGTCTAGGGCACCATGCAGTATCTAATG GAACAAAAGTGAATACCCTCACAGAACGGGGTGTTGAAGTGGTTAATGCCACCGAAACAGTCGAGAGAACTAACATTCCCAGGATTTGTA GCAAGGGTAAGAAGACAGTTGACCTTGGGCAGTGTGGCTTACTTGGAACTATTACCGGCCCACCACAGTGCGATCAGTTTCTGGAGTTC AGCGCAGATCTCATTATTGAGAGAAGAAGGAAGCGACGTGTGCTACCCTGGCAAGTTCGTGAATGAGGAGGCCCTTCGGCAGATCCT TAGGGAGTCCGGAGGCATTGATAAGGAGGCTATGGTTTTACCTATTCTGGCATTCGTACCAACGGGGCCACAAGTGCTTGTCGCCGCT CCGGTTCTTCCTTTTACGCTGAGATGAAATGGTTGCTCAGCAACACTGACAATGCTGCTTTCCCACAGATGACAAAATCCTACAAAAATAC CAGAAAATCGCCCGCCTTGATTGTGTGGGGGATCCACCATAGTGTGTCTACCGCTGAGCAGACCAAGCTGTATGGTTCCGGGAATAAGC TCGTGACCGTAGGTTCTTCCAATTATCAGCAGAGTTTCGTGCCTTCCCCCGGCGCCAGACCTCAGGTGAATGGCCAGAGCGGGAGAATA GACTTCCATTGGCTCATGCTGAACCCTAACGATACAGTGACCTTCAGTTTCAACGGCGCCTTCATCGCTCCAGACCGCGCCTCATTCCTT CGCGGCAAAAGCATGGGGATCCAGTCCGGGGTTCAAGTAGACGCCAACTGCGAGGGTGACTGCTATCACTCCGGAGGGACGATAATCA GCAATCTTCCCTTCCAGAACATCGATAGCCGCCGTCGGTAAGTGCCCACGCTACGTTAAACAGCGCAGCCTGCTCTTGGCTACCGGC ATGAAGAACGTCCCCGAAATCCCTAAGGGCCGGGCCTGTTCGGGGCCATTGCGGGTTTTATTGAGAATGGCTGGAGGGGCTGATAG ACGGGTGGTACGGATTTAGACACCAGAATGCTCAGGGGGAAGGGACCGCTGCCGATTATAAGAGCACCCAGTCTGCTATTGACCAGATT ACGGGTAAGCTGAACAGACTTATTGAAAAAACCAACCAGCAGTTTGAGCTTATCGACAATGAATTCAACGAAGTGGAGAAGCAGATCGGG AATGTCATCAACTGGACAAGAGATAGCATCACAGAGGTCTGGTCATATAACGCCGAACTGTTGGTGGCCATGGAAAATCAACACACTATA GATCTAGCCGACTCTGAAATGGATAAGTTGTACGAGCGGGTAAAACGGCAGCTGCGGGAAAACGCTGAGGAAGATGGCACCGGATGCT TCGAGATTTTTCATAAATGCGATGACGACTGTATGGCCTCTATCAGGAATAATACATACGATCATAGTAAGTACCGGGAAGAAGCCATGCA GAACAGGATCCAGATAGATCCCGTTAAGCTGTCTAGCGGGTACAAGGATGTCATCTTATGGTTCAGCTTCGGCGCCAGCTGCTTCATCCT ATTGGCCATTGTCATGGGACTAGTCTTTATCTGCGTGAAAAACGGTAATATGCGGTGTACTATCTGTATC

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2810	ATGAATACCCAGATCCTGGTTTTCGGCGCTGATCGCAATCATACCTACTAACGCAGATAAGATTTGCTTGGGACATCATGCCGTGTCCAAC GGCACAAAAGTCAATACCCTCACAGAGAGGGGCGTTGAGGTGGTGAATGCTACCGAGACTGTGGAGAGGACCAATATTCCGAGAATTTG CTCAAAAGGAAAGCGTACAGTCGACCTGGGGCAATGTGGCCTACTCGGCACCATTACAGGGCCCCCCCCAGTGTGACCAGTTTCTCGAAT TTTCTGCTGACCTCATCATCGAGAGACGCGAGGGGTCCGACGTGTGTTACCCTGGCAAATTCGTTAATGAAGAAGCCCTAAGACAAATTC TACGCGAGAGCGGCAGGTATTGACAAAGAGGCTATGGGATTCACTATTCTGGTATCCGCACCAACGGCGCTACCTCCGCCTGCCGGCGC TCCGGATCCAGCTTTTATGCTGAGATGAAATGGTTGCTGTCCAACACCGACAATGCTGCATTTCCTCAGATGACCAAATCTTATAAAAACA CAAGAAAGAGTCCTGCGTTGATTGTGTGGGGAATACACCACTCAGTAAGCACTGCCGAACAGACGAAGCTGTATGGTTCCGGAAACAAG CTCGTTACAGTGGGCAGTTCAAATTACCAGCAGAGGCTTTGTTCCTTCCCCAGCGGAACGACCCCAAGTTAATGGACTGTCCGGGAGAATT GATTTCCATTGGCTGATGCTGAACCCCAACGACACTGTGACGTTCTCCTTTAATGGGGCATTTATCGCCCCGGATAGAGCTTCTTTTCTGA GAGGCAAGTCAATGGGGATCCAGTCAGGGGTGCAAGTCGATGCCAACTGCGAAGGAGATTGTTATCACTCAGGAGGCACGATTATTAGC AATCTGCCCTTCCAGAATATTGATTCTCGCGCCGTGGGCAAATGTCCTCGATACGTGAAGCAGAGATCCCCTGCTGCTGGCTACCGGCAT GAAAAATGTACCAGAGATTCCAAAGGGGAGAGGACTGTTCGGTGCCATCGCCGGTTTCATAGAAAATGGGTGGGAGGGCCTGATTGATG GCTGGTACGGTTTTAGGCACCAGAATGCTCAGGGAGAAGGGACCGCCGCAGATTATAAAAGCACTCAGTCTGCAATCGATCAGATAACA GGTAAACTGAACCGCCTGATTGAGAAGACAAACCAGCAGTTTGAACTGATCGATAATGAGTTTAATGAAGTGGAGAAGCAGATTGGCAAC GTTATCAACTGGACACGGGACTCCATCACCGAAGTGTGGAGCTACAACGCTGTGCTGGTAGCCATGGAAAATCAGCACACAATCGA TCTGGCTGACTCAGAAATGGACAAGCTCTATGAGAGGGTCAAAAGGCAACTAAGAGAAAATGCCGAGGAAGATGGGACCGGCTGTTTCG AGATATTTCACAAATGCGACGATGACTGCATGGCTAGCATTAGGAATAATACCTACGATCATAGCAAATATCGGGAAGAAGCTATGCAGAA CCGCATCCAAATAGATCCCGTCAAGTTGAGCTCTGGGTACAAGGATGTGATTCTGTGGTTCTCTTTCGGCGCCTCTTGCTTTATTCTGCTG GCAATCGTGATGGGTCTGGTGTTTATTTGTGTCAAAAACGGTAACATGCGGCTGCACTATCTGCATA

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SEQ ID NO.	Sequenza di acido nucleico
2811	ATGAATACACAGATTCTAGTGTTTGCCTTGATAGCTATAATCCCAACCAACGCGGACAAGATCTGTCTCGGACACCATGCCGTGTCAAATG GTACTAAGGTGAATACACTGACCGAAAGAGGAGTGGAGGTCGTGAATGCGACAGAAACGGTTGAGCGAACCAACATTCCTAGGATCTGT AGTAAGGGAAAGCGAACTGTCGATCTGGGCCAGTGTGGACTCCTCGGGACCATTACAGGGCCTCCTCAGTGTGATCAGTTTTTGGAATT TTCCGCAGACTTGATAATCGAGAGGCGGGAAGGGTCTGACGTGTGCTACCCAGGCAAATTTGTAAATGAAGAGGCCCTAAGGCAGATCC TGAGGGAGAGTGGTGGAATCGATAAAGAAGCCATGGGATTTACATATTCAGGCATCAGGACCAACGGCGCAACATCAGCCTGCCGAAGA TCGGGATCTTCATTCTACGCCGAGATGAAATGGTTGCTATCCAACACTGACAATGCCGCATTCCCCCAGATGACTAAAAGCTACAAAAAC ACCCGGAAGTCCCCAGCTCTCATCGTCTGGGGATCCATCACAGTGTGTCCACCGCCGAGCAGACCAAGCTGTATGGATCCGGCAGTAA ACTGGTTACTGTGGGGTCATCTAATTACCAACAGAGTTTTGTGCCATCGCCTGGCGCCAGACCTCAAGTGAATGGACTGTCCGGTAGAAT TGATTTTCACTGGCTCATGCTGAACCCTAATGACACGGTTACCTTTTCTTTCAACGGAGCATTTATAGCTCCGGATCGGCCAGTTTTCTA CGGGGGAAAAGCATGGGAATCCAGTCGGGTGTGCAGGTAGATGCTAACTGCGAAGGTGATTGCTACCACTCCGGTGGTACAATCATCAG CAATCTGCCGTTCCAGAACATAGATAGTCGTGCAGTGGGTAAGTGCCCTAGGTACGTGAAACAAAGATCTCTGCTGCTTGCAACCGGTAT GAAGAACGTGCCTGAGATTCCGAAAGGGCGCGGGCTTATTCGGAGCTATAGCTGGATTCATCGAGAATGGATGGGAGGGCCTGATTGATG GTTGGTACGGGTTTCGACATCAGAACGCCCAGGGAGAGGGTACCGCTGCTGACTACAAGAGCACCCAATCCGCTATCGACCAGATAACT GGCAAGCTGAATAGACTGATTGAAAAGACAAATCAGCAATTTGAATTGATCGACAACGAATTCAACGAAGTGGAAAAGCAGATTGGTAAC GTGATCAACTGGACCAGAGACTCTATCACAGAGGTATGGTCTTACAATGCCGAGCTCCTGGTTGCCATGGAAAACCAACATACCATTGAC TTGGCCGACAGCGAAATGGATAAACTATACGAGCGGGTCAAACGACAGCTGCGCGAGGAGGATGGAACTGGCTGCTTCG AAATCTTCCACAAGTGTGACGACGATTGTATGGCCAGCATCCGGAACAATACATATGATCATTCAAAATATCGCGAGGAGGCTATGCAGA ATAGAATTCAGATTGACCCCGTGAAGCTGAGCAGCGGGTACAAGGACGTCATTCTGTGGTTCAGTTTCGGAGCCTCTTGTTTTATCCTCC TCGCGATCGTGATGGGATTAGTGTTTATTTGTGTGAAGAACGGCAATATGAGGTGTACGATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2812	ATGAACACGCAGATCTTGGTTCGCACTAATCGCGATAATCCCCACTAATGCAGACAAAATTTGTTTAGGCCATCATGCTGTATCCAATG GCACAAAAGTCAACACCCTGACGGAAAGAGGTGTGGAAGTCGTCAACGCTACCGAGACTGTGGAACGGACGAATATCCCAAGGATCTGT TCAAAGGGGAAGCGAACGCTCGACCTGGGACAGTGCGGCCTGCTGGGGACCATCACAGGACCGCCACAGTGCGACCAGTTTCTGGAG TTTTCTGCGGACTTGATTATCGAAAGACGGGAGGGAAGTGACGTATGCTATCCCGGCAAATTCGTGAATGAAGAGGCCTTGCGCCAGAT ATTACGCGAGTCCGGAGGGCATCGACAAGGAAGCTATGGGGTTCACATACTCCGGCATCAGAACCAACGGCGCCACATCCGCATGCCGG CGCAGTGGATCCAGCTTCTACGCAGAAATGAAATGGCTCCTCAGCAATACGGATAACGCCGCCTTCCCACAAATGACCAAGTCATACAAA AATACCAGAAAAGAGCCCAGCCTTGATAGTGTGGGGAATCCCACCACTCTGTGTCTACCGCCGAACAGACTAAGCTGTATGGATCTGGCTC GAAATTAGTCACCGTCGGCTCCTCCAACTATCAGCAATCATTCGTGCCAAGCCCCGGAGCCCGCCCACAGGTTAATGGACTGTCAGGAA GGATTGACTTCCACTGGCTGATGCTGAATCCTAATGATACTGTGACTTTCTCATTTAATGGCGCTTTTATTGCCCCTGACAGAGCCAGCTT CCTTCGAGGGAAGTCCATGGGAATCCAGTCTGGCGTGCAAGTAGACGCAAACTGTGAAGGGGATTGCTATCATAGTGGTGGGACAATCA TTTCAAATCTGCCCTTCCAGAATATCGATAGTAGCAGTAGGAAAATGTCCCAGGTACGTGAAACAGAGATCACTGTTATTGGCTACAG GAATGAAAAATGTCCCAGAAATCCCGAAGGGGAGAGGCCTCTTTGGGCCATAGCAGGCTTTTATTGAGAATGGGTGGGAAGGCCTAATC GATGGATGGTACGGGTTCCGCCATCAGAATGCGCAGGGCGAGGGGACTGCAGCCGACTACAAAAGCACGCAATCCGCTATCGACCAGA TTACTGGAAAGCTCAACCGATTAATTGAAAAGACTAATCAGCAGTTCGAACTGATCGATAACGAGTTCAACGAGGTCGAAAAGCAGATCG GGAATGTGATCAACTGGACCAGGGATTCCATAACCGAGGTTTGGAGCTATAATGCAGAGTTGCTTGTAGCAATGGAGAACCAACATACCA TAGACCTGGCCGATTCGGATAATGGACAAGCTGTATGAGCGAGTGAAACGGCAGCTGCGGGAGAATGCAGAAGAAGACGGCACAGGTTG TTTTGAAATTTTTCACAAATGCGATGACGATTGCATGGCATCGATCAGAAATAACACCTATGATCATTCAAAGTATCGCGAGGAGGGCATG CAGAATAGGATCCAAATCGACCCTGTCAAACTCTCTAGTGGCTACAAGGATGTCATCCTCTGGTTCTCCTTTGGTGCCTCTTGCTTCATTT TGCTCGCCATTGTAATGGGATTGGTGTTCATTTGTGTTAAATCCAGAAATATGCGTTGTACCATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2813	ATGAACACCCAGATTCTGGTCTTCGCTCTGATCGCCATTATACCAACAAATGCGGATAAAATTTGCCTGGGACACCATGCTGTAAGCAAC GGCACGAAGGTGAACACACTCACCGAAAGGGGAGTCGAAGTAGTCAATGCCACAGAGACCGTTGAACGTACGAACATCCCTAGAATTTG TAGCAAAGGGAAACGGACTGTCGATTTGGGACAATGTGGACTGCTTGGGACTATCACAGGGCCCCCTCAGTGCGATCAGTTCCTGGAAT TCTCGGCCGATCTGATCATTGAACGGAGAGAAGGAAGCGACGTGTGCTACCCAGGTAAATTCGTGAACGAAGAGGCACTGCGCCAAATT CTTCGGGAGTCCGGCGGGATCGACAAGGAGGCAATGGGATTTACGTATTCTGGCATTAGGACCAACGGGGCTACATCTGCCTGCCGGC GAAGTGGATCCTCCTTCTATGCAGAAATGAAGTGGCTCCTTTCAAACACAGACAATGCCGCCTTTCCACAGATGACCAAGAGTTATAAGA ATACCAGGAAAAGTCCTGCCTTGATTGTGTGGGGATTCACCACTCCGTGAGCACTGCCGAGCAGACCAAGCTTTACGGGAGGCGGCAAT AAGCTGGTGACAGTGGGCTCTTCCAATTATCAACAATCCTTCGTGCCTAGCCCTGGGAAAGACCCCAGGTGAATGGACTGTCCGGCCG GATCGACTTTCACTGGCTCATGCTGAATCCCAACGACACTGTAACCTTTAGCTTTACGGCGCCTTCATCGCTCCCGATAGGGCGTCTTT CCTACGGGGGAAAAGTATGGGAATTCAATCAGGCGTCCAGGTAGACGCCAACTGCGAGAGGGTGACTGTTACCACAGCGGAGGTACAATAA TTTCCAACCTGCCTTTCCAAAACATAGATTCCCGCGCAGTGGCGAAATGCCCCAGGTACGTGAAGCAGCGAAGTCTCCTCCTTGCCACA GGAATGAAGAACGTGCCTGAGATTCCAAAAGGGCGGGGGTTGTTCGGGGCCATCGCTGGATTTATCGAAAACGGGTGGGAAGGCCTTA TCGACGGCTGGTACGGTTTTAGGCACCAGAACGCACAGGGTGAGGGGACTGCGGCCGACTACAAGTCGACACAAAGCGCTATAGACCA GATCACCGGGAAACTTAATCGGCTGATCGAAAAGACTAACCAGCAGTTTGAATTAATGAGGTGGAGAAGCAGAT CGGAAACGTGATTAATTGGACCAGGGATTCCATCACGGAAGTTTGGTCCTATAACGCGGAGTTGCTTGTTGCCATGGAAAACCAGCACAC CATTGACCTCGCTGACTCTGAGATGGACAAACTATATGAGAGCAGTCAAAAGACAGCGTGCGCGAAAATGCAGAGGAGGATGGCACGGGTT GTTTCGAAATCTTTCACAAATGTGATGACGATTGTATGGCCAGTATACGGAATAACACCTATGACCACTCAAGTACCGAGAAGAAGCCAT GCAGAATCGCATCCAGATCGATCCTGTTAAGCTGTCCTCAGGATATAAAGACGTCATCCTGTGGTTCTCTTTTGGCGCAAGCTGCTTTATC CTTTTAGCGATCGTGATGGGCCTGGTTTTTATATGTGTCAAGAATGGAAATATGCGGTGTACAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2814	ATGAACACTCAGATCTTAGTGTTTGCACTGATTGCCATAATCCCAACAAACGCCGATAAAATCTGCCTGGGCCATCACGCGGTGTCGAAT GGCACAAAGGTCAACACACTGACCGAAAGAGGCGTAGAGGTCGTGAACGCGACGGAGACCGTGGAGCGCACTAACATTCCTCGCATCT GTTCAAAAGGTAAGAAAACAGTGGATTTGGGACAGTGTGGCCTTCTCGGTACCATTACCGGCCCTCCCCAGTGCGACCAGTTCCTCGAA TTTTCTGCTGATTTAATTATTGAACGGCGGGAGGGGTCAGACGTGTGTTATCCCGGCAAGTTTGTGAACGAAGAAGCTCTTAGACAGATC CTCCGGGAGAGCGGGGGGGATTGACAAGGAAGCAATGGGCTTTACATACTCAGGTATTCGAACAAATGGAGCCACTAGCGCCTGCCGAC GATCCGGGTCATCTTTCTACGCAGAGATGAAATGGCTGCTCAGCAACACTGATAATGCTGCCTTTCCACAGATGACAAAATCCTATAAAAA CACCAGAAAATCCCCTGCGTTAATTGTCTGGGCATCCACCATTCGGTTTCTACAGCAGAGCAGACCAAGCTGTACGGCAGCGGAAATA AACTCGTGACTGTAGGATCGAGTAATTATCAGCAAAGCTTTGTTCCATCACCAGGGGCCCGTCCACAGGTCAATGGACAGAGTGGAAGG ATCGATTTCCATTGGCTAATGCTGAACCCAAACGATACTGTGACCTTTTCTTTCAACGGGGCCTTCATTGCTCCTGATCGGGCATCATTTT TGCGTGGGAAGTCAATGGGTATACAATCAGGGGTGCAAGTGGACGCTAATTGCGAAGGTGACTGTTACCATTCTGGAGGGCACCATTATC TCTAACTTGCCTTTCCAAAACATTGACAGCAGAGCCGTGGGTAAGTGCCCTCGATACGTGAAGCAGCGGTCGCTTCTCCTTGCCACGGG CATGAAGAACGTGCCTGAAATCCCCTAAAGGTCGTGGTCTATTCGGAGCAATTGCCGGTTTCATCGAGAATGGGTGGGAAGGCCTTATCG ATGGTTGGTACGGGTTTCGGCACCAGAATGCCCAGGGCGAGGGCACAGCTGCTGACTACAAGTCGACCCAGAGCGCTATCGACCAGAT CACAGGCAAGCTCAACAGGCTGATCGAAAAGACTAACCAGCAATTCGATAACGAGTTTAATGAGGTGGAAAAGCAGATTGG GAATGTTATCAACTGGACCCGCGATTCCATTACTGAGGTATGGTCCTACAACGCTGAGCTCTTAGTCGCTATGGAGAACCAGCACACCAT AGATCTGGCTGATTCAGAGATGGATAAGCTCTATGAACGGGTTAAAAGGCAGCTTCGGGAGAACGCCGAGGAAGACGGAACTGGTTGCT TCGAGATCTTTCACAAATGTGACGATGACTGCATGGCTTCCATTAGAAATAACACGTATGACCATAGCAAGTATAGAGAGGAAGCAATGCA AAACCGGATCCAGATCGACCCAGTCAAATTGAGCTCGGGATACAAGGACGTTATCCTGTGGTTCTCATTTGGCGCCTCCTGTTTCATATT GTTGGCTATTGTGATGGTCTGGTGTTCATCTGTGTCAAGAATGGGAACATGAGGTGCACCATTTGTATA

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2815	ATGAACACACAGATTCTCGTGTTTGCGCTAATTGCAATCATACCCACTAATGCAGACAAAATCTGTCTGGGACACCACGCGGTTAGCAAT GGCACGAAGGTGAATACCCTGACAGAGAGAGGAGTGGAGGTTGTTAACGCGACCGAAACTGTTGAAAGGACTAATATCCCTCGTATCTG TTCAAAGGGAAAAAAGACCGTAGACCTGGGCCAGTGTGGACTGCTCGGCACGATCACAGGGCCACCTCAGTGTGACCAATTTCTGGAGT TCAGTGCTGACCTGATTATCGAAAGAAGAGGGATCAGACGTATGTTATCCCGGAAAGTTCGTGAATGAGGAAGCCCTTCGACAGATCT TAAGAGAATCAGGCGGGATCGATAAGCAATGGGCTTCACCTACTCTGGCATTCGGACCAATGGCGCAACTTCTGCATGCCGCAGA TCCGGCTCTAGTTTTTACGCGGAGATGAAGTGGCTCCTCTCCAATACAGACAATGCAGCATTCCCACAAATGACCAAGTCTTATAAAAACA CCCGCAAGTCCCCCCGCTCTCATCGTTTGGGTATCCACCATAGTGTGTCCACAGCCGAGCAAACAAAGCTATACGGAAGTGGCAACAAG CTGGTCACAGTGGGCAGTAGTAATTATCAGCAGAGCTTCGTGCCTAGCCCCGGGGCCAGGCCACAGGTTAACGGCCAGTCAGGGCGCA TCGACTTTCACTGGCTTATGCTGAACCCGAACGACACTGTCACATTCTCATTCAACGGCGCCTTCATAGCACCCGATAGGGCCTCATTTTT AAGGGGGAAGTCTATGGGAATTCAGTCCGGAGTGCAGGTCGACGCCAACTGTGAGGGCGACTGCTACCATAGTGGAGGAACCATCATA AGTAATCTGCCATTTCAAAACATCGATTCACGCGCGGTGTGGAAAATGCCCCAGGTATGTCAAGCAGCGGAGCCTTTTGCTTGCTACCGG GATGAAGAATGTGCCCGAGATTCCCAAGGGGAGAGGTTTATTCGGGGCTATAGCCGGTTTATTGAAAACGGTTGGGAGGGGCTAATAG ACGGATGGTACGGCTTCAGGCACCAGAATGCTCAAGGGAAGGGACTGCCGCTGATTATAAGAGCACGCAGTCAGCTATCGACCAGAT CACTGGGAAATTGAATCGTTTAATCGAGAAAACCAATCAGCAGTTCGAACTGATTGATAACGAGGTCGAGAAACAAATAGG AAACGTTATAAAACTGGACACGAGATTCCATAACCGAGGTGTGGTCCTATAATGCTGAACTACTCGTAGCCATGGAGAACCAGCATACCAT TGATCTGGCCGACTCTGAGATGGACAAGCTATATGAACGGGTGAAAAGACAGTTGCGCGAAACGCGGAAGAAGACGGGACAGGTTGC TTTGAAATTTTTCACAAATGCGATGACGACTGCATGGCTAGTATACGGAACAACACATACGATCACTCTAAGTATCGCGAGAGGCAATG CAGAATCGCATCCAGATCGATCCCGTCAAACTGTCTTCCGGATATAAAGATGTCATACTGTGGTTCTCTTTCGGCGCAAGCTGTTTCATTC TCCTAGCCATCGTCATGGGTCTGGTTTTCATATGTGTGAAGAACGGGAAACATGCGGTGCACCATATGTATA

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SEQ ID NO.	Sequenza di acido nucleico
2816	ATGAATACGCAGATCCTGGTGTTTGCTTTAATAGCCATCATCCCTACTAACGCAGACAAAATTTGTCTCGGGCACCACGCCGTGTCTAATG GAACAAAGGTCAACACTCTGACAGAACGCGGAGTTGAAGTAGTGAATGCCACTGAAACTGTGGAGAGGACCAATATCCCTCGCATTTGTT CTAAGGGAAAGAAGACCGTCGACCTCGGTCAGTGCGGCCTATTGGGAACCATCACTGGCCCTCCTCAGTGTGACCAGTTTCTGGAGTTT AGTGCCGATTTGATCATCGAAAGAAGAGGGAAGCGACGTTTGTTATCCCGGAAAGTTTGTCAACGAGGAGGCTCTCCGCCAAATTCTC AGGGAATCTGGAGGTATCGACAAGGAAGCAATGGGCTTCACTTATTCAGGCATCGCAACAAACGGGCCACCTCTGCATGCCGCCGCAG CGGCTCTAGCTTTTACGCCGAAATGAAATGGCTGCTCTCCAATACTGACAACGCTGCCTTTCCCCAAATGACCAAGTCCTATAAAAACACG CGCAAAAGTCCGGCCCTCATTGTGTGGGGGATTCACCACTCCGTCTCCACAGCCGAGCAGACTAAGCTGTACGGTAGTGGTAATAAGTT GGTCACCGTGGGGTCAAGTAATTATCAGCAAAGCTTCGTCCCTAGGCCCCGGGGCCAGACCCCAGGTGAACGGACAAAGCGGAAGGATC GATTTTCACTGGCTGATGCTTAACCCTAATGACACCGTTACATTCAGTTTTAATGGTGCGTTTATCGCCCCCGATCGGGCCTCCTTTCTTA GAGGCAAAAGTATGGGTATCCAGAGTGGAGTACAGGTCGATGCCAATTGCGAAGGCGACTGCTATCACTCTGGGGGAACAATTATCTCC AATTTACCGTTCCAGAACATCGACTCTAGGGCAGTCGGCAAATGCCCTAGATATGTAAAGCAGAGGTCTCTGCTGCTCGCCACGGGAAT GAAAAACGTCCCAGAGATCCCAAAAGGCAGAGGACTGTTCGGAGCCATAGCTGGCTTTATCGAGAACGGCTGGGAGGGACTGATCGAT GGATGGTATGGTTTCCGGCACCAGAATGCACACAAGGTGAGGGAACTGCCGCAGATTATAAGTCCACCCAAAGTGCCATCGATCAGATTAC AGGCAAGTTAAACAGACTTATTGAAAAAACAAATCAACAGTTTGAGCTTATTGACAACGAGTTCAATGAAGTTGAGAAGCAAATCGGTAAC GTTATCAATTGGACTCGCGACTCCATCACCGAGGTGTGGTCTTACAACGCGGAACTACTTGTAGCGATGGAAAATCAGCATACCATCGAC TTCGGCGACTCGGAGATGGATAAGTTGTACGAGAGAGTGAAACGGCAGCTCAGGGAAAACGCGGAGGAGGACGGAACAGGTTGTTTCG AAATATTTCACAAGTGCGATGATGACTGTATGGCTAGCATTCGGAACAACACTTACGATCACTCCAAGTACCGTGAAGAGGCTATGCAGA ACAGGATTCAGATCGATCCGGTGAAACTCTCAAGCGGATACAAGGACGTTATACTTTGGTTCAGCTTCGGAGCTTCTTGCTTTATTCTTTT GGCTATCGTTATGGGACTAGTGTTTATATGTGTGAAAAACGGCAACATGCGCTGTACGATATGCATA

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2817	ATGAACACACAGATCCTTGTGTTTGCACTGATTGCCATCATTCCCACCAATGCCGACAAAATCTGCTTAGGTCACCACGCTGTTAGCAACG GAACGAAGGTCAACACCCTGACCGAACGAGGCGTCGAAGTAGTTAATGCTACCGAAACTGTGGAGAGGACCAACATACCCAGGATCTGC AGTAAGGGTAAGAAGACAGTCGATCTAGGCCAGTGCGGACTACTCGGCACAATTACCGGACCTCCCCAGTGCGACCAGTTTCTTGAGTT CAGTGCTGATCTTATTATAGAACGACGAGAAGGGAGTGATGTGTGCTATCCCGGCAAGTTTGTGAACGAAGAGGCGCTGCGACAAATCTT GAGGGAGTCAGGCGGGATTGACAAGGAAGCAATGGGGTTTACATATTCAGGTATTCGTACTAATGGAGCAACATCTGCCTGCCGGCGCA GTGGCTCCAGCTTTTACGCGGAAATGAAATGGCTGTTAAGTAACACCGACAATGCAGCATTTCCCCAAATGACAAAGAGTTATAAGAATAC ACGAAAGTCACCCGCACTGATTGTATGGGGCATCCACCATTCGGTGTCGACCGCTGAACAGACAAAATTGTACGGCTCAGGCAACAAAC TGGTGACTGTTGGTTCTTCTAACTACCAGCAGAGCTTTGTCCCGTCACCCGGAGCCCGACCACAGGTGAATGGACAGTCCGGACCGATT GACTTTCACTGGCTTATGCTCAATCCCAATGATACTGTGACATTTAGTTTCAACGGGGCCTTTATAGCTCCCGATCGGGCTTCTTTTCTTC GAGGAAAATCAATGGGCATTCAATCCGGAGTTCAGGTGGACGCCAATTGTGAAGGAGACTGTTACCATTCCGGAGGTACAATTATTTCCA ACCTGCCTTTCCAAAATATCGATAGTCGAGCCGTGGGAAAGTGTCCCAGATATGTAAAACAGAGAAGTCTATTGCTGGCTACAGGGATGA AAAATGTGCCCGAAATACCCAAGGGACGGGGATTGTTTGGTGCCATAGCTGGGTTTATCGAGAATGGGTGGGAAGGCCTTATCGACGGC TGGTATGGCTTTCGGCACCAAAACGCGCGCAGGGTGAGGGGACCGCGGCAGACTACAAGTCTACTCAGAGCGCAATTGATCAGATTACCG GCAAACTGAACCGACTAATAGAAAAAACAAACCAGCAGTTTGAGCTCATTGATAATGAATTCAACGAAGTGGAGAAGCAGATTGGGAACG TGATCAATTGGACGCGCGATTCCATCACTGAGGTGTGGAGTTACAATGCCGAACTCCTGGTGGCCATGGAAAACCAGCACACAATTGAC CTCGCTGACTCTGAGATGGACAAGTTGTATGAGCGCGTGAAGCGGCAGCTTAGAGAGAACGCCGAGGAAGACGGGACAGGGTGTTTTG AGATCTTCCATAAGTGCGATGAGGACTGCATGGCATCCATCCGTAACAACACATATGATCACTCAAAGTATAGGGAGGAAGCCATGCAGA ACAGGATTCAGATCGACCCTGTGAAACTCTCATCAGGGTACAAAGATGTAATCTTGTGGTTTTCGTTTGGAGCTTCGTGCTTCATTCTGCT AGCGATTGTCATGGGCCTTGTGTTTATCTGCGTCAAGAACGGCAACATGAGGTGTACTATCTGTATA

SEQ ID NO.	Sequenza di acido nucleico
2818	ATGAATACCCAGATTCTGGTGTTTGCGCTGATTGCCATAATCCCCACTAACGCTGATAAGATCTGCCTGGGGCACCATGCAGTGTCTAAT GGCACTAAGGTCAATACGCTCACGGAGAGAGGCGTGGAAGTGGTTAATGCTACCGAAACTGTGGAACGGACTAACATTCCAAGAATCTG TTCAAAGGGTAAGAAAACTGTGGACCTCGGCCAATGTGGCTTGCTGGGCACCATCACTGGGCCACCACAGTGTGATCAGTTTCTCGAGT TCTCTGCCGATTTAATCATCGAGCGCCCGGGAAGGATCAGATGTGTGCTACCCGGGTAAATTCGTGAATGAGGAAGCACTGAGACAGATT CTGCGTGAATCAGGAGGGATTGATAAGGAGGCTATGGGGTTTACATACTCTGGCATCAGAACAAATGGGGCCACCAGCGCGTGCCGGC GCTCTGGGAGTTCTTTCTACGCTGAAATGAAATGGCTGCTTTCTAACACGGACAATGCCGCTTTCCCCCAGATGACAAAAAGCTACAAGA ACACTCGCAAGAGCCCTGCACTCATAGTGTGGGGCATCCACCACTCCGTCTCTACTGCAGAGCAGACCAAGCTGTACGGCAGCGGGAA CAAGCTTGTAACCGTTGGATCTTCAAACTACCAACAATCATTCGTTCCCTCTCCTGGAGCCCGGCCCCAAGTTAATGGGCAGTCCGGGAG AATCGACTTCCATTGGCTGATGCTAAATCCCAATGATACAGTTACCTTTAGCTTTAACGGCGCCTTCATCGCTCCGGATAGAGCGAGCTTC CTTCGCGGTAAGTCTATGGGAATCCAGTCCGGGGTGCAAGTCGACGCAAACTGCGAGGGAGACTGTTACCATTCCGGGGGTACTATCAT TTCAAATTTACCCTTTCAGAACATTGATAGCGCGCGCCGTAGGCAAATGTCCTAGGTATGTGAAACAGAGAAGCCTGCTCCTGGCAACCGG AATGAAGAACGTGCCTGAGATCCCTAAGGGTAGAGGACTTTTCGGAGCTATCGCCGGGTTCATCGAGAACGGTTGGGAGGGACTCATTG ATGGGTGGTATGGTTTCCGCCACCAGAACGCCCAAGGGGAAGGCACTGCTGCTGACTATAAATCAACGCAGTCCGCCATAGACCAGATT ACAGGTAAATTAAATAGACTGATTGAGAAAACAAACCAGCAATTCGAGCTAATCGACAATGAGTTTAATGAGGTCGAGAAGCAGATCGGTA ACGTCATAAATTGGACACGGGATAGTATCACCGAAGTGTGGAGCTACAATGCTGAGCTCCTAGTTGCCATGGAGAATCAACATACGATCG ACCTGGCGGATTCTGAAATGGACAAGTTATACGAAAGAGTGAAGCGACAGCTAAGAGAGAATGCAGAGGAAGACGGCACTGGCTGCTTC GAAATATTTCACAAGTGTGATGATGACTGTATGGCAAGCATCAGGAATAACACCTACGACCACAGTAAGTATAGAGAGGAGGGCAATGCAG AACAGGATACAGATCGATCCCGTCAAACTTTCCAGTGGCTATAAGGACGTTATCTTTGGTTCTCGTTTGGGGCGAGCTGCTTCATCTTG CTGGCGATCGTGATGGCGCTCGTGTTTATTTGCGTGAAAAACGGAAACATGAGGTGTACAATTTGTATT

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SEQ ID NO.	Sequenza di acido nucleico
2819	ATGAATACACAAATTCTGTCTTCGCACTGATCGCCATAATCCCCACTAACGCAGACAAGATCTGTCTCGGTCACCACGCCGTTTCGAAT GGTACTAAGGTAAATACGCTGACAGAGAGGGGGGTGGAAGTCGTGAACGCCACTGAGACCGTCGAAAGGACAAACATTCCCCGCATCT GTTCGAAGGGAAAGAAGACCGTCGATCTTGGGCAGTGCGGTCTCTTGGGTACGATCACAGGGCCTCCTCAGTGCGATCAATTCCTGGAG TTTTCAGCCGACCTGATAATCGAAAGAGGAGGGAAGCGATGTGTGTTACCCCGGGAAGTTCGTGAATGAGGAAGCCCTGCGACAGAT CCTAAGGGAGAGCGGGGGAATCGATAAAGAGGCAATGGGGTTCACCTATAGTGGAATCAGAACTAACGGCGCCACTTCCGGCCTGCCGG AGATCGGGTAGCTCTTTCTATGCTGAAATGAAATGGCTGCTCAGTAATACAGACAACGCGGGCGGTTCCCACAGATGACCAAGTCCTATAAG AATACCCGGAAATCTCCTGCGCTATTGTGTGGGCATCCACCACTCTGTGTCCACCGCTGAGCAGACAAAACTTTACGGATCAGGAAAT AAGCTCGTCACCGTGGGAAGCTCCAATTATCAGCAATCCTTCGTGCCATCCCCCGGAGCAAGACCACAGGTGAATGGACAGTCCGGGAG GATCGATTTCCACTGGTTGATGCTGAACCCCAATGATACTGTCACGTTCAGCTTCAACGGTGCTTTTATTGCTCCCGATAGGGCCAGCTTT CTGAGAGGCAAGTCCATGGCATCCAGAGCGGGGTCCAAGTGGACGCTAATTGCGAGGGTGATTGCTACCACTCTGGAGGCACCATCA TCAGCAACCTGCCTTTCCAGAATATAGATTCCCGGGCGGTGGGGAAGTGCCCAAGATACGTCAAGCAACGGAGGCCTCCTCCTTGCGACT GGAATGAAAAACGTGCCAGAGATTCCAAAGGGGAGGGGCCTGTTTGGAGCGATTGCCGGATTCATCGAGAATGGCTGGGAAGGGCTCA TTGACGGATGGTATGGCTTTCGCCATCAGAACGCCCAGGGAGAGGGGACCGCGGCCGACTACAAGTCCACCCAAAGCGCCATTGACCA AATCACAGGAAAGCTGAATCGCCTAATCGAAAAGACTAATCAGCAGTTCGAGCTGATAGATAATGAGTTCAACGAGGTCGAGAAACAAAT CGGAAATGTCATCAATTGGACCCGCGACTCTATAACAGAAGTTTGGTCCTATAACGGCGGAGCTGCTAGTCGCCATGGAAAACCAGCACAC TATTGACCTTGCCGATAGCGAAATGGACAAGCTGTATGAAAGGGTGAAAAGACAGCTGCGCGAGAATGCAGAAGAGGACGGTACCGGCT GTTTCGAGATTTTCCATAAGTGTCACGACGACTGCATGGCATCGATTCGAAACACAACACATACGACCACTCTAAGTATAGAGAGGAGGCCA TGCAGAACAGAATCCAGATCGA˜CCTGTGAAGCTGTCATCCGGGTACAAGGATGTCATTCTTTGGTTCTCATTCGGTGCGTCTTGTTTCAT CCTGCTCGCCATAGTCATGGGGCTGGTCTTCATTTGCGTGAAAAACGGGAACATGCGGTGTACAATTTGCATC

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2820	ATGAATACCCAGATACTCGTGTTTGCCCTTATCGCTATAATCCCCACGAATGCAGACAAAATCTGCCTTGGGCATCACGCCGTGAGTAAT GGCACCAAAGTGAACACATTGACCGAGCGGCGGGGGTGGAGGTAGTCAATGCCACCGAAACAGTGGAACGCACCAACATTCCTCGGATCT GTAGCAAAGGAAAGAAAACAGTCGATCTGGGCCAGTGTGGCCTGTTAGGAACCATCACTGGACCGCCTCAATGCGATCAGTTTCTCGAA TTCAGCGCGGATCTCATTATTGAAAGAAGAGAGGGTTCTGACGTGTGTTACCCCGGCAAGTTTGTGAACGAAGAAGCACTCCGCCAGATA CTTAGGGAGTCCGGCGGGATCGACAAAGAGGCTATGGGGTTTACTTATAGTGGAATCCGCACGAACGGGGCCACGTCCGCCTGCAGAC GGAGCGGCTCCCTCATTTTACGCGGAGATGAAGTGGCTGCTCAGCAACACAGACAATGCCGCCTTTCCCCAGATGACAAAGTCTTACAAG AACACCAGAAAGTCGCCAGCCCTCATAGTCTGGGGGATACATCACAGCGTTTCCACCGCCGAGCAGACTAAGCTGTATGGCAGCGGAAA TAAACTGGTGACTGTGGGCTCCAGCAATTACCAGCAAAGCTTTGTACCCAGCCCCGGAGCAAGGCCCCAAGTGAATGGCCAGTCTGGTA GAATCGATTTCCATTGGCTTATGTTGAACCCTAACGACACGGTTACATTCAGTTTCAATGGGGCATTTATCGCCCCCGACCGTGCCTCTTT CTTGAGGGGTAAATCTATGGGCATCCAGTCAGGTGTGCAGGTGGATGCTAATGCGAAGGCCGACTGCTATCACAGTGGCGGTACTATCA TATCCAATCTGCCTTTTCAAAACATCGATTCCCGTGCGGTGGGGAAGTGTCCTCGATACGTGAAACAGCGCTCATTGCTGTTGGCCACCG GAATGAAAAACGTGCCAGAGATCCCAAAGGGCAGAGGTCTGTTCGGAGCTATTGCTGGCTTTATCGAAAACGGCTGGGAAGGGCTGATT GACGGCTGGTATGGATTTAGGCACCAAAATGCTCAAGGCGAGGGCACAGCCGCCGACTATAAAAGCACTCAAAGTGCGATAGACCAGAT CACAGGCAAGCTGAACCGCCTGATTGAGAAAACAAACCAGCAGTTCGAACTCATTGACAACGAATTCAACGAAGTGGAGAAACAGATCG GAAATGTTATCAATTGGACAAGAGACAGTATTACAGAGGGTGTGGTCCTATAACGCCGAGCTCCTGGTCGCTATGGAGAATCAGCATACCA TCGACCTGGCGGATTCAGAGATGGACAAACTTTATGAGAGAGTTAAAAGACAACTGCGTGAGAATGCTGAAGAAGATGGAACTGGATGCT TCGAAATTTTTCATAAGTGTGATGATGACTGTATGGCGTCAATCCGGAATAACACCTACGATCACTCCAAATATAGAGAAGAGGCAATGCA GAATCGTATTCAGATAGACCCTGTGAAATTGTCCAGTGGATACAAGGACGTAATTTTGTGGTTCAGCTTCGGGGCTTCCTGTTTCATCCTC CTCGCCATCGTGATGGGTCTCGTTTTCATATGCGTGAAGAACGGGAATATGAGGTGCACGATATGTATC

SEQ ID NO.	Sequenza di acido nucleico
2821	ATGAACACCCAGATTCTGGTGTTCGCTCTCATCGCAATCATACCCACCAATGCTGACAAAATCTGTTTTGGGGCATCATGCCGTCAGCAAC GGCACTAAGGTCAATACTCTTACAGAACGCCGGGGTTGAGGTTGTCAATGCAACTGAAACCGTGGAAAGAACGAATATCCCACGTATTTGC AGTAAGGGCAAGAAAACCGTGGACCTCGGGCAATGCGGGCTGCTTGGAACGATTACCGGCCCACCCCAATGCGATCAGTTCCTCGAGT TTTCTGCAGATTTGATTATTGAGCGAAGGGAGGGCTCCGACGTCTGTTATCCTGGAAAGTTTGTGAATGAGGAGGCACTGCGCCAGATAC TCCGTGAAAGCGGCGGGATTGATAAGGAGGCCATGGGCTTTACTTACTCGGGAATACGCACACAAATGGAGCCACTAGCGCCTGCCGGAG GTCTGGATCAAGCTTCTACGCAGAAATGAAGTGGTTACTAAGCAACACAGATAAGCGCAGCTTTCCCACAGATGACAAAAAGCTATAAGAAT ACTCGCAAGTCCCCTGCCCTGATAGTATGGGGCATCCACCACTCTGTCTCTACCGCCGAACAGACTAAGCTGTATGGAAGCGGGAATAA ACTGGTTACAGTGGGAAGCAGTAACTATCAGCAGAGTTTTGTCCCATCCCCAGGCGCTAGGCCACAAGTCAACGGACAGAGCGGGAGAA TAGATTTTCATTGGCTCATGTTAAATCCTAACGACACAGTGACTTTCTCGTTTTAATGGCGCTTTTATCGCCCCTGATAGGGCCTCTTTTTTA AGAGGCAAGAGCATGGGAATCCAGTCTGGAGTGCAGGTCGATGCTAATTGCGAAGGCGACTGCTACCACAGCGGAGGAACAATCATCT CTAATTTGCCCTTCCAGAATATTGATAGTCGCGCAGTGGGCAAATGCCCCCGGTACGTAAAGCAGCGCTCACTCCTGCTGGCAACAGGG ATGAAAAATGTCCCTGAGATCCCCAAAGGGCAGAGGACTGTTTGGTGCCATTGCCCGGATTCATCGAGAACGGATGGGAGGGGCTGATCGA CGGATGGTATGGATTCCGGCATCAGAACGCCCAGGGCGAAGGGACAGCCGCTGATTATAAGTCCACCCAATCAGCCATTGATCAGATTA CCGGCAAACTAAATCGCTTGATTGAGAAAACAAATCAGCAATTCGAATTGATTGACAATGAGTTTAATGAGGTTGAGAAACAGATCGGAAA CGTGATTAATTGGCACACGGGATCTATAACCGAGGTCTGGTCATACAATGCTGAACTTCTGGTCGCGATGGAGAACCAGCACACAATTGA CCTGGCCGATAGTGAAATGGATAAGTTATACGAACGGGTCAAACGGCAGCTGAGGGAGAACGCCGAAGAAGACGGTACCGGTTGTTTC GAAATCTTCCATAAGTGTGATGACGACTGCATGGCCTCAATTCGGAACAACACCTACGATCACAGCAAGTATAGAGAAGAGGCTATGCAA AACCGCATACAGATCGACCCAGTAAAATTAAGTAGTGGCTACAAAGATGTGATTCTTTGGTTCTCCTTTGGAGCCAGCTGCTTTATTCTGC TGGCAATAGTTATGGGCCTCGTCTTTATCTGTGTCAAGAATGGAAACATGAGGTGTACTATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2822	ATGAACACGCAGATCCTTGTATTTGCGCTCATAGCAATAATCCCTACGAATGCAGATAAGATTTGCCTGGGACACCATGCTGTCTCTAACG GAACCAAGGTCAATACACTGACTGAACGTGGCGTTGAGGTGGTGAATGCAACTGAGACCGTTGAGCGAACCAACATCCCCCGCATTTGC TCTAAGGGAAAGAAGACAGTCGATCTCGGACAGTGTGGCCTGCTCGGCACAATTACGGGGCCCCCTCAGTGCGATCAGTTCTTGGAATT CTCTGCCGACCTCATCATCGAGCGCCGGGAAGGCTCTGACGTTTGTTATCCTGGCAAATTCGTGAACGAGGAGGCATTGAGGCAAATCT TGAGAGAATCTGGAGGTATAGATAAGGAAGCCATGGGCTTTACGTACTCTGGGATTAGGACCAATGGTGCAACTTCTGCGTGCCGTAGG AGCGGAAGTTCTTTCTACGCTGAGATGAAATGGCTGCTGTCGAATACTGATAATGCCGCTTTTCCCCAGATGACCAAGTCTTACAAGAATA CCAGGAAGTCTCCTGCCCTGATTGTGTGGGGTATCCACCACACAGCGGTGTCCACACGCCGAACAAACCAAACTTTATGGCTCAGGTAATAAGC TCGTCACTGTCGGTAGCTCTAATTATCAGCAGTCTTTTTGTCCCTAGCCCCCGGGGCTAGGCCACACGGTCAACGGCCAGAGCGGGACGGATT GACTTCCACTGGCTGATGCTGAACCCGAACGACACAGTAACGTTTAGCTTCAATGGCGCCTTTATTGCCCCGGACCCGAGCTTCATTCCTG CGGGGTAAGAGTATGGGGATCCAATCAGGTGTTCAGGTGGACGGCCAATTGCGAAGGCGATTGCTATCATTCCGGGGGGTACCATTATCTC CAACCTCCCATTTCAAAATATTGATAGCAGGGCCGTGGGCAAATGTCCCAGGTATGTTAAGCAGCGTTCTCTGTTACTGGCCACTGGCAT GAAGAATGTCCCTGAAATCCCCAAAGGGCAGAGGACTGTTCGGCGCGATCGCGGGATTTATCGAAAACGGATGGGAGGGCTTGATCGAT GGCTGGTATGGGTTTCGACATCAGAACGCCCAAGGGAGGGAACCGCGCTGATTATAAAAGCACCCAGAGTGCCATTGATCAGATCAC GGGCAAACTGAACCGGCTCATTGAGAAAACAACCAGCAGTTCGAACTCATCGATAACGAGTTTAATGAGGTGGAGAAACAAATCGGCAA CGTTATTAACTGGACTAGGGATTCTATCACGGAGGTCTGGTCCTACAACGCAGAACTGCTGGTGGCAATGGAAAATCAACATACTATTGA TCTGGCCGATTCCGAAATGGACAAGCTTTACGAGAGGGTCAAGAGACAGCTGAGAGAGAACGCTGAAGAGGATGGGACCGGATGCTTC GAAATCTTTCATAAGTGTGATGATGATTGCATGGCCAGTATCCGTAATAATACATATGATCATTCTAAATACCGCGAAGAGGCGATGCAGA ATCGAATCCAAATTGACCCAGTTAAACTGTCTAGTGGCTACAAAGACGTCATCCTGTGGTTTTCGTTCCGGAGCTTCTTGCTTCATTCTGTT GGCAATAGTGATGGGCCTCGTATTTATATGTGTGAAAAACGGGAATATGAGATGCACAATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2823	ATGAATACCCAGATCCTGGTGTTCGCCCTTATTGCCATCATTCCGACCAACGCTGACAAAATCTGTCTCGGACACCACGCTGTCTCCAAT GGGACAAAGGTGAATACCTTGACCGAGCGAGGGGTCGAGGTCGTCAACGCGACAGAAACAGTGGAGAGGACCAACATTCCCCGGATAT GCTCAAAGGGCAAAAGAACGGTGGATCTGGGGCAATGCGGGCTGCTGGGCACTATAACCGGACCCCCCCAATGTGACCAGTTTCTTGA ATTTTCTGCCGATCTGATAATCGAACGCCCGGGAAGGATCCGACGTGTGCTATCCTGGAAAGTTTGTGAATGAGGAAGCCCTCCGGCAGA TTCTGAGGGAATCCGGAGGGATAGATAAGGAAGCAATGGGGTTCACTTATAGCGGTATCCGCACAAATGGGGCGACTAGTGCATGTCGT CGAAGTGGAAGCAGTTTCTATGCCGAGATGAAATGGCTGCTAAGCAATACAGACAACGCCGCATTCCCACAGATGACCAAGTCCTATAAA AATACAAGAAAGAGTCCCGCGCTTATCGTGTGGGGCATACATCACTCCGTCAGCACCGCCGAACAGACCAAGCTCTATGGCTCAGGCAA CAAGTTGGTGACAGTCGGCAGTAGCAATTACCAGCAGTCCTTCGTGCCTAGCCCAGGCGAAAGGCCTCAGGTGAATGGTTTGAGCGGC CGAATAGACTTCCATTGGTTAATGCTCAATCCTAACGATACAGTCACGTTCAGTTTCAATGGTGCCTTTATAGCGCCTGATCGCGCATCAT TCCTGCGTGGAAAATCTATGGGCATTCAGAGCGGAGTCCAGGTCGACGGCAACTGCGAAGGCGACTGTTATCACTCCCGGGGGCACCATT ATTTCCAATTTGCCCTTCCAGAACATTGATAGCAGAGCAGTTGGCAAGTGCCCGCGCTACGTAAAACAAAGGTCTCTGCTTTTGGCTACA GGTATGAAAAATGTCCCAGAAATTCCCAAGGGCCGCGGATTGTTCGGGGCGATCGCTGGTTTTATTGAGAACGGTTGGGAAGGCCTCAT CGATGGGTGGTATGGTTTTTCGGCATCAGAACGCCCAGGGCGAAGGCACTGCCGCGGATTATAAGTCCACCCAGTCAGCGATCGATCAG ATCACAGGAAAGCTGAACCGACTATCGAAAAAACAAACCAGCAGTTTGAACTAATTGACAATGAATTCAACGAGGTGGAGAAACAGATT GGCAATGTGATTAACTGGACCCGTGATAGCATCACAGAGGTCTGGAGCTATAATGCAGAACTGTTGGTTGCTATGGAGAATCAGCACACC ATCGACCTGGCCGACTCTGAAATGGACAAACTGTACGAGCGAGTGAAACGGCAGCTGCGTGAGAACGCTGAGGAAGACGGCAACCGGTT GTTTCGAAATCTTCCATAAAATGCGACGACTGTATGGCTTCTATTAGAAACAATACCTACGATCACTCCAAGTACCGGGAGGAAGCAAT GCAGAATCGAATCCAGATCGACCCAGTTAAGTTGTCCAGCGGATACAAGGACGTGATTCTATGGTTTAGTTTTGGAGCCTCCTGCTTCAT TCTTCTGGCCATTGTGATGGGTTTGGTTTTTATCTGTGTAAAAAATGGAAATATGCGCTGTACTATTTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2824	ATGAACACTCAGATTCTTGTGTTCGCTCTGATCGCAATTATACCCACAAACGCGGATAAAATCTGCCTTGGACATCACGCAGTGTCGAAC GGAACTAAGGTGAACACTCTCACCGAGCGGGGCGTCGAAGTAGTCAATGCTACAGAGACCGTCGAACGCACTAATATTCCACGTATCTG CTCCAAGGGGAAAAGGACCGTCGACCTGGGACAATGTGGCTTGCTAGGGACTATTACCGGCCCACCGCAGTGTGATCAATTCCTCGAGT TCTCAGCCGACCTGATCATCGAGCGACGCGAGGGCAGCGATGTCTGTTACCCCGGGAAATTTGTTAATGAGGAAGCATTAAGGCAGATC CTGCGCGAGTCTGGCGGGATCGACAAGGAGGCCATGGGCTTTACATATTCCGGGATCCGGACAAACGGCGCCACAAGTGCCTGTCGAC GGTCAGGATCATCATTCTATGCCGAGATGAAATGGCTTCTCAGCAATACCGATAACGCTGCATTTCCACAGATGACAAAGTCGTATAAAAA CACAAGAAAGTCACCCGCTCTGATTGTTTGGGGAATTCACCACAGTGTCTCAACCGCAGAACAGACCAAGTTGTACGGGAGTGGAAACA AGTTGGTAACCGTGGGATCTTCAAACTATCAGCAGAGCTTCGTGCCAAGCCCCGGGAACGCCCCCAAGTGAATGGACTGTCTGGACG GATTGACTTCCACTGGCTGATGCTGAACCCCAACGACACAGTGACATTCAGTTTTAATGGAGCATTTATCGCCCCGGACAGAGCAAGCTT TCTCAGGGGTAAGAGTATGGGAATTCAGAGTGGTGTACAGGTTGACGCTAACTGCGAAGGTGACTGTTATCATTCTGGTGGGACTATCAT CTCCAACCTGCCTTTCCAGAACATTGACTCCAGAGCAGTCGGCAAGTGCCCCAGGTACGTGAAGCAAAGGTCTTTGCTGCTCGCAACCG GCATGAAGAACGTGCCTGAAATACCTAAGGGCCGTGGCTTGTTTGGCGCAATCGCGGGATTTATCGAAAATGGGTGGGAGGGGTTGATT GACGGTTGGTACGGCTTCCGTCATCAGAATGCCCAAGGGGAGGGCACCGCCGCAGACTATAAAAGCACCCAAAGTGCAATCGATCAGAT CACCGGCAAATTGAACCGGCTGATTGAGAAAACGAATCAGCAGTTCGAACTGATCGACAACGAATTTAACGAGGTCGAAAAGCAGATTGG AAATGTGATCAACTGGACCCGGGATTCCATCACCGAAGTCTGGTCATATAACGCGGAACTGCTTGTAGCAATGGAGAATCAACACACTAT CGATCTGGCGGACAGTGAGATGGATAAGCTCTACGAGAGGGTTAAGAGACAACTGCGCGAGAATGCTGAGGAAGATGGTACCGGGTGT TTCGAGATTTTTCACAAATGTGATGATGACTGCATGGCTAGTATTCGCAACAACACATATGATCACTCCAAATACCGCGAAGAGGCTATGC AGAACCGCATCCAAATAGATCCCGTAAAGCTTAGCTCGGGTTACAAAGATGTAATCTTATGGTTTAGTTTCGGAGCGAGCTGTTTTTATTCT ACTCGCCATTGTGATGGGGCTTGTCTTCATATGTGTGAAGAATGGAAATATGCGCTGCACAATCTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2825	ATGAATACCCAGATTCTTGTCTTCGCACTCATAGCTATTATTCCTACGAACGCGGACAAGATTTGTCTGGGGCATCACGCCGTCTCCAATG GGACAAAAGTGAACACCCTGACTGAACGAGGGGTTGAAGTGGTCAATGCAACTGAAACAGTGGAACGGACAAACATTCCAAGAATCTGT TCCAAAGGAAAGCGAACAGTGGACCTGGGACAGTGCGGCCTGCTGGGTACCATTACTGGCCCCCCACAGTGCGACGACAGTTCCTGGAAT TTAGCGCAGATCTTATCATCGAGCGGCGGGAAGGAAGTGACGTGTGTTATCCCGGGAAGTTTGTAAACGAGGAGGGCCCTCCGGCAGATC CTTCGTGAGAGCGCGCGGGATTGATAAAGAGGCTATGGGCTTTACCTATTCCGGAATAAGAACCAACGGGCGCCACTTCTGCGTGTCGTAG GAGCGGCAGCAGCTTCTACGCCGAAATGAAGTGGCTGTTGTCTAACACCGATNATGCCGCCTTCCCTCAGATGACCAAGTCCTATAAGAA CACCCGGAAATCCCCTGCCCTGATTGTTTGGGGGATTCACCATTCCGTATCTACCGCCGAACAGACCAAGTTGTACGGTTCCGGAAACAA GCTCGTCACAGTTGGCTCCTCCAATTACCAGCAGAGTTTCGTACCTTCTCCCCGCGCAAGACCACAGGTCAACGGACTAAGCGGCGGGA TTGACTTTCACTGGCTCATGTTGAATCCAAATGACACTGTAACCTTTAGTTTCAACGGTGCCTTTATAGCACCAGATCGGGCGCAGCTTTCT GCGTGGAAAGTCTATGGGCATTCAAAGTGGTGTGCAAGTGGATGCTAACTGTGAGGGAGATTGCTACCATTCAGGTGGGACAATCATTA GCAATCTTCCGTTTCAGAATATTGATTCACGGGCTGTGGGCAAGTGCCCCCGTTACGTGAAGCAGAGAAGCCTGCTTCTTGCCACGGGA ATGAAGAATGTTCCCGAAATACCAAAGGGTAGGGGTCTCTTCGGAGCAATAGCCGGATTTATCGAGAATGGCTGGGAGGGGCTTATCGA TGGTTGGTACGGCTTTCGCCATCAGAACGCTCAGGGAGAGGGGACCGCAGCAGACTACAAATCCACCCAGTCTGCTATCGACCAGATCA CTGGCAAGCTGAATCGGATAATCGAGAAGACTAACCAGCAGTTTGAGCTGATCGACAATGAGTTTAACGAAGTGGAGAAACAGATTGGCA ATGTGATCAATTGGACAAGAGATTCCATTACGGAAGTTTGGTCATATAATGCCGAGCTCCTGGTTGCAATGGAGAACCAACATACAATCGA CCTGGCGGACAGTGAGATGGACAAGCTGTACGAGCGCGTGTGAAGCGCCAACTCCGGGAAAATGCTGAGGAAGACGGCACGGGCTGCTTT GAAATCTTCCACAAGTGTGACGACGACTGCATGGCAAGCATAAGGAACAACACCTATGATCATTCTAAGTACAGAGAGGAGGCGATGCA GAATCGCATCCAGATTGACCCAGTTAAGCTTTCCAGCGGGTACAAAGACGTCATCTTGTGGTTTTCCTTTGGTGCCTCTTGTTTCATTTTG CTCGCTATCGTAATGGGACTGGTATTCATCTGCGTGAAAAATGGAAATATGAGATGCACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2826	ATGAACACACAAATTCTGGTGTTCGCTCTCATCGCAATAATTCCTACCAACGCCGATAAGATTTGCCTGGGGCACCATGCGGTCAGTAAC GGAACCAAAGTCAATACACTCACAGAAAGAGGCGTTGAGGTGGTGAATGCCACAGAAACTGTTGAACGTACAAATATTCCGCGAATCTGT TCTAAAGGCAAGAAAACCGTTGATCTGGGTCAATGCGGCCTCTGGGAACCATTACAGGGCCACCTCAGTGCGACCAGTTTCTCGAATTT TCTGCTGATCTCATTATCGAGAGGCGCGAAGCAGTGACGTTTGCTACCCTGGTAAATTCGTAAATGAGGAGGCCCTCAGGCAGATCCT GAGGAAGTCCGGCGGTATTGATAAGGAAGCCATGGGCTTCACTTATTCTGGGATCAGGACCAACGGGGCCACTTCAACATGTAGAAGGT CCGGAAGCTCTTTCTATGCAGAGATGAAATGGCTCCTGAGCAACACAGACAACGCCGCTTTCCACAGATGACCAAGAGCTATAAGAATA CTCGCAAATCTCCAGCCATCATAGTGTGGGGTATCCACCACAGCGTGTCCACGGCCGAGCAGACAAAGCTGTATGGGAGCGGCAACAA GCTGGTGACTGTCGGTAGCTCGAATTACCAGCAGTCTTTCGTGCCTAGCCCCGGGGCCGGCCAGGTCAATGGGCTTTCCGGGCGA ATCGACTTTCACTGGTTGATGTTAAACCCAAACGACACGGTGACATTCAGCTTTAACGGCGCGCCTTTATTGCACCTGACCGCGCATGTTTCC TGAGGGGCAAGTCTATGGGTATCCAGTCTGGTGTACAAGTCGACGCCGACTGTGAAGGAGACTGCTACCATTCCGGCGGGACAATAATC TCAAACCTACCCTTCCAGAACATCGACAGTAGGGCGGTGGGCAAGTGTCCTAGGTACGTGAAACAGCGGAGCCTGCTGTTGGCCACAG GCATGAAGAATGTCCCCCGAAATTCCAAAGGGGCGGGTCTCTTTGGAGCAATTGCAGGATTCATTGAGAATGGTTGGGAAGGTCTCATC GATGGATGGTACGGGTTCCGCCATCAGAACGCCCCAGGGTGAGGGGACCCGCAGCCGACTATAAGAGTACCCAGTCAGCGATCGACCAAA TCACCGGCAAGCTAAATCGGCTGATTGAGAAGACAAACCAACAGTTTGAATTAATTGACAACGAGTTTAATGAGGTGGAAAGACAGATCG GCAACGTGATCAACTGGACACGCGATTCCATCACAGAAGTCTGGTCTTATAATGCAGAGCTGCTAGTGGCCATGGAGAATCAGCACACC ATTGATCTAGCCGACTCTGAAATGGACAAGTTGTATGAACGGGTAAAACGTCAGTTACGAGAAAATGCCGAGAGGAAGATGGCACAGGGTG TTTCGAGATTTTTCACAAATGTGACGACGATTGTATGGCAAGTATTCGTAACAACACATACGACCACAGCAAATACAGAGAGGAGGCCAT GCAGAACCGCATCCAGATAGACCCAGTTAAACTGAGCTCCGGGTACAAGGATGTGATCCTCTGGTTTAGTTTCGGCGCAAGTTGTTTCAT CCTACTCGCGATAGTTATGGGCCTGGTATTCATTTGCGTCAAGAACGGGAACATGAGGTGTACCATCTGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2827	ATGAATACCCAGATTCTCGTGTTTGCTTTGATTGCTATCATCCCCACGAATGCTGATAAAATTTGCCTAGGCCATCATGCTGTGTCTAACG GGACCAAGGTGAACACCCTCACTGAGAGAGGCGTGGAGGTCGTGAACGCGACCGAGACTGTTGAGCGCACAAACATTCCCAGGATTTG TAGCAAAGGAAAAAGAACCGTTGATCTCGGCCAATGCCGCCTCCTGGGTACCATCACGGGGCCTCCACAGTGTGACCAGTTCTTGGAAT TCAGTGCAGACCTTATCATCGAGCGCAGGGAGGGCTCTGATGTATGCTACCCTGGAAAATTCGTGAACGAGGAGGCTTTGAGACAAATC CTGAGGGAGTCTGGAGGCATCGATAAGGAGGCCATGGGCTTTACATACAGCGGCATTCGCACTAACGGAGCCACTTCCGCATGCAGGC GGTCCGGCAGCTCATTCTACGCTGAAATGAAGTGGCTCCTGAGTAATACGGATAACGCCGCCTTTCCGCAGATGACCAAAAGTTATAAGA ATACAAGGAAATCACCTGCTCTCATTGTCTGGGGTATCCACCACTCGGTGAGCACCGCTGAGCAGACCAAACTGTACGGGTCAGGCAAT AAACTTGTGACCGTGGGCTCAAGCAATTACCAGCAGTCCTTTGTGCCTTCACCCGGCGAAAGACCTCAAGTCAACGGACTGTCTGGTCG GATCGACTTTCACTGGCTGATGTTAAACCCAAATGATACAGTGACATTCTCCTTCAACGGAGCATTCATAGCCCCCGATAGGGCCAGCTT CCTCCGGGGGAAATCCATGGGAATTCAGTCAGGCGTCCAGGTTGACGCTAACTGCGAGGGTGACTGTTATCATTCCGGAGGTACTATAA TAAGCAATCTTCCATTCCAGAATATAGATTCACGAGCGGTCGGCAAGTGTCCGCGGTACGTTAAACAGCGTAGCTTACTGCTCCGCAACCG GGATGAAAAACGTTCCAGAAATTCCTAAGGGCAGAGGGCTGTTTGGGGCCATCGCCGGCTTCATCGAGAACGGTTGGGAAGGGCTCAT CGATGGCTGGTACGGTTTTAGACACCAGAATGCCCCAGGGCGAGGGGACCGCAGCAGATTACAAGAGCACACAGTCAGCCATAGATCAA ATTACTGGGAAGCTCAATCGGTTGATAGAAAAGACTAACCAGCAGTTCGAATTGATCGATAATGAATTTAACGAGGTCGAGAAACAAATCG GCAATGTTATTAATTGGACTAGAGACTCCATCACAGAAGTGTGGTCCTACAATGCCGAACTGCTGGTGGCTATGGAGAACCAGCACACAA TCGACCTTGCAGACAGTGAGATGGATAAACTGTATGAGAGAGTGAAAAGGCAGCTCCGCGAGAACGCTGAGGAAGATGGAACCGGCTG TTTTGAAATTTTCCATAAGTGCGACGATGATTGCATGGCTTCTATCCGGAATAATACTTACGACCACACAGTAAGTACCGAGAAGGCCATG CAGAATCGAATTCAGATAGACCCCGTCAAGCTGAGCTCCGGCTATAAAGATGTGATTCTGTGGTTCAGCTTTGGGGCCTCTTGTTTCATT CTTTTGGCCATCGTGATGGGCCTTGTGTTCATTTGTGTAAAAAATGGCAATATGAGGTGCACAATATGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2828	ATGAATACCCAGATACTGGTGTTCGCCCTGATTGCAATCATCCCAACTAACGCTGATAAGATTTGTCTCGGTCACCACGCTGTGAGTAAC GGAACTAAAGTTAACACACTGACAGAGAGGGGAGTGGAGGTTGTTAACGCGACAGAGACAGTGGAGCGCACTAATATACCACGGATATG TAGTAAGGGAAAAAGAACTGTGGACTTGGGTCAATGCGGACTGTTGGGGACGATAACTGGCCCCCCTCAGTGTGATCAGTTTCTGGAGT TCTCAGCCGATCTGATCATCGAGAGGCGAGAGGGGAGTGATGTGTGTTATCCTGGTAAGTTTGTGAATGAGGAGGCTCTCAGGCAAATC CTCAGGGAATCTGGAGGGATCCATAAGGAGGCTATGGGCTTCACTTACTCTGGAATAAGAACTAACGGCGCCACTAGCGCCTGTAGGCG ATCCGGAAGTTCGTTCTACGCTGAAATGAAGTGGTTGCTCAGCAACACTGACAACGCAGCATTTCCCCAAATGACCAAAAGCTATAAGAA TACTCGCAAGTCTCCCCGCCCTGATAGTGTGGGGGATTCACCATAGTGTCTCTACAGCCGAGCAGACTAAATTATACGGCAGTGGCAACAA GCTGGTGACGGTGGGGAGTTCAAATTACCAGCAGAGCTTCGTGCCCAGTCCGGGAGCTCGCCCTCAAGTTAATGGTCTTTCCGGCAGAA TTGATTTTCACTGGCTGATGCTTAACCCTAACGACACCGTGACCTTTTCCTTCAACGGCGCTTTCATTGCCCCCGGACCGAGCTAGTTTCCT TAGGGGGAAGTCTATGGGCATACAAGTCTGGTGTGCAAGTTGATGCGAATTGCGAGGGGGATTGTTACCACTCTGGAGGTACAATCATCA GTAATTTACCCTTCCAGAACATTGATAGTAGAGCCGTTGGGAAGTGTCCACGGTATGTTAAACAGCGCAGCCTGCTTCTGGCCACAGGGA TGAAGAATGTCCCCGAAATCCCCCAAAGGCAGAGGATTGTTCGGCGCAATCGCGGGGGTTTATTGAAAACGGTTGGGAAGGCCTCATTGAC GGCTGGTACGGGTTCCGGCACCAGAATGCTCAAGGAGAGGGCACCGCCGCCGATTATAAGTCTACCCAGAGCGCCATCGACCAGATCA CAGGCAAATTGAACCGAATTATCGAGAAGACCAACCAACAGTTCGAGCTTATCGACAACGAATTTAATGAAGTAGAAAAGCAGATCGGAA ACGTTATTAACTGGACTCGGGACAGTATTACTGAAGTGTGGTCCTATAAATGCTGAGCTGTTGGTGGCAATGGAGAACCAGCACACCATTG ACCTGGCCGACAGCGAGATGGACAAGCTTTACGAAAGAGTGAAGCGACAGCTTCGGGAAAACGCCGAGGAAGATGGAACCGGCTGTTT TGAAATCTTCCATAAGTGCGATCATGACTGTATGGCCAGTATACGCAACAACACTTATGACCATTCAAAATACCGCGAAGAAGCCATGCA GAATCGGATCCAGATCGACCCTGTGAAGCTGTCGAGCGGGTATAAGGACGTGATACTGTGGTTCAGCTTCGGAGCCAGCTGCTTCATTC TGCTGGCTATTGTCATGGGCCTGGTGTTCATTTGCGTCAAAAATGGTAATATGAGGTGTACGATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2829	ATGAACACTCAGATCCTCGTGTTTGCCTTGATCGCAATAATCCCCACCAATGCCGATAAGATATGTCTCGGACACCACGCTGTGTCCAAC GGGACCAAGGTTAATACTCTGACAGAGCGGGGCGTTGAAGTGGTGAATGCCACCGAAACCGTGGAACGGACAAATATTCCACGAATTTG CAGCAAGGCAAAGAAGACCGTGGACCTTGGTCAGTGTGTGGGCTGCTGGGGACTATCACCGGGCCTCCCCAATGCGACCAGTTCCTCGAG TTCTCTGCAGATCTGATTATTGAGCGGCGCGAGGGTAGTGATGTGTGCTACCCTGGCAAATTCGTGAATGAGGAGGCACTGAGACAGAT CCTGAGAGAGAGTGGCGGAATCGATAAAGAAGCAATGGGGTTTACCTATTCCGGGATACGGACTAACGGGCAACATCGGCTTGCAGGG CGAAGTGGCTCATCTTTCTACGCCGAAATGAAGTGGCTCCTGAGCAACACCGATAATGCCGCTTTCCCACAGATGACTAAGTCCTATAAG AACACCCGGAAGAGCCCGGCCTTGATTGTCTGGGGGATCCAACCATTCTGTCAGTACAGCTGAACAAACTAAGTTGTACGGTTCCGGAAA CAAGCTGGTGACCGTGGGATCTAGCAATTATCAGCAGTCATTCGTGCCTTCACCTGGCGCACGACCACAGGTCAATGGACAGAGTGGTA GAATCGACTTTCACTGGCTGATGCTTAATCCGAATGACACCGTGACCTTCTCCTTCAACGGAGCCTTTATTGCCCCTGACCGAGCTAGCT TTCTCAGGGGAAAGTCTATGGGCATACAGAGCGGCGTGCAGGTCGACGCAAATTGTGAAGGGGACTGTTACCACTCAGGCGGGACCAT TATAAGTAATCTGCCTTTTCAGAACATTGACAGCAGAGCGGTGGGCAAATGTCCGCGTTACGTGAAGCAGAGATCACTGCTCTTGGCCAC CGGCATGAAGAATGTCCCTGAGATCCCGAAAGGCAGGGTCTGTTTGGGGCTATTGCGGGCTTCATTGAAAACGGCTGGGAAGGTCTCA TCGATGGTTGGTACGGATTCCGGCACCAGAATGCTCAGGGGGAGGGCACCGCCGCCGCGATTATAAGAGTACCCAGTCTGCCATCGACCA AATCACCGGCAAGCTTAACCGTCTTATCGAGAAAACAAATCAGCAGTTCGATCGATAACGAATTTAATGAGGTAGAGAACAGATT GGTAATGTGATTAACTGGACACCGCGACTCCATTACCGAGGTGTGGTCGTATAATGCAGAATTACTGGTGGCCATGGAGAATCAACACACC ATTGATCTGGCCGATAGCGAGATGGACAAGCTGTATGAGAGAGTGAAGAGACAACTGAGGGAAAACGCGGAGAGGATGGAACAGGAT GTTTCGAGATCTTCCACACAAGTGTGACCGACGATTGCATCGGCGAGTATCCGGAACACAACCTACGATCATTCAAAATATCGAGAGGAAGCTA TGCAAAACCGAATTCAGATCGATCCAGTAAAATTATCTTCAGGGTATAAGGATGTCATACTATGGTTCAGCTTCGGGGCGTCGTGCTTCAT CTTGCTGGCTATCGTCATGGGGGTCGTCTTTATTTGTGTGAAAAATGGAAATATGCGGGTGCACGATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2830	ATGAACACGCAAATCCTGGTATTTGCGCTGATCGCTATCATTCCCACTAATGCTGACAAAATCTGTCTGGGCCATCACGCTGTGTCAAACG GAACCAAGGTGAATACGCTGACCGAACGCGGCGTCGAGGTGGTCAATGCCACGGAAACAGTCGAAAGAACAAACATTCCCAGAATCTGC TCAAAGGGTAAAAAGACGGTAGATCTCGGGCAGTGTGGGCTTCTTGGAACAATCACTGGCCCACCACAATGCGATCAATTTCTCGAATTC AGCGCCGACCTGATCATCGAGAGGAGGGAAGGTAGTGATGTGTGCTACCCCGGGAAGTTTGTGAATGAGGAGGCATTGCGCCAAATAC TGAGAGAGAGCGGAGGGATTGACAAGGAGGCCATGGGATTCACCTACAGCGGGATCAGAACTAATGGAGCCACGAGCGCTTGCAGGAG GAGTGGAAGCAGCTTTATGCTGAAATGAAGTGGCTACTGTCCAATACGGATAACGCTGCGTTCCCACAAATGACAAAGTCGTACAAGAA TACGCGAAAGAGCCCAGCCCTCATTGTCTGGGGTATCCATCACAGCGTGAGTACCGCAGAACAAACCAAACTTTACGGGTCAGGTAACA AACTGGTAACCGTTGGAAGCTCCAATTATCAGCAATCGTTCGTTCCTTCACCTGGGCTCGCCCACAAGTCAATGGACAGAGCGGCAGA ATTGACTTCCATTGGCTCATGCTCAATCCAAACGATACAGTCACCTTTTCATTTAACGGAGCTTTCATCGCTCCTGATCGGGCTAGCTTTCT AAGGGGCAAGTCTATGGGTATTCAGTCCGGCGTACAAGTCGACGCCAACTGTGAGGGGGACTGCTACCATAGCGGAGGCACTATCATAT CAAATCTCCCCTTCCAGAATATCGACTCCAGGGCTGTTGGTAAGTGCCCAAGATACGTGAAGCAGAGATCCCCTCCTTCTGGCTACAGGCA TGAAAAATGTGCCAGAAATTCCAAAGGGACGGGGCCTATTTGGAGCTATTGCAGGCTTCATCGAGAACGGATGGGAAGGACTGATCGAT GGGTGGTACGGATTTTAGGCACCAGAACGCCCAGGGAGAGGGAACAGCTGCTGACTACAAATCTACCCAGTCTGCAATTGATCAGATCAC CGGTAAACTGAATAGACTGATTGAGAAAACTAACCAGCAGTTCGAGCTAATTGATAATGAGTTCAATGAAGTGGAGAAGCAGATCGGCAA CGTGATTAACTGGACCCAGAGATTCAATCACGGAGGTCTGGTCTTACAACGCCGAGTTGCTGGTGGCTATGGAAAACCAGCACACCATAG ACCTGGCCGACTCTGAAATGGACAAATTGTACGAGAGGGTAAAAAGGCAGTCCGAGAAAACGCCGAGGAGGACGGTACTGGCTGCTTT GAGATATTTCACAAGTCGACGATGATTGCATGGCCTCCATTCGAAACAACACGTACGACCACAGTAAATACAGGGAGGAAGCCATGCA GAACCGCATCCAGATTGACCCTGTCAAGCTGAGTAGTGGCTACAAGGACGTTATCCTCTGGTTTAGTTTTGGAGCATCATGTTTTATACTG TTGGCAATAGTCATGGGGCTTGTCTTCATCTGCGTGAAAAATGGCAACATGCGTTGTACAATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2831	ATGAATACCCAAATTCTGGTGTTCGCTCTAATTGCCATCATACCAACAAACGCAGACAAGATTTGTCTGGGCCACCACGCCGTGTCAAAC GGAACGAAAGTGAACACTCTGACTGAGCGTGGCGTGGAGGTAGTGAACGCTACCGAAACTGTGGAGCGGACTAATATCCCAAGGATCTG TAGCAAGGGAAAAAAGACAGTGGACCTGGGTCAGTGCGGATTGCTAGGAACCATAACCGGTCCACCTCAGTGCGATCAGTTTTTGGAGT TTAGCGCCGATCTCATCATCGAAAGAAGGGAGGGTTCTGATGTTTGTTACCCAGGAAAATTTGTTAACGAAGAAGCCCTTCGCCAGATCC TTAGAGAATCAGGCGGCATCGATAAAGAGGCAAATGGGGTTCACCTATTCAGGAATACGCACACAAATGGCGCCACGAGCGCGTGCAGGCG CAGCGGGAGTTCATTTTATGCTGAAATGAAATGGCTCCTCTCAAACACTGATAACGCTGCATTTCCACACAATGACGAAAAGTTATAAGAAT ACGAGAAAGTCTCCAGCCCTCATTGTCTGGGGCATTCATCACTCAGTGTCGACTGCCGAGCAAACCAAGCTGTACGGCAGGCGGGTAACAA ATTGGTAACTGTCGGCAGTAGTAACTACCAGCAAAGTTTTTGTGCCTAGCCCCCGCGCTCGGCCACAAGTGAACGGACAGAGGCGGGCGC ATCGATTTTCACTGGCTGATGCTAAATCCAAATGACACAGTCACCTTTTCGTTAACGGGGCCTTCATCGCCCCTGACCGGGCTTCTTTCC TGAGAGGAAAAAGCATGGGAATCCAGTCCGGAGTCCAGGTTGACGCCAACTCCGAAGGAGACTGTTATCATTCCGGGGGCACTATTATA AGCAATCTGCCTTTTCAGAACATAGATAGTCGCGCCGTAGGCAAGTGTCCCCGCTACGTCAAACAGAGAAGCCTTCTGCTGGCTACCGG TATGAAGAACGTCCCCGAAATCCCTAAAGGCCGAGGACTATTCGGCGCTATCGGCCGGCTTCATTGAAAATGGCTGGGAGGGCTTGATAG ATGGGTGGTATGGCTTTCCGCCATCAGAATGCACAGGGTGAAGGGACTGCAGCCGATTATAAATCTACTCAGTCCGCCATCGATCAGATTA CCGGGAAGCTCAATAGACTCATTGAGAAGACAAATCAACAGTTCGAACTGATCGATAACGAGTTCAACGAGGTAGAGAAACAGATCGGGA ATGTCATTAACTGGACCCGAGATTCTATCACAGAAGTTTGGTCTTACAACGCGGAGCTGCTGGTCGCAATGGAAAATCAGCATACCATCG ATCTGGCCGATTCAGAAATGGACAAGCTTTATGAGAGAGTGAAGCGCCAGTTGCGCGAGAATGCGGAAGAGGACGGCACCGGATGCTT CGAGATTTTTCACAAATGTGATGATTGTATGGCTTCGATTCGGAATAACACCTACGATCACTCCAAATATCGCGAAGAGGCTATGCAG AACAGAATACAAATCGATCCCGTCAACTTAGCAGCGGCTACAAAGACGTCATTCTGTGGTTTTCCTTCGGGGCATCCTGTTTTATACTGC TGGCCATAGTGATGGGTCTGGTGTTTATATGTGTAAAGAACGGCAACATGCGCTGTACCATTTGCATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2832	ATGAACACCCAGATCCTCGTGTTCGCCTTAATCGCTATCATTCCAACCAATGCAGACAAGATATGTCTGGGTCATCATGCCGTTAGCAATG GCACCAAGGTCAACACCCTGACCGAGCGCGGAGTCGAGGTTGTTAATGCAACCGAAACTGTGGAGCGGACAAATATTCCCCGGATCTGC AGCAAGGGGAAGAGGACAGTCGATCTGGCCAATGCGGACTGCTGGGCACAATCACCGGACCCCCTCAGTGCGATCAATTTCTGGAGT TCAGCGCCGACCTGATCATCGAGAGAAGCGGAGGGAGTGACGTATGTTACCCAGGGAAGTTTGTGAACGAGGAGGGCCCTGAGACAGAT TCTGAGAGAAAGCGCGGCGGCATCGATAAAGAGGCCATGGGATTTACCTATAGCGGCATTCGCACCAATGGAGCCACTTCAGCTTGTAGGA GATCCGGGAGTAGCTTTTACGCTGAGATGAAATGGCTGCTTCCAATACTGATAATGCCGCTTTCCCACAGATGACTAAGTCTTATAAGAA TACTCGCAAGAGTCCTGCCCTGATAGTCTGGGGCATCCATCATTCCGTCTCAACCGCTGAACAGACCAAACTCTACGGGTCTGGGAACAA GTTGGTGACCGTGGGCTCCTCGAATTATCAACAATCATTCGTGCCGTCCCCCGGCGCTCGGCCGCAGGTTAACGGTCTTTCAGCCGGCA TCGACTTCCACTGGCTAATGTTGAACCCAAACGATACTGTTACTTTTAGCTTTAACGGCGCATTTATTGCCCCCGACCGGGCCTCCTTCCT GCCGAGGCAAGTCCATGGGTATCCAGTCTGGAGTCCAAGTGGATGCTAACTGTGAAGGCGACTGTTACCATAGTGGAGGGACAATTATTA GTAACCTGCCCTTCCAGAACATTGACAGTAGGGCCGTGGGCAAATGCCCACGGTACGTGAAGCAGCGGTCCCTGCTGCTGGCAACTGG AATGAAGAACGTGCCAGAGATCCCTAAAGGGCCGGGCCTCTTCGGCGCTATCGGCCGGGTTTATAGAGAATGGTTGGGAAGGGCTGATC GATGGATGGTATGGGTTCCGCCACCAGAATGCTCAGGGTGAGGGGACAGCTGCTGACTACAAGTCTACACAGAGTGCTATTGACCAGAT CACCGGAAAACTTAACAGGATCATCGAGAAAACGAATCAGCAATTTGAGCTCATTGATAACGAGTTCAATGAAGTCGAGAAGCAAATCGG GAACGTGATAAATTGCACACGCGACTCCATCACTGAGGTCTGGAGCTATAACGCCGAGCTTCTGGTGGCAATGGACAATCAGCATACTAT CGATCTCGGCGGATTCCGAAATGGATAAGCTCTACGAGAGAGGTTAAGAGGCAGCTCCGCGAGAATGCGGAGGATGGGACCGGATGC TTCGAGATATTCCATAAGTGCGACGACGACTGCATGGCGTCAATAAGGAATAATACTTATGATCATTCTAAGTACACGGGAGGAGGCCATG CAGAATCGCATTCAGATTGATCCTGTTAAACTAAGCTCAGGCTATAAGGACGTAATATTATGGTTTTCTTTTGGCGCTTCCTGTTTTATCCT CCTGGCTATAGTTATGGGGCTGGTGTTTATTTGTGTTAAAAATGGAAATATGAGATGCACAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2833	ATGAATACCCAAATTCTGGTCTTCTGCTCTGATAGCTATAATCCCAACGAATGCCGATAAGATATGTCTGGGTCATCACGCTGTCTCCAATG GGACCAAAGTGAACACATTGACGAACGCGGCGTGGAGGTGGTTAACCGCCACTGAGACCGTAGAGCGGACTAATATACCCCGGATCTG CAGTAAGGGAAAAAAGACAGTCGACTTGGGTCAGTGCGGCCTGCTAGGGACCATCACAGGGCCTCCTCAATGTGACCAGTTCCTGGAGT TCAGCGCAGACCTTATAATCGAAAGAGAAGGGGTCGGACGTCTGTTACCCCGGCAAGTTTGTGAACGAGGAAGCACTGAGGCAGATC CTGAGAGAATCCGGCGGAATTGATAAGGAAGCCATGGGTTTCACCTACAGTGGCATACGCACCAATGGAGCAACATCCGCTTGTAGACG GAGCGGTTCTTCCTTTTACGCCGAGATGAAGTGGCTGCTGTCCAACACGGATAATGCAGCCTTCCCTCAAATGACTAAGAGTTATAAGAA TACGAGAAAGTCCCCCGCCTTGATTGTGTGGGGGATCCACCATAGCGTTAGCACAGCCGAACAGACTAAGCTTTACGGTTCAGGCAACA AGCTCGTAACCGTGGGATCCTCCAATTATCAGCAATCCTTCGTGCCTTCTCCTGGCGCCCGCCCTCAGGTTAACGGTCAAGCGGTCGC ATAGATTTTCATTGGCTCATGCTGAACCCGAATGATACAGTCACGTTTTCTTTCAATGGGGCATTTATCGCACCAGACCGGGCCTCCTTTC TTCGCGGGAAGTCTATGGGAATACAATCCGGCGTACAGGTTGATGCTAACTGCGAGGGCGACTGTTATCATTCAGGGGGTACCATAATC TCCAACTTGCCTTTCCAAAATATTGATTCCCGGGCTGTCGGAAAGTGCCCGAGATATGTGAAGCAACGCAGTTTACTCCTGGCCACGGGA ATGAAAACGTTCCCGAAATCCCTAAGGGAAGGGGACTATTTGGTGCTATTGCAGGGTTTATTGAGAATGGCTGGGAGGGCTTAATCGAC GGCTGGTATGGCTTCCGCCACCAAAACGCACAGGGGGAGGGGACAGCAGCAGACTATAAAAGCACGCAGAGCGCAATCGACCAAATTA CCGGCAAGTTGAATAGGCTCATGAAAAACAAACCAGCAATTTGAGCTCATCGACAACGAGTTCAATGAAGTTGAGAAACAGATAGGAA ATGTGATCAATTGGACTCGCGACAGCATTACCGAGGTATGGTCATACAACGCAGAGCTCTTAGTGGCGATGGAGAACCAGCACACCATC GATCTAGCCGACAGTGAGATGGACAAGCTGTACGAACGAGTCAAGAGACAGTTACGAGAGAATGCCGAGGAGGACGGAACCGGCTGCT TTGAGATTTTCCACAAGTGTGACGATGACTGTATGGCTAGCATTCGCAATAATACCTATGACCACAGTAAATACCGGGAGGAGGCTATGC AGAATCGTATTCAGATCGATCCTGTGAAGCTGTCTAGTGGATACAAGGACGTAATCCTGTGGTTTTCTTTCGGTGCTTCTTGTTTCATCCT GTTAGCAATAGTAATGGGTCTGGTATTTATCTGCGTTAAGAACGGAAATATGCGGTGTACTATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2834	ATGAACACACAGATACTGGTCTTTGCTCTTATCGCTATCATTCCCACCAATGCCGATAAAATCTGCTTGGGGCACCACGCCGTGTCCAAC GGGACGAAAGTTAATACACTCACTGAGCGAGGCGTGGAGGTCGTCAACGCCACAGAGACGGTGGAGCGCACCAACATCCCGAGGATCT GCAGCAAGGGCAAACGAACCGTCGATCTTGGGCAGTGCGGGCTGTTGGGCAACCATTACGGGACCTCCCCAGTGTGATCAGTTCTTGGA GTTTTCTGCTGACCTCATCATTGAGAGAAGGGAAGGCAGCGACGTGTGCTATCCCGGCAAGTTCGTGAAAGAAGAGGCCCTGCGGCAGA TACTGCGGGAGTCAGGCCGGTATTTGATAAAGAAGCGATGGGCTTCACGTACAGCGGTATCAGCGACTAACGGCGCTACCACGCGCTTGCCG ACGGAGCGGTAGCTCTTTCTACGCCGAGATGAAATGGTTACTTTCTAACACCGATAACGCTGCGTTTCCACAGATGACGAAATCCTACAA GAATACTAGAAAAAGTCCAGCCCTGATCGTTTGGGGAATTCACCACTCTGTCTCCACAGCTGAACAGACCAAGTTGTATGGCTCCGGCAA CAAGCTGGTTACAGTAGGCTCCAGCAATTACCAGCAGTCTTTTGTCCCCTCCCCTGGAGCTCGTCCACAGGTCAATGGACTGTCAGGCC GAATCGACTTCCACTGGCTGATGTTGAATCCAAACGATACAGTGACTTTCTCATTTAATGGCGCTTTTATTGCCCCAGATCGGGCCAGTTT CCTCAGAGGTAAGTCCATGGGAATCCAGTCGGGGGTCCAAGTCGATGCCAACTGCGAAGGCGACTGTTACCACAGCGGCGGTACCATT ATCTCCAACCTGCCCTTCCAAAACATCGACTCTCGGGCAGTTGGAAAATGTCCAAGGTACGTCAAGCAGAGATCCCTGCTGCTGGCCACA GGCATGAAGAACGTGCCCGAGATTCCCAAAGGACGGGGCCTATTCGGAGCGATCGCAGGATTCATTGAGAACGGATGGGAGGGCTTGA TTGATGGCTGGTACGGCTTTAGACACCAAAATGCTCAGGGGGAGGGCACTGCCGCCGACTACAAATCTACTCAGTCGGCGATTGACCAG ATTACTGGAAAGTTGAACCGGCTCATTGAAAAAACCAACCAGCAGTTCGAATTGATTGATAATGAGTTCAATGAAGTGGAAAAACAGATCG GGAATGTGATTAACTGGACCAGAGACTCCATCACAGAGGTTTGGAGCTACAACGCGGAATTACTAGTTGCCATGGAAAATCAGCACACCA TTGACCTCGCTGACAGTGAGATGGATAAACTGTACGAGGCGCGTGAAAAGACAGCTACGGCGAGAATGCGGAAGAAGACGGCACAGGATG CTTTGAGATCTTTCACAAGTGCGACGATGATTGCATGGCTTCGATTCGGAATAATACCTACACTCCAAATATAGAGAGGAGGCTATG CAAAATCGAATTCAGATCGACCCCGTCAAGTTGTCCTCCGGCTACAAGGACGTTATCTTGTGGTTCTCCTTTGGCGCATCATGCTTCATTT TGCTGGCCATAGTCATGGGCCTGGTATTCATTTGTGTCAAGAATGGAAATATGAGGTGCACCATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2835	ATGAATACCCAGATTCTTGTGTTCGCTCTGATCGCGATTATTCCTACCAACGCTGATAAAATCTGCCTCGGACATCACGCTGTTAGCAACG GAACCAAGGTGAACACACTGACAGAGCGCGGGGTCGAAGTTGTCAACGCTACTGAGACGGTGGAACCGACCAACATACCACGGATCTG CTCTAAGGGCAAGCGAACTGTGGATCTCGGGCAGTGTGGCTTGCTGGGAACGATTACGGGCCCTCCTCAGTGTGATCAGTTTCTCGAGT TCTCTGCAGATCTGATAATCGAGAGAAGGGAAGGATCAGATGTCTGCTACCCTGGGAAATTCGTGAAAGAAGAAGCACTGAGACAAATCT TACGCGAGTCACGGGGGCATAGATAAGGAAGCCATGGGCTTCACATACTCTGGGATCCGTACCAACGGCGCCACGTCAGCTTGTCGTAG GTCTGGCTCTTCTTTCTATGCCCAGATGAAATGGCTCCTGTCGAATACTGACAATGCTGCGTTCCCCCAGATGACTAAGAGCTACAAAAAT ACAAGAAAGTCTCCCCGCGCTGATAGTTTGGGGGATTCACCACTCTGTCTCCACTGCCGAACAGACAAAGTTATACGGCAGCGGTAACAA GCTAGTGACAGTTGGGAGCTCAAACTATCAACAATCATTTGTACCATCCCCCGGTGCCAGGCCACAGGTAAACGGCCTTTCCGGACGTAT CGACTTTCACTGGCTGATGCTGAATCCCAATGATACCGTAACTTTTTCCTTCAACGGGGCTTTTTATTGCCCCAGATAGGGCATCCTTTCTG CGAGGTAAGAGTATGGGCATACAGAGCGGCGTGCAAGTGGACGCTAATTGTGAGGGGGGACTGCTACCATTCCGGGGGAACCATCATCT CGAATTTACCGTTTCAGAACATCGATTCACGCGCTGTTGGGAAGTGTCCTAGGTATGTAAAACAGCGATCCCTTCTTCTGGCCACAGGCA TGAAGAACGTACCAGAGATACCTAAAGGACGGGGACTGTTCGGGGCCATTGCAGGGTTCATCGAAAACGGCTGGGAAGGCCTGATCGA CGGCTGGTATGGCTTTCGGCATCAGAACGCCCAGGGAGAGGGTACTGCAGCCGATTATAAGAGTACACAGTCTGCAATCGACCAAATTA CAGGAAAGCTGAATAGACTCATAGAGAAGACAAATCAGCAGTTTGAACTCATTGACAATGAGTTCAATGAAGTGGAAAAGCAAATCGGGA ACGTGATTAATTGCACCAGGGATAGCATAACAGAAGTCTGGTCCTATAACGCTGAACTACTTGTTGCAATGGAGAACCAGCACACTATCG ATCTGGCAGACTCTGAAATGGACAAACTGTATGAGAGGGTTAAACGCCAACTGAGAGAGAATGCTGAGGAAGACGGTACTGGCTGTTTT GAGATTTTCCACAAATGTGACGACGATTGTATGGCGTCCATCAGGAACAACACCTATGACCATTCTAAATATAGAGAGGAAGGCATGCAG AATCGGATACAGATTGATCCTGTGAAACTTAGCTCTGGATATAAGGACGTGATCCTGTGGTTTTCATTTGGAGCGTCATGCTTTATCCTGC TGGCCATCGTGATGGGATTGGTCTTCATATGTGTCAAGAATGGCAATATGCGGTGTACCATATGTATT

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2836	ATGAATACACAGATACTCGTGTTTGCCCTCATTGCCATCATCCCTACCAATGCAGATAAGATCTGCCTCGGCCACCATGCTGTTAGCAACG GAACCAAGGTTAACACCCTCACTGAACGAGGAGTGGAGGTCGTTAACGCCACAGAAACCGTGGAACGGACGAACATCCCCCCGCATCTG CAGCAAAGGCAAGCGCACCGTGGATCTGGGGCAGTGCGGCCTGCTGGGCACGATTACAGGGCCCCCCCCAATGCGACCAGTTTTTGGAG TTCAGCGCAGACCTGATCATTGAAAGGCGTGAGGGGAGTGACGTGTGTTATCCCGGTAAATTTGTGAACGAAGAGGCCCTCAGACAGAT CCTGCGGGAGTCTGGTGGGATCGATAAAGAGGCAATGGGCTTCACTTATTCTGGAATCCGGACCAACGGGGCCACCTCTGCGTGCAGG CGTTCCGGCAGCTCATCTATGCAGAGATGAAATGGCTACTTAGTAACACGGACAACGCAGCTTTCCCCCAGATGACTAAAAGTTACAAG AACACTCGAAAGAGTCCAGCACTCATTGTGTGGGGATTCATCATTCCGTGTCTACCGCCGAGCAGACTAAACTATACGGTAGTGGGAAT AAACTAGTAACCGTCGGCTCTTCTAACTACCAGCAGTCTTTTGTGCCCTCTCCAGGTGAACGCCCCCAGGTCAACGGGCTGTCTGGTCG CATCGACTTTCATTGGCTGATGCTCAACCCTAATGACACAGTCACGTTCAGTTTCAATGGTGCTTTCATTGCACCCGATAGGGCCTCATTT CTTCGGGGCAAGTCCATGGGCATCCAAAGTGGAGTTCAGGTGGACCGCCAATTGCGAAGGTGACTGCTATCACAGTGGCGGCACAATCAT TTCTAACCTGCCGTTTCAGAATATTGACTCCCGTGCTGTAGGGAAGTGTCCCCGATACGTGAAGCAGCGGTCCTTGCTTCTGGCAACCGG TATGAAGAATGTCCCTGAGATTCCTAAAGGCCGGGGGCTGTTCGGAGCTATTGCAGGGTTCATCGAAAACGGCTGGGAGGGGCTCATCG ATGGTTGGTACGGATTCAGACATCAAAATGCACAAGGGGAAGGAACCGCAGCCGACTATAAGAGCACACAAAGCGCTATCGATCAGATC ACCGGGAAATTAAACCGCCTGATTGAGAAAACCAATCAGCAGTTCGAGCTTATTGACAACGAATTCAATGAGGTGGAAAAACAGATAGGG AATGTGATCAACTGGACCAGAGATTCTATCACCGAGGTTTGGTCTTATAACGCCGAACTGCTGGTTGCTATGGAGAATCAGCATACCATC GACCTGGCTGACAGCGAGATGGATAAGTTATACGAGCGTGTCAAACGACAGCTGAGGGAGAATGCGGAGGAGGATGGAACCGGGTGTT TCGAGATCTTCCATAAATGTGACGATGACTGCATGGCCAGTATTCGGAACAATACATATGACCATTCCAAATACCGCGAAGAGGCAATGC AGAATCGAATACAGATAGATCCTGTGAAACTGAGCAGCGGGTATAAAGACGTCATCTTGTGGTTTAGTTTTGGGGCATCCTGCTTTATTCT GCTCGCCATAGTGATGGGGTTAGTGTTTATATGTGTTAAAAACGGAAATATGCGGTGTACAATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2837	ATGAATACCCAGATTCTTGTGTTTGCCCTGATCGCTATAATACCTACTAATGCAGATAAGATCTGTTTAGGACATCACGCCGTCTCCAATG GAACTAAGGTAAACACGCCTGACCGAGCGGGGCGTCGAGGTGGTGAACGCCAACCGAAACTGTTGAGCGCACCAATATTCCCCGGATATG CTCAAAGGGGAAGCGAACCGTTGACCTAGGCCAATGCCGCTTGCTGGGGACAATTACCGGACACCCCAATGTGACCAGTTTCTGGAAT TTTCAGCCGACCTAATCATCGAGCGACGCGAGGGCAGCGACGTGTGTTATCCCGGTAAGTTTGTCAATGAGGAAGCCCTGAGGCAGATA CTTAGAGAATCGGGCCGGGATCCACAAGGAGCGCATGGGGTTCACATATAGTGGTATCCGCACTAATGGAGCTACATCCGCCTGTCGGAG GAGCGGGAGCTCCCTTCTACGCTGAAATGAAGTGGCTCCTCAGTAACACGGATAACGCTGCTTTCCCCCAGATGACTAAAAGCTATAAAAA CACTAGAAAGAGCCCAGCACTCATTGTGTGGGGTATTCACCACTCAGTGTCTACGGCCGAACAAACAAAATTATATGGATCCGGGAACAA GCTGGTAACCGTCGGAAGTAGCAATTATCAGCAGTCCTTTGTGCCAAGCCCGGGAGCCCGGCCCCAGGTGAACGGCCTATCTGGCCGG ATCGATTTTCATTGGCTTATGCTCAACCCTAACGACACCGTTACCTTTAGCTTCAACGGGGCTTTCATTGCACCCGACCGTGCATCATTCC TGCGTGGGAAGAGCATGGGGATACAGAGCGGCGTACAGGTGGACGCGAACTGCGAAGGCGACTGTTACCATTCAGGCGGCACCATTAT TTCCAATTTGCCCGTTTCAGAACATCGACTCACGCGCCGTAGGAAAATGTCCCCGGTACGTCAAACAGCGCAGCCTCCTACTAGCCACCG GGATGAAAAACGTGCCCGAGATCCCCAAGGGACGGGGACTATTCGGAGCGATAGCCGGGTTCATTGAGAATGGATGGGAGGGTCTGAT CGATGGCTGGTACGGGTTCCGGCATCAAAACGCACAGGGCGAGGGGACTGCAGCCGATTACAAATCTACCCAATCGGCAATCGACCAG ATTACAGGCAAACTGAATAGGATCATAGAGAAAACCAATCAGCAGTTCGAACTGATTGACAATGAGTTTAATGAAGTAGAGAAGCAGATTG GGAATGTGATAAATTGGACTCGAGACAGCATTACCGAAGTCTGGTCTTACAATGCCGAGTTACTCGTCGCTATGGAGAACCAGCACACCA TTGACCTGGCCGACTCAGAGATGGACAAACTCTATGAGCGCGTAAAGAGACAATTGAGGGAAAACGCGGAGGAAGACGGAACAGGCTG TTTCGAAATATTTCACAAGTGCGACGACTGTATGGCATCCATCCGGAATAATACCTATGATCACAGCAAGTACAGGGAGGAGGCTAT GCAAAATCGGATCCAGATTGATCCTGTAAAACTGAGCTCGGGATACAAGGATGTTATCCTGTGGTTTAGTTTCGGCGCCAGCTGCTTTATT CTCCTTGCCATCGTCATGGGCCTGGTCTTCATCTGCGTCAAAAATGGAAATATGAGATGCACAATTTGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2838	ATGAACACTCAAATTCTCGTGTTTGCTCTAATTGCCATCATCCCGACAAATGCAGATAAGATTTGCCTGGGTCACCATGCGGTGTCTAATG GAACAAAGGTTAATACCCTGACCGAAAGGGGCGTGGAGGTCGTGAATGCCACCGAGACGGTGGAAAGAACCAACATTCCAAGAATTTGC TCCAAAGGAAAGAAAACCGTCGACCTGGTCAGTGCGGATTGCTGGGAACAATCACCGGGCCACCCCAGTGCGACCAGTTCCTGGAATT CAGCGCCGACCTCATTATTGAGCGCAGAGAAGGTTCTGACGTGTGTTATCCAGGGAAGTTCGTGAACGAGGAGGCACTGCGGCAAATCC TGCGTGAAAAGCGGGCGGCATTGACAAGGAGGCGATGGGCTTTACATACTCCGGGATCCGTACAAACGGGGCCACTAGTGCGTGCAGAAG ATCTGGAAGCAGCTTTTATGCTGAAATGAAATGGTTGCTCTCCAACACGGACAACGCTGCCTTCCCCCAGATGACAAAGAGCTACAAAAA TACTCGAAAAAGCCCCCGCCCTAATAGTGTGGGGCATCCACCATTCTGTGAGCACCGCCGGAACAGACCAAGCTGTATGGCAGCGGTAACA AATTGGTTACCGTAGGCTCTTCTAACTATCAGCAGAGGCTTCGTCCCATCGCCTGGTGCCAGGCCCCAGGTCAAGGCCAAAGCCGGTCGG ATTGATTTTCACTGGTTAATGCTTAATCCAAATGATACAGTGACCTTTAGTTTTAACGGAGCTTTCATCGCCCCCGATCGGGCGAGCTTTC TCCGGGGGAAATCCATGGGAATCCAGTCTGGGGTGCAGGTGGACGCTAATTGCGAGGGCGACTGCTACCACTCCGGGGGGACCATCAT AAGTAACCTCCCTTTCCAAAACATCGATTCACGAGCTGTGGGAAAATGCCCCCGTTACGTAAAACAGCGTTCTCTCTTATTGGCCACAGGT ATGAAAAATGTGCCACGAAATTCCTAAGGGCCGGGGCTCTTCGGCGCCATAGCCGGATTCATTGAGAATGGGTGGGAAGGTCTGATCGA CGGGTGGTACGGTTTCCGACACCAGAACGCACAGGGAGAGGGTACGGCTGCAGATTACAAGTCTACTCAGTCAGCTATTGACCAGATCA CCGGCAAGCTGAATAGGCTTATCGAGAAAACAAACCAACAGTTTGAACTGATCGACAATGAGTTTAACGAGGTCGAGAAGCAGATCGGCA ACGTTATTAACTGGACTAGAGACTCCATCACCGAAGTGTGGAGCTACAATGCCGAGCTGCTAGTGGCTATGGAGAATCAACATACCATTG ATCTGGCCGATAGTGAGATGGACAAGCTGTATGAACGAGTCAAGCGACAACTACGCGAAAATGCGGAAGAAGATGGGACAGGATGTTTT GAGATTTTCCACAAATGCGATGACGATTGTATGGCCAGCATCCGGAACAACACATACGATCATAGCAAATACAGAGAGGAGGCCATGCAA AATCGCATTCAAATAGACCCTGTCAAGCTTAGCTCCGGGTATAAAGACGTGATTCTATGGTTCTCGTTTGGGGCCTCATGTTTCATTCTGC TGGCCATCGTCATGGGCCTCGTGTTTATTTGCGTAAAGAATGGCAACATGCGCTGTACCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2839	ATGAACACTCAGATTCTGGTGTTTGCTCTGATCGCGATTATCCCCACTAATGCCGACAAGATATGTCTCGGTCATCATGCGGTTTCTAACG GGACGAAGGTGAACACATTGACAGAGCGAGGGGTGGAGGTGGTTAATGCGACTGAGACTGTAGAAAGGACCAATATTCCGCGTATTTGT AGCAAGGGTAAGAAAACTGTTGACTTGGGACAATGTGGTCTGCTCGGAACCATTACTGGCCCCCCTCAGTGTGATCAATTCCTGGAGTTC AGCGCCGATCTGATTATAGAGCGAAGAGAGGGTAGCGATGTTTGCTATCCCGGGAAATTTGTAAACGAGGAGGCCCTCCGCCAAATCCT ACGAGAGTCAGGTGGGATTGACAAGGAGAGGCTATGGGGTTCACCTATAGTGGAATCCGGACCAATGGGGCAACTTCTGCCTGTCCGGAGAT CTGGCTCGAGCTTCTACGCGGAGATGAAGTGGTTGCTGAGTAACACTGATAACGCTGCGTTTCCCCAAATGACCAAGTCGTATAAAAATA CAAGAAAGAGTCCTGCTCTGATCGTGTGGGGAATCCATCACTCTGTAAGCACGGCCGAGCAAACTAAACTTTATGGATCGGGCAATAAAC TTGTCACAGTGGGCAGCAGCAACTACCAGCAATCATTTGTGCCTTCTCCGGGCGCGAGACCACAGGTCAATGGCCAGTCTGGGAGGATC GATTTTCACTGGCTCATGCTAAATCCCAACGACACAGTGACCTTTAGCTTTAATGCGCGCATTTATTGCACCTGATAGAGCGTCATTCCTTA GGGGAAAAAGCATGGGGATACAATCAGGGGTCCAGGTCGACGCTAATTGCCGAGGGCGACTGCTACCACTCAGGGGGTACCATCATATC TAATCTTCCATTCCAGAACATCGACTCGCGAGCCCGTTGGAAAGTGCCCCAGGTACGTGAAGCAGCGGAGTCTGCTCCTGGCAACTGGCA TGAAGAACGTGCCTGAGATCCCCAAAGGCCGTGGCTTATTTGGAGCTATCGCAGGGTTTATCGAGAATGGCTGGGAGGGATTGATCGAT GGTTGGTATGGCTTTCGGCACCTAAATGCCCAGGGAGAGGGAACCGCGCCGCGATTATAAGTCAACTCAGAGTGCGATAGATCAGATTAC AGGTAAGCTAAATAGACTGATTGAGAAGACTAACCAACAGTTCGAGCTTATCGACAACGAATTTAATGAAGTGGAAAAGCAAATAGGAAAC GTTATCAACTGGACACGCGATAGCATCACAGAAGTTTGGTCTTACAACGCCGAGCTCTTGGTGGCTATGGAGAATCAACATACAATCGAC CTGGCAGATAGCGAAATGGATAAGTTATACGAACGGGTCAAGCGACAGCTGAGGGAGAACGCTGAAGAGGATGGAACTGGCTGTTTTGA GATCTTCCACAAGTGCGATGATGACTGTATGGCAAGCATACGAAACAACACTTACGATCATTCAAAGTACCGGGAGGAGGCCATGCAAAA CAGGATTCAGATTGATCCAGTGAAGTTGTCCTCTGGCTACAAGGATGTGATACTGTGGTTTTCCTTCGGAGCAAGCTGCTTTATCTTACTG GCAATTGTGATGGGACTCGTGTTATATGCGTGAAAATGGAAATATGCGCTGTACAATCTGCATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2840	ATGAACACGCAGATACTTGTGTTTGCCCTTATTGCCATTATTCCCACTAACGCGGACAAAATATGCCTGGGCCATCACGCTGTCTCCAATG GGACGAAAGTGAACACATTGACCGAGCGAGGCGTGGAAGTGGTAAATGCGACCGAAACCGTAGAGAGAACCAACATTCCTAGAATTTGC TCCAAGGGCAAACGGACAGTAGATCTGGGGCAGTGCGGACTGTTGGGTACAATTACAGGACCTCCCCAGTGCGATCAGTTCCTGGAGTT TTCCGCTGATCTGATTATAGAAAGGCGAGAGGGTTCCGACGTGTGCTACCCTGGTAAGTTTGTTAAAGAGGAAGCTCTCCGTCAGATTCT CCGAGAGTCTGGCGGGATCGATAAAGAGGCGATGGGGTTTACCTACTCTGGAATAAGGACCAACGGAGCAACCTCCGCCTGCAGGAGA TCAGGGTCGTCCTTCTATGCTGAAATGAAATGGTTGCTGTCTAATACCGACAATGCAGCCTTCCCCCAGATGACCAAAAGCTACAAGAAT ACACGCAAATCTCCCGCCCTGATTGTGTGGGGCATACACCATAGTGTGAGTACTGCAGAACAGACCAAGCTTTACGGATCCGGCAATAA GCTGGTGACTGTAGGCTCTAGCAACTACCAACAGAGCTTTGTACCATCCCCCGGTGCACGCCCTCAGGTGAACGGACTCTCGGGGCGG ATAGATTTCCACTGGTTGATGTTGAATCCCAACGACACCGTGACGTTCAGTTTCAACGGTGCTTTCATCGCGCCTGATAGGGCCTCTTTCT TAAGAGGGAAATCAATGGGCATCCAGAGCGGGGGTTCAGGTAGACGCTAACTGTGAGGGTGACTGCTATCATAGCGGCGGCACTATTATA TCTAACCTGCCCTTCCAGAATATCGACTCCCGGGCCGTGGGAAAATGCCCAAGGTATGTGAAACAGAGGTCACTGCTACTGGCGACCGG GATGAAGAACGTTCCAGAAATACCTAAAGGTCGTGGGCTGTTCGGCGCAATTGCCGGTTTCATTGAAAACGGCTGGGAGGGCCTGATCG ACGGATGGTATGGGTCAGACACCAGAACGCCCAGGGAGAGGGCACAGCTGCCGACTATAAGTCCACACAAAGCGCCATTGATCAGAT CACAGGCAAGCTTAACAGACTGATCGAGAAGACAAACCAGCAATTTGAGTTGATAGACAACGAGTTCAACGAAGTGGAGAAGCAAATCG GGAACGTCATTAATTGGACCCGGGATTCTATCACCGAAGTATGGTCATACAACGCCGAGCTGCTCGTGGCTATGGAGAATCAGCATACCA TTGATCTTGCCGATTCCGAGATGGACAAGTCGTATGAAAGAGTCAAACGACAGTTGCGAGAAAACGCTGAAGAGGACGGAACAGGATGC TTTGAAATCTTTCACAAATGTGACGACGACTGTATGGCAAGCATTCGGAACAATACCTATGATCACTCAAAGTACCGAGAGGACGCCATG CAGAATAGGATTCAGATCGACCCAGTCAAGCTCTCCTCCGGGTACAAAGATGTAATCCTGTGGTTTTCGTTCGGCGCCAGTTGTTTCATC TTACTGGCCATAGTCATGGGCCTGGTCTTTATCTGCGTTAAGAACGGCAACATGCGCTGCACTATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2841	ATGAACACCCAGATACTTGTTTTTTGCCCTGATTGCCATCATCCCAACCAACGCCGACAAGATCTGCTTGGGGCACCATGCTGTTAGCAAC GGAACAAAAGTGAACACCCTGACCGAAAGAGGCGTCGAGGTAGTAAACGCCACTGAAACGGTCGAGCGAACCAATATACCTAGGATATG TTCAAAGGGAAAAAGGACGGTTGATTTAGGTCAGTGTGTGGACTTCTGGGGACAATCACCGGACCACCCCAATGTGACCAGTTCCTTGAGTT CAGCGCGGACCTGATTATTGAGAGACGTGAAGGATCTGACGTCTGCTACCCAGGAAAGTTTGTGAATGAGGAAGCACTCCGCCAGATTC TCAGGGAATCCGCGCGGCATTGATAAAGAGGCAATGGGATTTACCTACTCCGGCATTCGGACTAACGGTGCTACATCTGCATGTAGACGG TCCGGCTCTTCATTCTATGCAGAGATGAAATGGCTGCTTTCAAATACTGATAACGCCGCCTTTCCTCAGATGACCAAATCCTACAAGAACA CCCGGAAATCCCCCGCCCTCATTGTTTGGGGATCCACCACTCAGTGTCAACCGCCGAGCAGACCAAGCTCTACGGAAGTGGAAATAAG TTGGTAACTGTGGGAAGCTCTAACTACCAGCAAAGCTTTGTGCCAAGTCCTGGAGAGAGGCCCCAGGTGAACGGACTTAGCGGTAGGAT CGATTTTCATTGGCTTATGCTCAACCCCAACGATACGGTCACCTTTTCATTCAATGGGGCCTTTATTGCACCGGATAGAGCCAGCTTTCTG AGAGGGAAGTCTATGGGCATCCAGTCGGGCGTACAGGTGGATGCAAACTGTGAGGGGGATTGCTATCATAGTGGAGGCACCATCATAA GTAATCTGCCCTTCCAGAATATCGATAGCCGGGCCGTGGGCAAATGTCCAAGGTATGTGAAACAGAGGTCACTGCTCGCTCGCTACAGGC ATGAAAAACGTGCCTGAAATACCCAAAGGACGGGGGCTTTTCGGCGCCATCGCCGGCTTCATTGAGAACGGATGGGAAGGTTTGATCGA TGGATGGTATGGATTTAGGCACCAAAACGCCCCAGGGGGAAGGCACCGCCGCGGACTACAAGAGTACTCAGTCTGCAATCGACCAAATCA CTGGCAAACTGAATCGGCTGATTGAGAAGACCAATCAGCAATTCGAACTCATTGACAACGAGTTTAATGAAGTGGAGAAACAGATCGGTA ACGTGATAAATTGGACCAGAGACTCGATCACGGAAGTATGGAGCTACAATGCTGAACTGTTGGTCGCTATGGAGAATCAACACACTATCG ACCTGGCCGACAGCGAGATGGATAAACTCTATGAAAGAGTGAAACGGCAGCTCAGAGAGAACGCAGAGGAGCGGAACCGGCTGCTT TGAAATATTCCATAAATGCGACGACGATTGCATGGCCAGCATCAGGAACAATACCTATGATCATAGCAAGTACCGCGGAGGAAGCCATGCA GAATAGAATTCAGATCGACCCAGTGAAACTGTCTAGCGGATATAAGGACGTGATTCTGTGGTTCTCATTCGGCGCCTCATGCTTCATTCTA TTGGCGATTGTGATGGGACTTGTGTTCATCTGCGTCAAAAATGGCAATATGCGGTGCACGATATGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2842	ATGAACACCCAAATTCTGGTCTTTGCTCTGATCGCAATTATCCCAACCAATGCTGACAAAATTTGCCTCGGACATCATGCGGTATCCAACG GCACAAAGGTAAACACTCTCACTGAACGCGGAGTTGAGGTGGTAAATGCCACGGAAACAGTTGAGAGGACTAATATACCTAGAATTTGTA GCAAAGGAAAAAAAACGGTGGACCTCGGGCAGTGTGGCCTGCTTGGAACAATTACAGGCCGCCCCAGTGCGACCAGTTCCTAGAATTC TCCGCCGATCTGATCATCGAACGCCGCCGAAGGAAGCGATGTGTGTTATCCAGGCAAGTTTGTGAATGAGGAGGCCCTGAGACAAATCCT GCGGGAGAGCCGCCGGAATTGATAAAGAGGCAATGGGATTCACTTACAGTGGGATCCGGACAAACGGGGCCACGTCGGCCTGCAGACGT AGCGGGAGTTCCTTCTATGCCGAAATGAAGTGGCTGCTGTCCAACACTGACAACGCGGCCTTTCCACAAATGACTAAATCTTATAAAAAC ACACGGAAGTCACCAGCTCTCATCGTGTGGGGTATCCACCATTCGGTCTCTACAGCTGAGCAAACTAAGCTTTACGGAAGTGGCAACAAA CTGGTGACAGTGGGCAGCTCTAACTACCAGCAGTCATTTGTCCCGTCTCCCGGGGCCAGACCACAGGTTAATGGGCAGTCAGGCCGGA TCGATTTTCATTGGTTGATGTTAAACCCAAACGACACAGTCACATTTAGTTTTAATGGGCATTTATAGCCCTGATAGAGCTAGTTTCTTG AGGGGAAAGAGTATGGGGATCCAGTCAGGTGTACAGGTCGACGCCAACTGCGAGGGTGACTGTTACCATTCCGGGGGTACCATCATTA GTAACCTGCCTTTCCAGAACATCGACAGTAGAGCAGTGGGTAAATGCCCAAGGTACGTGAAACAACGCAGCTTACTGCTGGCTACAGGA ATGAAAAACGTGCCCGAGATTCCAAAAGGGAGGGGTTTGTTCGGTGCTATTGCCGGTTTTATTGAAAACGGATGGGAGGGTCTCATCGAT GGATGGTATGGGTTTAGGCACCAGAATGCACAAGGGGAAGGAACTGCCCGCCGATTATAAATCCACCCAGTCCGCTATTGACCAGATTAC CGGTAAACTGAATCGTTTGATTGAGAAAACAAACCAGCAGTTTGAACTAATCGACAACGAATTCAATGAAGTGGAGAAGCAGATTGGTAAC GTCATTAACTGGACCCGTGACAGTATCACTGAAGTTTGGTCTTATAATGCCGAACTCCTAGTAGCGATGGAGAACCAGCACACCATAGAC CTCGCCGATAGTGAAATGGACAAACTGTATGAGAGAGTGAAGCGGCAGTTACGCGAAAACGCTGAGGAGGACGGGACTGGCTGCTTCG AGATTTTTCACAAGTGCGACGAACGACTGCATGGCATCAATCCGCAACAATACATACGATCATTCCAAGTATCGTGAAGAAGGCCATGCAGA ACCGGATCCAAATAGACCCTGTCAAACTTAGCAGCGGGTATAAAGATGTTATTCTGTGGTTTAGCTTTGGAGCCAGTTGTTTCATACTGCT GGCCATTGTTATGGGCCTCGTCTTCATCTGCGTGAAAAACGGGAACATGCGA˜GTACGATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2843	ATGAACACTCAAATTTTAGTCTTCGCCCTCATTGCGATAATCCCTACTAACGCAGACAAGATCTGTCTGGGACACCACGCCGTGTCTAATG GCACCAAAGTGAACACATTGACGGAGAGAGCGAGTAGAGGTGGTGAACGCCACCGAGACCGTCGAGAGAACCAATATACCTAGGATCTG CAGCAAGGGAAAAGAAGACTGTCGATCTGGGCCAATGCGGGTTGCTCGGGAC˜ATTACTGGACCTCCGCAATGTGACCAGTTCCTTGAAT TCTCTGCTGACCTGATAATCGAACGACGAGAGGGATCCGATGTTTGCTATCCAGGGAAGTTTGTGAATGAGGAGGCTCTCAGACAAATCC TGCGGGAGTCCCGGCGGCATCGACAAAGAAGCCATGGGTTTCACCTATAGTGGAATTCGGACCAATGGCGCAACCAGCGCATGCCGGCG TAGTGGAAGCTCCTTTTATGCCGAGATGAAGTGGTTACTTTCCAATACCGATAACGCAGCATTCCCTCAGATGACCAAAAGTTACAAGAAC ACTCGTAAATCTCCCTGCTCTTATTGTATGGGGATACACCACAGTGTGAGCACCGCCGAGCAAACTAAGCTTTACGGATCAGGGAATAAG CTTGTAACAGTGGGAAGCTCTAACTACCAACAGTCCTTTGTTCCATCTCCCGGGGCGAGACCTCAAGTAAACGGGCAATCTGGTAGGATA GACTTTCATTGGCTGATGCTGAATCCGAATGATACAGTTACCTTCTCCTTTAATGGAGCCTTTATCGCCCCCGACAGAGCGAGTTTTCTGA GGGCGAAGTCTATGCGGATCCAGTCCGGCGTTCAGGTAGACGCGAATTGCGAAGGGGATTGCTATCACAGCGGCGGTACAATTATCTCT AACCTCCCTTTCCAGAATATCGACTCCCGAGCCGTTGGGAAGTGCCCTCGGTATGTTAAGCAACGGAGCCTGCTGCTGGCTACCGGGAT GAAAAACGTGCCTGAGATTCCTAAAGGCCCGGGCCTATTTGGGGCCATCGCTGTTTTATAGAGAACGGCTGGGAAGGTCTGATCGATG GCTGGTATGGTTTTAGACATCAGAATGCCCAGGGTGAAGGGACCGCCGCCGACTACAAGAGTACCCAATCTGCCATCGACCAGATCACC GGGAAGCTGAACCGTCTCATCGAGAAGACGAACCAGCAGTTCGAACTGATTGATAATGAGTTCAATGAAGTGGAGAAGCAGATGGTAA CGTTATCAACTGGACGCGCGACAGCATAACCGAGGTGTGGAGTTATAACGCTGAACTCTTGGTTGCCATGGAGAACCAGCATACCATCG ATCTCGCCGATAGTGAGATGGATAAGCTGTATGAACGGGTGAAAAGGCAACTGCGCGAGAACGCCGAGGAAGGACGGCACCGGCTGCTT TGAAATCTTTCACAAATGCGATGATGATTGTATGGCATCTATCAGGAACAATACCTACGATCACACAGCAAATACCGCGAGGAAGCCATGCA GAATAGAATCCAGATAGATCCCGTGAAGCTGTCCAGCGGGTATAAGGACGTCATCTTGTGGTTCAGTTTTGGGCTTCGTGTTTTATTCT GTTGGCTATCGTCATGGGCCTCGTGTTCATCTGCGTCAAGAACGGGAACATGCGCTGCACCATCTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2844	ATGAACACTCAAATTTTAGTCTTTGCATTAATTGCCATTATCCCAACCAACGCAGACAAAATCTGCCTGGGACATCACGCCGTGTCAAACG GCACCAAAGTGAACACGCTGACCGAACGTGGGGTCGAAGTGGTGAATGCCACAGAGACTGTCGAGCGCACAAATATCCCGCGCATTTGT TCCAAGGGTAAGCGGACGGTGGACTTAGGTCAGTGTGTGGACTTCTAGGTACTATTACCGGACCTCCACAGTGTGACCAGTTCCTGGAGTT CTCTGCCGATCTCATCATTGAGCGTCGCGAAGGAAGTGATGTCTGTTACCCAGGAAAATTCGTGAATGAAGAAGCCCTCCGGCAAATTCT GCGCGAGTCCGGGGGCATCGACAAGGAGGCGATGGGCTTCACCTATAGTGGCATCCGAACAAACGGCGCCACCTCCGCATGCCGGAG GAGTGGCAGCTCCTTCTACGCCGAGATGAAGTGGCTCTTATCCAACACAGACAATGCCGCTTTCCCGCAGATGACAAAGAGTTACAAAAA CACGCGGAAAAGTCCCGCTTTGATTGTGTGGGGTATCCACCACTCTGTCTCTACAGCGGAGCAGACAAAGTTATACGGGTCTGGCAGTA AACTGGTTACAGTGGGCTCAAGCAACTACCAACAGTCTTTCGTCCCCTGCCCCAAGACCCCAGGTAAATGGCCTCTCTGGAAGG ATTGACTTCCACTGGCTGATGCTCAACCCAAATGATACCGTGACATTTAGCTTCAACGGTGCATTTATCGCCCCAGACAGAGCTAGTTTCC TTCGGGGCAAATCAATGGGGATTCAGAGCGGAGTGCAGGTGGATGCTAATTGTGAAGGCGATTGCTACCACTCCGGCGGTACTATTATC TCAAACCTGCCTTTTCAGAATATCGATAGTAGAGCCGTGGGCAAGTGCCCGCGTTATGTGAAACAGCGCTCTCTTTTGCTCGCTACAGGA ATGAAAAACGTACCAGAGATCCCCAAGGGGCGTGGCCTATTTGGAGCTATCGGTGGTTTTATTGAAAACGGGTGGGAGGGCCTGATAGA CGGTTGGTATGGCTTCAGACACCAGAATGCTCAGGGAGAGGGCACCGCCGCCGACTATAAATCAACACAGAGTGCGATCGACCAGATTA CCGGAAAACTGAATCGCCTCATAGAGAAGACAAACCAACAGTTCGAGCTCATCGACAACGAATTTAACGAGGTAGAAAAACAGATCGGTA ACGTTATCAACTGGACACGGGACAGCATCACGGAGGTGTGGTCTTACAATGCCGAGCTTTTGGTGGCTATGGAGAACCAGCACACAATC GACCTCGCCGATAGTGAAATGGATAAACTTTATGAGAGGGTAAAGCGTCAGCTGCGAGAGAATGCTGAAGAAGATGGGACAGGTTGCTT TGAGATCTTCCACAAGTGCGATGACGATTGCATGGCCTCTATTAGAAATAACACTTACGATCATAGCAAATATAGAGAGGAAGCTATGCAG AATAGGATCCAGATAGATCCCGTAAAGCTGTCCTCTGGATATAAGGACGTGATCCTCTGGTTCAGTTTTGGGGCATCATGTTTTATTCTGC TCGCAATCGTTATGGGTTTAGTTTTCATTTGTGTCAAATCACGGAATATGAGATGTACAATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2845	ATGAATACACAGATCCTGGTGTTCGCACTGATCGCTATCATCCCCACAAACGCTGACAAAATCTGTCTGGGCACCACGCGGTGAGTAAC GGCACTAAGGTGAATACACTGACCGAACGCCGGGGTAGAGGTGGTGAATGCTACAGAGACCGTTGAGCGCACTAACATCCCCAGAATATG TAGTAAAGGTAAGAAAACCGTCGACCTGGGCCAGTGTGGCCTGCTGGGCACAATTACCGGTCCACCCCAATGCGATCAGTTCTTAGAGT TCTCAGCAGATCTAATTATCGACGCCGCGAGGGGAGCGACGTCTGCTACCCTGGGAAATTTGTCAACGAAGAGGCCCTTCGGCAAATC CTTCGAGAGAGTGGCGGCATTGACAAGGAGGCAATGGGGTTTACTTATAGCGGAATCCGGACCAATGGAGCAACCTCTGCATGCAGGA GAAGCGGCAGTTCCTTCTATGCCGAAATGAAATGGCTGCTGAGCAATACAGATAACGCTGCCTTCCCACAGATGACCAAGAGTTACAAGA ATACTAGGAAGTCCCCAGCCCTGATTGTTTGGGGAATTCACCACTCCGTTAGTACCGCCGAGCAAACTAAACTGTACGGATCTGGAAACA AATTAGTTACAGTCGGAAGTTCTAACTACCAACAGTCATTTGTTCCATCTCCTGGTGCTAGGCCGCAGGTCAATGGCCAATCCGGCCGAA TAGACTTTCACTGGCTTATGCTTAATCCGAACGACACAGTGACCTTTAGCTTCAATGGCGCCTTCATTGCCCCTGACAGAGCAAGCTTCCT GAGAGGCAAGAGCATGGGGATTCAGAGCGGTGTCCAGGTGGACCGCTAACTGTGAGGGTGACTGCTATCACTCCGGTGGCACTATAATC TCTAACCTACCCTTTCAGAATATCGACAGTCGGGCTGTGGCAAGTGCCCCCGGTATGTTAAACAGCGTAGCCTTTTGCTGGCTACTGGG ATGAAAAACGTGCCCGAGATACCCAAGGGGCGCGGACTCTTCGGGGCCATCGCGGGCTTCATCGAGAATGGTTGGGAAGGTCTCATCG ATGGCTGGTACGGATTCAGGCATCAGAACGCACAGGGTGAGGGACAGCGGCTGACTACAAGTCGACCCAGAGTGCTATCGATCAGAT AACTGGCAAGCTCAACCGGCTCATAGAGAAAACGAACCAGCAATTCGAGCTGATTGACAACGAATTCAACGAGGTTGAGAAGCAGATTG GCAATGTGATCAACTGGACGAGCAGACATTACCGAGGTGTGGAGTTACAACGCCGAGCTACTGGTAGCAATGGAGAATCAACATACC ATTGATTTGGCGGATTCTGAGATGGACAAGTTGTACGAGAGGGTCAAGCGGCAGCTGCGCGAAAACGCAGAAGAGGACGGCACTGGCT GCTTCGAGATTTTTCACAAATGTGATGACGATTGCATGGCGTCTATCAGGAATAACACATATGACCACAGCAAATACCGGGAGGAAGCGA TGCAGAACCGGATCCAAATTGACCAGTCAAGCTGTCAAGCGGCTACAAGGATGTGATCTTATGGTTCAGTTTCGGAGCAAGTTGCTTTA TTCTCCTTGCTATCGTTATGGGACTTGTCTTCATCTGTGTTAAAAACGGTAATATGCGGTGTACCATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2846	ATGAACACCCAGATCCTGGTATTTGCTCTGATTGCCATCATTCCTACCAATGCCGACAAAATCTGTCTGGGCCACCACGCAGTTTCGAATG GCACTAAAGTGAATACCCTGACCGAGCGCGGCGTCGAGGTCGTGAATGCCACAGAGACCGTCGAACGCACAAATATACCTCGGATTTGC AGCAAGGGAAAGCGGACAGTGGACCTCGGGCAGTGCTCGGGACTATAACTGGACCGCCTCAGTGCGATCAATTTTTGGAGT TTTCCGCTGATTTGATCATCGAGAGAAGGAAGCGACGTCTGCTATCCAGGAAAGTTCGTGAACGAGGAGCGCCTGAGGCAAATC TTGAGGGAGAGTGGTGGCATCGACAAAGAGGCTATGGGTTTCACCTACTCAGGTATACGCACCAACGGCGCAACAAGTGCTTGTCGGCG GTCAGGATCTTCCTTCTACGCCGAGATGAAATGGTTGCTAAGTAATACAGACAATGCTGCGTTCCCTCAGATGACAAAGTCCTATAAGAAT ACACGGAAGTCACCTGCCCTGATCGTGTGGGGCATTCACCACACGCGTTAGCACAGCTGAGCAGACCAAGTTATATGGCAGTGGTAACAA ACTCGTAACGGTGCGGAGTTCCAATTACCAACAGAGCTTCGTGCCGTCTCCTGGAGCTCGTCCACAGGTCAACGGACTGAGTGGGCGC TTCGAATCTCCCATTCCAGAACATCGACTCTAGGGCTGTGGGCAAGTGCCCTCGATATGTGAAACAGCGGAGCTTGCTGCTTGCTACCG GGATGAAGAACGTGCCGGAGATCCCCAAGGGCCGTGGCTTATTTGGCGCTATCGCGGGTTTCATCGAAAATGGTTGGGAGGGCCTAATA AACGGCTGGTACGGTTTCCGCCACCAGAACGCGCAGGGCGAGGGCGACCGGCGCCGCGATTACAAATCCACACAGAGCGCAATCGATCAAA TAACTGGAAAGCTGAATCGCTTGATCGAAAAGACCAATCAGCAGTTTGAGCTAATCGATAACGAATTTAATGAAGTGGAAAAGCAAATCGGG AAACGTGATCAATTGCACCAGAGACTCGATAACAGAGGTGTGGAGTTACAATGCAGAGCTGCTGGTAGCCATGGAAAATCAGCACACGA TTGACCTGGCAGATTCAGAGATGGATAAGCTGTACGAGAGGGTGAAGAGGCAGCTCCGTGAGAATGCTGAAGAGGATGGAACCGGGTG TTTCGAGATTTTTCACAAATGCGACGATTGTATGGCCTCCATCAGGAATAACACATACGACCATAGCAAATACAGAGAGGAGGGCAAT GCAAAATCGGATTCAAATTGATCCCGTGAAACTTTCTAGCGGGTACAAGGATGTTATCTTGTGGTTCAGTTTCGGCGCCTCCTGTTTTATT CTGCTGGCAATTGTGATGGGTCTGGTGTTTATTTGTGTAAAGAACGGGAATATGAGGTGCACAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2847	ATGAACACTCAGATACTGGTTTTTCGCTTTGATCGCTATCATACCCACACAAATGCCGACACAAGATATGCTTGGGTCATCACGCCGTGTCCAACG GCACTAAAGTGAACACATTGACCGAGAGAGGAGTAGAAGTGGTCAATGCTACAGAGACCGTGGAACGCACTAATATCCCGCGGATATGT AGTAAGGGCAAAAAAACCGTGGACCTCGGCCAGTGTGGCCTGCTGGGCACCATTACCGGCCCGCCACAATGTGATCAGTTCTTGGAATT CTCTGCAGACCTTATCATAGAGCGCCGGGAAGGATCTGACGTGTGTTATCCAGGCAAGTTCGTTAACGAGGAGGCCCTTAGCGCAGATTT TGCGTGAGAGCGGAGGCATCGATAAAGAAGCTATGGGTTTACATATAGCGGTATTCGAACAAACGGAGCCACCTCTGCATGCAGGCGG TCCGGGTCATCATTCTACGCGGAGATGAAGTGGCTGCTCTCAAATACGGACAATGCGGCATTTCCCCAGATGACAAAAGTTACAAAAAC ACAAGGAAATCCCCAGCCCTGATCGTGTGGGGAATTCACCACAGTGTTAGCACCGCTGAGCAGACCAAACTCTATGGCTCTGGCAACAA ATTAGTTACCGTCGGATCAAGTAATTACCAGCAGTCTTTTGTCCCGAGCCCAGGGGCTAGACCTCAGGTGAATGGACAGTCCGGAAGGA TCGACTTCCACTGGCTGATGCTTAATCCAAACGATACAGTTACTTTCTCATTCAATGGCGCCTTCATCGCTCCCGATAGAGCTTCTTTCTT GCGAGGCAAATCAATGGGCATCCAGAGCGGGGTGCAGGTCGATGCAAATTGTGAGGGTGATTGCTATCATTCAGGCGGTACCATCATAT CCAATCTCCCTTTCCAAAACATTGATTCCCGGGCAGTGGGAAAATGTCCCCGCTATGTGAAACAGAGGTCACTTCTATTAGCCACAGGGA TGAAAAATGTGCCAGAGATTCCCAAAGGAAGGGGCCTCTTTGGCGCAATCGCAGTTTCATCGAGAATGGTTGGGAGGGTCTGATCGAC GGCTGGTACGGCTTCAGGCACCAGAACGCTCAGGGGGAGGGCACCGCAGCGGATTATAAAAGCACCCAAAGTGCTATTGATCAGATCA CAGGCAAACTGAACCGGCTTATAGAGAAGACAAATCAGCAGTTTGAGTTAATAGACAACGAATTCAACGAGGTGGAGAAACAGATTGGAA ACGTTATAAACTGGACTCGGGACTCTATTACCGAGGTTTGGTCTTACAACGCCGAACTCCTAGTGGCCATGGAGAATCAGCATACCATCG ATCTCGCTGATTCTGAAATGGACAAGCTGTACGAGAGGGTTAAACGGCAGCTGCGAGAGAATGCAGAGGAAGACGGAACAGGCTGCTTC GAGATCTTCCACAAATGCGATGACGATTGTATGGCTTCCATCCGCAATAACACCTACGACCACAGCAAGTATCGGGAAGAAGGCCATGCAG AACCGCATTCAAATTGACCCGGTAAAACTTTCCAGCGGATACAAGGACGTCATCCTGTGGTTTAGTTTCGGTGCGAGCTGCTTCATCTTA CTAGCTATCGTGATGGGCCTCGTGTTCATCTGCGTTAAAAACGGCAACATGCGTTGTACCATATGTATT

SEQ ID NO.	Sequenza di acido nucleico
2848	ATGAACACAGATCCTCGTTTTCGCTCTGATAGCAATTATCCCAACAAACGCAGACAAAATCTGTCTGGGGCACCATGCCGTGAGTAAC GGCACTAAGGTCAATACACTGACAGAGCGCGGCGTGGAGGTTGTCAATGCTACAGAAACTGTTGAGAGAACGAACATACCTCGGATTTG CAGCAAGGGCAAAAAGACCGTCGACCTGGGCCAGTGTGGCTTGCTCGGAACCATCACCGGCCCACCCCAATGCGACCAGTTCCTTGAA TTCAGTGCGGACCTCATCATCGAAAGGAGAGGAAGTGATGTGTGCTATCCCGGGAAGTTCGTGAACGAAGAGGCCCTGAGGCAGAT TCTTCGGGAGTCTGGTGGTATCGAAAAGGAGGCCATGGGATTCACCTACAGCGCGCATTCGGCGCCAACGGTGCAACTTCTGCATGTCGCC GCTCTGGGTCTTCTTTTTACGCCGAAATGAAGTGGCTGCTTTCTAATACAGATAATGCGCGCATTCCCCACAAATGACCAAGTCATATAAAAA CACGAGAAAGAGTCCCGCCCTTATAGTGTGGGGATTCACCACTCCGTCTCCACAGCTGAACAGACAAAATTATACGGCAGTGGGAATA AGCTTGTTACTGTCGGCTCCAGCAATTATCAGCAAAGCTTCGTGCCATCCCCAGGGGCCAGACCACAGGTAAACGGGCTCAGCGGACGC ATCGATTTTCATTGGTTGATGCTAAACCCAAACGACACCGTAACATTTAGTTTCAACGGTGCCTTCATAGCGCCCGATCGGGCATCGTTCC TGCGGGGAAAATCCATGGGCATTCAAGGCGGCGTGCAGGTGGACGCGAATTGCGAAGGTGACTGTTATCATAGCGGCGGGACCATTAT AAGCAATCTGCCTTTTCAGAACATCGACTCACGGGCCGTGGGCAAATGCCCTCGTTACGTGAAACAACGAAGCCTGCTGCTGGCGACCG GAATGAAAAATGTCCCGGAAATACCTAAAGGAAGGGGGCTCTTCGGGGCTATAGCCGGTTTTATCGAGAACGGCTGGGAGGGCCTGATC GATGGATGGTACGGGTTCAGGCACCAGAACGCCCAAGGGGAAGGCACGGCCGCGGACTATAAGTCAACTCAGTCTGCCATTGACCAGA TTACTGGGAAGCTCAATCGCCTGATCGAAAAGACCAACCAGCAATTTGAGTTGATCGACAATGAGTTTAATGGAAAAACAGATCG GGAATGTGATCAACTGGACCAGGGACTCTATTACCGAGGTTTGGTCCTACAACGCAGAGTTACTCGTAGCCATGGAAAACCAACACACCA TTGACCTCGCCGATAGTGAGATGGATAAACTGTATGAACGCGTCAAGCGGCAGTTGCGAGAAAATGCAGAAGAGGATGGCACAGGGTGT TTTGAGATTTTCCATAAGTGCGACGATGACTGTATGGCCTCCATCCGCAATAACCTACGATCACTCAAAGTACCGGGAAGAGGCCATG CAGAATCGAATTCAGATTGACCCAGTTAAACTATCTTCAGGGTACAAAGATGTGATTCTATGGTTTAGTTTTGGTGCATCGTGCTTTATCCT CCTGGCTATCGTTATGGGCCTCGTCTTTATCTGTGTCAAGAACGGGAATATGAGATGTACTATTTGCATC

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2849	ATGAACACCCAGATTCTAGTATTCGCCCTGATTGCAATAATCCCAACAAATGCAGATAAAATCTGTCTGGGACACCACGCGGTCTCAAAC GGGACTAAGGTTAATACCCTCACGGAAAGAGGAGTGGAGGTGGTGAACGCTACGGAGACCGTCGAGCGTACAAACATACCCGGATCT GCTCAAAAGGCAAGAGGACCGTGGATTTAGGACAGTGCGGATTGTTGGGAACAATCACCGGCCCTCCTCAGTGTGACCAATTTCTCGAG TTTAGTGCCGATCTGATTATCGAACGGCGCGGAGGGATCAGACGTGTGCTACCCGGGGAAATTCGTAAACGAGGAGGGCTCTGCGCCAGAT TCTCCGGGAGTCCGGGGGGGATTGATAAGGAGGCCATGGGGTTCACATATTCTGGCATTCGGACCAATGGCGCCACTTCTGCCTGCAGA CGCTCCGGCTCGAGCTTTTATGCCGAAATGAAATGGCTCCTTAGCAACACCGATAATGCCGCATTCCCCCCAAATGACCAAAAGTTACAAG AATACACGTAAGTCGCCTGCACTTATCGTGTGGGCATACACCACTCAGTGAGCACAGCTGAGCAAACCAAGTTATATGGTTCGGGGAG TAAGCTGGTGACCGTAGGGTCTTCAAATTATCAGCAGAGTTTCGTCCCTAGTCCAGGCGCCAGGCCTCAGGTTAACGGTCTGTCTGGAC GCATCGATTTTCATTGGTTGATGCTTAATCCGAACGATACAGTGACTTTCTCTTTTAATGGCGCCTTCATCGCCCCCGATCGCGCTAGCTT CCTCCGGGGTAAAAGCATGGGTATCCAGAGCGGCGTGCAGGTTGACGCCAACTGCGAGGGGAGACTGCTATCACAGCGGCGGTACCATC ATCTCCAACCTTCCCTTTCAGAACATAGACTCTCGGGCTGTCGGAAAATGTCCTCGATACGTGAAGCAGAGATCACTGCTGCTTGCTACT GGAATGAAGAACGTCCCCGAGATACCGAAAGGGAGAGGTCTCTTTGGTGCTATAGCAGGGTTTATTGAAAACGGGTGGGAAGGCTTGAT CGACGGTTGGTATGGCTTCAGACATCAGAATGCTCAGGGCGAGGGCACAGCAGCAGATTATAAGTCGACACAGAGTGCAATCGATCAGA TTACTGGCAAACTGAATAGGCTTATTGAGAAGACCAATCAGCAATTTGAGCTTATCGACAACGAGTTTAACGAAGTTGAAAAGCAAATTGG GAACGTCATCAACTGGACCCGGGACTCAATCACCGAAGTATGGAGCTATAATGCCGAGTTGCTGGTTGCAATGGAGAACCAGCACACTA TCGATCTTGCGGATTCCGAAATGGATAAACTTTACGAAAGAGTGAAGAGACAGCTCAGAGAAAACGCGCGAGGAGGACGGTACGGGTTGT TTTGAGATATTCCACAAGTGCGATGATTGCATGGCTAGCATCAGGAACAACACCTATGATCACAGCAAATACCGTGAGGAGGCAATG CAGAACAGGATTCAGATTGACCCTGTGAAACTGTCTAGCGGCTACAAGGACGTGATCTTGTGGTTTTCTTTCGGTGCCAGTTGTTTTATCT TACTCGCCATTGTCATGGGGCTCGTTTTCATTTGTGTAAAAAATGGAAACATGAGGTGTACGATTTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2850	ATGAACACACAAATTCTCTCGTGTTTGCCCTAATCGCCATTATCCCGACAAACGCAGATAAGATCTGTCTGGGCACCACGCAGTCAGCAAT GGCACCAAAGTGAATACTCTTACCGAGAGAGGAGTGGAAGTCGTGAATGCCACGGAGACCGTCGAGAGGACTAATATCCCAAGGATTTG TAGCAAAGGTAAGAAAACGGTTGACCTGGGCCAATGCGGCCTGCTGGGCACAATCACAGGTCCGCCCCAGTGCGATCAGTTCCTGGAG TTCTCAGCGGATCTGATAATTGAGCGGCGAGAGGGGTCAGATGTATGTTACCCAGGTAAATTCGTCAACGAGGAGGCACTGCGGCAGAT CCTGCGAGAAAGTGGGATAGAAAAGGAAGCAATGGGTTTTACCTACTCCGGAATCCGAGCCAATGGGGCCACTTCCGCGTGTAGG AGAAGCGGAAGTTCTTTCTACGCTGAAATGAAGTGGCTCCTGAGTAACACAGATAACGCGGCTTTCCCTCAAATGACCAAGTCATACAAG AATACGCGCAAGTCACCAGCCCTCATTGTGTGGGAATCCATCATTCCGTCTCGGACTGCGGAACAGACAAAACTCTACGGATCCGGAAA CAAACTGGTGACCGTAGGTTCCAGTAATTACCAGCAAAGTTTTGTGCCCTCACCCGGAGCCAGGCCTCAGGTCAATGGGTTAAGTGGGC GCATTGACTTCCACTCGTTGATGCTGAATCCCAACGACACAGTGACTTTCTCTTTCAACGGGGCTTTCATAGCTCCCGATCGGGCCTCTTT CCTGCGGGTAAGTCTATGGGTATTCAAAGCGGCGTCCAGGTGGATGCTAATTGTGAAGGGGACTGTTACCACTCGGGAGGCACAATCA TTAGTAACCTGCCTTTCCAGAATATTGACTCGAGGGCAGTAGGCAAGTGTCCCCGCTATGTGAAGCAAAGGTCACTCCTTTGGCAACCG GGATGAAGAATGTGCCCGAGATACCAAAGGGTAGAGGGCTATTTGGCGCAATTGCAGGATTTATCGAGAATGGTTGGGAGGGCCTGATT GACGGCTGGTACGGGTTTCGGCATCAGAATGCCCAGGGGGAAGGGACTGCCGCAGACTACAAAAGCACACAGTCGGCTATTGATCAGA TAACGGGAAAACTGAACAGGTTGATTGAGAAGACCAACCAACAATTCGAACTTATAGACAACGAGTTCAACGAGGTCGAGAAGCAAATCG GCAACGTGATCAATTCGACCCGGGACTCGATCACCGAGGTGTGGTCATATAACGCTGAGCTGTTAGTAGCTATGGAGAATCAGCACACG ATCGACCTTGCAGATAGCGAGATGGATAAACTGTATGAACGGGTCAAGCGGCAGCTGAGAGAAAATGCCGAAGAGGACGGTACGGGCT GCTTTGAAATTTTTCATAAGTGCGACGATGACTGCATGGCCAGTATTAGAAACAACACCTACGACCATTCCAAATATCGGGAAGAAGCGAT GCAGAACAGAATTCAGATAGATCCAGTTAAGCTGTCCTCTGGATATAAGGATGTGATACTGTGGTTTTCTTTTGGCGCCAGTTGCTTTATA TTGCTCGCAATTGTGATGGGCTGGTGTTCATTTGCGTCAAAAACGGGAACATGAGGTGCACCATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2851	ATGAATACACAGATTCTGTGTATTTGCTCTGATCGCGATTATTCCGACGAATGCAGATAAGATCTGTTTAGGCCACCACGCTGTTAGCAATG GGACGAAAGTGAATACTCTAACAGAACGTGGGGTGGAAGTCGTCAATGCTACGGAGACTGTCGAGCGCACCAATATTCCAAGGATCTGT TCCAAGGGTAAGAAGACTGTGGACCTCGGGCAATGCGGTCTCCTAGGCACCATTACCGGTCCTCCTCAGTGCGATCAGTTTCTGGAATT CTCTGCAGATCTTATTATAGAGCGGCGCGAGGGCAGTGATGTGTGCTACCCAGGTAAGTTCGTCAATGAAGAGGCTCTGCGTCAAATTTT GAGAGAGTCAGGCGCGCATTGATAAGGAGGCGCATGGCTTTACCTACAGCGGAATCCCGCAACCAACGGAGCAACCAGCGCCTGTCGGAGA AGCGGTAGCAGTTTCTACGCCGAAATGAAATGGCTACTTTCTAATACCGATAATGCTGCGTTTCCACAGATGACAAAGAGTTACAAGAACA CCCGTAAGAGTCCTGCCCTCATCGTGTGGGGGATCCATCACAGTGTGTCAACCGCAGAGCAAACCAAATTGTATGGTTCCGGAAACAAA CTGGTTACCGTGGGCTCTAGCAATTACCAGCAGAGTTTCGTTCCGTCCCCCGGCGCTAGACCCCAAGTCAATGGTCAGAGCGGAAGAAT CGATTTCCACTGGCTGATGCTGAATCCCAATGACACTGTGACTTTCTCCTTTAATGGGGCCTTCATTGCTCCCGACCGCGCTTCATTCTTG CGCCGCAAATCCATGGCAATACAGAGCCGGTGTGCAGGTGGATGCCAATTGCGAAGGTGATTGTTATCACAGTGGAGGAACTATTATCTC TAATCTGCCGTTTCAGAACATTGACAGCAGAGCCGCGTTGGCAAGTGTCCACGATACGTCAAACAGCGGTCCCTCCTGTTGGCCACAGGCA TGAAGAACGTGCCTGAGATCCCTAAGGGGCGCGGACTGTTTGGAGCCATCGCGGGATTTATTGAGAACGGATGGGAAGGCTTGATAGAT GGCTGGTATGGCTTTAGGCACCACGAATGCACAGGGGCAGCGGCACCGCGCTGATTACAAGAGCACGCAGTCTGCGATCGACCAAATAA CCGGTAAGTTAAATCGCCTGATCGAGAAAACCAATCAGCAGTTCGAGCTGATCGACAACGAGTTTAATGAAGTCGAAAAACAGATCGGCA ACGTGATCAATTGGACCAGGGACAGTATCACAGAGGTATGGAGCTACAATGCCGAGCTGCTGGTGGCCATGGAGAATCAGCATACAATT GACCTAGCTGATAGTGAGATGGGCAAACTGTATGAGAGGGTCAAGAGACAATTGCGGGAAAACGCGGAGGAAGATGGGACAGGCTGCT TCGAGATCTTCCATAAGTGCGACGACTGTATGGCCAGTATCAGAAATAACACGTACGACCACTCGAAGTATAGGGAGGAGGCAATG CAGAACAGAATTCAGATCGACCCTGTGAAGCTTAGTAGTGGATACAAGGACGTGATTCTCTGGTTCTCTTTCGGGGCCTCATGTTTCATTT TGCTCGCTATAGTTATGGGCCTAGTGTTCATCTGCGTGAAGAATGGGAATATGCGGTGCACGATTTGCATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2852	ATGAATACTCAGATCTTAGTGTTCGCATTGATCGCCATCATCCCAACCAACGCCGATAAAATTTGCCTTGGACATCATGCTGTGAGCAACG GCACAAAGGTCAATACACTTACAGAAAGAGGGGTGGAAGTGGTGAACGCCACAGAAACCGTGGAACGGACGAACATTCCCCGAATTTGT TCTAAGGGAAAGAGAACAGTAGACCTCGGACAGTGTGGCCTCCTGGGCACCCATAACCGGCCCTCCACAGTGTGACCAGTTCTGGAATT CAGCGCGGATCTGATTATTGAGAGGCGGGAGGGCTCCGATGTCTGCTACCCTGGCAAGTTTGTGAACGAGGAGGCCCTGAGGCAGATC CTACGGGAGTCCGGAGGGATCGATAAAGAGGCAATGGGTTTTACCTACAGCCGCATCCGGACCAATGGAGCCACTTCTGCATGCCGGC GCTCCGGGAGTTCATTTTATGCTGAGATGAAATGGTTACTTTCTAACACCGATAACGCAGCCTTCCCACACGATCACCAAGAGCTATAAAAA TACGCGAAAATCTCCAGCCCTCATAGTCTGGGGTATCCATCACTCTGTTAGCACAGCGGAGCAGACCAAGTTATACGGGTCAGGAAATAA ACTTGTGACAGTGGGCTCCTCTAACTATCAGCAGTCTTTTGTGCCCAGGCCCTGGGGCCAGGCCCCAAGTCAATGGCCTTTCTGGTAGGA TTGATTTCCACTGGTTGATGTTGAACCCCAATGATACCGTCACATTCAGCTTTTAATGGTGCTTTTATCGCCCCTGACCGAGCTAGTTTCCT AAGAGGAAAATCTATGGGTATCCAGTCTGGCGTTCAGGTGGACGCCAATTGTGAGGGCGACTGTTATCATTCCGGGGGAACCATCATCT CTAACCTTCCCTTCCAAAATATCGACTCCAGGGCAGTTGGCAAATGTCCACGCTATGTGAAGCAGAGATCACTCCTGTTAGCGACTGGGA TGAAAAACGTGCCAGAAATCCCTAAAGGTCGTGGATTGTTCGGAGCGATCGCGGGATTTATCGAAAACGGGTGGGAGGGTCTTATAGAC GGCTGGTATGGGTTTAGACACCAGAACGCACAGGGTGAGGGCACCGCGGCAGACTACAAATCTACACAATCTGCAATAGATCAGATCAC CGGCAAGCTGAACCGACTTATTGAAAAGACCAATCAGCAGTTTGAGTTAATCGATAACGAATTCAACGAGGTGGAGAAGCAAATAGGGAA TGTTATTAACTGGACACGGGACTCAATCACAGAAGTATGGTCGTATAATGCAGAGCTGCTAGTCGCAATGGAGAATCAGCATACGATTGA CCTCGCCGACAGTGAGATGGACAAGTTGTATGAAAGGGTCAAAAGACAGCTCCGGGAAAATGCCGAGGAAGACGGCACAGGCTGTTTT GAAATATTCCATAAGTGCGACGATGACTGCATGGCAAGTATTAGGAACAACACGTATGACCATTCAAAGTACAGGGAGGAGCCATGCAG AACCGCATCCAGATTGATCCAGTTAAGCTTAGCAGTGGCTATAAGGATGTCATCTGTGGTTTAGTTTTTGGCGCCTCCTGTTTTATCCTGC TGGCCATCGTTATGGGGCTTGTGTTCATATGCGTGAAGAATGGCAATATGCGCTGCACCATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2853	ATGAATACACAAATTCTGGTATTCGCCCTCATAGCTATAATTCCCACCAACGCCGATAAGATTTGTTTAGGTCACCACGCCGTGTCAAACG GGACAAAGGTTAATACACTTACAGAGCGGGGGCGTGGAAGTCGTGAACGCTACTGAGACAGTCGAAAGGACTAACATCCCCAGAATTTGT AGCAAAGGAAAAAAGACCGTGGATTTGGGGCAGTGTGGCTTACTAGGGACAATCACCGGTCCACACCCCAGTGTGACCAGTTCCTCGAGTT CTCAGCGGACCTAATTATCGAGCGTCGAGAGGGCAGCGATGTGTGCTATCCCGGGAAATTCGTGAATGAGGAGGCCTTACGGCAGATCT TGCGTGAAAGTGGGGGCATAGATAAAGAGGCGATGGGGTTCACGTATTCTGGCATTCGACCAACGGAGCTACCTCAGCCTGTCGTCGT TCAGGATCCAGCTTCTACGCAGAAATGAAGTGGTTACTCTCTAACACAGATAACGCAGCTTCCCGCAAATGACGAAGAGCTACAAAAAC ACTCGCAAATCCCCCGCCCTCATCGTCTGGGGTATTCACCACAGCGGTTAGCACCGCTGAACAGACTAAATTATACGGCAGCGGAAATAAG CTTGTCACCGTCGGGAGCTCCAACTATCAGCAGAGCTTTGTCCCATCTCCTGGGGCCCGGCCCCAGGTGAACGGACAGTCCGGGCGCA TTGATTTCCACTGGTTGATGCTGAACCCAAACGACACTGTTACGTTCAGCTTTAACGGCGCCTTCATTGCACCTGACCGAGCTAGCTTTTTT GCGGGGCAAATCGATGGGAATACAGTCAGGGGTCCAGGTAGACGCCAACTGCGAAGGCGATTGCTACCATTCCGGCGGGACAATCATC TCCAACCTGCCCTTCCAGAACATTGACAGCCGGGCAGTCGGGAAGTGTCCCAGATATGTGAAACAACGCTCTCTGCTGCTTGCGACCGG CATGAAAAACGTTCCAGAAATCCCGAAGGGCGAGGTTTGTTTGGCGCTATAGCTGGGTTCATTGAGAACGGCTGGGAAGGCCTCATCG ACGGCTGGTATGGATTTAGGCATCAAAATGCACAGGGCGAAGGTACCGCTGCCGACTATAAGTCAACTCAGAGCGCAATAGACCAAATT ACCGGAAAGCTCAATCGCCTGATTGAGAAAACCAATCAGCAGTTTGAACTGATAGACAACGAATTTAATGAAGTGGAGAAGCAGATCGGG AATGTGATCAACTGGACTCGTGACAGTATTACTGAGGTATGGAGTTATAACGCTGAACTTCTGGTGGCTATGGAGAACCAACACACTATT GATCTCGCCGACTCCGAGATGGATAAACTCTACGAAAGAGTTAAAAGACAGCTTAGGGAAAACGCCGAGGAGGATGGTACTGGATGTTT CGAGATCTTTCATAAATGCGATGACGACTGCATGGCTAGCATCCGGAATAACACCTACGATCATTCTAAGTATCGTGAAGAAGCCATGCA AAATCGTATTCAGATTGATCCGGTAAAATTGAGCTCAGGCTATAAGGACGTCATACTGTGGTTCTCCTTCGGCGCTTCCTGCTTTATCTTA TTAGCAATTGTGATGGATTAGTTTTCATCTGCGTGAAAAACGGAAACATGCGCTGTACCATTTGCATA

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2854	ATGAACACTCAAATTTTAGTGTTCGCCTTGATAGCAATCATCCCCACAAATGCGGATAAAATCTGTCTCGGCCATCATGCCGTGTCTAATG GTACCAAAGTAAATACCCTTACCGAGCGTGGGGTTGAGGTCGTTAATGCCACCGAGACTGTGGAGAGAACCAATATCCCCCCGCATCTGT TCCAAGGGAAAAAAGACCGTTGACCTCGGTCAGTGTGGTCTGCTTGGTACAATAACCGGACCGCCCCAGTGCGACCAATTCCTGGAATT CAGTGCGGATCTCATAATCGAAAGGCGAGAAGGCTCCGATGTTTGTTACCCCGGAAAGTTCGTCAACGAGGAGGGCCCTGCGACAGATAT TGCGGGAAAGCGGAGGCATCGATAAGGAGGCTATGGCTTCACATATAGTGGAATCCGCACGAATGGGGCCACCTCAGCCTGTCGCGCG CAGCGGGTCTAGTTTTTATGCTGAAATGAAGTGGCTTCTTTCGAATACTGACAATGCTGCCTTCCCCCCAGATGACCAAGAGTTATAAAAAT ACCAGAAAGAGCCCTGCCCTGATAGTCTGGGGAATCCATCACACAGCGTAAGCACTGCCGAACAGACTAAGCTCTATGGCAGCGGGAATAA GCTCGTGACCGTGGGCAGTTCCAATTACCAGCAGAGCTTTGTGCCATCCCCCGGGGGCCCGTCCCACAGGTTAACGGGCAATCTGGCCGA ATTGATTTTCATTGGCTGATGCTGAATCCAAACGATACTGTGACTTTCTCTTTTAACGGAGCCTTCATTGCACCCGATCGGGCAAGCTTCC TGCGGGGAAAATCTATGGGAATTCAGAGTGGGGTGCAGGTGGACGCAAACTGTGAAGGCGATTGCTACCACTCTGGCGGGACAAATCATT AGCAATCTGCCTTTCCAGAACATAGACAGCCGCGGCAGTTGGAAAATGCCCGCGTTATGTCAAGCAAAGGAGTTTACTGCTCGCTACAGG CATGAAGAATGTTCCGGAGATCCCCGAAGGGAAGAGGTTTGTTCGGCGCCATAGCAGGATTCATTGAAAATGGCTGGGAAGGGTTAATCG ACGGGTGGTATGGTTTTCGACACCAGAACGCACAAGGGGAGGGGACAGCAGCAGATTACAAGAGCACACAGTCAGCAATTGACCAGATT ACTGGAAAGCTAAACCGGCTCATCGAGAAGACCAACCAGCAGTTCGAATTGATTGACAACGAATTTAATGAGGTGGAAAAACAGATCGGT AACGTCATAAACTGGACTAGAGATTCCATTACTGAGGTCTGGTCATATAATGCCGAACTGCTCGTGGCGATGGAGAATCAGCATACCATA GATCTCGCCGACTCCGAGATGGACAAACTTTATGAACGGGTGAAGCGCCAGCTGCGGGAAAATGCCGAAGAGGACGGTACAGGGTGTT TCGAGATTTTCCATAAATGTGATGACGACTGCATGGCAAGCATACGCAATAACACATATGATCACTCTAAGTATAGGGAAGAGGCCATGC AGAACCGAATTCAAATCGACCCAGTAAAGCTTTCTAGCGGCTATAAAGATGTGATTCTGTGGTTTAGCTTCGGGGCCTCTTGTTTTATCCT GTTAGCCATCGTCATGGGGCTAGTTTTCATCTGCGTGAAAAATGGCAACATGCGTTGCACTATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2855	ATGAATACGCAGATCCTCGTGTTCGCACTGATAGCGATCATCCCGACAAATGCTGACAAAATCTGTTTGGGCCATCATGCCGTTAGCAAT GGTACCAAAGTGAACACTCTCACTGAGCGCGGCGTGGAAGTGGTGAACGCCACTGAAACAGTAGAAAGAACAAACATTCCCAGAATCTG CAGTAAGGGTAAGAAAACTGTCGACTTGGGCCAGTGTGGCCTATTAGGAACAATCACCGGACCTCCCCAATGCGATCAGTTCCTAGAATT TAGCGCTGATCTGATAATTGAAAGAAGAGAAGGTTCGGATGTCTGTTACCCGGGTAAATTCGTGAACGAAGAAGCCTTAAGACAGATTCT CAGAGAAAGTGGCGGAATTGATAAAGAAGCCATGGGCTTCACTTATTCTGGCATACGGACAAATGGGGCCACTAGCGCATGTAGACGAT CAGGCAGCTCTTTTCTACGCCGAGATGAAGTGGCTGTTATCCAACACAGACAATGCAGCCTTTCCTCAGATGACCAAATCCTACAAAAATA CAAGGAAGAGCCCCGCACTAATCGTATGGGCATCCATCACTCTGTGTCGACGGCAGAACAAACCAAGCTCTATGGTAGTGGGAACAAG TTGGTGACGGTGGGGTCCTCTAATTACCAGCAGTCGTTCGTGCCCTCTCCAGGTGCCCGGCCCCAGGTGAATGGTCAGTCCGGCCGAA TCGACTTTCACTGGCTTATGCTGAATCCCAATGATACCGTAACATTTAGCTTTAATGGAGCTTTCATTGCTCCTGACCGTGCCAGCTTCTT GAGAGGAAAATCTATGGGCATACAGTCTGGTGTCCAGGTGGATGCTAACTGCGAAGGTGACTGTTACCACTCAGGAGGTACTATAATTAG CAATCTCCCCTTCCAGAACATCGACAGCCGCGCTGTAGGAAAGTGCCCTCGCTACGTGAAGCAACGATCATTACTGCTGGCCACTGGCA TGAAGAACGTACCCGAGATCCCAAAGGGAAGGGGTTTGTTTGGCGCCATTGCCGGCTTTATTGAGAACGGATGGGAGGGTCTGATCGAT GGATGGTATGGATTCCGTCATCAGAATGCCCAGGGCGAGGGGACCGCTGCTGATTACAAATCCACACAATCTGCAATAGATCAAATCACA GGAAAACTGAACCGGCTTATTGAAAAAACCAATCAGCAGTTCGAGTTGATCGACAATGAGTTCAATGAAGTGGAAAAGCAGATCGGCAAC GTCATCAACTGGACTCGGGACTCTATCACAGAGGTCTGGTCCTACAATGCAGAGTTACTAGTTGCCATGGAGAACCAGCACACGATTGAT TTGGCCGATAGCGAGATGGATAAACTCTACGAGCGTGTGAAGAGGCAGCTGCGCGAAAATGCCGAAGAGGATGGAACAGGTTGCTTCG AGATCTTCCACAAATGCGATGACGACTGCATGGCCTCCATCAGGAATAATACTTATGATCACAGCAAGTACCGGGAGGAAGCCATGCAAA ACAGAATTCAGATTGATCCCGTAAAGTTAAGCTCCGGCTACAAAGATGTGATTCTGTGGTTCTCTTTCGGAGCTTCATGCTTCATCCTCCT CGCTATAGTGATGGGTCTCGTATTCATTTGCGTTAAGAACGGCAAATATGAGATGCACAATCTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2856	ATGAATACTCAAATCCTGTGTTCGCACTCATTGCCATCATACCAACCAACGCAGACAAGATATGCTTGGGCCATCACGCCGTGTCTAAT GGTACGAAAGTGAATACTCTGACTGAGCGCCGGGGTCGAAGTAGTAAACCGCGACTGAAACAGTGGAACGAACTAATATTCCCAGAATTTG CAGTAAAGGGAAAAAGACCGTCGATCTCGGCCAATGCCGACTGCTGGGGACAATCACAGGGCCACCGCAATGCGATCAGTTCCTGGAG TTTAGCGCGGATCTCATCATCGAGCGAAGAGAAGGGTCCGACGTCTGTTACCCGGGTAAATTTGTGAATGAAGAGGCCCTGCGTCAGAT TCTGCGGAAAGCGGGCGGAATTGACAAGGAGGCAATGGGGTTCACGTACAGTGGTATCAGAACCAACGGAGCTACAAGCGCATGCAGA CGGTCCGGGTCCTCGTTTTACGGCGGAGATGAAGTGGCTGTTATCCAACACTGACAACGCTGCTTCCCACAGATGACCAAAAGCTATAAG AACACAAGAAAAAGTCCAGCCCTGATTGTGTGGGGGATCCACCATTCGGTATCAACTGCTGAGCAAACAAAGTTATATGGAAGTGGAAAC AAGCTTGTCACCGTAGGTTCATCCAACTATCAACAGAGTTTCGTGCCCTCCCCCGGACGCCCGCCCCAGGTGAATGGACAGTCGGGAAG AATAGACTTTCATTGGTTGATGCTGAATCCCAATGACACCGTGACCTTCAGCTTAATGGGGCCTTCATTGCCCCGGACAGGGCTAGCTT TCTCCGAGGAAAGAGCATGGGCATTCAATCTGGAGTTCAAGTGGATGCCAACGTTGAGGGCGATTGCTACCATAGCGGAGGGACAATCA TCAGCAACCTCCCCTTCCAAAACATTGATAGTCGTGCTGTAGGAAAATGCCCTCGGTACGTTAAACAAAGATCGCTGCTGCTACTGGCTACAG GAATGAAGAACGTGCCCGAGATCCCAAAAGGACGAGGCCTATTTGGGGCCATCGCGGGTTTTATCGAAAATGGATGGGAGGGCCTCATC GACGGGTGGTATGGCTTTCGTCATCAGAATGCTCAAGGCGAAGGAACAGCCCCTGATTACAAATCAACCCAATCTGCCATCGACCAGAT CACCGGAAAGCTCAACCGCCTGATTGAAAAGACTAATCAGCAGTTCGAGCTGATCGACAATGAGTTCAATGAAGTGGAAAAGCAGATTGG TAACGTGATTAACTGGACTAGAGATTCCATTACCGAAGTGTGGTCTTATAACGCCGAGCTACTGGTCGCCATGGACAACCACATACCAT TGATTTAGCTGATTCTGAGATGGACAAGCTGTACGAAAGGGTGAAACGGCAGCTCCGAGAAAATGCCGAAGAAGACGGAACCCGGGTGTT TCGAGATCTTCCACAAGTGCGACGATTGCATGGCTAGCATTAGAAACAACACTTATGACCACACGCAAGTATCGCGAAGACGGCGATG CAGAATCGAATCCAGATCGATCCTGTCAAGCTGAGCAGCGGGTACAAGGACGTGATCTTATGGTTTTCCTTCGGGGCTAGCTGTTTTATC CTGCTGGCTATCGTGATGGGTCTGGTTTTTATATGTGTTAAAAACGGCAACATGCGGTGCACAATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2857	ATGAATACCCAGATTTTAGTGTTTGCACTTATCGCTATCATACCAACTAATGCTGACAAGATCTGCCTGGGCCACCATGCAGTGAGCAACG GGACCAAAGTGAACACCCTAACCGAGCGGGCGTGGAGGTGGTAAATGCCACTGAAACCGTCGAAAGGACGAACATTCCGCGGATTTG CAGTAAAGGCAAACGAACCGTGGACCTGGCCAGTGTGGCCTCCTGGGGACCATCACGGGACCACCCCAATGTGACCAGTTCCTGGAG TTCTCCGCTGACCTTATCATCGAAAGGCGAGAAGGGTCTGATGTCTGTTACCCTGGAAAATTCGTAAACGAGGAGGCTCTCCGACAAATT CTGCGGGAATCCGGCGGCATCGACAAGGAGGCGATGGGTTTTACCTATTCCGGGATACGCACTAACGGAGCTACATCAGCATGTAGGC GCTCTGGGTCTAGTTTCTATGCCGAAATGAAATGGTTGCTGTCAAACACTGACAACGCTGCTTTCCCTCAGATGACTAAGTCCTATAAGAA TACCCGGAAGTCCCCAGCACTAATAGTCTGGGGGATTCACCACTCCGTATCTACTGCGGAGCAGACGAAACTTTACGGGAGCGGGAACA AACTGGTCACTGTTGGGTCATCAAATTATCAGCAATCATTCGTACCCTCTCCCGGCGCTCGGCCCCAGGTCAATGGCCTGTCCGGCAGA ATTGACTTCCACTGGCTTATGCTAAATCCTAACGACACCGTGACCTTCTCCTTCAACGGCGCCTTCATCGCGCCTGACCGAGCTAGCTTT CTGCGTGGGAAAAGTATGGGAATTCAGAGCGGTGTGCAGGTGGATGCAAATTGTGAAGGCGACTGCTATCATAGCGGGGGGTACCATTAT CTCTAATCTGCCTTTCCAGAACATCGACAGTAGAGCCGTGGGCAAATGCCCCAGATATGTGAAACAACGTAGCCTTCTGCTGGCAACAGG AATGAAAAATGTGCCCGAGATTCCCAAAGGGCGTGGCCTGTTTGGGCCATCGCCGGCTTCATCGAAAACGGTTGGGAGGGATTAATCG ACGGGTGGTATGGCTTCAGGCACCAAAACGCTCAAGGGGAGGGCACGGCGCGGATTACAAATCTACCCAGTCCGCCATTGATCAAATT ACTGGCAAATTAAACAGAATCATCGAAAAGACTAACCAGCAGTTCGAACTGATTGATAATGAGTTCAACGAGGTTGAGAAGCAAATCGGTA ACGTTATCAACTGGACGCGTGACAGTATCACCGAGGTCTGGTCATATAATGCTGAGCTGCTCGTGGCTATGGAAAACCAGCACACTATCG ATCTGGCGGACTCCGAGATGGACAAGTTGTATGAACGGGTGAAAAGACAGCTTCGGGAGAACGCCGAGGAGGACCGGGATGCTT CGAGATCTTTCACAAGTGCGATGATTGCATGGCTTCAATTCGCAATAATACATATGACCATTCTAAGTACAGGGAGGAGGCTATGCA GAACCGGATCCAGATAGATCCCGTCAAACTTAGTAGCGGGTACAAGGATGTCATCCTGTGGTTTTCCTTCGGGGCCTCATGCTTTATTCT TCTGGCCATCGTGATGGGACTCGTGTTCATCTGCGTTAAGAATGGCAACATGCGATGTACAATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2858	ATGAACACCCAGATTCTCGTGTTCGCTTTGATCGCGATTATACCTACTAACGCAGATAAAATATGTCTGGGTCATCACGCTGTCAGTAACG GGACAAAGGTGAACACGTTGACCGAGAGGGGCGTCGAGGTGGTTAACGCCACTGAAACAGTGGAACGGACCAATATACCAAGGATCTG TAGCAAGGGTAAGAAGACTGTCGACCTCGGTCAGTGTGGGTTGCTTGGGACCATCACCGGGCCTCCACAGTGTGATCAGTTTCTGGAGT TCTCGGCTGACCTGATAATCGAGAGACGGGAGGGCAGTGACGTGTGCTACCCAGGGAAGTTTGTGAACGAAGAAGCATTGCGACAGATT CTTCGGGAATCAGGTGGAATCGACAAGGAGGCCATGGGATTTACATACTCTGGGATCAGGACCAACGGTGCTACCTCCGCTTGTAGGAG AAGTGGATCAAGCTTTTATGCTGAAATGAAATGGCTTCTGTCCAATACGGACAACGCAGCTTTCCCTCAGATGACAAAGTCCTACAAAAAC ACAAGAAAGTCACCCGCTCTGATTGTTTGGGGAATCCACCACTCAGTGTCCACGGCGGAGCAGACGAACTCTATGGCTCTGGGAATAA GCTGGTGACAGTCGGGAGCTCAAATTATCAGCAATCCTTCGTTCCATCCCCCGGCGCCCGACCTCAGGTCAACGGCCAATCGGGCAGG CAAATCTGCCATTCCAGAACATTGACTCTCGAGCCGTCGGAAAATGCCCTCGTATGTAAAGCAGCGAAGTCTGCTGCTGGCAACCGGC ATTGACTTCCATTGGCTAATGCTCAATCCCAATGACACCGTCACATTCTCTTTTAATGGTGCCTTCATCGCCCCAGATCGAGCCTCTTTTCT ATGAAAAACGTACCCGAGATCCCCAAAGGGCAGAGGGCTTTTCGGTGCGATCGCCCGGGTTTATCGAAAATGGCTGGGAGGGCCTGATCG ATGGGTGGTACGGTTTTCGGCACCAGAACGCTCAGGGTGAGGGCACTGCAGCGGATTATAAGAGTACCCAGTCAGCCATTGACCAGATC ACAGGTAAGTTGAACCGCCTCATTGAAAAGACCAACCAGCAGTTTGAGCTGATCGATAATGAGTTTAATGAGGTGGAGAAGCAGATCGGG AATGTTATTAATTGGACGCGCGATTCAATCACAGAGGTATGGTCATACAACGCTGAGCTGCTGGTGGCAATGGAGAATCAACACACGATC GACCTCGCTGACTCAGAAATGGATAAACTGTACGAAAGGGTCAAAAGGCAGCTGCGCGAGAACGCCGAAGAAGACGGAACTGGTTGTTT CGAAATTTTCCACAAGTGTGACGACGACTGTATGGCATCCATCAGAAACAACACATACGACCATAGCAAATACCGGGAGGAGGCAATGCA GAATCGAATCCAGATTGATCCCGTGAAGTTGTCTAGCGGATACAAAGATGTGATCTTATGGTTTTCATTCGGGGCTAGCTGTTTCATCCTC CTGGCCATAGTTATGGGGCTCGTTTTCATCTGCGTAAAGAATGGGAATATGAGATGTACTATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2859	ATGAATACGCAGATTCTGGTGTTCGCTCTCATCGCTATTATTCCTACCAATGCCGATAAGATCTGTCTGGGGCACCACGCCGTCAGCAAC GGCACTAAAGTGAACACCTTGACAGAAAGGGGGTGGAAGTGGTGAACGCAACGGAAACAGTGGAGAGGACAAACATACCGCGGATTT GCTCGAAAGGAAAACGGACTGTAGACCTGGGCCAATGCGGCCTGCTCGGAACCATCACCGGGCCACCCCAATGTGACCAGTTCCTAGA ATTTTCCGCCGACCTTATAATTGAGCGGAGAGGAGGATCCGATGTGTGTTATCCTGGCAAGTTCGTGAACGAGGAGGCCCTGCGGCAGA TATTGCGTGAATCTGGGGGCATCGACAAGGAGGCGATGGGATTCACATACTCCGGCATCCGCACCAACGGCGGCGACCAGCGCATGCCG TCGCTCCGGGTCCTCATTCTACGCTGAAATGAAATGGCTCCTCTCAAATACTGATAAATGCTGCTTTTCCTCAAATGACCAAAAGTTACAAA AACACCAGGAAAAGCCCAGCTCTGATTGTCTGGGGCATTCACCATTCCGTATCTACGGCAGAACAGACTAAACTATATGGCAGTGGCAGC AAGCTCGTGACCGTCGGCTCCTCCAACTATCAGCAATCTTTCGTTCCATCACCAGGCGCCCCGGCCCCAGGTCAATGGGCTCTCCGGCCG TATCGATTTCCACTGGCTGATGCTCAATCCTAACGACACCGTTACCTTTTCTTTTAACGGCGCGCCTTTATTGCTCCAGACAGAGCGTCTTTC CTGCGGGGTAAAAGCATGGGCATTCAGTCTGGTGTCCAAGTGGACGCAAACTGTGAAGGGGATTGCTATCATAGTGGCGGCACTATCAT TAGTAACCTGCCTTTCCAGAACATTGATTCGCGGGCAGTTGGCAAATGCCCCAGGTATGTCAAACAGAGATCACTCTTGTTAGCTACCGG AATGAAGAACGTACCGGAGATTCCTAAGGGTAGGGGACTGTTCGGGGCTATTGCCGGGTTCATCGAGAATGGGTGGGAAGGTCTCATC GACGGGTGGTATGGCTTTCGTCATCAGAACGCCCAGGGCGAAGGTACAGCAGCCGATTATAAGTCTACCCAGTCCGCTATCGACCAAAT AACCGGGAAGTTGAACCGGTTAATCGAGAAAACCAACCAACAGTTCGAATTGATCGACAATGAATTTAATGAGGTGGAAAAACAAATAGG GAACGTGATAAACTGGACAAGGGACTCCATTACAGAAGTCTGGAGCTATAACGCCGAACTGCTGGTAGCTATGGAGAATCAGCATACCAT TGACCTGGCAGACAGTGAGATGGACAAACTTTACGAACGGGTTAAAAGACAGTTGCGAGAGAATGCCGAAGAAGATGGAACTGGCTGCT TTGAGATTTTTCACAAATGCGATGATGACTGTATGGCCAGCATTAGAAACAACACATACGACCACAGTAAGTACAGGGAAGAAGCCATGC AAAACCGGATCCAGATTGACCCCGTCAAGCTGAGCTCGGGTTATAAGGATGTAATCTTATGGTTCAGTTTTGGCGCCTCCTGCTTCATTCT TCTAGCAATCGTGATGGGATTGGTCTTCATTTGCGTGAAAAATGGCAATATGAGGTGCACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2860	ATGAATACACAGATCCTAGTCTTCGCCTTAATTGCAATAATACCTACCAACGCAGACAAAATTTGTCTTGGGCACCACGCCGTGTCCAACG GGACCAAAGTTAATACCCTCACCGAACGTGGGGTGGAGGTGGTAAACGCTACGGAGACAGTAGAAAGGACCAACATACCTCGCATCTGT TCCAAAGGGAAAAGAACCGTCGACCTGGGGCAGTGCGGGCTGCTAGGAACTATTACTGGCCCACCACAGTGCGATCAGTTTCTGGAATT TAGTGCTGATCTGATCATCGAAAGGCGTGAGGGTAGCGATGTCTGTTATCCCGGGAAGTTCGTGAATGAAGAGGCGCTGAGACAAATTC TGAGAGAAAGCGGGGGGGATCGATAAGGAAGCAATGGGGTTTACTATTCTGGCATTAGAACCAATGGGGCCACATCCGCCTGCCGCAG GTCTGGAAGCTCCTTTTATGCTGAAATGAAATGGCTGCTGAGTAATACTGACAACGCCGCTTTTCCTCAGATGACAAAATCTTATAAAAAC ACGAGAAAATCTCCTGCCCTGATGTGTGGGGCATTCACCATTCGGTTTCAACAGCGGAGCAAACTAAACTATATGGAAGCGGCAGCAAG CTGGTCACAGTGGGAAGCTCTAACTACCAACAGTCTTTTGTTCCCAGTCCCGGCGCCCGACCTCAGGTCAACGGACTGAGTGGCAGAAT TGATTTCCACTGGCTGATGCTTAATCCGAACGATACCGTCACCTTTTCTTTCAATGGTGCTTTTATTGCCCCTGACAGGGCAAGCTTCTTG CGCGGGAAGTCTATGGGAATCCAATCCGGCGTACAAGTGGACGCAAACTGTGAAGGGGACTGTTTATCACTCCGGAGGCACAATTATTAG TAACTTGCCTTTCCAGAATATCGATTCCAGAGCCGTGGGTAAATGCCCTCGATACGTAAAACAGCGCTCTCTGCTTCTGGCTACCGGAAT GAAGAATGTGCCTGAGATCCCCTAAGGGCAGAGGCCTGTTCGGGGCCATCGCTGGTTTTATTGAGAATGGGTGGGAAGGCTTAATAGACG GGTGGTACGGTTTTCGTCACCAAAATGCACACAGGGCGAAGGCACAGCAGCCGACTACAAAAGTACCGCAAAGCGCCATAGATCAGATAACA GGAAAACTTAATCGCCTGATCGAAAAAACGAACCAACAGTTCGAACTGATTGACAATGAATTTAACGAAGTCGAAAAGCAGATAGGCAAT GTCATCAATTGGACGAGAGACAGTATTACAGAAGTTTGGAGCTATAATGCAGAGCTGTTAGTGGCGATGGAAAATCAGCACACCATTGAT TTGGCGGACAGCGAAATGGACAAGCTGTACGAACGAGTGAAGCGACAGCTACGCGAGAATGCAGAAGATGGGACTGGCTGCTTCG AAATCTTTCACAAGTGCGACGATTGCATGGCCAGCATTCGCAATAACACATACGATCACTCCAAGTATCGAGAGGAGGCGATGCAAA ACCGAATCCAAATTGACCCTGTGAAATTATCTAGTGGGTATAAAGACGTGATACTGTGGTTTTCATTCGGAGCTTCATGTTTCATTCTGTTG GCAATTGTCATGGGACTGGTGTTATATGTGTAAAAAGCAGAAATATGCGATGCACCATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2861	ATGAATACCCAGATCCTGGTATTCGCATTAATTGCTATCATTCCTACAAATGCTGACAAAATCTGTCTCGGCATCACGCCGTGAGTAATG GAACTAAAGTGAATACTCTCACTGAGCGCGGGGTAGAGGTAGTGAATGCCACTGAGACCGTCGAGCGAACTAACATCCCCCGCATCTGT AGCAAAGGCAAGAAGACGGTGGACTTAGGACAGTGTGGCCTCCTGGGGACCATCACAGGACCTCCTCAGTGCGACCAGTTTCTGGAATT TAGTGCTGACCTTATCATTGAACGGCGCGAGGGCAGCGATGTCTGCTACCCTGGCAAGTTTGTCAATGAGGAAGCCTTACGACAGATCC TCAGAGAATCAGGGGGGATTGACAAGGAGGCAATGGGGTTCACCTATAGCGGAATCCGGACTAATGGCGCAACAAGTGCATGTAGACG GAGTGGGAGTAGTTTTTACGCCGAAATGAAGTGGCTGTTAAGCAACACGGACAACGCTGCTTTTCCACAGATGACTAAGTCTTACAAAAA CACCAGGAAGTCACCTGCTCTGATCGTGTGGGGAATTCACCATAGCGTGAGCACAGCTGAGCAGACCAAGCTTTACGGAAGTGGCAACA AACTCGTGACAGTGGGCAGCTCCAACTACCAGCAGTCTTTCGTGCCCTCCCCCGGCGCAAGACCTCAGGTCAACGGGCAGTCGGGCG TATTGACTTCCACTGGCTCATGCTGAACCCCAATGATACTGTGACCTTTTCGTTCAATGGGGCGTTTATCGCCCCTGATCGGGCAAGCTT CCTGAGGGGTAAATCAATGGGAATACAGTCCGGCGTCCAGGTGGATGCCAACTGTGAAGGCGACTGCTATCATTCCGGGGGTACCATTA TCAGCAACCTTCCCTTTCAGAACATTGATTCTCGGGCTGTGGGAAAATGTCCCAGGTACGTCAAGCAGCGGTCACTCCTGCTGGCAACTG GGATGAAGAACGTCCCTGAAATCCCGAAAGGGCGTGGGCTGTTTGGTGCTATCGCTGGATTCATCGAAAACGGCTGGGAAGGGCTTATT GATGGTTGGTACGGGTTTCGCCACCAGAACGCGCAGGGCGAGGGCACCGCTGCAGACTATAAATCTACTCAGTCTGCAATTGACCAGAT CACCGGCAAACTGAACCGCCTGATTGAGAAGACCAACCAACAGTTTGAGCTCATAGATAACGAGGTGGAAAAGCAAATCGG AAACGTTATCAACTGGACTAGGGACTCTATCACTGAAGTGTGGTCCTACAATGCAGAGCTGCTCGTTGCCATGGAAAACCAGCACACCAT TGACCTAGCTGACTCCGAGATGGATAAACTGTATGAGCGGGTAAAACGGCAGCTGAGAGAGAACGCCGAAGAGGACGGACAGGATGT TTTGAGATATTTCACAAATGCGACGACTGTATGGCAAGCATCCGGAACAACACCTACGATCATTCTAAATATCGGGAGGAAGCCATG CAGAATCGCATTCAGATTGATCCCGTCAAACTGAGTTCTGGCTATAAGGACGTAATTCTGTGGTTCTCCTTCGGAGCTAGTTGCTTCATTC TGCTTGCAATAGTAATGGGACTCGTTTTTATTTGTGTCAAGAACGGCAACATGAGGTGTACCATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2862	ATGAATACACAGATTCTGGTCTTTGCTCTCATCGCTATAATCCCGACCAACGCTGACAAAATCTGTCTGGGTCACCACGCCGTATCTAATG GAACTAAGGTGAATACATTGACCGAGCCGCCGGGTTGAGGTCGTTAATGCTACAGAAACTGTTGAGCGGACAAATATCCCCCCGGATATGC TCAAAGGGAAAAAAGACTGTCGACTTAGGACAATGCGGGTTACTAGGCACAATAACAGGGCCGCCCCAGTGCGACCAGTTTCTCGAGTT CAGTGCCGATCTGATTATCGAACGCCGGGAGGGAAGCGACGTCTGTTATCCCGGCAAATTCGTGAATGAAGAGGCCCTCCGCCAGATCC TGAGAGAATCCGGAGGCATCGACAAGGAGGCCATGGGATTCACTTACTCTGGAATCAGGACCAACGGGGCTACCTCCGCGTGCCGACG GTCCGGGTCCTCTTTCTACGCAGAGATGAAGTGGCTACTATCTAATACCGATAACGCAGCTTTCCCCCAAATGACAAAATCATATAAGAAT ACAAGGAAATCTCCGGCATTGA`CGTCTGGGGCATTCATCACTCTGTCAGTACCGCTGAACAAACAAAGCTGTATGGCAGCGGGAACAA GCTGGTTACAGTGGGGTCTAGTAACTATCAACAGTCCTTCGTGCCATCTCCGGGAGCGCGGCCACAGGTGAATGGGCAGTCTGGCCGG ATTGACTTTCACTGGTTAATGTTAAATCCAAACGACACGGTGACTTTTTTCATTTAACGGTGCCTTTATTGCTCCTGACAGAGCCTCATTTCT CAGAGGCAAATCAATGGGTATCCAATCAGGCGTGCAGGTGGACGCTAACTGCGAGGGCGATTGCTACCACTCTGGGGGCACAATCATAT CCAACCTGCCCTTCCAGAATATTGACTCAAGAGCCGTCGGGAAATGTCCACGGTACGTTGAAACAGAGGAGTCTACTGCTAGCTACAGGA ATGAAGAATGTGCCCGAGATTCCGAAAGGGAGAGGGTTGTTTGGAGCCATCGCAGGATTCATTGAAAATGGATGGGAAGGTCTCATAGA TGGTTGGTATGGCTTTCGACACCAAAACGCGCAGGGCGAGGGGACTGCAGCTGACTACAAAAGTACGCAATCTGCCATTGATCAGATTA CAGGAAAGCTCAACCGACTGATCGAAAAAACAAATCAGCAGTTTGAGCTCATAGACAATGAGTTCAATGAAGTGGAAAAGCAGATCGGCA ACGTTATCAACTGGACGCGCGACTCAATCACAGAAGTGTGGTCTTACAATGCAGAATTGCTTGTCGCCATGGAGAATCAGCACACTATCG ACCTGGCCGACAGCGAAATGGATAAGCTCTACGAGAGGGTCAAGCGCCAACTTCGAGAGAATGCTGAGGAGGACGGAACCGGTTGCTT TGAGATATTTCACAAGTGTGATGACGATTGCATGGCATCAATCAGAAATAATACTTACGACCATTCGAAATACAGGGAAGAGGCAATGCAG AACAGAATTCAGATCGACCTGTGAAGCTTTCTAGTGGGTATAAAGACGTGATGCCTCTGGTTCAGTTTTGGAGCATCTTGTTTCATTCTGC TAGCCATTGTTATGGGACTTGTCTTCATTTGCGTGAAGAACGGGAATATGCGTTGTACGATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2863	ATGAACACTCAGATACTCGTCTTCGCCCTCATAGCCATCATTCCCACGAATGCCGACAAAATCTGTCTGGGTCACCACGCGGTAAGTAAC GGGACTAAGGTCAACACACACTGACAGAAAGAGGCGTCGAAGTCGTGAACGCCACAGAGACGGTGGAGAGGACAAACATACCCAGAATTT GCTCGAAGGGCAAGAAGACCGTAGATCTGGGCCAGTGCGGGCTGTTGGGCACCATCACAGGCCCCCCCCAGTGCGATCAGTTCCTGGA ATTCTCTGCCGACCTTATCATTGAAAGGAGAGAGGGGAGCGATGTTTGTTACCCCGGGAAGTTCGTTAACGAGGAGGCCCTTAGACAGA TCCTTCGGGAATCCGGTGGGATTGACAAGGAAGCCATGGGATTCACCTACTCTGGTATACGGACTAACGGAGACCACCTCAGCCTGCAGA AGAAGCGGTAGTTCTTTTTATGCCGAAATGAAATGGCTGTTGTCAAACACCGACAATGCTGCCTTCCCACAGATGACCAAATCATACAAGA ATACCCGCAAGTCTCCCGCCCTGATTGTGTGGGCATCCATCACTCGGTGTCCACCGCCGAACAGACTAAGCTCTACGGCTCAGGGAAT AAGCTGGTGACTGTTGGCAGCTCAAACTACCAGCAGTCCTTCGTGCCTAGCCCTGGTGCCCGTCCCCAGGTGAACGGCCAGAGCGGTC GGATTGACTTCCATTGGCTTATCTTGAACCCAAACGATACCGTGACCTTCTCCTTCAATGGTGCCTTTATAGCACCCGATCGGGCGTCCTT TCTGCGCGGTAAATCTATGGGGATTCAAAGCGGCGTCCAGGTGGATGCTAATTGTGAAGGAGATTGCTATCACAGCGGGGGAACTATAA TTTCTAACCTGCCATTTCAAAATATTGATAGCCGGGCAGTGGGAAAGTGTCCTCGCTATGTTAAACAAAGATCTCTTTTTGCTGGCTACCGG AATGAAGAACGTGCCAGAGATCCCCAAAGGAAGGGGACTGTTCGGAGCAATCGCCGGGTTTATTGAAAATGGATGGGAGGGCCTCATTG ACGGTTGGTACGGGTTCCGCCACCAGAACGCTCAAGGAGAGGGGACGGCAGCGGATTATAAGAGCACTCAGTCCGCAATCGACCAGAT CACAGGAAAGCTGAATCGCCTCATTGAGAAAACAAACCAGCAGTTCGAGTTGATTGATAACGAATTCAACGAGGTGGAAAAACAGATCGG CAATGTGATAAACTGGACCCCGCGACTCCATTACTGAGGTCTGGTCTTACAACGCAGAACTGCTTGTCGCAATGGAGAATCAACACACCAT AGATCTCGCTGATTCTGAAATGGATAAGCTGTACGAAAGGGTGAAAAGACAGCTGAGAGAGAATGCTGAAGAAGATGGCACCCGGTTGCT TCGAGATCTTTCACAAATGTGACGATGACTGCATGGCCTCCATTAGGAATAACACATATGATCATTCCAAGTACAGGGAAGAGGCCATGC AGAACCGGATTCAGATTGATCCGGTTAAGTCTGAGTTCCGGGTACAAAGATGTGATACTATGGTTTTCTTCGGCGCGAGTTGCTTCATTTT GCTTGCCATAGTGATGGGTTTAGTTTTCATCTGCGTGAAGAACGGAAACATGCGCTGCACTATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2864	ATGAATACCCAGATTCTTGTTTTTGCTCTTATAGCCATAATACCCACGAACGCAGACAAAATCTGCTTGGGCCACCACGCAGTATCTAACG GCACCAAGGTGAATACTCTCACCGAACGTGGGGTGGAGGTCGTGAATGCTACAGAAACAGTGGAGCGCACAAACATTCCTCGTATTTGT TCAAAAGGGAAGAAGACAGTGGATCTGGGCCAGTGCGGCCTATTAGGAACAATCACAGGGCCCCCTCAATGTGACCAGTTTCTGGAGTT TTCCGCGGACCTCATTATCGAGCGCAGCGGGAAGGGAGCGACGTATGCTACCCGGGAAAATTCGTCAATGAGGAGGCCCTGCGTCAGATT CTTAGGGAGTCAGGCGGCATCCACACAAGGAAGCTATGGGATTTACATATTCTGGAATTCGCACTAACGGCGCCACCTCCGCTTGTCGACG GAGCGGATCGTCCTTCTATGCCGAAATGAAGTGGCTGCTGTCGAATACGGACAACGCTGCTTTTCCACAAATGACTAAGAGCTATAAGAA TACCAGAAAGTCTCCTGCGTTATTGTATGGGGAATACATCATAGTGTGTCTACCGCCGAGCAGACAAAACTGTACGGTTCCGGCAATAA GCTAGTCACTGTGGGCTCTTCCAATTACCAGCAGTCGTTTGTCCCCTCGCCAGGGGCCCGCCCGCAAGTAAATGGACAATCTGGGCGTA TCGATTTCCATTGGCTTATGCTGAACCCTAATGACACCGTGACATTTTCATTCAATGGGGCTTTCATTGCCCCCGACAGGGCTAGCTTCCT TCGCGGCAAGAGCATGGGGATACAATCCGGGGTTCAAGTGGATGCCAACTGCGAGGGCGACTGTTACCACTCAGGCGGAACCATCATT TCAAATCTGCCCTTTCAGAACATTGACAGCCGCGCCGTGGGCAAGTGTCCACGATATGTGAAGCAGAGATCACTGCTCCTTGCAACCGG TATGAAAAATGTTCCTGAGATACGGAAGGGCCGGGGGCTCTTCGGTGCTATCGCTGGATTCATTGAAAACGGGTGGGAAGGACTGATCG ACGGTTGGTATGGATTTAGGCACCAGAACGCACAGGGCGAAGGGACCGCCGCTGATTATAAAAGCACGCAGAGCGCTATAGATCAGATC ACCGGAAAGCTGAACCGCCTGATCGAGAAAACGAACCAACAGTTCGAACTGATTGATAACGAGTTTAACGAAGTGGAAAAACAGATTGGT AACGTGATCAACTGGACTAGAGACTCCATCACCGAAGTGTGGTCATATAACGCAGAGTTACTCGTCGCGATGGAAAACCAACACACCATC GACCTGGCAGACAGTGAGATGCATAAACTCTACGAACGGGTCAAGAGACAACTACGTGAGAATGCCGAGGAAGATGGCACAGGTTGTTT TGAAATTTTTCACAAGTGTGACGACGACTGCATGGCATCAATAAGAAACAATACTTACGACCATAGTAAGTACCGGGAGGAAGCTATGCA GAATAGAATCCAAATAGATCCAGTGAAATTGAGTAGCGGATATAAGGATGTGATTCTATGGTTTAGCTTCGGCGCTAGTTGTTTTATCCTTT TGGCTATAGTGATGGGGCTCGTTTTTTATCTGCGTGAAGAACGGAAACATGAGATGTACGATCTGCATT

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Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2865	ATGAATACCCAAATTCTCGTTTTTGCCCTCATCGCCATTATCCCTACTAACGCCGATAAGATCTGTCTGGGGCATCATGCCGTCTCCAACG GGACCAAGGTAAACACTCTGACCGAGGCGCGGTGTCGAAGTAGTCAATGCTACAGAGACAGTTGAACGCACTAATATTCCCAGGATCTGT AGTAAAGGAAAGCGTACCGTGGACCTAGGACAATGTGGCTTGCTCGGCACTATCACCGGCCCTCCACAGTGCGACCAATTTCTGGAATT CTCCGCTGATCTGATTATCGAGAGAAGAAGGCAGTGACGTGTGCTACCCGGGAAAGTTTGTCAACGAAGAGGCCTTAAGGCAGATCC TGCGCGAGAGCGGGGGTATAGATAAAGAAGCCATGGGCTTCACTTACAGTGGAATTAGGACAAACGGCGCCACGTCGGCCTGCAGAAG GTCTGGGTCCTCATTCTACGCCGAGATGAAGTGGCTTCTGTCGAATACCGACAATGCAGCATTTCCACAAATGACTAAATCCTATAAGAAC ACCCGGAAGTCACCAGCCCTCATAGTGTGGGGATCCATCACTCCGTGAGCACTGCAGAGCAAACAAAGCTGTATGGGTCCGGGAATAA ACTGGTAACCGTTGGCAGTAGCAATTATCAGCAGTCATTTGTTCCCTCCCCAGGTGCCCGGCCTCAGGTGAATGGTCTGTCTGGTCGCAT CGACTTTCACTGGCTGATGCTGAATCCAAATGATACAGTCACATTTTCGTTTAATGGAGCCTTCATCGCGCCCGACAGGGCTAGCTTCCTA CGCGGCAAGAGCATGGGCATTCAGAGCGGCGTCCAGGTTGACGCCAATTGCGAGGGAGATTGTTATCATAGCGGAGGCACAATCATCT CAAACCTCCCCTTTCAGAATATAGACTCCAGAGCCGTTGGGAAGTGCCCTAGATACGTGAAACAGCGATCCCTGCTCCTAGCTACAGGAA TGAAGAATGTGCCAGAAATCCCCCAAGGGTCGGGGGCTCTTTGGAGCCATCGCCGGTTTTATCGAAAATGGTTGGGAAGGCCTCATTAAT GGCTGGTACGGCTTTCGACACCAGAATGCCCAGGGTGAAGGAACAGCGGCAGACTATAAGTCCACACAGAGTGCTATAGACCAGATCAC CGGCAAGCTTAACAGACTGATTGAAAAGACCAATCAGCAGTTCGAGTTGATCGACAACGAATTCAACGAGGTTGAGAAACAAATAGGAAA CGTGATAAATTGGACCCGCGATTCTATAACAGAAGTGTGGTCATATAATGCGGAACTGCTCGTGGCAATGGAGAACCAACATACAATAGA CCTTGCAGACTCCGAAATGGATAAGCTGTACGAGCGCGTCAAGCGACAGCTCAGAGAAAATGCAGAGGAGGATGGAACAGGCTGTTTTG AAATTTTCCACAAGTGTGACGACGATTGCATGGCCTCCATCAGAAATAACACATATGACCATTCAAAGTATCGCGAAGAAGCTATGCAGAA TCGAATCCAAATAGATCCTGTGAAGTTGTCGTCCGGCTACAAAGATGTTATCCTGTGGTTCAGTTTCGGGGCCTCATGCTTCATCCTGCT GGCCATAGTGATGGGTCTCGTGTTCATCTGCGTGAAGAACGGCAACATGCGCTGCACTATCTGCATT

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2866	ATGAATACCCAGATTTTGGTGTTCGCACTTATCGCAATAATCCCGACTAACGCTGATAAAATTTGTTTAGGACATCATGCCGTTTCTAACG GAACTAAGGTGAACACACTTACCGAGAGAGGTGTGGAAGTGGTGAACGCTACCGAAACTGTGGAGCGGACTAACATCCCCCGGATATGC TCAAAGGGCAAGAGAACTGTGGATTTAGGTCAATGTGGTCTACTGGGCACAATTACCGGCCCACCCCAATGCGACCAGTTCCTGGAGTT TAGCGCCGACCTGATTATTGAGAGACGTGAGGGCTCAGACGTATGTTATCCTGGGAAATTTGTCAACGAAGAAGCCTTGCGGCAGATCC TACGTGAGAGCGCGGGGGCATTGACAAAGAGGCCATGGGGTTTACATACTCAGGCATCCGAACTAACGGGGCAACAAGTGCATGTAGACG ATCTGGGTCTAGCTTCTATGCCGAGATGAAATGGCTCCTCTCGAACACCGATAACGCCGCTTTTCCGCAGATGACTAAATCTTATAAGAAT ACAAGGAAGTCCCCCGCTTTAATTGTCTGGGGCATCCACCACTCTGTGAGCACCGCCGAACAGACAAAATTGTACGGCTCGGGGTCCAA GCTTGTCACTGTGGGCTCATCCAATTACCAGCAAAGCTTTGTGCCCTCCCCCGGGGCAAGACCTCAGGTGAACGGGTTGAGCGGAAGG ATTGATTTCCATTGGCTGATGTTGAACCCTAACGACACAGTCACCTTCTCGTTTAACGGGGCCTTCATTGCCCCAGATAGGGCCTCTTTTC TGCGCGGAAAGTCGATGGGGATCCAGTCAGGGGTGCAGGTGGACGCCAACTGTGAAGGCGACTGTTATCACAGCGGAGGAACGATAAT TTCCAATCTACCCTTTCAGAATATAGATTCAAGAGCCGTTGGGAAATGTCCCAGGTACGTCAAGCAGAGGTCGCTCCTCTTGGCTACCGG CATGAAGAATGTTCCTGAAATCCCGAAGGGCAGAGGACTCTTTGGCGCCATAGCCGGCTTTATTGAAAATGGATGGGAAGGATTAATTGA CGGCTGGTACGGCTTCCCGGCATCAGAATGCACAGGGCGAGGGCACGGCGGCTGACTACAAGTCTACTCAGAGTGCCATAGACCAGATT ACCGGGAAGTTAAATCGTCTGATCGAGAAGACCAACCAACAGTTTGAACTCATTGACAATGAGTTCCAACGAAGTGGAGAAACAGATCGGC AACGTAATCAATTGGACTCGCGATTCCATTACCGAGGTGTGGTCTTATAACGCAGAACTCTTGGTGGCCATGGAAAACCAACACACGATT GATCTCGCAGACAGCGAGATGGACAAGTTGTATGAGAGAGTTAAGCGCCAGCTCAGGGAGAATGCCGAAGAGGACGGAACCGGTTGCT TTGAGATCTTTCACAAATGTGATGATGACTGCATGGCGAGCATTCGTAATAATACTTATGACCATAGTAAATACCGGGAGGAAGCCATGCA GAATCGCATCCAAATTGACCCCGTAAAGCTAAGTTCAGGTTATAAGGATGTTATTCTTTGGTTTTCATTCGGAGCTTCATGCTTCATCCTTC TTGCAATTGTAATGGGACTGGTTTTCATTTGTGTAAAGAACGGAAATATGCGATGTACGATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2867	ATGAATACTCAAATCCTTGTCTTGCGCTGATCGCTATCATTCCAACAAATGCAGATAAAATCTGTCTAGGACATCATGCTGTGTCAAACG GTACTAAAGTGAATACACTGACGGAGAGGGGAGTCGAGGTGGTGAACGCAACAGAGACAGTGGAACGCACACAAATATCCCCCGCATCTGT TCTAAGGGGAAAAAAACCGTGGACTTGGGGCAGTGCGGTTTACTGGGGACCATTACTGGTCCGCCCCAGTGCGACCAGTTCCTAGAGTT TTCCGCAGACCTGATTATAGAGAGACGCGAAGGAAGCGACGTATGTTACCCCGGGAAGTTTGTCAATGAAGAAGCCCTCAGACAGATTC TTCGGGAGTCCGGAGGCATCGATAAAGAGGCTATGGCTTCACCTACTCCGGCATTCGTACAAATGGTGCTACGTCTGCCTGTCGACGGC AGTGGGTCATCCTTTTACGCCGAAATGAAGTGGCTATTGAGCAATACCGACAACGCAGCTTTCCCTCAGATGACTAAGAGCTATAAAAAC ACCCGCAAGAGCCCAGCTCTGATCGTATGGGGAATTCACCACTCAGTTTCGACTGCAGAGCAGACTAAACTGTATGGCTCCGGGAATAA GCTGGTTACCGTGGGTAGCTCTAACTACCAGCAGTCATTCGTTCCTTCACCCGGCGCACGCCCCCAAGTGAATGGGCAATCTGGCGCGCA TAGACTTCCACTGGCTTATGCTAAACCCAAACGACACTGTGACCTTTTCATTCAACGGCGCATTCATTGCACCTGACCGCGCGTCATTTCT CCGGGGCAAGAGCATGGGGATCCAGAGCGGCGTACAGGTGGACGCGAATTGCGAGGGGGATTGCTACCATTCAGGAGGAACCATTATT TCTAACCTCCCGTTCCAAAATATAGACTCTCGTGCTGTGGGAAAGTGCCCGAGATACGTCAAACAGCGTTCTCTACTCCTGGCTACGGGG ATGAAGAACGTGCCCGAGATTCCGAAAGGGCGCGGACTGTTTGGCGCCATCGGCGGGATTTATTGAGAACGGCTGGGAGGGGCTTATTG ATGGTTGGTATGGCTTCCGGCACCAGAACGCTCAGGGGGAGGGGACTGCAGCTGATTACAAGTCAACACAATCAGCAATCGATCAGATT ACCGGAAAGCTGAACAGACTCATCGAGAAGACGAATCAACAGTTTGAATTGATCGATAACGAATTCAACGAAGTCGAGAAACAAATCGGA AACGTCATTAACTGGACTAGAGATTCCATCACCGAGGTGTGGTCTTATAACGCCGAGCTCCTGGTGGCGATGGAGAACCAGCACACAATT GATCTCGCTGACAGCGAGATGGACAAGTTGTACGAGAGGGTAAAACGACAGCTCCGGGAAAATGCCGAGGAAGATGGGACAGGGTGCT TCGAGATCTTTCACAAGTGTGACGACGACTGTATGGCCTCAATTCGAAATAACACCTATGATCACTCGAAATACCGCGAGGAAGCTATGC AGAACAGAATCCAGATTGACCCGTGAAGCTGAGCAGTGGGTATAAAGACGTCATCTTATGGTTCAGCTTCGGGGCTTCTTGCTTCATAC TGCTTGCCATCGTTATGGGCCTGGTGTTTATCTGTGTCAAGAATGGTAACATGAGGTGCACTATCTGTATA

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SEQ ID NO.	Sequenza di acido nucleico
2868	ATGAACACCCAAATTCTTGTATTTGCTCTGATCGCCATTATTCCAACCAATGCCGACAAGATCTGTTTGGGGCACCATGCCGTTTCTAATG GCACAAAAGTCAATACATTAACTGAGCGCGCGGCGTAGAAGTCGTGAACGCTACCGAAACAGTTGAGAGAACCAACATCCCTCGAATATGTT CCAAGGGGAAGAAAACAGTGGATCTCGGGCAGTGCGGCTTGCTGGGAACAA`AACTGGCCCGCCTCAGTGTGATCAGTTCCTGGAATTT AGTGCTGACCTGATAATCGAGCGCAAGAGAGGGGACGCGATGTGTGTTATCCCCGGGAAATTTGTAAACGAGGAGGCCCTGCGGCAGATACT TAGAGAGAGTGGGGGAATCGACAAAGAAGCGATGGGGTTTACCTACTCTGGAATCAGAACTAACGGGGCTACAAGCGCCTGCCGGCGC AGCGGATCGTCCTTCTACGCAGAGATGAAGTGGCTGCTCAGCAACACTGACAATGCCGCTTTTCCTCAAATGACCAAGTCTTACAAGAAC ACCCGTAAAAGTCCCGCGCTCATAGTATGGGGTATCCACCATTCTGTCTCAACAGCAGAACAGACCAAACTGTACGGCAGCGGCAACAA ACTGGTGACAGTGGGATCTAGCAATTACCAGCAGAGTTTTGTCCCATCCCCTGGCGCGCGGCCCCAGGTGAATGGGCAAAGTGGACGG ATAGACTTCCACTGGTTGATGCTGAACCCAAATGATACCGTGACATTTTCTTTCAACGGTGCATTTTATAGCCCCTGACCGTGCAAGCTTCT TGAGAGGTAAGAGCATGGGAATTCAGTCAGGTGTTCAGGTGGATGCCAATTGCGAGGGCGATTGCTACCACAGCGGCGGCACTATTATT TCTAATCTTCCTTTCCAGAATATAGACTCCCGTGCTGTGGGTAAATGCCCTAGGTACGTAAAGCAAAGGAGCTTACTGTTGGCAACAGGC ATGAAGAATGTGCCAGAAATTCCCAAGGGCGGGGCCTGTTTGGCGCCATTCCAGGCTTTATTGAGAATGGCTGGGAGGGCCTAATTGA TGGTTGGTACGGCTTCAGGCACCAGAACGCACAGGGGGAAGGCACAGCTGCGGATTACAAAAGTACCCAGAGCGCCATAGATCAAATAA CCGGCAAGTTAAACCGATTGATTGAGAAAACAAACCAGCAATTTGAGCTGATATAGACAATGAATTCAACGAAGTCGAAAAGCAGATTGGCA ACGTGATCAATTGGACCCGGGATAGCATTACTGAGGTATGGAGCTATAATGCAGAGTTGCTGGTGGCCATGGAAAACCAGCATACCATC GATCTGGCCGACTCAGAAATGGATAAGCTCTACGAGCGGGTGAAGAGGCAGCTGAGAGAAAATGCCCGAAGAACGGAACCGGCTGCT TTGAGATTTTTCACAAGTGCGACGATGATTGCATGGCCAGTATTAGAAACAACACCTATGATCACTCCAAGTACCGCGAAGAAGCCATGC AGAACCGCATCCAAATCGATCCGGTCAAACTCTCCTCTGGCTATAAGGATGTAATCCTGTGGTTCTCTTTTGGAGCGTCCTGCTTCATATT ATTGGCTATTGTGATGGCTTGGTGTTTATCTGTGTTAAGAACGGAAACATGCGGTGTACAATCTGCATT

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2869	ATGAATACACAGATACTCGTGTTCGCCCTTATTGCTATCATCCCTACAAATGCTGACAAGATATGTCTGGGCCACCACGCCGTGAGCAAT GGCACCAAGGTTAATACCCTAACCGAACGGGGAGTTGAGGTGGTTAACGCTACGGAGACCGTAGAGCGCACTAATATTCCACGCATTTG CTCGAAAGGCAAGAAAACAGTGGACTTAGGCCAAATGTGGACTCCTCGGAACACATAACCGGCCCACCACAGTGCGATCAGTTCCTCGAGT TTTCAGCCGACCTAATTATTGAGCGACGGGAAGGTAGCGATGTGTGTTATCCAGGGAAGTTCGTCAATGAAGAGGCCTTGCGGCAGATA CTGCGCGAAAGTGGGGGCATAGACAAGGAGGCTATGGGGTTTACATACAGTGGAATTCGCACCAATGGGGCCACTAGCGCCTGTAGGA GATCAGGCTCCTCTTTCTACGCTGAGATGAAATGGTTACTGTCAAATACTGATAACGCCGCCTTTCCTCAGATGACAAAATCCTATAAGAA CACTAGGAAGTCACCTGCTCTAATCGTTTGGGGAATCCATCACTCCGTGAGCACCGCTGAGCAGACCAAGCTTTATGGCTCAGGAAACAA GCTCGTGACGGTGGGCTCCAGTAACTATCAACAAAGCTTCGTGCCTTCTCCAGGAGCAAGGCCCCAGGTGAATGGACAGTCCGGGAGA ATCGACTTTCACTGGCTCATGCTGAATCCAAACGATACCGTTACCTTTTCATTCAATGGGGCCTTCATCGCCCCAGACAGGGCCAGCTTC CTCCGCGGCAAAAGCATGGCATACAAAGCGCCGTGCAGGTGGATGCTAATTGCGAGGGTGACTGCTATCATTCAGGCGGCACCATAAT CAGTAACCTGCCCTTTCAAAATATAGATTCGCGGGCAGTAGGTAAATGCCCTCGTTATGTGAAACAGCGGTCCTTGCTGCTTGCGACTGG AATGAAAAACGTGCCCGAGATTCCCAAGGGCCGTGGATTATTTGGCGCTATCGCCGGGTTCATCGAGAACGGCTGGGAGGGTCTCATTG ATGGATGGTACGGTTTCAGACACCAGAACGCCCAGGGGGAGGGGACCGCAGCGACTACAAATCAACCCAGTCCGCCATTGATCAGAT CACAGGGAAGCTAAATCGCCTGATTGAGAAGACAAATCAGCAGTTCGATCGACTGATCGACAACGAATTCAATGAGGTAGAGAAACAGATTGGG GAACGTTATTAATTGGACCAGAGATTCCATAACAGAGGTATGGTCTTATAACGCAGAACTGCTCGTTGCGATGGAGAACCAGCATACAAT CGACCTGGCAGACAGTGAAATGGACAAGCTCTATGAGAGGGTCAAGAGGCAATTGAGAGAATGCCGAAGAAGACGGGACCGGTTGC TTCGAGATCTTCCACAAATGTGATGACTGCATGGCAAGCATTAGAAACAACACCTACGATCACTCCAAATACCGAGAGGAGGCTATG CAAAATCGGATACAGATCGATCCTGTCAAGCTGTCTTCTGGTTACAAAGATGTATTCTGTGGTTCAGTTTTTGGGGCCTCATGTTTCATCTT ACTGGCAATCGTGATGGGACTCGTTTTCATCTGTGTTAAAAATGGCAACATGAGGTGTACCATTTGTATC

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SEQ ID NO.	Sequenza di acido nucleico
2870	ATGAACACACAAATTTTAGTGTTTGCTCTGATTGCCATTATCCCCACCAACGCTGATAAGATTTGTCTGGGGCACCACGCAGTGTCTAATG GCACCAAAGTCAACACACTTACAGAGAGAGGAGTGGAGGTGGTTAACGCCACTGAAACCGTCGAGAGAACCAATATTCCTCGGATCTGC TCCAAGGGCAAGAAAACAGTTGATCTAGGACAGTGTGGGTTGCTAGGGACAATCACCGGACCACCTCAGTGTGATCAGTTCTTAGAGTTC TCCGCTGATCTAATTATTGAGCGAAGAGAAGGGTCCGATGTGTGCTACCCCGGTAAATTTGTCAATGAAGAAGCCTTGAGGCAGATTCTG AGAGAAAGCGGGCGGCATCGATAAGGAGGCAATGGGTTTCACTTACTCTGGAATCCGGACCAACGGAGCCACTAGCGCTGTCGAAGGA GTGGATCGTCCTTCTACGCCGAGATGAAATGGCTCTTGTCAAATACAGATAATGCCGCATTTCCCCAGATGACTAAGAGCTACAAGAATA CACGTAAGAGCCCGGCTCTGATCGTCTGGGTATTCATCATAGTGTGTCTACTGCAGAGCAGACCAAACTATACGGTAGTGGCAACAAAC TTGTCACCGTCGGCAGTTCTAATTACCAGCAATCCTTTGTCCCTCCCCGGCGCTCGGCCTCAGGTGAATGGACAGAGCGGCAGGATT GACTTCCACTGGCTTATGCTGAACCCTAATGATACTGTTACCTTCTCGTTTAATGGGGCGTTTATTGCTCCCGATAGGGCCAGTTTTCTTC GGGGCAAGTCCATGGGGATCCAGTCAGGTGTGCAGGTCGATGCTAATTGTGAGGGCGACTGCTATCATTCTGGCGGCACGATCATCTCA AACTTGCCCTTCCAAAATATAGATAGCCGAGCAGTGGGAAAATGCCCTCGTTACGTCAAGCAGAGGAGCCTCCTGTTAGCCACCGGGAT GAAAAATGTTCCAGAAATACCCAAGGGAGGGCTTATTTGCCGCTATTGCAGGATTTATCGAGAACGGTTGGGAGGGACTCATTGACG GATGGTATGGCTTCCGCCACCAGAACGCCCAGGGGGAGGGTACCGCAGCTGATTACAAGTCCACACAGAGTGCCATAGATCAAATCACC GGTAAGCTGAATAGGCTGATCGAAAAAACCAATCAGCAGTTTGAGCTCATCGATAATGAGTTCAACGAGGTGGAGAAACAGATTGGTAAT GTCATCAACTGGACAAGGGACTCGATTACCGAAGTGTGGAGCTATAACGCAGAGCTCTTGGTTGCCATGGAGAATCAGCACACCATCGA TTTAGCAGATAGCGAAATGGACAAACTATACGAAAGGGTGAAACGGCAACTTAGGGAGAACGCCGAAGAGGATGGGACCGGGTGCTTC GAAATTTTTCACAAGTGTGATGACGACTGCATGGCCTCTATCCGGAATAATACCTACGATCACACAGCAAATACAGGGACGGAAGCCATGCAG AACCGCATCCAGATCGATCCAGTCAAGCTGTCTTCTGGCTATAAGGACGTGATCCTGTGGTTCTCTTTCGGGCGCTAGTTGTTTTATCCTGC TGGCCATCGTGATGGGCCTTGTTTTCATCTGTGTGAAAAACGGGAATATGAGGTGCACAATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2871	ATGAACACACAGATCCTCGTCTTTGCACTCATCGCAATCATCCCCACCAACGCTGATAAAATTTGTCTCGGACATCATGCCGTGAGCAATG GGACCAAAGTTAACACCCTAACGGAGAGAGGTGTCGAGGTGGTGAACGCGACAGAAACCGTAGAACGAACCAATATTCCAAGGATCTGC AGTAAGGGAAAAAGGACCGTGCATTTGGGGCAGTGTGGTGGACTATCACAGGACCACCACAGTGCGACCAATTCCTTGAATT TTCCGCGGATCTGATTATTGAGAGGGAGGGATCTGACGTCTGTTACCCAGGCAAGTTCGTTAATGAGGAAGCGCTGAGACAGATTC TGCGAGAGGCGGAGGCATAGACAAAGAGGCTATGGGTTTTACCTATTCTGGGATACGCACAAACGGAGCTACAAGCGCATGCCGGAG AAGTGGAAGCTCATTTTATGCGGAAATGAAATGGCTCCTCTCCAACACCGACAATGCAGCATTCCCTCAGATGACCAAATCATATAAAAAC ACCAGAAAAAGTCCGGCTCTCA˙AGTGTGGGGTATACATCATTCCGTCTCGACCGCAGAGCAAACTAAGCTCTACGGCTCTGGAAACAAA CTCGTGACTGTCGGCAGTTCTAATTACCAGCAGTCTTTTGTACCTAGCCCCGGGGCTAGGCCACAGGTGAATGGCTTATCTGGGCGCAT AGACTTCCACTGGCTTATGCTGAACCCAAACGATACAGTGACCTTCTCCTTTAACGGCGCCTTCATTGCCCCCGACAGAGCTAGTTTCCT GCGCCGAAAATCAATGGGAATCCAGAGTGGGGTGCAGGTGGATGCAAACTGCGAAGGCGACTGCTATCACTCAGGCGGCACAATAATT AGTAACCTACCATTCCAGAACATTGATTCACGCGCCGTCGGGAAGTGTCCGAGATACGTGAAACAGCGGTCTCTCCTGTTAGCAACAGG CATGAAGAATGTGCCTGAGATTCCCAAAGGCCGGGGGCTCTTCGGAGCCATTGCTGGTTTCATCGAGAACGGGTGGGAGGGTCTGATC GATGGCTGGTATGGTTTCCGGCATCAGAACGCGCAGGGGAGGGCACAGCCGCAGATTACAAGAGTACTCAGAGTGCCATCGATCAGA TTACAGGGAAGCTGAATAGAATATCGAAAAAACTAATCAGCAGTTTGAACTGATAGACAACGAATTCAACGAGGTCGAGAAGCAGATCG GGAATGTGATCAACTGGACCCGCGACTCAATCACAGAGGTTTGGAGTTATAATGCCGAGCTCCTCGTTGCCATGGAGAATCAACATACAA TTGACCTTGCTGACTCTGAGATGGATAAACTGTATGAACGAGTTAAGCGACAGTTGAGGGAGAAGAAGACGGGACCGGCTGC TTCGAAATATTCCATAAGTGCGACGATGACTGTATGGCATCAATCAGGAACAACACCTATGACCACTCCAAGTATCGAGAGGAAGCGATG CAGAACAGGATCCAGATCGATCCAGTCAAGTTGTCCTCTGGCTATAAGGACGTGATTCTGTGGTTTTCTTTCGGCGCAAGCTGTTTCATTT TATTAGCTATCGTCATGGGTCTAGTGTTCATCTGTGTTAAAAATGGCAATATGCGATGTACAATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2872	ATGAACACCCAAATCCTTGTTTTCGCTCTGATTGCAATTATCCCAACGAATGCTGACAAAATTTGCCTGGGCCACCACGCTGTGTCCAACG GAACTAAGGTAAATACTCTGACTGAACGCGGCGTGGAGGTGGTGAACGCCACCGAAACAGTGGAGAGAACTAATATTCCCCGCATCTGT TCTAAGGGCAAAAAGACAGTGGATCTCGGTCAGTGCGGGCTGTTGGGAACAATTACCGGACCTCCCCAATGCGATCAGTTCCTAGAGTT TTCCGCCGACCTGATAATCGAAAGACGTGAAGGCTCTGACGTGTGTTACCCCGGAAAGTTTGTGAATGAAGAAGCACTGCGGCAGATCT TACGCGAGAGTGGCGGCATTGACAAGGAGGCAATGGGATTTACCTACTCCGGAATCAGGACAAATGGCGCAACCAGTGCTTGTAGGCG CTCCGGAAGCTCCTTTTATGCCGAGATGAAATGGCTTCTGTCCAACACGGACAACGCCGCTTTCCCTCAAATGACCAAATCCTACAAAAAT ACCCGTAAGTCACCGGGCGCTGATTGTATGGGGGATACACCACAGTGTTTCTACCGCCGAACAAACCAAGCTGTACGGCAGCGGAAATAA ACTGGTAACTGTCGGATCATCCAATTACCAGCAGTCCTTCGTCCCTAGCCCTCGGGCGCGCCCGCAGGTCAATGGGCAGTCTGGAAGAA TTGACTTTCATTGGCTGATGTTAAATCCAAACGACACAGTTACATTCAGTTTCAACGGGGCCTTTATTGCACCCGATAGAGCATCCTTTCT GCGAGGCAAAAGTATGGGGATTCAATCTGGGGTGCAGGTTGATGCGAATTGCGAGGGAGATTGCTATCACTCTGGCGGAACCATCATCA GCAACCTCCCATTCCAAAATATTGACTCACGCGCTGTGGGAAAGTGCCCTAGGTATGTGAAGCAGCGGTCCTTGCTTTTAGCTACCGGAA TGAAAAACGTGCCAGAAATCCCTAAGGGGCGCGGATTATTCGGCGCCATTGCTGGCTTCATTGAGAATGGATGGGAGGGCCTAATCGAC GGTTGGTATGGTTTTCGTCATCAGAACGCACAAGGGGAAGGGACTGCTGCCGACTACAAGTCTACCCAGTCCGCTATAGACCAGATTAC CGGTAAGCTAAATCGGCTTATAGAGAAGACTAACCAACACAGTTCGAGCTGATCGACAACGAATTTAACGAAGTGGAGAAGCAGATTGGGAA CGTCATCAACTGGACGCGAGACTCTATTACTGAAGTCTGGTCTTACAATGCTGAGTTGCTCGTGGCTATGGAAAACCAGCATACTATAGA CCTGGCCGACTCAGAGATGGATAAGTTATATGAACGCGTGAAGCGGCAGCTCCGAGAAAATGCCGAAGAGGACGGAACAGGGTGTTTT GAGATCTTCCACAAATGTGACGATGACTGCATGGCATCTATACGGAACAATACCTATGACCATTCCAAGTACCGTGAGGAAGCCATGCAA AATAGAATACAAATCGATCCAGTCAAACTCTCTAGCGGCTACAAGGACGTTATCTTGTGGTTCTCCTTCGGAGCGAGCTGTTTTATTTTGC TCGCGATTGTGATGGGATTGGTGTTTATTTGCGTTAAAAACGGAAACATGCGGTGCACCATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2873	ATGAATACCCAGATCCTGGTCTTCGCTCTGATCGCAATCATTCCTACCAACGCTGACAAAATTTGCCTGGGCCACCACGCAGTTAGTAAT GGAACAAAGTGAATACTCTTACAGAGCGGGGTGTCGAGGTAGTAAACGCTACGGAAACCGTAGAGCGCACAAATATCCCCAGAATCTG TAGCAAAGGTAAAAGGACAGTAGACTTGGGCCAGTGTGGACTGCTCGGAACAATTACAGGCCCCCCTCAGTGTGATCAGTTCCTGGAAT TCTCAGCCGACCTTATCATCGAACGAAGGAGAGGGAGCGATGTCTGCTACCCAGGCAAGTTTGTGAATGAAGAGGCCCTTCGTCAAATA CTCCGAGAATCGGGGGGAATCGATAAAGAAGCAATGGGATTTACCTATAGCGGAATCAGAACTAACGGCCGCAACTTCCGCCTGCAGGCG GTCTGGCAGCTCCTTTTATGCCGAGATGAAGTGGCTATTGAGCAATACTGACAACGCAGCCTTCCCTCAAATGACCAAGTCATACAAAAA TACACGCAAGTCTCCAGCTCTGATCGTGTGGGGCATTCACCATAGCGTCAGCACAGCCGAGCAAACAAAGCTCTACGGCAGCGGCAACA AACTCGTGACCGTCGGCAGTTCTAACTACCAGCAGTCCTTTGTGCCCAGCCCAGGGCCCCGTCCACAGGTTAACGGACTGTCTGGCCG GATCGATTTCCACTGGCTGATGTTAAATCCCAACGACACAGTCACGTTTAGCTTTAACGGAGCCTTTATCGCCCCCGACAGGGCTAGCTT TCTTAGGGGCAAGAGCATGGGAATTCAATCAGGGGTTCAAGTGGACGCAAACTGCGAGAGGGCGATTGCTATCACTCCGGTGGAACTATTA TAAGTAATCTACCATTCCAAAACATCGATTTCAAGGGCGGTGGGTAAGTGTCCTCGCTACGTTAAGCAGCGCAGCCTGCTACTCGCGACG GGAATGAAAAATGTCCCGGAGATACCTAAAGGCAGAGGCCTCTTCGGCGCCATCGCAGGTTTCATCGAAAACGGCTGGGAAGGTCTGAT CGACGGTTGGTATGGATTCCGTCACCAAAACGCACAGGGAGAGGGTACAGCCGCAGACTATAAGTCTACCCAGTCAGCTATCGACCAAA TTACTGGAAAACTGAATCGTATCATTGAAAAGACCAATCAACAATTCGAGCTGATCGACAACGAGTTTAATGAAGTTGAGAAACAGATCGG AAATGTGATTTAACTGGACACGTGACAGCATTACTGAGGTCTGGAGCTACAACGCGGAACTTCTCGTAGCGATGGAGAACCAGCACACTAT TGACCTGGCTGATAGTGAAATGGATAAACTATATGAAAGGGTCAAAAGACAACTGCGGGAAAATGCCGAGGAAGATGGTACTGGATGTTT TGAAATCTTTCACAAGTGCGATGACGACTGTATGGCTAGCATCAGGAACAATACATACGACCATTCGAAGTATCGCGAAGAGGCCATGCA GAACCGAATACAGATTGATCCGGTTAAGCTGTCTTCTGGATATATAAAGACGTCATCCTGTGGTTTAGTTTCGGGGCGAGTTGTTTCATTCTA CTGGCTATTGTCATGGGCCTGGTTTTTATCTGCGTGAAAAATGGCAACATGCGGTGCACGATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2874	ATGAACACACAGATCTTGGTGTTCGCCCTCATCGCGATAATACCCACTAATGCCGACAAAATTTGTTTGGGTCATCACGCCGTGAGCAAT GGCACTAAGGTGAACACGCTTACAGAACGGGGCGTAGAAGTTGTGAACGCCACAGAGACAGTGGAGAGGACAAATATCCCGCGGATCT GCTCAAAGGGGAAAAAAACCGTTGACCTGGGACAGTGCGGCCTGCTGGGGACAATAACAGGCCCCCCCCAGTGTGACCAATTTCTGGA GTTCTCTGCCGACCTGATTATCGAAAGACGGGAGGGCAGTGATGTCTGCTACCCCGGCAAGTTCGTAAATGAAGAGGCTCTGCGGCAGA TCCTACGGGAGTCCGGAGGAATCGATAAGGAGGCAATGGGGTTTACGTATAGCGGCATTAGAACCAACGGAGCAACCAGTGCTTGCAG GAGGAGCGGCAGCTCATTCTACGCGGAAATGAAGTGGCTGCTGTCAAATACAGATAACGCCGCTTTCCCACAGATGACTAAATCCTATAA GAACACCCGCAAGAGTCCTGCTCTCATCGTTTGGGGTATCCACCACTCTGTGTCAACTGCCGAGCAGACCAAACTTTACGGATCTGGGAA TAAGCTTGTGACAGTTGGGAGCAGCAACTATCAGCAGTCATTTGTGCCCTCTCCGGGTGCCAGGCCACAGGTTAATGGACAGTCGGCGC GTATCGACTTCCATTGGCTTATGCTCAATCCTAATGACACTGTTACCTTTTCTTTCAACGGCGCGTTCATTGCCCCCGACAGAGCGAGCTT TCTTAGGGGGAAATCGATGGGTATTCAGAGCGGGGTCCAGGTCGATGCGAACTGCGAGGGCGATTGCTACCACTCAGGGGGAACAATT ATCTCTAATTTACCCTTTCAGAACATCGACTCAAGGGCAGTGGGGAAGTGTCCGCGATACGTTAAACAACGGAGTTTGCTCCTGGCCACA GGCATGAAAAACGTCCCAGAAATCCCCAAAGGCAGAGGGTTGTTTGGGGCGATCGCCGGCTTTATCGAGAACGGATGGGAAGGCTTAAT TGACGGCTGGTACGGCTTCCGCCACCAGAACGCTCAGGGGGAAGGTACCGCCGCTGATTATAAAAGTACGCAAAGCGCTATTGATCAGA TTACGGGCAAATTGAATCGGCTGATTGAGAAAACAAATCAGCAGTTTGAACTGATCGACAACGAGTTTAATGAGGTGGAGAAGCAGATAG GAAATGTAATTAACTGGACTCGGGATTCGATCACGGAGGTTTGGTCCTATAACGCAGAGCTACTGGTCGCCATGGAGAATCAGCACACTA TTGACCTGGCAGATTCTGAGATGGACAAGCTGTACGAGAGGGTAAAAAGACAACTGCGGGAGAACGCTGAAGAGGATGGAACAGGGTG TTTTGAGATCTTTCACAAGTGCGACGATGATTGCATGGCATCTATCCGCAACAATACTTACGACCACTCTAAGTACAGAGAAGAGGCGAT GCAGAATCGAATTCAGATTGACCCGGTGAAGCTGAGCAGTGGATATAAAGATGTAATCCTCTGGTTTAGCTTCGGAGCCTCATGTTTTATC CTCCTTGCTATCGTTATGGGCCTCGTCTTTATATGTGTCAAAAACGGCAATATGCGCTGCACAATCTGCATT

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SEQ ID NO.	Sequenza di acido nucleico
2875	ATGAATACCCAAATTTTGGTTTTTGCTCTGATTGCCATTATTCCCACTAATGCCGACAAGATCTGCCTCGGCCATCATGCCGTGTCTAATG GCACAAAGGTGAATACCTTGACAGAAAGGGGTGTGGAAGTAGTGAATGCCACAGAAACTGTAGAGCGGACCAATATTCCCAGGATTTGC TCTAAGGGAAAGAAGACCGTTGATCTGGGCCAATGCGGCTTGCTGGGCACCATCACTGGGCCACCACAGTGCGACCAGTTCCTGGAATT TAGCGCCGATCTGATAATAGAGAGACGGGAAGGTAGCGACGTCTGCTATCCTGGGAAATTCGTCAACGAGGAAGCTCTGCGGCAGATCC TACGGGAGAGTGGCGGGATAGACAAGGAGGCAATGGGCTTTACGTACTCAGGAATTCGAACCAATGGGGCGACGTCCGCCTGCCGGAG ATCGGGCTCTTCTTTTTACGCACAAATGAAGTGGCTGCTGTCGAATACAGATAATGCGGCTTTCCCCCAGATGACCAAGTCATATAAAAAT ACGAGAAAATCGCCCGCACTTA TGTGTGGGGCATCCACCACTCCGTGTCAACTGCCGAGCAAACCAAGCTATATGGCAGCGGCAATAA GCTGGTGACAGTAGGAAGTTCTAATTACCAGCAGTCTTTCGTGCCGAGCCCTGGAGCCAGACCACAGGTGAATGGCCAGTCGGGCAGG ATAGATTTCCACTGGTTAATGCTTAACCCAAACGACACGGTGACCTTCAGTTTCAACGGTGCCTTCATCGCCCCCGATCGCGCCTCCTTTT TGCGCGGCAAGTCTATGGGTATTCAGAGTGGAGTGCAGGTGGACGCAAACTGCGAAGGGGATTGTTATCACAGCGGCGGGACCATAAT CAGCAATCTCCCGTTTCAAAATATCGATTCTCGGGCAGTCGGTAAATGTCCCAGGTACGTTAAGCAACGGAGCCTGCTGCTCGCTACAGG CATGAAGAATGTGCCCGAGATCCCCAAGGAAGAGGCCTGTTCGGGGCCATCGCTGGTTTCATCGAGAACGGATGGGAGGATTAATC GACGGGTGGTACGGTTTCCGACACCAGAACGCACAGGGTGAGGGCACTGCCGCTGATTACAAATCAACCCAGTCTGCAATCGACCAGAT CACTGGGAAATTGAACCGATTGATCGAAAAGACGAACCAGCAGTTCGAACTCATTGACAACGAGTTTAATGAAGTCGAGAAGCAGATTGG AAATGTGATCAACTGGACAAGGGATTCTATCACAGAGGTCTGGTCATACAACGCTGAACTCCTTGTGGCCATGGAGAACCAGCACACCAT CGATCTGGCTGATTCAGAAATGGATAAACTATATGAAAGGGTGAAGCGGCAACTTAGGGAAAATGCTGAGGAGGACGGCACGGGATGCT TTGAAATCTTCCACAAGTGTGATGATGACTGTATGGCGTCCATCCGGAACAATACATATGACCATTCAAAATATAGAGAAGAGGCAATGCA GAACAGGATACAGATTGACCCTGTCAAGTTGAGTTCTGGCTACAAGGACGTGATTCTGTGGTTCAGCTTCGGAGCCAGTTGTTTCATCCT CCTGGCCATCGTGATGGGCCTAGTGTTCATCTGCGTGAAAAATGGCAATATGCGCTGCACAATATGTATA

Ing. Ines Sangiacomo
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SEQ ID NO.	Sequenza di acido nucleico
2876	ATGAATACCCAAATCCTCGTTTTCGCACTGATTGCTATTATACCCACCAACGCTGACAAGATTTGTCTGGGTCACCACGCAGTTTCTAACG GCACAAAGGTGAATACTCTCACAGAGCGCGGGGTTGAGGTCGTCAACGCTACTGAGACCGTCGAACGAACCAATATCCCCAGGATCTGT AGCAAGGGAAAGAAAACAGTCGATTTAGGCCAGTGTGGCCTCTTAGGCACCATCACAGGCCCACCCCAATGCGACCAGTTCCTGGAGTT CTCCGCAGATTTAATCATTGAGCGGCGAGAGGGAGTGATGTTTGCTACCCAGGTAAGTTCGTCAATGAAGAAGCCTTGCGCCAGATCC TGCCGGAAAGCGGCGGCATTGACAAAGAGGCTATGGGATTTACTTATTCTGGCATACGAACTAACGGGCGCAACGTCTGCTTGTCGACGC TCAGGCTCATCCTTCTACGCAGAAATGAAATGGTTGCTCAGTAATACAGATAATGCCGCATTTCCCCCAAATGACCAAGAGCTACAAGAATA CACGGAAGAGCCCAGCCCTGATTGTGTGGGGTATCCACCATTCTGTAAGTACAGCAGAGCAGACAAAACTGTATGGGTCTGGCAACAAA CTGGTGACGGTGGGCAGTAGCAACTACCAACAGAGTTTCGTGCCGTCACCTGGGGCAAGACCCCAGGTTAACGGGCAGTCCGGCCGCA TAGACTTTCACTGGCTCATGCTGAATCCGAACGATACAGTGACTTTTTCATTCAATGGTGCATTTATCGCCCCCGATCGCGCTTCGTTCCT CCGCGGCAAATCTATGGGAATTCAATCCGGGGTACAGGTCGACGCCAACTGCGAGGGCGACTGTTACCATTCCGGCGGGACTATTATAA GTAATCTACCTTTTCAGAACATAGATTCCAGAGCCGTGGGAAAATGCCCTCGCTACGTGAAACAGAGGTCCCTGCTTCTGGCTACTGGAA TGAAGAATGTTCCAGAGATACCTAAGGGACGGGGCCTTTTCGGGGCAATCGCCGGATTCATCGAAAATGGGTGGGAAGGGCTGATCGAT GGCTGGTACGGCTTTCGCCATCAGAACGCACAGGGAGAGGGTACAGCGGCTGATTACAAATCGACTCAAAGTGCTATAGATCAGATTAC CGGCAAACTGAACAGGCTGATCGAGAAAACGAATCAACAGTTCGAACTGATTGATAACGAGGTGGAAAAACAAATCGGAAA CGTTATCAATTGGACGAGGGACAGCATTACCGAAGTGTGGTCGTATAATGCAGAGCTGTTAGTCGCCATGGAGAATCAACACACCATCGA TCTTGCCGACAGCGAGATGGACAAGCTTTATGAGCGCGTGAAGAGACAACTGCGAGAAAATGCCGAGGAAGATGGAACCGGATGTTTTG AGATATTCCACAAGTGCGACGATGATTGTATGGCGAGCATCCGCAACAATACCTATGATCACTCCAAATACAGGGAAGAGCGCTATGCAAA ATAGAATCCAAATTGATCCCGTCAAACTGTCAAGTGGGTACAAGGATGTGATATTATGGTTTTCCTTTGGCGCCTCATGCTTTATACTGCT GGCTATCGTGATGGGCTTGGTCTTTATTTGCGTGAAGAATGGCAACATGCGGTGTACAATATGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2877	ATGAATACACAAATTCTGGTGTTCGCACTCATTGCTATCATACCCACTAATGCCGATAAGATCTGTCTGGGCACCACGCTGTTAGCAACG GGACCAAAGTTAACACCCTTACCGAGAGGGGCGTGGAGGTGGTCAACGCAACCGAAACCGTCGAACGGACAAACATCCCGAGGATCTG CAGTAAAGGAAAGAGAACAGTCGACCTCGGGCAATGTGGACTGCTGGGGACTATTACAGGGCCCCCCCCAATGTGATCAGTTCCTGGAGT TTTCTGCGGATTTAATCATTGAGAGGCGGGAGGGAGTGATGTTTGTTACCCAGGTAAGTTTGTTAATGAAGAAGCGCTGCGCCAGATAC TTAGAGAGAGTGGGGGAATCGACAAGGAGGCTATGGGTTTTACCTACAGCGGCATCAGAACAAATGGCGCCACCAGCGCATGCCGCAG GAGCGGTTCCTCATTCTACGCCGAAATGAAGTGGCTCCTATCCAATACAGATAACGCCGCCTTCCCCCAGATGACAAAGTCCTACAAAAA CACCCGGAAGAGCCCTGCCCTAATTGTGTGGGGTATCCAACCACTCCGTGTCTACGGCCGAGCAGACCAAGCTGTACGGAAGCGGCAAC AAACTAGTGACCGTAGGATCTAGTAACTATCAGCAGAGTTTCGTACCTTCACCAGGAGCGCGGGCCTCAGGTTAATGGTCTGAGCGGGAG GATCGATTTCCATTGGCTTATGCTGAACCCCAATGACACTGTTACGTTTTCTTTCAACGGAGCATTCATCGCTCCAGACCGCGCGCGAGCTTT CTCCGAGGAAAATCAATGGGGATACAGTCTGGGGTCCAAGTGGACGCTAACTGTGAGGGGGACTGTTATCACTCAGGTGGAACCATTAT TTCTAACTTGCCATTCCAGAACATAGATTCGCGAGCCGTGGGCAAATGTCCCCGTTACGTGAAACAGCGTTCCCTCCTGCTAGCCACCGG GATGAAGAACGTACCCGAAATTCCTAAAGGGAGAGGCCTCTTTGCGGGCTATTGCGGGGTTTATTGAAAACGGATGGGAGGGCCTAATTG ACGGCTGGTATGGGTTCAGACATCAGAATGCACAGGGTGAGGGGACAGCTGCTGACTACAAGTCCACGCAGTCTGCAATAGATCAAATA ACCGGCAAACTCAACCGCTTAA˜CGAGAAAACGAACCAGCAGTTCGAGCTTATAGACAATGAGTTCAATGAGGTTGAAAAACAGATCGGC AACGTGATTAATTGGACTCGGGACTCTATCACCGAGGTCTGGAGCTATAACGCAGAGTTGCTGGTCGCCATGGAGAATCAGCACACAATA GATCTTGCTGACTCGGAAATGGACAAACTTTACGAAAGGGTCAAGCGGCAGCTGAGGGAGAACGCTGAAGAAGATGGGACGGGGTGCT TCGAAATTTTTCATAAGTGCGATGATGATTGTATGGCGTCCATTAGAAATAACACCTACGACCATAGTAAATACCGGGAGGAAGCCATGCA GAACAGGATCCAGATCGACCCAGTAAAACTGTCAAGTGGGTATAAGGATGTTATATTGTGGTTCTCGTTCGGCGCCAGTTGCTTCATCCT CCTCGCTATTGTCATGGCCTTGTGTTTATTTGCGTGAAGAATGGAAATATGCGCTGCACCATTTGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2878	ATGAATACCCAGATACTGGTGTTTGCCTTAATAGCAATTATCCCAACAAATGCCCGACAAGATCTGCCTTGGACACCACGCCGGTGTCCAAT GGTACTAAAGTGAACACACCTTGACCGAGCCGGGCGGTGGAGGTGGTAAATGCCACGGAGACTGTCGAACGTACAAATATCCCCCGCATCT GTTCTAAAGGCAAAAAAACTGTCGACTTGGGCCAGTGCGGACTACTGGGGACGATTACTGGTCCGCCTCAGTGCGACCAATTCCTCGAA TTTAGTGCAGATCTCATTATTGAAAGACGAGAGGGGAGTGACGTTTGCTATCCAGGCAAGTTCGTTAACGAGGAAGCCCTTAGGCAAATT TTGAGGGAGTCCGGGGGGAATTGATAAAGAAGCAATGGGATTTACTTACAGCGGCATTCGGACCAACGGTGCTACCTCAGCATGCAGCGG CTCTGGCTCCTCCTTCTACGCTGAGATGAAATGGCTACTGTCCAACACCGACAATGCAGCATTTCCTCAAATGACTAAGAGCTATAAGAAC ACAAGAAAATCCCCCCGCCCTCATAGTCTGGGGGATCCCACCACTCAGTGTCCACCGCAGAGCGAAATTATATGGATCCGGAAATAA ACTGGTGACAGTGGGGAGTAGTAACTACCAACAGAGTTTTGTTCCCAGCCCAGGCGCCAGACCTCAGGTAAATGGACAGTCCGGAAGGA TCGATTTTCATTGGCTCATGCTAAACCCCAACGATACCGTCACATTCTCATTCAACGGAGCATTTATAGCTCCCGACCGGGCTTCATTCCT TCGGGGTAAATCAATGGGCATTCAGTCTGGGGTACAAGTGGACGCCAATTGTGAGGGCGACTGCTATCACTCTGGCCGGAACAATCATAT CTAATCTCCCATTCCCAGAACATCGATTCCCGCGCAGTCGGCAAGTGTCCAAGGTACGTGAAACAGCGCTCCCTGTTGTTGGCAACTGGAA TGAAAAATGTACCAGAGATTCCTAAGGGACGTGGACTGTTCGGAGCTATTGCAGGGTTCATCGAAAATGGGTGGGAGGGCCTAATCGAC GGTTGGTATGGGTTCAGACATCAGAACGCCCAGGGGGAGGGTACTGCCGCCGATTACAAGTCCACCCAGTCCGCAATTGACCAGATCA CGGGTAAATTAAACAGACTCATTGAAAAAACTAATCAGCAGTTCGAGCTTATTGATAATGAATTTAATGAAGTGGAAAAGCAGATAGGGAA TGTGATTAACTGGACCCGCGACTCTATCACAGAAGTCTGGTCATACAATGCTGAACTGCTTGTCGCCATGGAAAATCAGCATACCATAGA CCTTGCAGATTCAGAAATGGACAAGCTGTACGAAAGAGTCAAAAGACAGCTGAGGGAGAATGCCGAGGAGGATGGTACAGGGTGCTTCG AAATCTTCCACAAGTGCGACGATGACTGTATGGCGAGCATCCGCAATAATACGTATGACCATTCTAAATACAGAGAAGAGGCGATGCAGA ATCGGATCCAAATCGACCCGGTAAAGCTCAGTTCGGGCTACAAAGACGTAATACTATGGTTCTCCTTTGGAGCTTCGTGCTTCATTCTCCT AGCTATCGTCATGGGGTTAGTCTTCATCTGCGTGAAGAATGGTAATATGCGCTGTACAATTTGTATA

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2879	ATGAACACACAGATCCTAGTGTTTGCCCTCATCGCCATTATTCCAACAAACGCTGATAAGATTTGCCTAGGACATCACGCAGTGTCCAACG GAACTAAGGTGAACACCTTAACTGAGAGGGGAGTAGAGGTGGTGAATGCCACAGAGACTGTTGAAAGAACCAATATTCCCCGTATCTGCT CAAAGGGGAAGAGAACGGTAGACCTGGGGCAGTGTGGCTTGCTGGGCACCATCACCGGCCCACCCCAGTGCGATCAGTTTTTGGAATT CTCTGCCGATTTAATAATAGAACGCAGAGAAGGTTCCGACGTGTGCTACCCTGGAAAATTCGTCAATGAGGAAGCACTGAGGCAGATCTT ACGCCGAGTCCCGGAGGCATCGACAAAGAGGCAATGGGATTCACTTACTCCGGAATCCCGGACTAACGGGGCGACGAGCGCCTGCAGGCGT AGCGGCTCCTCTTTTTACGCGGAAATGAAGTGGCTTCTATCCAACACTGACAATGCCGCTTTTCCACAAATGACCAAGTCTTTATAAAAACA CACGCAAGTCGCCCCGCCTTAATAGTGTGGGCATTCATCATTCCGTGTCAACAGCAGAGCAGACTAAGTTGTATGGCAGTGGTTCTAAGT TGGTGACAGTAGGATCCTCCAACTACCAGCAAAGTTTCGTGCCTAGCCCAGGCGCACGTCCCCAGGTGAACGGCCTTTCAGGGAGGATC GATTTCCATTGGCTGATGCTCAACCCCAACGACACTGTTACTTTCTCCTTCAACGGAGCATTTATCGCACCAGATCGGGCCTCCTTCTTGC GGGGAAAATCTATGGGAATCCAGAGCGGAGTGCAGGTGGATGCCAATTGTGAAGGGGATTGCTACCACTCTGGGGGAACAATTATGTCC AATTTGCCCTTCCAGAATATCGATTCCCGAGCTGTCGGAAAATGTCCGAGGTATGTCAAGCAGCGTAGTCTGCTCCTTGCCACGGGCATG AAGAACGTCCCAGAGATTCCCAAGGGCCGGGGCTTATTCGGCCGGTTCATCGAGAACGGATGGGAGGGGCTAATAGACG GCTGGTATGGCTTCAGGCATCAGAATGCACAAGGTGAAGGAACGGCGGCTGATTATAAATCCACCCAGAGTGCCATCGATCAGATTACA GGTAAGCTTAACCGGCTAATCGAAAAGACGAATCAGCAGTTTGAACTCATCGATAACGAGTTCAATGAGGTGGAGAAGCAGATCGGAAAT GTCATCAACTGGACTCGAGACTCGATCACTGAGGTGTGGTCCTACAATGCTGAGCTTCTGGTCGCTATGGAAAATCAACACACCATCGAT CTGGCAGACTCAGAAATGGACAAGTTGTACGAGCGGGTGAAGAGACAACTAA3GGAAAACGCCGAGGAAGATGGCACTGGATGCTTTG AAATCTTTCACAAGTGCGACGATGACTGCATGGCTTCAATCAGAAATAACACCTACGATCACACAGCAAGTACAGAGAAGAAGCAATGCAGA ACCGTATTCAAATCGACCCCGTCAAGCTGTCCAGCGGATACAAGGATGTGATCCTGTGGTTCTCCTTCGGGGCAAGCTGTTTCATCCTGC TGGCTATAGTGATGGGCCTGGTCTTCATTTGTGTCAAGTCCAGGAATATGCGGTGTACTATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2880	ATGAACACCCAGATACTGGTCTTTGCTCTCATAGCGATCATACCAACCAACGCTGACAAAATCTGTCTGGGCACCACGCGGTGTCTAAC GGCACTAAGGTAAACACACCCTCACTGAACGCGGGTGTGGAGGTGGTGAACGCCACCGGAGACCGTTGAGCGTACAAATATACCCAGGATCTG TTCCAAGGGTAAAACGGACCGTCGACCTTGGCCAGTGTGGCCTGCTGGGCACCATTACGGGCCCTCCCCAATGCGATCAATTTCTTGAGT TCAGCGCCGATTTGATCATAGAGCGACGTGAGGGGTCAGACGTGTGTTACCCTGGGAAATTTGTGAAGGAAGAAGCACTGCGACAGATC CTTCGAGAGTCTGGAGGGATTGATAAGGAAGCTATGGGCTTCACCTATAGCGGAATCAGGACTAACGGCGCTACTAGTGCGTGCAGACG ATCTGGAAGCAGTTTTTTACGCCGAAATGAAGTGGCTGCTGTCTAATACTGATAATGCCGCCTTCCCACAAATGACCAAGTCCTACAAGAA CACACGGAAGTCCCCAGCTCTGATCGTGTGTGGGGCATCCATCACTCGGTCTCCACAGCCGAGCAAACAAAGCTTTACGGGTCAGGAAACA AATTGGTAACCGTGGGCTCTAGTAACTATCAACAGAGCTTCGTCCCGTCCCCCGGTGCACGCCCACAGGTGAACGGTTTAAGTGGGCGC ATCGACTTCCATTGGCTCATGCTGAACCCTAATGACACAGTGACCTTTTCCTTTAACGGGGCATTCATCGCCCCTGATAGGGCATCCTTCC TCCGGGGCAAGAGTATGGGGATACAATCGGGGGTGCAAGTCGACGCAAATTGCGAGGGTGATTGTTACCACTCTGGGGGTACCATCATT TCCAACCTGCCCTTTCAGAACATAGATTCGAGGGCTGTCGGGAAGTGCCCTCGATATGTGAAGCAGCGGAGTCTCCTGCTGGCAACAGG CATGAAGAACGTCCCCGAGATCCCCCAAAGGACGAGGACTCTTCGGCGCAATCGCCGGTTTTATAGAGAACGGATGGGAAGGCCTGATC GACGGTTGGTATGGCTTTCGTCACCAGAACGCGCAGGGTGAGGGCACTGCCGCCGACTATAAGAGCACACAGTCCGCCATCGACCAAA TTACTGGAAAGCTTAATAGACTAATCGAAAAAACAAACCAACAGTTTGAGCTGATTGACAATGAGTTTAATGAGGTGGAGAAGCAGATAGG TAATGTGATAAATTGGACCCGGGATTCTATTACCGAAGTGTGGTCATACAATGCGGAACTGCTGGTAGCAATGGAAAATCAGCACACAAT CGATCTGGCCGATAGTGAGATGGACAAGTTGTACGAGAGGGTTAAGAGGCACCTTCGGGAAAATGCAGAAGAGGATGGTACCGGGTGT TTTGAAATCTTCCACAAGTGCGATGACGACTGCATGGCTTCTATCAGAAACAA`ACATACGACCACAGCAAATATCGGGAGGAAGCCATG CAGAACCGAATCCAGATCGATCCCGTCAAGCTTAGCTCGGGCTATAAAGATGTCATTCTGTGGTTTTCCTTTGGAGCCTCCTGTTTCATCC TCCTAGCCATTGTGATGGGTCTTGTGTTTATCTGCGTGAAGAACGGCAAATATGAGGTGCACTATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2881	ATGAATACCCAAATTCTTGTGTTCGCCCTGATCGCTATTATCCCGACGAACGCCGATAAGATCTGCCTAGGACACCACACGCTGTGAGTAAT GGAACCAAGGTGAACACACTGACTGAGAGGGGCGTGGAGGTGGTGAACGCGACAGAGACCGTGGAACGAACAAATATTCCGAGGATCT GTTCAAAGGGGAAGAGAAACCGTGGATCTGGGCCAGTGCGGACTGCTAGGCACTATTACCGGCCCACCACAGTGTGACCAGTTCCTGGA GTTTAGTGCCGACCTGATTATTGAAAGGCGCGAGGGAAGTGACGTTTGTTACCCCGGGAAATTCGTAAATGAGGAGGCCCTCAGACAAA TACTAAGAGAGTCCGGCGGAATTGACAAAGAGCGCGATGGGCTTTACATACAGCGGTATAAGAACGAACGGGGCGACCTCCGCATGTAG GCGTAGTGGCTCAAGTTTCTATGCCGAGATGAAGTGGCTGCTGAGCAATACAGACAATGCCGCCTTTCCCCAGATGACCAAGTCTTACAA GAATACGAGAAAAAGTCCAGCACTCATTGTGTGGGGTATCCATCATTCTGTGAGCACAGCAGAACAAACAAAGCTGTACGGCTCAGGAAA CAAGCTCGTGACTGTGGGCAGCTCTAACTACCAGCAATCATTCGTCCCCTCCCCGGGAGCCAGACCACAGGTTAACGGACTGAGTGGGC GAATTGATTTCCACTGGCTTATGTTAAACCCCAATGATACTGTGACATTTTCTTTCAACGGCGCGTTTATCGCTCCAGATCGTGCCAGTTTT CTGAGGGGGAAGTCCATGGGCATCCAGTCCGGAGTGCAGGTTGACGCCAATTGTGAAGGGGACTGTTACCATTCTGGTGGGACTATTAT TTCGAACCTACCCTTCCAGAATATTGACAGCCGGGCCGTTGGTAAATGCCCTCGGTACGTTAAACAAAGAAGCCTCCTGCTGGCGACCG GAATGAAGAATGTGCCTGAAATTCCGAAAGGACGCGGACTGTTCGGCGCTATCGCAGGGTTTATAGAAAACGGTTGGGAGGGCTTAATT AACGGTTGGTATGGCTTTCGGCACCAGAACGCCCAGGGCGAGGGGACCGCCGCCGACTATAAAAGCACACAGTCTGCGATTGATCAGA TTACCGGGAAGCTCAACAGGCTCATAGAGAAAACAAACCAACAGTTTGAACTGATTGACAATGAATTTAACGAGGTAGAAAAACAGATTG GCAATGTTATCAACTCGACCAGGGATTCAATTACAGAGGTGTGGTCTTATAATGCCGAGCTATTGGTGCCATGGAAAACCAACATACAA TCGACCTCGGCGATTCAGAGATGGACAAGCTGTATGAGAGGGTCAAAAGACAGTTGCGCGAGAATGCCGAGGAGGACGGGACTGGCTG CTTCGAGATCTTTCACAAATGCGATGACGACTGTATGGCTAGTATCCGCAACAACACGTATGATCACTCTAAGTACCGCGAGGAAGCCAT GCAGAATCGGATCCAAATTGATCCAGTTAAACTGTCTAGCGGCTACAAGGATGTGATTCTGTGGTTTTCTTTCGGAGCATCCTGCTTCATC TTGTTAGCCATTGTGATGGGCCTGGTTTTTATCTGCGTGAAGAACGGCAATATGCGGTGTACTATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2882	ATGAATACGCAGATTCTGGTGTTTGCCTTAATAGCTATTATCCCCACTAATGCCGACAAGATCTGTTTAGGGCACCACGCTGTATCAAATG GCACCAAAGTCAATACGCTCACCGAACGGGGGTGGAAGTTGTGAACGCGACTGAAACTGTCGAAAGAACCAATATTCCGCGAATTTGC AGTAAGGGAAAGAAGACTGTGGACCTGGGCCAATGTGGCTTGTTGGGCACCATTACCGGTCCACCGCAGTGCGATCAATTTCTTGAATT CTCTGCAGACCTGATAATCGAACGCCGCGAGGGCTCTGACGTGTGTTATCCTGGGAAATTTGTTAATGAGGAAGCCCTCAGGCAGATAC TCAGGGAATCTGGCCGGTATTGATAAGGAGGCCCATGGGGTTCACGTACTCTGGTATACGCACCAATGGTGCCACATCCGCATGCAGGAGA AGCGGCTCCTCGTTCTATGCAGAAATGAAGTGGTTGCTGTCGAACACAGACAACGCCGCCTTTCCACAGATGACAAAGAGTTACAAGAAC ACAAGGAAGTCACCTGCCCTGATCGTTTGGGGTATTCATCATTCTGTCTCCACAGCTGAGCAGACCAAACTGTACGGGTCAGGAAACAAG CTGGTGACTGTGGGTTCCTCGAATTATCAGCAGAGCTTTGTTCCGTCCCCAGGTGCGAGGCCCCAGGTGAACGGCCAATCCGGGCGCA TCGACTTTCACTGGCTGATGCTTAACCCAAACGATACTGTGACCTTCTCCTTTAACGGAGCGTTTATCGCTCCAGACAGGGCCTCGTTTCT GAGAGGGAAAAGCATGGGAATCCAGTCAGGGGTGCAGGTGGATGCTAATTGTGAAGGTGACTGTTACCACTCAGGAGGCACAATCATTA GCAACCTGCCCTTTCAGAACATTGACTCCAGGGCAGTGGGCAAATGTCCACGGTATGTGAAGCAGAGAAGCCTCCTCCTGGCCACAGGC ATGAAGAACGTGCCAGAGATTCCCAAGGGTAGCGGCCTGTTCGGTGCTATAGCCGGATTTATTGAGAATGGATGGGAAGGGCTGATCGA CGGTTGGTACGGCTTTAGACACCAGAACGCTCAGGGAGAGGGAACTGCCGCAGACTATAAAAGTACTCAAAGCGCGATCGACCAGATAA CAGGTAAGCTCAACCGTCTCATTGAGAAAACAAACCAGCAGTTCGAACTCATCGATAACGAGTTTTAACGAAGTCGAGAAACAAATTGGAA ACGTCATTAACTGGACTAGAGATTCAATCACTGAGGTGTGGAGCTACAACGCTGAGCTGCTTGTGGCTATGGAGAATCAGCATACCATAG ATCTGGCTGACTCTGAAATGGATAAACTCTATGAACGAGTCAAGAGACAGCTCAGGGAGAATGCTGAAGAGGATGGCACAGGATGTTTC GAAATCTTCCACAAGTGTGACGACGACTGCATGGCAAGCATTAGGAATAACACATATGATCATTCTAAATATAGGGAAGAGGCAATGCAG AATCGGATCCAAATTGATCCAGTCAAGTTATCTTCCGGGTATAAAGACGTGATCCTTTGGTTCAGCTTTGGCGCTTCATGTTTCATCTTGC TTGCCATCGTCATGGGACTCGTCTTTATCTGCGTCAAAAATGGTAACATGAGATGCACAATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2883	ATGAATACCCAGATTTTAGTGTTTGCCCTGATTGCCATAATCCCAACTAACGCCGATAAGATTTGCTTGGGCCACCACGCTGTGAGCAAC GGCACCAAAGTCAACACCCTGACCGAACGCGGCGTGGAGGTCGTCAATGCCACCGAAACCGTGGAGCGAACCAACATTCCACGCATCT GTTCCAAGGGAAAAAGAACGGTTGATCTCGGCCAGTGTGGCCTGCTCGGGACAATCACCGGGCCGCCGCAGTGCGACCAGTTCCTGGA GTTTAGCGCCGACCTAATCATCGAACGCCGGGAGGGTTCTGATGTGTGCTACCCTGGCAAATTTGTGAATGAGGAGGCGCTTAGGCAGA TTCTCAGGGAGTCCGGTGGAATTGACAAGGAAGCCATGGGTTTCACATACAGCGGTATTAGGACTAATGGCGCAACATCAGCTTGTCGA AGATCTGGTTCTAGCTTTTACGCAGAGATGAAATGGCTTCTATCCAATACTGATAATGCAGCTTTTCCCCAAATTACAAAGTCATATAAAAA CACCCGCAAATCGCCCGCTCTCATAGTGTGGGGAATTCACCATTCCGTTAGTACCGCTGAACAGACCAAATTGTATGGGAGCGGTAACAA GCTGGTCACCGTTGGGTCCTCCAATTATCAGCAGTCGTTCGTGCCGAGTCCTGGAGCCCGCCCCCAGGTCAACGGCCTTTCTGGCCGG ATTGACTTTCATTGGCTGATGTTGAACCCTAACGACACAGTTACATTCTCATTTAATGGAGCCTTCATCGCTCCGGATCGAGCCAGCTTCC TCCGTGGTAAGAGTATGGGGATCCAAAGCGGTGTTCAGGTCGATGCCAACTGCGAGAGGCGATTGTTATCATTCAGGGGGTACTATAATC AGCAACCTGCCCTTTCAAAACATAGACAGCAGGGCAGTCGGAAAATGTCCTCGATATGTCAAACAACGGTCTCTGTTGCTGGCTACAGGG ATGAAGAACGTGCCGGAGATCCCCAAAGGACGTGGATTATTTGGGGCCATAGCCGGTTTATTGAGAATGGATGGGAGGGCCTGATTGA TGGATGGTACGGTTTTCGCCATCAGAATGCACAGGGAGAAGGAACAGCTGCCGACTACAAGTCAACGCAGAGTGCTATTGACCAGATAA CTGGCAAGTTAAACCGGCTGATCGAAAAGACTAATCAACAATTTGAGTTGATCGACAATGAGTTTAATGAAGTTGAGAAACAGATCGGCAA CGTCATCAACTGGACGCCGCGATAGCATTACAGAAGTCTGGTCTTATAACGCCGAGTTGCTTGTAGCAATGGAGAACCAGCATACCATTGA TCTCGCGGACAGTGAAATGGACAAGCTCTACGAGCGCGTAAAGCGACAGCTAAGAGAAAATGCAGAAGAAGATGGGACGGGATGTTTCG AAATCTTCCACAAATGCGATTGCATGGCCAGCATACGGAATAATACCTACGATCATTCCAAGTATCGGGAAGAGGCCATGCAGA ACCGCATTCAGATTGATCCCGTGAAACTTTCAAGTGGCTACAAGGACGTCATCCTGTGGTTCTCTTTCGGGGCAAGTTGTTTTATTCTGCT CGCTATTGTCATGGGTCTGGTCTTTATCTGTGTCAAAAATGGCAACATGCGGTGCACAATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2884	ATGAACACACAGATTCTAGTGTTTGCACTGATTGCTATCATTCCTACAAATGCAGACAAGATTTGTCTGGGCCATCACGCCGTCTCGAATG GTACAAAAGTGAATACCCTGACTGAAAGAGGGGTCGAAGTGGTTAACGCAACAGAGACCGTAGAGAGAACGAATATTCCAAGAATCTGCT CTAAGGGCAAAAAAAACAGTGGATCTGGGTCAGTGTGGACTGTTAGGGACAATCACACAGGTCCACCACAATGCGACCAGTTCCTTGAATTCT CGGCGGATCTTATCATCGAGCGCCGAGAAGGTTCCGACGTGTGTTACCCAGGAAAATTCGTCAATGAGGAGGCTTTGAGACAGATCTTG CGCGAAAGCGGTGGCATCGACAAAGAGGCTATGGGATTCACTTACTCTGGAATACGAACTAACGGTGCCACGTCCGCTTGCCGCAGGA GTGGATCTAGCTTCTATGCAGAGATGAAGTGGCTATTGAGCAACACTGATAATGCTGCCTTCCCTCAGATGACAAAGAGCTATAAAAACA CTAGAAAGAGCCCAGCATTGATCGTTTGGGGCATTCACCACACAGTGTATCCACAGCAGAGCAGACCAAACTGTATGGGAGTGGAAACAAG CTTGTTACTGTAGGGTCCAGCAACTATCAACAGAGCTTTGTTCCGTCACCAGGTGCTCGGCCCCAGGTTAATGGGCAAAGTGGGCGGAT CGACTTCCACTGGCTGATGCTCAATCCTAATGACACGGTCACATTTTCCTTTAACGGGGCCTTCATTGCTCCGGATCGCGCCAGCTTTCT GCGTGGAAAGAGTATGGGTATTCAAAGTGGCGTTCAGGTCGACGCCAACTGCGAGGGCGACTGCTATCATAGCGGTGGAACAATCATCT CTAACCTGCCTTTCCAGAACATCGATAGCAGAGCCGTTGGCAAGTGTCCCAGGTACGTGAAGCAGCGATCACTGTTGTTGGCTACGGGC ATGAAAAACGTCCCAGAGATTCCAAAAGGGAGGGGACTATTCGGCGCCATTGCTGGGTTCATTGAAAATGGCTGGGAGGGTCTGATTGA TGGATGGTACGGGTTTAGGCACCAAAACGCCCAAGGCGAAGGGACAGCAGCTGACTATAAATCCACTCAATCTGCTATCGACCAGATCA CTGGAAAACTCAACAGACTTATTGAGAAGACTAATCAGCAGTTTGAGCTCATCGACAACGAGTTTAATGAAGTGGAGAAGCAGATTGGGA ACGTTATCAACTGGACGAGGGACTCAATCACGGAAGTATGGTCCTACAATGCCGAATTGCTGGTGGCCATGGAGAACCAGCACACCATT GACCTGGCGGACTCCGAAATGGATAAACTCTACGAACGAGTGAAGAGGCAACTCCGAGAAAATGCTGAGGAAGATGGGACCGGTTGTTT CGAGATCTTTCATAAGTGTGACGATGACTGCATGGCTTCTATTAGAAACAATACTTACGATCACTCAAAATATAGAGAAGAGGCAATGCAG AACCGCATTCAGATCGACCCGGTGAAGCTGAGCAGTGGTTATAAGGATGTCATTTTATGGTTTAGTTTTTGGAGCATCTTGTTTTATTTTGC TCGCTATCGTAATGGGCCTCGTGTTTATCTGCGTGAAAAATGGTAACATGCGGTGCACGATATGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2885	ATGAATACGCAGATTTTGGTTTTCGCCTTGATTGCCATTATTCCTACAAACGCCGACAAGATCTGCCTGGGACATCACGCCGTGAGTAATG GAACCAAGGTGAATACACTGACCGAGAGGGCGTAGAAGTTGTAAATGCTACTGAGACAGTGGAGCGAACAAATATTCCCAGAATTTGCT CCAAGGGCAAAGAAGACTGTCGACCTTGGCCAATGTGGGCTGCTCGGCAOGATCACGGGGCCACCCCAATGTGATCAGTTTCTGGAGTTT TCTGCCGACCTCATTATAGAACGCCGGGAGGGAGCGACGTATGCTACCCCGGTAAGTTCGTAAACGAAGAAGCCCTCAGACAGATTTT GAGGGAGTCCGGAGGCATCGATAAGGAGGCAATGGGCTTCACCTACAGCGGGATCAGAACAAACGGTGCCACAAGTGCATGTAGGCGC TCTGGCTCATCATTCTATGCAGAGATGAAGTGGCTGCTTTCCAATACTGATAATGCGGCCTTTCCTCAGATGACTAAATCATATAAGAACA CCAGAAAATCTCCCGCCTTGATCGTCTGGGGGATCCATCACAGCGGTCTCTACCGCTGAGCAGACCAAACTCTACGGTTCAGGGAACAAA TTAGTGACCGTTGGCAGCTCCAACTACCAGCAATCATTTGTGCCTTCCCCAGCTGCCAGGCCGCAAGTAAACGGTCAGTCAGGACGAAT TGATTTCCACTGGCTAATGCTGAACCCGAATGACACAGTCACCTTCAGCTTTAACGGGGCTTTCATCGCACCCGACCGCGCCAGTTTCTT ACGGGGAAAATCAATGGGAATACAATCCGGCGTTCAAGTGGACGCGAATTGCGAGGGAGATTGTTACCATAGTGGTGGTACAATTATCTC CAATCTTCCCTTTCAGAATATCGACAGTAGGGCAGTGGGAAAATGTCCCCGATACGTCAAACAGCGGAGCCTGCTCCTCGCCACCGGGA TGAAGAACGTCCCCGAGATTCCAAAAGGTAGGGGTTTGTTCGGAGCTATCGGCAGGGTTCATCGAAAACGGCTGGGAAGGCCTGATAGAC GGTTGGTATGGATTCCGACACCAAAACGCTCAAGGCGAGGGCACTGCAGCAGATTACAAATCTACACAAAGCGCTATCGACCAGATTAC CGGAAAACTTAACCGTCTAATCGAAAAGACCAATCAGCAGTTCGAGCTCATCGATAACGAATTCAATGAGGTGGAGAAACAGATCGGAAA CGTAATCAATTGGACACGAGATTCCATCACTGAGGTTTGGTCTTATAACGCCGAACTCTTAGTGGCTATGGAGAATCAGCACACCATCGA CCTGGCTGATTCCGAGATGGACAAGCTGTACGAAAGAGTGAAGAGACAGCTTCGCGAAAACGCAGAGGAGGATGGGACCGGATGTTTC GAAATCTTCCACAAATGTGATGATTGCATGGCCAGCATCCGGAACAACACATATGATCATTCGAAATATCGCGAGGAGGCTATGCAA AATCGGATCCAGATCGATCCCGTCAAGCTAAGCTCTGGGTACAAGGACGTGATTTTATGGTTTTCCTTCGGCGCTTCATGTTTCATCCTTC TGGCCATCGTGATGGGCCTAGTGTTTATCTGCGTCAAGAATGGAAACATGAGATGTACGATCTGCATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2886	ATGAACACTCAGATTCTGGTATTTGCGCTAATCGCAATCATTCCCACCAACGCAGACAAGATTTGTCTGGGACATCATGCCGTGAGCAAC GGCACAAAAGTGAACACACTCTGACTGAAAGGGGAGTGGAGGTTGTAAATGCGACCGAAACTGTGGAAAGAACCAATATACCCCGAATCTG TAGCAAGGGTAAAAAGACCGTAGACTTAGGACAGTGTGGTCTCTTGGGGACAATCACAGGCCCCCCTCAATGTGACCAGTTCTTAGAGTT TAGCGCAGATTTGATTATCGAGCGAAGGGAGGGAAGTGACGTTTGTTACCCTGGGAAGTTCGTGAATGAAGAAGCTCTCCGTCAGATCTT GAGGGAGTCCGGAGGCATAGACAAAGAGGCCATGGGGTTCACTTACTCCGGGATTCGCACAAATGGAGCTACAAGTGCCTGTAGAAGG TCAGGCAGTTCTTTCTATGCTGAGATGAAATGGCTCTTATCAAACACAGACAACGCTGCCTTCCCACAGATGACAAAATCCTACAAAAACA CTCGCAAATCCCCAGCCCTTATCGTGTGGGGATCCATCACTCCGTGTCCACTGCGGAACAGACTAAGCTGTATGGATCCGGGAACAAA CTGGTAACTGTAGGGAGTAGCAACTACCAGCAGTCCTTCGTCCCATCTCCTGGGGCACGCCCCCAGGTAAACGGACAGTCTGGAAGAAT TGATTTCCACTGGTTGATGCTGAACCCAAATGATACTGTGACCTTCTCTTTCAATGGCGCTTTCATCGCGCCCGATCGCGCTAGCTTCCTA AGGGGAAAATCCATGGGGATTCAGTCTGGCGTCCAGGTCGATGCAAATTGCGAAGGCGACTGTTACCATTCTGGAGGGACCATTATCAG TAACCTGCCATTCCAGAATATTGACTCGAGGGCAGTGGGTAAGTGCCCCAGGTACGTGAAACAAGATCACTGCTTCTGGCTACAGGAAT GAAGAACGTACCTGAGATCCCTAAAGGGCGGGGATTATTCGGAGCCATCGCAGGCTTCATAGAGAACGGGTGGGAGGGCCTGATTGAT GGGTGGTACGGATTCAGGCACCAAAATGCCCAGGGAGAAGGGACCGCTGCGGATTACAAGAGTACCCAGTCCGCTATAGACCAGATCA CAGGCAAACTTAATAGGCTGATTGAAAAGACCAATCAGCAGTTTGAACTCATCGATAACGAATTTAACGAGGTGGAAAAGCAGATTGGGA ACGTGATTAACTGGACAAGGGATTCTATTACCGAGGTGTGGAGCTACAATGCCGAGCTGTTGGTTGCGATGGAGAATCAGCACACTATC GATCTAGCAGACTCCGAAATGGACAAGTTGTATGAAAGAGTGAAGCGCCAATTAAGGGAAAACGCAGAGGAGGATGGGACCCGATGTTT TGAGATCTTCCATAAATGCGATGACGACTGCATGGCCAGCATTAGAAATAATACCTACGACCATAGTAAGTATAGGGAGGAGGCGATGCA AAACAGAATTCAAATAGACCCAGTGAAACTGAGTTCTGGGTACAAAGACGTTATTCTCTGGTTTTCATTCGGCGCCAGCTGCTTTATACTG CTGGCTATCGTCATGGGCTTGGTCTTCATCTGCGTGAAAAACGGGAATATGCGATGCACAATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2887	ATGAATACCCAGATCCTGGTGTTCGCTCTCATCGCCATCATACCAACAAACGGCTGACAAGATCTGCCTAGGTCACCACGCTGTGTCTAAT GGAACCAAAGTGAATACACTGACCGAGCGCGGGTGTGGAGGTGGTGAACGCTACAGAGACCGTGGAACGCACTAATATCCCTCGAATATG TTCTAAGGGCAAGAAAACTGTAGATCTGGGGCAGTGCGGCCTTCTGGGAACTATCACGGGCCCTCCACAGTGCGATCAATTTTTGGAGT TTTCTGCCGACCTCATCATCGAACGCCGTGAGGGATCGGACGTGTGTTATCCAGGAAAGTTTGTGAATGAGGAAGCGCTCCGGCAGATC TTAAGAGAAAGCGGTGGTATTGACAAAGAAGCAATGGGCTTCACCTATTCAGGAATTAGGACCAACGGAGCAACCAGTGCGTGTAGACG AAGCGGGTCTTCATTCTACGCCGAAATGAAGTGGCTGCTTTCTAACACCGATAACGCAGCATTCCCACAAATGACCAAGAGCTACAAGAA TACAAGAAAATCCCCCTGCATTAATTGTATGGGGAATCCATCACTCCGTCTCAACAGCAGAACAGACAAAACTTTATGGCAGTGGCAACAAA CTCGTCACCGTTGGTAGCTCCAACTACCAGCAGTCTTTCGTGCCAAGTCCCGGGGCCCGACCGCAAGTGAACGGGCAGTCTGGCAGAA TCGACTTTCACTGGCTCATGCTGAATCCAAACGACACAGTTACCTTCAGCTTCAATGGGGCATTCATTGCCCCAGACAGAGCCAGCTTTC TTCGAGGCAAGAGCATGGGCATCCAGAGCGGGGTACAGGTCGACGCAAACTGTGAAGGAGATTGCTACCACTCCGGGCGGGAACGATCAT TTCGAATCTGCCATTCCAGAATATCGACTCTAGGGCTGTGGGGAAATGTCCTAGGTATGTGAAACAGCGGAGCCTCCTTCTGGCAACAG GAATGAAAAACGTACCTGAGATCCCTAAGGGGCGAGGATTGTTTGGTGCCATCGCGGGATTCATTGAAAATGGCTGGGAGGGATTGATT GACGGCTGGTACGGATTCCGGCATCAAAACGCGCAAGGGGAGGGTACGGCGGCAGATTACAAAAGCACTCAGTCCGCGATCGACCAGA TCACCGGCAAACTCAATAGACTTATCGAGAAGACTAACCAACAGTTCGAGCTCATCGACAATGAGTTTAATGAAGTAGAGAAACAGATCG GCAATGTCATAAACTGGACCAGGGACAGCATCACCGAAGTGTGGTCCTATAACGCCGAGCTCCTGGTGGCCATGGAGAATCAGCACACT ATAGACTTAGCTGACTCTGAGATGGACAAGCTCTATGAGAGAGTTAAACGGCAGCTCAGAGAAACGCAGAAGAAGATGGCACCCGGTG CTTCGAGATCTTTCATAAATGTGATGACGACTGCATGGCCTCGATACGTAACAATACATATGATCATAGTAAGTATCGGGAGGAAGCAATG CAGAACAGGATTCAGATCGACCCCGTTAAATTGTCCAGCGGCTATAAGGACGTAATTCTGTGGTTCTCGTTTGGCGCCTCCTGTTTCATTT TGTTGGCCATTGTGATGGGTCTCGTCTTCATTTGCGTAAAAAATGGCAATATGCGGTGCACTATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2888	ATGAATACTCAGATCCTAGTTTTTGCTCTGATTGCCATAATTCCGACGAATGCGGACAAGATTTGCCTGGGACACCACGCTGTCAGTAAC GGTACCAAAGTAAATACCCTGACGGAGCGAGGTGTCGAGGTGGTGAATGCCACCGAAACTGTGGAGAGAACCAACATCCCTCGGATCTG TAGCAAGGGCAAGAAAACTGTGGACCTCGGTCAGTGTGGGTTGCTCGGGACCATTACAGGCCCCCCACAGTGCGATCAATTTCTGGAGT TCTCTGCCGACTTAATTATTGAAAGACGGGAGGGTAGCGACGTTTGTTATCCCGGCAAATTCGTAAATGAGGAGGCCTTGCGCCAGATTT TGCGCGAGTCCGGCGGCATTGATAAAGAGGCTATGGGATTCACTTATTCTGGCATTAGGACAAACGGCGGCGACCAGTGCATGTCGCCGA TCCGGCTCCTCCTTTTACGCTGAGATGAAATGGCTGTTGTCGAACACTGACAACGCTGCATTTCCACAGATGACAAAGTCCTATAAGAAC ACCAGGAAGAGTCCGGCCCTGATCGTGTGTGGGGAATACATCACTCTGTGTCCACGCGCCGAACAGACCAAGCTGTACGGAAGTGGCAATAA GCTGGTTACTGTCGGGAGCAGCAATTACCAGCAGAGTTTTGTGCCGTCACCCGGGGCCCGGCCTCAGGTGAATGGTCAGTCCGGTAGA ATAGACTTCCACTGGCTTATGCTAAACCCAAATGACACCGTTACCTTCTCATTTAACGGTGCCTTTATTGCCCCCGACCGGGCTTCATTCC TGCGCCGGAAATCCATGGGCATCCAATCTGGGGTGCAGGTTGACGCTAATTGTGAGGGAGACTGTTATCATAGCGGAGGCACCATAATC TCCAATCTGCCCTTCCAGAACATTGACAGCAGAGCAGTAGGCAAATGCCCCAGGTATGTCAAGCAACGAAGCCTTCTTCTCGCTACCGGT ATGAAGAATGTGCCCGAAATACCAAAGGGACGGGGGGCTCTTTGGCGCGATACCCGGGTTCATCGAGAATGGATGGGAGGGACTCATTG ACGGTTGGTATGGGTTCCGCCATCAGAACGCGCAGGGGGAAGGCACAGCGCGACTATAAGTCCACACAGAGTGCAATTGACCAAATT ACCGGCAAATTAAACAGACTCATTGAGAAGACTAACCAGCAGTTTGAGTTAATGATGAGTTTAACGAAGTGGAGAAACAAATTGGAA ACGTGATCAACTGGACACGAGATAGCATTACGGAGGTATGGTCATATAACGCCGAGCTGCTCGTTGCGATGGAGAATCAACACACAATTG ATTTAGCAGACTCCGAAATGGACAAACTTTACGAACGGGTGAAACGCCAGCTGCGCGAAAACGCTGAAGAAGATGGGACAGGTTGCTTT GAAATTTTTCACAAGTGCGATGATGACTGCATGGCCTCAATCCGTAATAATACATACGATCACACGCAAGTATAGGGAAGAAGCCATGCAG AATAGGATTCAAATAGACCCGGTGAAATTATCTTCTGGCTATAAAGATGTTATTCTGTGGTTCTCCTTCGGCGCGTCATGTTTCATTTTATT GGCCATTGTGATGGGCCTGGTTTTCATATGCGTGAAGAACGGAAATATGAGATGCACCATCTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2889	ATGAACACACAAATCCTGGTGTTTGCCTTAATAGCTATTATCCCAACCAACGCAGACAAGATCTGTCTTGGACACCATGCTGTAAGCAATG GAACCAAAGTGAACACATTGACCGAGCGTGGGGTCGAAGTGGTTAACGCCACCGAGACAGTGGAGAGGACTAATATCCCCAGAATTTGT AGTAAAGGCAAGAGGACAGTTGACTTAGGACAATGCGGACTGTTGGTACCATTACAGGTCCACCCCAGTGTGATCAGTTTCTGGAATTC AGCGCTGATTTGATCATCGAGCGGAGAGAAGGCAGTGATGTCTGTTACCCTGGGAAATTCGTCAACGAAGAGGCATTGCGCCAGATTTT GAGGGAATCCGGCGGAATCGACAAAGAAGCCATGGGGTTCACATACTCAGGGATCCGGACGAATGGCGCAACGAGCGCTTGTAGGAGG TCCGGGAGTTCTTTCTATGCGGAGATGAAATGGCTATTGAGCAACACAGATAATGCCGCTTTCCCTCAAATGACCAAGTCATACAAAAATA CAAGGAAGAGCCCAGCCCTTATCGTGTGGGGTATCCATCACAGTGTGTCTACCGCAGAACAGACAAAACTCTACGGCAGCGGGAACAAA CTTGTGACCGTCGGCTCTTCAAACTATCAACAGAGTTTCGTTCCGTCTCCAGGCGCAAGGCCACAGGTGAATGGATTAAGTGGGCGGAT CGATTTTCATTGGCTTATGCTCAACCCTAATGATACAGTCACATTCTCTTTTAATGGAGCTTTCATTGCCCCAGACAGGGCGTCCTTCCTG CGAGGCAAATCTATGGGTATACAAAGCGGCGTCCAGGTAGACGCAAATTGTGAGGGTGATTGCTACCACAGCGGGGGAACCATTATCAG CAACTTGCCATTCCAAAACATCGATTCCCGTGCTGTGGGCAAGTGTCCAAGATATGTGAAACAGAGGAGTCTGTTGTTGGCGACGGGAAT GAAAAACGTTCCCGAGATTCCAAAGGGCCGGGGACTTTTTGGGGCCATCGCCGGATTCATAGAGAACGGCTGGGAAGGACTCATTAATG GATGGTATGGGTTCCGGCATCAGAACGCTCAGGGGGAGGGCACCGCTGCTGACTACAAGAGTACCCAGTCTGCCATCGATCAGATTAC CGGTAAGTTGAATAGGCTGATCGAGAAAACTAACCAGCAGTTTGAGCTCATTGATAATGAATTCAACGAGGTAGAAAAACAGATAGGCAA CGTGATTAACTGGACCCGTGACTCCATAACGGAGGTATGGAGTTATAATGCAGAACTCCTCGTGGCTATGGAAAATCAGCACACAATTGA TTTAGCTGACTCAGAAATGGATAAGCTGTACGAGCGGGTCAAACGCCAACTGCGCGAGAATGCAGAAGAACGGGACCGGGTGTTTCG AAATCTTTCATAAATGCGACGATGACTGTATGGCCAGCATCCGTAACAACACTTACGACCACAGCCAAGTATCGGGACGGAAGCTATGCAAA ATAGGATCCAGATCGACCCTGTCAAATTATCCAGTGGGTACAAAGATGTCATCCTGTGGTTTTCCTTTGGCGGTCATGCTTTATTTTGTT GGCTATCGTGATGGGCCTCGTTTTTATCTGTGTGAAGAATGGAAACATGCGATGCACCATCTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2890	ATGAACACTCAGATTCTGGTGTTCGCACTAATCGCAATCATACCTACTAATGCCGACAAAATTTGCCTCGGCCACCATGCCGTGTCAAATG GCACAAAAGTGAATACCCTGACGGAGCGCGGCGTCGAGGTTGTCAATGCCACAGAGACAGTGGAACGGACCAACATTCCACGTATTTGT TCAAAAGGCAAGCGTACCGTTGACCTGGGTCAGTGCGGACTTCTCGGGACAATCACTGGACCACCACAGTGCGATCAGTTCTTGGAGTT TTCAGCAGACCTTATCATCGAGAGGCGGGAAGGTAGCGACGTTTGCTACCCCGGCAAATTTGTTAATGAAGAAGCCTTAAGGCAGATCCT ACGAGAATCAGGGGGCATTGACAAAGAAGCGATGGGATTCACTTACAGTGGAATTAGAACAAACGGTGCCACGTCTGCTTGCAGACGCT CGGGCTCTAGCTTTTATGCTGAAATGAAATGGTTGCTGAGCAATACCGATAATGCTGCCTTCCCACAGATGACAAAAAGTTACAAGAATAC TAGAAAGTCACCCGCACTGATCGTCTGGGGGATTCACCATTCAGTCAGCACCGCCGAGCAGACCAAACTTTATGGTAGCGGTAACAAGT TAGTGACAGTTGGAAGCTCCAATATCAACAGTCATTTGTGCCATCTCCCGGGGCTCGACCCCAAGTGAACGGGTTAAGTGGTCGGATC GACTTCCACTGGTTGATGCTCAACCCTAACGACACAGTCACATTCTCCTTCAACGGCGCATTCATAGCCCCCGACCGGGCAAGCTTCCTA AGGCGAAAGAGTATGGGAATCCAGTCTGGGGTGCAAGTTGATGCCAACTGCGAAGGGGATTGCTATCATTCCGGCGGGACAATTATAAG CAACCTGCCATTCCAGAACATCGATTCACGGGCAGTCGGGAAGTGCCCCAGGTATGTGAAGCAGCGGTCACTGCTGTTGGCTACTGGCA TGAAAAACGTGCCGGAGATCCCAAAGGCCGTGGGCTCTTCGGGGCTATCGCCGGGTTTATCGAGAACGGCTGGGAGGGCCTGATTAA TGGGTGGTATGGCTTTAGGCATCAGAACGCGCAAGGAGAGGGAACCGCGGCCGACTATAAGAGCACACAGTCTGCGATCGATCAAATAA CCGGTAAGCTCAATCGGCTGATTGAAAAAACCAACCAGCAGTTTGAGCTAATCGACAATGAATTCAACGAGGTGGAAAAGCAGATTGGTA ACGTCATTAATTGGACAAGAGACAGTATTACTGAGGTGTGGAGTTATAACGCTGAACTGCTGGTTGCCATGGAGAATCAGCACACTATTG ACCTGGCAGATTCTGAGATGGATAAGCTCTATGAGAGAGTGAAACGGCAGCTGAGAGAGAATGCTGAAGAGGATGGAACCGGGTGCTTC GAAATTTTTCATAAGTGTGATGACGATTGTATGGCCTCGATTAGAAATAATACATACGATCACTCCAAGTACCGAGAGGAGGCCATGCAGA ACAGGATCCAAATTGACCCCGGTAAGCTGAGTAGTGGCTACAAGGATGTTATATTATGGTTTAGCTTCGGAGCCTCCTGCTTCATACTGCT GGCTATTGTGATGGGGTTAGTCTTATCTGCGTGAAAAATGGGAACATGAGATGTACAATCTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2891	ATGAACACGCAGATCCTAGTCTTTGCCCTTATTGCCATAATCCCTACCAACGCCGATAAGATCTGCCTCGGTCACCACGCCGTTTCCAAT GGCACAAAGGTGAATACTTTGACAGAACGGGGGGTTGAGGTGGTCAATGCTACCGAAACCGTAGAGCGAACAAATATCCCGAGAATATG TTCCAAAGGCAAGAAGACCGTGGACCTCGGACAGTGTGGATTACTCGGGACAATCACAGGTCCCCCACAGTGCGATCAGTTCTTGGAAT TCTCTGCCGACCTCATTATCGAACGGAGAGAAGGATCGGATGTGTGTTATCCTGGCAAGTTCGTCAATGAGGAAGCTCTTAGACAGATCT TACGCGGAGAGTGGTGGCATCGACAAGGAAGCAATGGGTTTCACATATAGCGGAATTCGGACTAATGGAGCAACTTCAGCTTGTAGGAGA AGCGGCTCATCTTTTTATGCCGAAATGAAGTGGCTGTTATCTAACACCGATAACGCTGCCTTCCCACAGATGACGAAATCATACAAGAACA CTAGGAAGAGCCCAGCTCTGATTGTGTGGGGTATTCATCATAGTGTCTCCACGGCGGAACAGACTAAGCTGTATGGGTCCGGCAATAAA CTTGTCACCGTAGGCAGCAGCAACTACCAGCAGAGCTTCGTGCCTAGCCCAGGAGCTAGGCCCCAGGTGAATGGACAGTCTGGGCGAA TAGACTTCCACTGGCTTATGCTCAATCCGAATGACACAGTGACATTCAGCTTCAATGGGGCTTTTATTGCTCCAGACAGAGCCAGCTTCCT GAGAGGCAAATCAATGGGGATCCAAAGCGGAGTACAGGTTGACGCCAACTGTGAAGGCGATTGCTACCACTCAGGGGGCACAATTATCT CTAACCTGCCATTCCAGAATATTGATTCGAGAGCTGTGGGGAAGTGTCCTAGGTATGTAAAACAGCGGAGCCTGCTCCTCGCTACAGGG ATGAAGAATGTCCCGGAAATCCCAAAAGGACGGGGCCTGTTTGGCGCAATTGCCGGCTTCATAGAGAATGGGTGGGAGGGACTGATCG ATGGATGGTACGGGTTTCGCCACCAGAACGCCCAGGGAGAAGGGACAGCCGCTGATTACAAATCCACACAAAGCGCAATCGACCAGAT CACAGGTAAACTGAATAGGCTCATCGAGAAGACCAATCAGCAATTCGAACTTATCGACAATGAGTTTAATGAGGTGGAGAAACAAATCGG AAATGTGATCAATTGGACGGAGATTCTATTACTGAGGTGTGGTCATACAATGCCGAACTCCTTGTGGCTATGGAAAATCAGCACACCATA GACCTGGCCGACTCCGAGATGGATAAGCTATACGAGGCGCTCAAGCGCCAGCTGAGGGAAAATGCTGAGGAAGACGGAACGGGTTGCT TCGAAATTTTTCACAAGTGCGACGATGACTGCATGCCTCTATTAGAAATAATACATACGACCACTCTAAGTATAGGGAAGAGGCCATGCA GAATCGCATACAGATCGATCCTGTGAAACTCTCCAGCGGGTATAAGGATGTCATTCTGTGGTTCAGTTTCGGCGCTAGCTGTTTTATACTT TTGGCTATTGTTATGGGTCTAGTGTTTATTTGCGTGAAAAACGGCAATATGCGGTGCACAATATGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2892	ATGAATACCCAGATCCTTGTCTTCGCATTAATAGCAATCATTCCAACCAATGCTGACAAGATCTGTCTGGGTCACCATGCAGTTTCCAATG GCACAAAAAGTTAATACACTGACAGAACGCCGGGGGTGGAAGTAGTCAACGCCACCCGAAACCGTAGAGAGGACCAATATCCCCAGGATCTGC TCAAAGGGAAAGCGTACAGTGTGGACCTGGGACAGTGTGGGCTGCTCGGCACAATTACAGGACCACCACACAGTGTGACCAGTTCCTGGAGTT TAGCGCTGACTTAATAATCGAGAGAAGAGGGAAGCGACGTCTGTTATCCTGGCAAGTTTGTCAAGGAGGAGGCTCTTAGGCAGATCT TGAGAGAGTCGGGGCGGCATAGATAAAGAGGCAATGGGATTCACCTATTCAGGGATTAGGACCAATGGTGCCACAAGTGCCTGCAGAAGA TCAGGCTCTAGTTTTTACGCTGAGATGAAGTGGCTTCTGTCGAACACAGATAACGCCGCGTTCCCTCAGATGACTAAGTCATACAAAAATA CACGCAAAAAGTCCTGCCTTAATCGTGTGGGGGATACATCATAGTGTATCCACCGCCGAGCAGACTAAGCTCTACGGTAGCGGTAATAAG CTGGTCACTGTGGGCAGTTCCAACTACCAGCAGAGTTTTGTTCCCAGCCCCGGTGCTCGTCCCCAAGTGAACGGACTTAGCGGTAGGAT TGACTTTCATTGGCTGATGTTGAATCCTAATGACACGGTCACTTTTAGTTTCAACGGCGCTTTCATCGCTCCCGATAGAGCTTCCTTCTTG CGCGGAAAGAGTATGGGGATACAGTCAGGCGTGCAGGTCGACGCGAATTGTGAAGGGGATTGCTACCATAGTGGAGGCACTATTATCTC AAACCTCCCTTTCCAGAACATCGACAGTAGGGCCGTGGGAAAATGCCCTAGGTACGTTAAGCAGAGATCCCTATTGCTGGCCACGGGTA TGAAGAATGTCCCCGAAATTCCAAAGGAAGAGGACTGTTCGGCGCCATCGCTGGCTTTATCGAGAACGGGTGGGAGGGGCTCATCGA CGGGTGGTACGGGTTCAGACACCAGAATGCCCAAGGGGAGGGCACCGCCGCTGACTACAAATCTACGCAAAGTGCCATTGACCAGATT ACCGGAAAGCTCAACCGGCTGATTGAGAAGACCAACCAGCAATTTGAGCTAATTGACAATGAATTTAACGAGGTCGAGAAGCAAATTGGG AACGTCATAAACTGGACTAGGGATTCAATTACCGAAGTCTGGAGCTATAACGCAGAACTATTGGTCGCTATGGAGAACCAGCACACAATC GATCTCGCTGATTCTGAGATGGATAAGCTGTATGAGAGGGTGAAGAGACAGTTGAGGGAGGATGGTACCGGCTGTTT TGAAATCTTTCATAAGTGTGACGATGACTGTATGGCTTCAATCCGGAACAATACGTACGATCACAGTAAATATAGGGAAGAAGCTATGCAG AACAGAATTCAGATTGATCCTGTGAAACTAAGCAGTGGTTATAAAGATGTGATCCTCTGGTTCAGTTTCGGCGCCAGCTGTTTCATCCTGC TCGCCATCGTAATGGGACTGGTCTTCATATGCGTGAAGAATGGAAACATGCGTTGCACCATCTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2893	ATGAATACACAGATTCTGGTGTTCGCTTTGATAGCGATCATTCCAACAAATGCAGACAAGATCTGCCTCGGTCATCACGCGGTTTCAAATG GCACCAAAGTGAACACTCTCACCGAACGGGGGGTCGAGGTAGTTAACGGCGACCGAGACTGTGGAGCGTACTAATATCCCCAGGATCTGT TCAAAGGGAAAGAGAACTGTGGACCTTGGGCAGTGTGGTCTGCTGGGCACCATCACTGGCCCCCCCCAGTGTGACCAGTTCCTGGAGT TCTCAGCCGACCTTATAATTGAGCGACGCGAAGGATCTGATGTATGCTACCCAGGCAAGTTTGTGAAAGAGGAGGCGTTACGCCAGATT CTGAGAGAGTCTGGTGGGATCGACAAAGAAGCGATGGGTTTCACATACAGCGGGATCCCGGACCAACGGTGCCACCTCGGCATGTCGTC GTAGCGGCTCATCCTTCTACGCCGAGATGAAATGGCTGCTGTCAAACACCGACAACGCCGCTTTCCCGCAGATGACTAAGAGCTACAAA AACACCAGAAAGTCACCCGCCCTGATTGTGTGGGGAATTCATCACTCTGTGTCTACCGCCGAACAGACCAAATTGTATGGTTCGGGGAAT AAGCTGGTTACGGTAGGATCGTCAAATTACCAACAAAGCTTTGTGCCCTCTCCAGGAGCCAGACCTCAGGTAAACGGCCTCTCAGGAAG GATTGACTTCCACTGGCTGATGCTGAATCCCAATGATACCGTAACATTCTCATTTAATGGCGCGTTCATCGCACCGGATAGGGCATCCTTC TTAAGGGGGAAGAGTATGGGCATCCAGTCCGGGGTTCAAGTGGATGCCAATTGCGAAGGCGATTGTTACCACTCCGGAGGAACGATTAT TAGCAATCTGCCCTTCCAAAACATCGACTCTAGGGCCGTGGCAAATGCCCTAGATATGTGAAGCAGAGGTCCCTGCTCCTAGCGACTG GCATGAAGAATGTGCCCGAGATACCAAAAGGGAGAGGACTATTCGGTGCCATCGCCGGGTTCATTGAAAACGGATGGGAAGGCCTCATC GATGGGTGGTACGGATTTCGGCACCAGAATGCGCAAGGGGAAGGTACTGCTGCTGATTATAAGAGCACTCAGAGCGCTATTGATCAGAT TACCGGTAAATTGAACCGTCTCATTGAAAAGACGAACCAGCAGTTCGAGCTGATCGATAATGAGTTTAATGAAGTGGAAAAGCAAATCGG GAACGTGATCAACTGGACAAGAGACTCAATCACTGAAGTCTGGTCCTACAATGCCGAGCTTTTGGTTGCCATGGCAACCACGCATACGAT CGACCTTGCCGATAGCGAGATGGACAAACTATACGAGCGAGTCAAGAGGCAACTCAGAGAAAATGCAGAAGAGGATGGAACCGGCTGTT TCGAGATCTTTCATAAGTGCGACGACGATTGCATGGCTTCCATTAGAAATAACACCTACGACCACTCTAAGTATAGAGAGGAGGCTATGC AAAATCGCATCCAGATTGATCCGGTGAAACTCTCCTCGGGGTACAAAGATGTGATCCTGTGGTTCTCCTTTGGCGCAAGCTGTTTCATTTT ATTAGCTATTGTGATGGGCTCGTCTTTATCTGCGTGAAGAATGGCAACATGCGGTGTACCATCTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2894	ATGAACACTCAGATACTCGTCTTTGCGCTCATCGCTATTATTCCTACCAACGCGGATAAAATTGCCTCGGGCACCACGCAGTGTCCAAC GGAACTAAAGTGAACACGCTGACTGAACGTGGTGTGGAAGTGGTGGAACGCAACAGAAACAGTGGAAAGGACTAATATTCCGCGTATATG CAGTAAGGGTAAGAAGACGGTCGACCTGGGGCAGTGCGCGGCTTCTCGGTACCATCACGGGTCCTCCTCAGTGTGATCAGTTCCTTGAGT TTTCAGCCGACCTCATCATTGAACGTCGTGAGGGAAGTGATGTTTGTTATCCCGGGAAGTTCGTGAACGAAGAGGCATTGAGACAGATTC TGCGGGAGTCTGGGGGAATCGATAAGGAGGCCATGGGTTTCACATACTCCGGTATCAGGACTAACGGCGCGAACCTCCGCCTGCCGGCG AAGCGGCAGCTCTTTTCTACGCTGAAATGAAGTGGCTGTTGTCTAACACCGATAACGCCGCTTTCCCTCAGATGACCAAATCCTATAAGAA TACGAGAAAGTCTCCTGCTCTCATCGTATGGGGGATCCACCATAGTGTGTCTACCGCCGAGCAGACCAAACTGTACGGCTCAGGCAACA AATTGGTGACTGTAGGGAGCAGTAATTATCAGCAAAGCTTCGTTCCTTCCCCTGGAGCCAGACCTCAGGTGAATGGACAGTCAGGCGGG ATCGATTTCCATTGGCTGATGCTGAACCCAAACGATACAGTGACATTCTCATTCAATTGGCGCGTTCATAGCCCCAGATCGCGCCTCTTTCC TGCGCGGGAAATCAA`GGGCATTCAATCTGGGGTACAGGTGGAGCGCTAACTGTGAGGGGGACTGCTATCATTCCGGGGGCACAATTATT AGTAACCTCCCTTTCCAGAACATTGATTCCAGAGCCGTGGGTAAGTGCCCGCGGTACGTGAAGCAGAGGTCACTGCTGCTAGCCACCGG AATGAAAAATGTGCCTGAAATCCCAAAAGGACGGGGCTTATTCGGCGCTATTGCTGGCTTCATCGAAAATGGGTGGGAGGGGTTGATCG ACGGTTGGTACGGGTTCCGCCACCAGAACGCTCAGGGCGAAGGAACCGCCGCTGACTATAAGTCCACCCAGTCTGCCATCGACCAGAT CACAGGAAAACTGAATAGGCTGATAGAAAAAACCAATCAGCAGTTCGAACTGATTGACAACGAGGTTCAACGAGGTCGAGAAACAGATCGG AAATGTTATTAATTGGACCCGAGATAGCATCACTGAAGTCTGGTCCTATAACGCTGAGCTTCTAGTAGCGATGGAAAATCAGCACACGATC GACCTGGCAGATAGCGAAATGGACAAACTCTACGAGAGAGTGAAGCGCCAGCTTCGAGAAAACGCCGAAGAAGATGGAACTGGGTGCT TTGAAATTTTCCACAAGTGTGATGACGATTGCATGGCCTCTATCCGCAATAATACCTACGATCACAGTAAATATCGCGAAGAAGGCGATGCA AAATCGTATCCAGATCGATCCTGTAAAGCTCAGCTCCGGATACAAAGACGTGATTCTCTGGTTCAGTTTTTGGCGCCAGCTGTTTTATCCTG CTCGCCATAGTCATGGGTTTGGTATTTATCTGCGTCAAGAACGGGAACATGCGTTGCACAATCTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2895	ATGAATACTCAAATCCTGGTATTCGCCCTAATTGCAATCATTCCAACCAACGCTGACAAGATCTGTTTAGGCCACCACGCCGTTTCGAACG GTACAAAGGTGAATACCCTGACAGAGAGGGGCGTGGAAGTGGTGAACGCGACAGAGACCGTGGAACGGACCAATATCCCCCGCATTTG CTCCAAGGGAAAAAAAAACTGTAGACCTCGGACAGTGCGGCCTGCTCGGAACGATCACCGCGACCCCCCTCAGTGCGACCAATTTCTGGAAT TTAGTGCAGATCTCATTATTGAGAGCGCGGAAGGAAGTGACGTTTGCTATCCCGGCAAATTTGTGAATGAAGAGGCCCTTCGCCAGATCC TCAGAGAAAGCGGGGGGCATAGACAAAGAGCGCCATGGCTTTACCTATTCTGGCATTCGAACCAACGGCGCTACCAGTGCTTGCAGACGG AGCGGCTCGTCCTTCTACGCAGAGATGAAGTGGCTTTTGTCCAATACCGACAACGCTGCTTTCCCTCAGATGACCAAGTCTTACAAGAAC ACCCGAAAGTCTCCAGCGCTGATTGTGTGGGGGATTCATCACTCAGTGAGTACAGCAGAGCAGACTAAGCTGTATGGATCCGGCAATAA ACTCGTGACTGTAGGTTCCTCAAATTATCAACAGAGCTTTGTCCCCTCTCCAGGAGCCAGGCCCCAGGTGAACGGACAATCTGGGCGTAT AGATTTTCACTGGCTGATGTTAAATCCAAACGACACCGTAACCTTCTCGTTTAATGGAGCCTTTATCGCTCCTGACAGAGCGAGCTTTTTA AGAGGAAAAAGTATGGGAATACAGTCCGGAGTTCAGGTGGATGCCAACTGTGAGGGTGATTGCTACCACAGTGGCGGTACAATTATCAG TAATCTACCCTTCCAAAATATCGATTCTCGGGCAGTGGGCAAGTGTCCCCGCTATGTCAAGCAGCGGAGCCTTCTCTTGGCAACAGGTAT GAAAAACGTGCCTGAAATCCCTAAAGGAAGGGGCCTGTTCGGTGCCATTGCAGGATTTATCGAGAATGGGTGGGAAGGGCTTATTGACG GGTGGTATGGATTCCGGCAOCAGAATGCCCAGGGGGAAGGCACCGCCGCTGACTACAAATCTACACAGAGTGCCATTGATCAGATCAC GGGCAAACTCAACAGACTTATCGAGAAGACAAATCAGCAATTTGAGCTGATAGACAATGAGTTCAATGAAGTGGAAAAACAGATCGGGAA TGTGATTAACTGGACCACAGCATTCCATCACAGAGGTCTGGTCCTATAACGCCGAACTGCTCGTTGCCATGGAAAACCAGCATACCATCGA TCTTGCCGATTCCGAGATGGACAAGCTCTATGAACGCGTCAAGCGACAGCTCAGAGAAAATGCAGAGGAGGATGGGACAGGATGTTTTG AAATTTTCCACAAGTGCGATGACGACTGTATGGCATCCATTCGCAACAACACATACGATCACAGCAAGTATAGAGAGGAGGCCATGCAGA ACAGAATACAGATCGATCCAGTTAAACTGAGTTCTGGCTATAAGGATGTGATTCTCTGGTTCTCTTTCGGAGCCAGCTGCTTTATCCTGCT GGCTATCGTCATGGGCCTGGTGTTCATCTGCGTCAAGAATGGAAACATGCGGTGCACGATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2896	ATGAATACTCAGATCCTTGTGTTCGCCTTAATCGCCATCATCCCTACTAACGCCGACAAGATCTGCCTGGGCCACCACGCTGTTTCCAAT GGCACGAAGGTCAACACTCTCACCGAAAGAGGCGGTTGAGGTGGTGAACGCCACCGAAACAGTAGAGAGAACGAACATCCCCCGTATTT GCTCCAAGGGGAAACGCACTGTGGATTTAGGACAGTGCGGCCTGCTGGGGACAATTACCGGACCTCCTCAGTGCGACCAATTCCTGGA ATTTTCAGCCTGACCTCATCATAGAGCCGGCGAGAGGGGTCCGATGTATGCTACCCTGGAAAGTTTGTGAATGAAGAGGCCCTTCGGCAGA TCCTGCGCGAGAGCGGGGGGGATTGATAAGGAAGCCATGGGTTTTACCTATTCCGGAATTAGAACGAACGGCGCGCTACATCAGCTTGCCGC CGTTCAGGTTCCAGCTTCTATGCCGAGATGAAGTGGCTACTTTCCAATACCGACAATGCGGCATTCCCCTCAGATGACTAAGTCTTACAAG AATACTCGGAAGTCACCAGCCCTTATCGTCTGGGGCATTCACCACAGCGGTGTCAACCGCGGAGCAAACCAAACTATATGGGTCGGGGTC TAAACTCGTAACCGTGGGTTCGAGCAATTACCAGCAGAGCTTCGTTCCCAGTCCTGGCGCTCGACCTCAGGTGAATGGGCTGAGTGGGA GGATAGACTTTCATTGGTTAAATGTTAAATCCTAACGATACTGTCACCTTCTCCTTCAATGGTGCTTTCATTGCACCAGACCGTGCTAGCTTC CTCCGCGGGAAATCGATGGGCATACAGTCCGGAGTGCAAGTCGACGCTAACTGTGAAGGCGATTGTTACCATTCAGGCCGGCACCATAAT CAGCAATCTGCCTTTTCAGAACATTGATAGTCGTGTGTGGGAAAGTGTCCTAGATACGTGAAGCAGAGGAGTCTTCTTTTGGCCACTGG CATGAAAAACGTACCAGAGATCCCCAAAGGACGGGGCCTGTTTGGCGCTATCGCGGGCTTTATAGAAAATGGCTGGGAGGGATTAATCG ACGGCTGGTACGGTTTTAGGCACCAGAATGCCCAAGGCGAAGGTACAGCAGCGATTACAAAAGTACACAGTCCGCCATCGGATCAGATT ACCCGGGAAACTCAATCGTCTCATTGAGAAGACAAACCAACACAGTTTGAGCTTATAGACAACGAATTTAATGAAGTGGAGAAACAGATTGGAA ACGTAATCAACTGGACACGGGACTCCATAACTGAGGTCTGGAGCTACAATGCTGAACTCTTGGTGGCCATGGAGAACCAGCATACCATT GACTTGGCAGACTCTGAGATGGATAAGCTGTACGAAAGGGTGAAACGGCAGCTTCGTGAAAATGCCGAGGAGGATGGCACCGGATGTTT TGAGATATTCCACAAGTGTGATGACGACTGCATGGCGAGCATTCGTAACAATACTTACGATCACTCAAAGTACCGGGAGGAAGCCATGCA GAATAGAATCCAGATCGATCCTGTGAAGCTGTCCTCGGGCTACAAGGACGTCATCCTGTGGTTCTCCTTTGGCGCTAGCTGTTTCATTCT GTTGGCGATCGTTATGGGTCTCGTCTTTATTTGCGTTAAGAACGGCAAACATGCGTTGCACAATTTGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2897	ATGAATACTCAAATTCTCGTCTTTGCCCTGATTGCTATCATTCCCACCAATGCAGACAAGATTTGCCTCGGTCACCACGCCGTATCAAACG GCACAAAAGTGAACACACTGACCGAAAGAGGTGTCGAGGTCGTTAATGCCACTGAGACCGTTGAGCGGACTAACATCCCTAGAATCTGC AGCAAGGGGAAGAAAACTGTGGATCTTGGGCAGTGCGGACTGCTGGGAACAATAACCGGGCCTCCCCAATGCGACCAATTCCTGGAGT TTTCCGCTGATCTCATTATTGAGCGCAGAGAAGGGAGCGATGTATGCTACCCCGGAAAGTTTGTCAACGAGGAAGCTTTGCGCCAGATTC TGAGCGAATCTGGCGGCATCGACAAAGAGGCTATGGGATTCACATACAGTGGTATAAGGACTAATGGACGCAACCAGCGCTTGTCGGCGG TCGGGGAGCTCCTTTTATGCTGAAATGAAATGGCTGCTTTCTAACACTGATAACGCTGCCTTCCCCCAGATGACTAAATCGTACAAGAACA CACGAAAATCGCCGGCACTGATCGTGTGGGGAATACACCATTCAGTGTCCACTGCCGAACAGACCAAACTGTATGGCAGCGGCAACAAG CTCGTGACCGTTGGTTCCTCGAACTATCAGCAAAGCTTCGTGCCTTCGCCCAGGTGCTCGCCCTCAGGTCAATGGACAGTCCGGAAGGAT TGACTTTCACTGGCTTATGTTGAACCCGAACGATACTGTTACATTTAGTTTTAAGGCGCCTTTATTGCACCCGACAGGGCCTCATTTTTG CGAGGCAAGTCGATGGGCATACAATCTGGCGTGCAGGTAGATGCAAACTGTGAAGGCGATTGCTATCACTCCCGGAGGGCACAATTATTAG TAATCTACCCTTCCAGAATATCGACTCTCGGGCGGTCGGCAAATGTCCCCGATACGTAAAGCAACGCTCCCTGTTGCTGGCCACTGGTAT GAAGAACGTCCCTGAAATCCCCCAAAGGCCCGGGGATTGTTCGGCGCCATAGCAGGATTCATCGAGAACGGCTGGGAAGGTCTCATAGAT GGTTGGTATGGTTCCGTCACCAGAACGCCCAGGGGGAAGGCACCGCAGCGGATTACAAGTCGACGCAGTCTGCAATCGACCAGATCA CCGGTAAACTGAACCGCCTGATTGAGAAAACAAACCCAACAATTCGAATTAATTGACAATGAGTTTAATGAGGTAGAGAAACAGATTGGCAA CGTGATTAACTGGACAAGGGATTCAATTACCGAAGTTTGGAGCTACAACGCCGAGTTGCTGGTCGCTATGGAAAACCAGCACACAATCGA CCTGGCCGACTCCGAGATGGACAAGTTATATGAACGGGTGAAACGGCAGCTCCGGGAGAATGCCGAGGAGGATGGTACAGGGTGTTTT GAAATCTTTCACAAATGTGATGATGATTGCATGGCGTCAATACGCAACAACACATATGACCACTCAAAATATCGAGAAGAAGCCATGCAGA ACAGAATACAGATTGACCCCGTGAAGCTTTCAAGTGGCTATAAAGATGTCATTCTGTGGTTCTCCTTCGGGGCATCCTGCTTTATCCTGCT CGCCATCGTTATGGGGCTTGTGTTCATTTGTGTCAAGAATGGAAACATGAGGTGCACCATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2898	ATGAATACCCAGATCCCTGGTTTTTTGCCCTGATCGCTATCATACCAACAAACGCTGACAAGATCTGTCTTGGCCACCACGCTGTCTCTAATG GGACCAAAGTCAATACCCTGACCGAAAGGGGAGTGGAGGTAGTCAACGCTACTGAGACAGTCGAAAGAACTAATATTCCTAGAATTTGCA GTAAGGGCAAGAAAACCGTGGATCTGGGGCAGTGTGGCCTGCTGGGCACCATAACCGGGCCTCCTCAGTGCGATCAGTTCCTGGAGTT TTCCGCCGATCTGATCATTGAACGCAGGGAAGGCAGCGACGTATGCTACCCACGGGAAGTTTGTTAATGAGGAAGCACTCCGCCAGATTC TCCGAGAGTCTGGGGGTATTGATAAGGAGGCAATGGGTTTTACATACAGCGGCATTAGGACTAATGGGCTACTTCAGCTTGCCGAAGG AGCGGATCTTCCTTTTACGCTGAGATGAAATGGCTCCTGAGCAATACCGACAATGCCGCCTTTCCTCAGATGACGAAATCTTATAAGAACA CAAGAAAGTCCCCAGCACTGATCGTGTGGGGGATTCACCACTCAGTCTCCACAGCCGAGCAGACCAAGCTGTACGGCTCAGGCAATAAA CTCGTGACGGTTGGCAGCTCCAATTACCAGCAGTCCTTTGTCCCTAGTCCTGGAGCCCCGGCCTCAGGTGAATGGGCAGTCCGGTCGAAT AGACTTTCACTGGCTCATGTTAAACCCCAATGACACAGTGACCTTCAGCTTCAATGGGGCTTTCATCGCCCCCGACCGTGCCAGCTTTCT GCGGGGGAAAAGCATGGGGATACAGTCTGGGGTTCAGGTGGATGCCAATTGTGAAGGGGACTGTTACCACTCTGGGGGCACCATCATC AGTAATTTACCATTCCAGAATATTGACTCGAGAGCCGTAGGAAAGTGCCCCAGGTACGTGAAGCAGAGATCTCTGCTGCTTGCGACGGG TATGAAAAATGTCCCAGAGATCCCGAAAGGCCGGGGACTTTTTGGAGCAATCGCCGGCTTCATCGAGAATGGCTGGGAAGGGCTGATCG ACGGCTGGTACGGCTTTCGCCACCAGAACGCCCAGAGGCGAGGGTACAGCGGCAGACTATAAGTCCACTCAGAGTGCCATCGATCAGAT CACAGGTAAGCTCAATCGTCTCATTGAGAAGACCAATCAGCAGTTCGAGCTCATCGACAACGAATTCAACGAGGTTGAGAAACAGATCGG CAACGTGATCAACTGGACAAGGGACAGTATCACCGAGGTGTGGAGCTACAACGCTGAGCTGCTGGTGGCTATGGAAAACCAGCACACCA TCGATCTGGCAGATTCCGAAATGGATAAGCTTTATGAGCGGGTGAAGCGTCAACTGAGAGAACGCCGAGGAGGATGGAACTGGCTG CTTCGAAATCTTTCATAAATGTGATGACGACTGCATGGCCTCAATCCGGAATAACACTTATGACCACAGCAAATACAGAGAAGAGGCGAT GCAGAATCGAATCCAGATAGACCCCGTCAAGCTTTCATCGGGTTATAAGGACGTTATCCTATGGTTTTCTTTTGGCGCCAGCTGCTTTATC CTCCTCGCGATTGTCATGGGACTTGTGTTCATTTGCGTGAAAAACGGCAATATGCGCTGTACAATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2899	ATGAACACAGATTCTGGTTTTCGCCTTGATTGCCATTATTCCTACTAATGCAGACAAGATCTGTTTGGGCCATCACGCCGTAAGTAACG GTACGAAGGTCAACACCTTGACAGAGCGCGGGGTTGAGGTTGTCAATGCAACAGAAACCGTCGAACGGACAAACATCCCAAGGATCTGC TCAAAAGGCAAGAAAACCGTCGACCTGGGCAATGTGGCCTTCTCGGAACTATAACCGGACCCCCACAATGCGATCAATTTCTGGAGTT CAGCGCTGACCTAATAATAGAGAGACGGGAGGGGTCAGATGTGTGTTATCCGGGGAAATTCGTGAACGAAGAAGCCCTTAGGCAGATCT TACGGGAAAGCGGTGGCATCGACAAAGAGGCCATGGGATTTACCTACAGCGGGATCCGGACGAACGGTGCCACTAGTGCATGTCGGAG GTCGGGAAGCTCTTTTTACGCCGAGATGAAGTGGCTTCTGAGCAATACAGATAATGCTGCTTTCCCGCAGATGACAAAGTCTTACAAGAA TACAAGAAAATCCCCAGCTCTCATAGTCTGGGGTATCCATCATTCTGTATCCACGGCCGAGCAAACCAAACTTTACGGCTCTGGGAATAA ACTGGTGACAGTGGGATCATCTAATTATCAGCAGTCTTTCGTGCCATCACCAGGCGCACGACCGCAAGTTAACGGACAGTCTGGTAGAAT CGACTTTCATTGGCTAATGCTGAACCCGAATGATACTGTGACCTTCAGTTTCAATGGGGCTTTCATAGCACCAGACAGGGCATCATTTCTC AGAGGAAAATCAATGGGCATTCAGTCTGGTGTGCAGGTGGATGCAAATTGCGAGGGAGACTGCTATCACAGTGGCGGCACTATCATCTC GAATCTCCCGTTCCAGAATATCGATAGCCGCGCCGTGGGGAAGTGCCCTCGGTACGTTAAACAACGATCTCTGCTGTTAGCCACCGGCA TGAAGAATGTACCCGAGATCCCTAAGGGTCGAGGCCTCTTTGGCGCCATTGCTGGCTTTATCGAGAATGGCTGGGAAGGACTCATAGAC GGCTGGTATGGGTTCCGGCATCAGAACGCTCAGGGAGAAGGGACCGCTGCGGACTATAAGTCAACACAGTCCGCCATTGACCAAATCA CAGGCAAGCTGAACCGGCTGATTGAAAAAACTAATCAACAATTCGAGCTGATAGATAACGAGTTCAACGAAGTCGAAAAGCAGATTGGCA ATGTCATTAATTGCGACACGCGATAGCATCACTGAAGTGTGGAGCTACAACGCAGAGCTGCTGGTTGCCATGGAGAACCAGGCACACCATC GATCTGGCTGACTCTGAGATGGACAAGCTGTACGAACGGGTGAAGCGTCAGCTCCGTGAGAACGCTGAAGAAGATGGGACAGGTTGCT TCGAAATCTTTCATAAATGCGACGACGATTGTATGGCCTCAATAAGGAACAATACATATGACCACTCTAAGTATAGAGAGGAGGCATGCA GAATCGTATCCAGATCCAGTGAAGCTGTCTTCAGGGTACAAAGATGTGATCCTCTGGTTTTCATTCGGTGCCAGCTGTTTTTATCTTA CTGGCCATCGTCATGGGCCTCGTCTTCATTTGTGTGAAAAACGGTAACATGAGATGCACCATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2900	ATGAATACGCAGATTTTTGGTGTTCGCCCTGATCGCCATAATCCCCACTAACGCCGACAAAATCTGTCTGGGCACCACGCGGTGTCTAAT GGGACTAAGGTAAACACACTGACAGAGAGGCGTTGAGGTTGTTAACGCCACGGAGACAGTAGAACGTACAAACATCCCCCGCATCTG CTCCAAGGGCAAAAAGACTGTGGATCTGGGCAGTGCGGTTTGCTCGGAACCATTACAGGCCCCCCTCAGTGTGACCAATTTCTTGAAT TCTCCGCCCGACCTCATCATCGAGCGCCCGGGAAGGAAGTGATGTTTGCTATCCCGGGAAATTTGTGAATGAGGAAGCCCTGAGGCAAATT CTCCCGGGAGTCAGGGGGTATTGACAAAGAGGCTATGGGGTTTACATACTCCGGTATCCGTACCAATGGAGCAACCTCGGCTTGCCGTAG GTCCCGGCAGGCTCCTTTTACGCTGAGATGAAATGGCTGCTCTCGAACACCGACAATGCCGCATTTCCCCAGATGACTAAGTCTTACAAGAA TACCCCGAAGTCTCCCGGCCCTGATTGTGTGGGGAATCCACCATTCCGTGTCCACCGCCGAACAGACTAAGCTTTACGGCTCGGGCAACA AACTGGTCACCGTTGGCTCTTCTAACTATCAGCAGAGCTTTGTGCCTTCACCAGGGGCTCGACCTCAGGTGAACGGGCAGTCCGGCCGG ATCGATTTCCACTGGCTAATGCTGAACCCAAATGATACTGTTACGTTTTCCTTCAATGGTGCTTTTATAGCACCTGATCGCGCTTCCTTTCT GAGGGGGAAAAGCATGGGCATACAATCTGGGGTTCAGGTTGATGCCAACTGTGAGGGGGATTGCTATCACTCTGGTGGGACCATAATTT CCAACCTCCCCTTTCAGAACATCGACTCACGAGCCGTCGGTAAGTGTCCAAGATACGTGAAGCAACGCTCATTACTCCTGGCTACCGGAA TGAAAAATGTTCCAGAGATCCCGAAGGGGAGGGGTCTGTTCGGTGCCATTGCGGGATTTATTGAAAACGGATGGGAGGGACTAATCGAC GGATGGTATGGGTTTAGGCATCAGAACGCACAGGGCGAGGGAACCGCCGCGGACTATAAAAGCACTCAGTCCGCCATTGATCAGATTAC AGGGAAACTCAATAGACTCATTGAGAAGACGAATCAGCAGTTCGAGCTGATCGACAACGAGTTCAATGAGGTCGAAAAACAGATCGGGA ATGTGATAAATTGGACTAGGGATTCAATAACAGAGGTCTGGAGCTACAACGCAGAGTTACTCGTTGCGATGGAGAACCAACATACTATTG ATCTTGCAGACTCCGAGATGGATAAGCTATACGAGCGGGTCAAGCGACAGTTAAGGGAGAATGCAGAAGAAGATGGAACTGGGTGCTTC GAAATATTTCATAAGTGCGACGACGACTGTATGGCCTCAATCCGCAACAACACATACGACCACTCAAAGTACAGGGAGGAAGCCATGCAG AACCGGATCCAAATTGACCCGGTGAAACTGAGCTCTGGCTACAAGGACGTGATCCTATGGTTTTCTTTTGGGCCAGTTGCTTCATCCTA CTCGCTATAGTCATGGGTCTGGTGTTCATTTGTGTCAAGAACGGGAACATGCGTTGTACTATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2901	ATGAATACCCAAATCTTGGTGTTCGCGTTGATCGCAATCATCCCCACTAACGCCGACAAAATCTGTTTAGGGCATCACGCTGTTTCCAACG GTACGAAAGTGAATACACTGACTGAACGCGGGGTCGAGGTCGTTAACGCTACAGAGACGGTGGAGAGAACTAATATCCCTAGGATCTGC TCCAAGGGCAAGCGCACTGTGCACCTGGGCAATGCGGACTGCTAGGGACAATTACTGGCCCGCCCCAGTGCGACCAATTTTTGGAGT TTAGCGCAGACCTGATCATAGAGCGACGCGAGGGTTCAGACGTTTGTTACCCTGGAAAGTTTGTAAATGAGGAAGCCCTTCGCCAGATC CTGCGGGAGAGCGGCGGTATCGATAAAGAGGCTATGGGGTTTACGTACTCTGGAATCAGAACCAATGGGCCACCTCTGCTTGTAGAAG ATCTGGATCCTCCTTTTATGCAGAAATGAAGTGGTTGTTATCAAATACTGATAACGCGGCATTTCCACAGATGACTAAGAGCTACAAGAAC ACGCGGAAGTCACCCGCTTTAATAGTCTGGGGCATCCACCACTCAGTTAGTACAGCTGAGCAGACTAAGCTGTATGGCAGTGGTAACAA GCTGGTCACCGTGGGTAGCTCTAATTATCAGCAATCTTTCGTACCATCACCCGGAGCTAGACCTCAGGTGAACGGTCTGTCAGGCCGGA TCGACTTCCACTGGTTGATGCTCAATCCCAATGACACTGTTACATTCAGCTTTAATGGCGCCTTCATCGCTCCTGACCGAGCCAGCTTTCT GCGCGGCAAGTCTATGGGGATCCAATCTGGCGTGCAGGTTGATGCGAACTGCGAAGGGGACTGCTACCACAGTGGAGGCACCATCATT TCTAACCTGCCATTCCAGAATATCGACAGTCGGCGCCGTGGGGAAGTGTCCCTCGATACGTGAAGCAGAGGAGCCTCCTCCTAGCGACTGG AATGAAGAACGTCCCAGAAATCCCTAAGGGCCGGGGGCTCTTTGGAGCGATTGCCGGATTTATCGAAAACGGCTGGGAAGGGCTTATTA ATGGCTGGTACGGCTTCAGGCATCAGAATGCTCAAGGCGAGGGAACTGCCGCCGACTACAAGTCCACTCAATCCGCCATTGATCAGATA ACCGGGAAACTTAACCGCCTGATCGAGAAGACAAACCAGCAGTTTGAGCTGATAGATAATGAGTTCAATGAAGTCGAGAAACAGATAGGA AACGTCATTAATTGGACCCGCGACTCAATTACACGAAGTCTGGAGCCTATAACGCAGAGCCTGTTGGTAGCGATGGAAAACCAACACACAATT GACCTGGCCGATTCCGAAATGGATAAGCTGTACGAGCGCGTGAAAAGACAGTTAAGGGAAAATGCCGAGGAAGATGGTACCGGCTGTTT CGAGATCTTCCACAAGTGCGATGATTGCATGGCCTCCATCCGAAATAATACTTACGATCACTCCAAGTACAGAGAGGAGGCAATGCA AAACAGAATTCAGATCGACCCCGTTAAGTTATCAAGCGGATACAAGGACGTCATCCTGTGGTTCTCATTTGGCGCATCGTGTTTTATTCTG CTTGCTATTGTGATGGGTCTCGTTTTCATTTGTGTCAAGAACGGGAATATGAGGTGTACGATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2902	ATGAACACCCAGATTTTAGTCTTTGCACTGATTGCAATTATTCCCACTAATGCTGACAAGATCTGTCTGGGCCACCACGCTGTGTCAAACG GAACTAAGGTGAACACGCCTGACTGAGCGAGGTGTCGAAGTGGTGAATGCGACGGAAACCGTGGAGAGAACAAATATCCCCAGAATCTGC AGTAAAGGAAAAAAAACTGTGGATCTGGCGCAATGCGGGCTGCTGGGTACTATCACCGGGCCACCACAATGCGACCAGTTTCTTGAGTT CTCCGCAGATCTCATCATCGAACGCCGGGAAGGCTCCGATGTTTGTTACCCAGGGAAGTTCGTAAATGAAGAAGCCTTAAGGCAAATCCT TAGAGAGAGCGGAGGAATTGAGAAAGAGGCAATGGGCTTTACCTACTCAGGAATTAGAGCCAACGGCGCTACTTCCGCTTGTCGACGAA GTGGCTCCAGTTTCTATGCCGAAATGAAGTGGCTGTTGTCTAACACGGATAACGCAGCCTTTCCTCAGATGACTAAGTCGTACAAAAACA CCCGGAAATCTCCAGCTCTGATTGTGTGGGAATCCACCATAGTGTGTCCACCGGCCGAGCAAACCAAACTTTATGGGAGCGGAAACAAG TTGGTTACTGTTGGATCCTCGAACTATCAGCAGAGCTTCGTGCCTAGCCCAGGGCGCTCGTCCACAGGTGAACGGACTCTCCGGTAGAAT CGATTTTCATTGGCTTATGCTCAATCCTAATGACACTGTGACCTTTAGCTTCAACGGCGCGTTTATCGCCCCTGATCGAGCCTCTTTCCTG CGCGGAAAGTCAATGGGTATCCAGTCGGGCGTTCAGGTGGATGCAAATTGCCAGGGGGACTGCTATCACTCTGGTGGCACCATTATCTC AAACCTGCCATTTCAGAACATCGACTCCCGTGCGGTCGGTAAATGCCCGAGA˜ACGTTAAGCAGCGAAGCCTGCTACTGGCAACAGGCA TGAAGAACGTGCCTGAGATACCTAAGGGACGTGGTCTGTTTGGAGCAATTGCCGGGTTCATTGAGAATGGCTGGGAGGGGCTCATCGAT GGGTGGTATGGCTTTAGACATCAAAATGCTCAGGGAGAAGGTACTGCAGCCGATTACAAGAGTACCCAGAGCGCCATCGATCAGATCAC TGGCAAGTTAAACCGCCTTATCGAAAAGACCAACCAGCAGTTTGAGCTTATCGACAATGAATTTAACGAAGTGGAGAAGCAAATCGGCAA CGTCATCAACTGGACTCGCGATTCTATCACCGAGGTCTGGTCATATAACGCAGAGTTACTCGTTGCGATGGAAAACCAGCACACTATTGA CTTGGCCGACTCTGAGATGGACAAACTGTACGAAAGAGTTAAAAGACAGCTGGGGGAAAACGCTGAGGAAGATGGGACTGGCTGTTTCG AGATCTTTCACAAATGCGATGACGACTGCATGGCTTCGATTCGGAATAATACATCACGATCACTCTAAGTACAGAGAAGAGGCTATGCAGA ACAGAATCCAAATCGATCCCGTTAAGCTGTCATCAGGCTACAAGGACGTGATCCTGTGGTTCTCTTTCGGGGCGAGTTGCTTTATCCTTC TTGCCATCGTGATGGGCCTTGTGTTTATTTGTGTTAAAAAACGGTAACATGCGC˜GTACAATCTGTATA

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2903	ATGAACACACAAATTCTGGTCTTCGCACTGATTGCAATCATCCCAACTAACGCTGACAAAATTTGTCTGGGCACCATGCGGTCAGTAATG GCACCAAGGTCAACACTCTCACTGAACGCGGAGTGGAAGTGGTGAACGCAACCGAGACAGTGGAGCGGACCAACATCCCCAGAATATG CTCAAAGGGTAAAAAGACTGTGGATTTGGGACAGTGCGGTCTTCTTGGGACAATCACCGGCCCTCCCCAGTGTGACCAGTTCCTGGAAT TCTCTGCCGACCTGATTATAGAGGCGGCGTGAGGGCTCCGATGTGTGTTACCCGGGCAAGTTCGTGAACGAGGAGGCACTGCGACAGAT CTTGAGAGAAAGCGGGGGGGATTGACAAAGAGGCTATGGGCTTCACTTATTCGGGCATCAGGACTAATGGCGCAACCTCCGCTTGTAGGA GATCAGGATCCTCTTTCTACGCCGAAATGAAGTGGCTGCTGTCGAATACAGACAATGCCGCTTTCCCCCAAATGACTAAGAGTTATAAAAA CACGCGTAAATCCCCAGCGCTGATTGTCTGGGGAATCCACCACTCGGTGAGCACTGCAGAGCAGACTAAACTGTACGGGAGCGGCAATA AACTTGTTACAGTGGGATCCTCGAATTACCAACAGAGCTTCGTCCCATCACCAGGTGCTCGACCACAGGTGAACGGCCAGTCTGGGCGA ATAGATTTTCATTGGCTCATGCTTAATCCCAATGACACTGTGACTTTTTCTTTCAATGGGCCTTCATCGCGCCTGATCGGGCCAGTTTCC TGAGAGGCAAGAGTATGGGAATCCAGTCCGGCGTGCAGGTGGACGCTAATTGTGAGGGGGATTGCTATCACTCAGGTGGCACTATAATT TCAAATCTTCCTTTCCAGAACATCGATTCTCGAGCCGTCGGAAAGTGCCCTAGGTACGTGAAACAAAGGTCACTCCTTTTGGCAACCGGG ATGAAGAACGTGCCAGAGATTCCCAAGGGTCGGGGGCTCTTTGGCGCTATTGCTGGATTTATCGAGAATGGGTGGGAGGGTCTGATAGA CGGTTGGTATGGCTTCAGACACCAGAACGCCCAGGGGGAGGGCACCGCCGGCGACTATAAGAGTACCCAGAGCGCAATTGACCAGATT ACCGGAAAATTGAACCGACTGATTGAGAAGACAAATCAGCAGTTTGAGTTGATCGACAACGAATTCAATGAGGTTGAAAACAGATCGGG AACGTTATAAACTGGACACGAGATAGCATAACAGAGGTCTGGAGTTACAATGCTGAACTGCTGGTTGCTATGGAAAACCAGCATACTATT GACCTTGCGGACAGCGGAGATGGACAAACTATACGAAAGAGTGAAGCGCCAGCTGCGTGAGAACGCCGAAGAAGACGGGACTGGATGCT TCGAGATATTCCACAAGTGTGATGACGATTGTATGGCAAGCATACGGAACACACATACGATCATAGCAAATATAGGGAGGAGGCGGATGC AGAACAGAATACAGATAGACCCTGTGAAGTTATCTTCCGGTTACAAAGACGTTATCCTCTGGTTTAGCTTCGGAGCCAGCTGCTTTATATT ATTAGCCATCGTCATGGGCCTCGTTTTCATCTGCGTGAAGAATGGAAATATGCGCTGCACCATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2904	ATGAATACGCAGATCTTGGTATTCGCACTTATAGCCATCATCCCCACCAACGCCGATAAGATTTGCTTAGGCCACCATGCTGTTTCTAACG GCACAAAAGTGAACACACTTACCGAGAGAGGGGTCGAAGTTGTGAACGCCACGGAGACAGTCGAAAGGACAAACATTCCTCGAATCTGC AGTAAGGGCAAGAAAACAGTGGATCTCGGCCAGTGTGGGCTGCTGGGAACCATCACGGGTCCTCCGCAGTGTGACCAGTTCCTGGAGT TCTCTGCCGATCTCATCATCGAAAGGCCGGAGAGGGATCCCGACGTGTGCTACCCAGGCAAATTCGTGAACGAAGAAGCGCTTCGGCAAATT CTGCGAGAGTCAGGGGGGATAGATAAAGAGCAATGGGGTTTACTTATTCTGGCATTAGAACCAATGGGGCCACGAGTGCATGTAGACG GTCCGGAAGTAGCTTTTACGCAGAAATGAAGTGGCTGTTGTCTAACACTGACAACGCTGCATTTCCACAGATGACCAAGTCTTATAAAAAC ACGAGAAAATCCCCAGCCCTCATTGTGTGGGGGATCCACCATTCTGTGAGCACCGCCGAGCAAACGAAGCTGTATGGCAGTGGTAACAA GCTAGTCACAGTAGGATCCAGTAATTACCAGCAAAGCTTCGTGCCCAGTCCCGGAGCTCGGCCTCAGGTCAACGGGCAATCTGGGAGAA TCGACTTCCACTGGCTGATGCTGAACCCAAACGACACAGTGACATTTTCTTTTAATGGCGCTTTCATTGCCCCCGACAGGGCTAGTTTTCT GAGAGGCAAGTCCATGGGGATCCAAAGCGGAGTGCAGGTGGACGCTAATTGCGAGGGCGATTGTTACCACAGTGGGGGGACCATTATC AGTAATCTGCCTTTCCAGAACATCGATAGTAGAGCCGTGGGCAAATGTCCACGTTACGTCAAGCAGCGAGCCTGCTCTTAGCCACGGG CATGAAGAACGTGCCTGAGATCCCAAAGGGCAGAGGGCTGTTTGGCGCTATCGCGGGATTCATTGAAAATGGGTGGGAGGGACTAATC GACGGATGGTACGGTTTTCGACACCAGAACGCACAGGGGGAAGGGACAGCTGCCGATTATAAGTCTACTCAATCTGCTATCGACCAGAT AACTGGGAAACTTAATCGGCTGATTGAGAAAACAAACCAGCAGTTTGAGCTGATAGACAACGAATTCAACGAAGTGGAGAAACAGATCGG TAACGTGATAAACTGGACTAGGGACTCTATCACCGAGGTGTGGTCCTACAACGCGGAACTCCTTGTCGCTATGGAGAATCAGCACACTAT AGACCTGGCAGACTCTGAAATGGATAAACTGTACGAACGGGTTAAGCGGCAATTGCGGGAGAACGCTGAGGAGGATGGCACAGGATGT TTTGAAATTTTTCATAAAATGTGACGACGATTGCATGGCTTCCATTCGCAACAATACTTATGATCATTCGAAGTACCGCGAAGAGGCCATGC AAAACCGTATCCAGATCGATCCCGTCAAACTGTCGTCGGGGTACAAGGACGTTATACTTTGGTTCAGCTTTGGAGCCTCTTGTTTCATCTT GCTCGCTATAGTGATGGGCTTGGTGTTTATATGCGTAAAAAATGGCAACATGCGGTGCACAATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2905	ATGAACACTCAGATACTCGTCTTTGCTCTCATTGCAATTATTCCTACCAATGCTGATAAGATTTGCTTGGGGCACCACGCAGTTTCCAATG GGACAAAGGTGAACACCCTAACTGAGCGCGGCGTTGAAGTGGTGAACGCAACCGAGACAGTGGAAAGAACAAATATCCCCCGCATTTGC AGTAAAGGCAAAAAAACCGTCGACTTGGGACAGTGTGGCCTGCTTGGGACTATCACCGGACCCCCACAGTGTGACCAATTTTTGGAGTTT TCAGCTGATCTGATTATCGAAAGACGCGAGGGAAGCGATGTTTGCTATCCAGGAAAATTTGTGAATGAAGAAGCACTCCGACAGATCCTG CGGGAGTCCGGCGGAATAGATAAGGAAGCAATGGGGTTCACTTACTCGGGCATCCGGACTAACGGAGCCACTTCCGCCTGCAGAAGGT CAGGCTCGTCGTTCTATGCCGAGATGAAGTGGCTGCTTTCAAACACTGATAATGCCGCATTCCCACAGATGACAAAGTCATACAAAAACA CCAGGAAATCACCCGCATTGATAGTGTGGGCATCCATCATTCTGTGTCCACTGCCGAGCAGACTAAACTGTACGGGAGCGGGGAATAAG CTTGTTACCGTCGGGTCAAGCAACTATCAGCAAAGTTTTGTACCAAGCCCGGGCGCACGGCCCCAGGTTAATGGTCAGTCCGGTCGCAT TGATTTCCATTGGCTAAATGCTAAATCCAAATGACACTGTAACGTTCTCATTCAACGGAGCGTTCATCGCTCCAGACCGTGCCTCTTTTCTG CGCCGGAAAAGCATGGGGATACAGTCCGGGGTGCAGGTAGATGCTAACTGTGAGGGAGACTGTTATCACTCTGGCGGCACGATCATCT CCAACCTTCCCTTTCAGAACATTGACAGCAGAGCCGTCGGGAAATGCCCCCGATATGTTAAGCAGAGGTCACTTCTTCTCGCTACGGGTA TGAAGAATGTCCCAGAAATTCCTAAAGGCCGGGGATTGTTTGGAGCAATCGCCGGCTTCATCGAAAACGGTTGGGAAGGCTTGATTGAT GGCTGGTACGGCTTCCGCCACCAAAATGCTCAGGGAGAAGGAACTGCAGCTGACTATAAATCAACACAGAGCGCCATTGACCAGATCAC AGGGAAGCTGAACAGACTTATCGAGAAAACCAATCAGCAGTTTGAGCTCATAGACAACGAATTTAACGAAGTGGAGAAACAGATTGGCAA CGTTATCAATTGGACCCCGGGACTCAATCACTGAAGTCTGGTCCTACAATGCACAGCTGCTCGTCGCTATGGAAAACCCAGCACACTATCGA TTTGGCTGACAGCGAAATGGATAAACTATATGAAAGGGTCAAGCGTCAGCTCCGAGAAAATGCAGAAGAGGATGGAACAGGCTGTTTCG AAATCTTCCATAAGTGTGATGACGATTGCATGGCCAGTATCAGAAACAACACTACGATCACTCCAAATACAGGGAGGAGGCCATGCAGA ACCGGATCCAGATTGACCCTGTAAAACTGTCGAGCGGCTATAAAGATGTTTATCCTGTGGTTCAGCTTCGGGGCCAGCTGCTTCATACTGC TTGCCATTGTGATGGGACTGGTGTTCATTTGCGTTAAAAATGGAAACATGAGATGCACCATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

SEQ ID NO.	Sequenza di acido nucleico
2906	ATGAACACACAAATCCTGGTGTTCGCTCTAATAGCGATCATCCCAACCAATGCCGATAAGATCTGTCTGGGCCACGCCAGCCGTATCCAAT GGGACTAAGGTTAATACACTGACAGAGGCGAGGAGTCGAAGTGGTGAACGCAACCGAGACAGTCGAAAGGACGAATATTCCCAGGATCTG CAGCAAGGGGAAGAAGACTGTTGACCTGGGACAATGTGGCCTACTGGGAACTATAACCGGGCCCTCCACAATGCGACCAATTCCTGGAGT TTTCCGCTGACCTGATTATTGAACGGCGCGAAGGGAGCGACGTATGTTATCCCGGGAAATTCGTGAATGAGGAGGCTCTGCGCCAGATC CTGCGCGAGAGCGGGGGAATCGATAAGGAGGCCATGGGTTTCACCTATTCCGGAATAAGGACTAACGGCGCAACCTCAGCTTGTAGAC GCAGTGGCTCTTCTTTTTATGCTGAAATGAAATGGTTATTATCAAACACGGACAACGCCGCTTTTCCCCAGATGACCAAGAGTTATAAGAA CACCCGGAAATCACCTGCTCTGATAGTATGGGGAATTCATCACTCGGTGTCCACTGCGGAGCAAACCAAACTGTACGGGAGCGGCAATA AGTTGGTTACAGTAGGAAGCTCCAATTATCAGCAAAGTTTCGTCCCCTCCCCTGGCGCCAGGCCTCAAGTGAACGGACAGTCAGGGAGA ATCGACTTCCACTGGCTGATGCTCAATCCAAACGACACCGTAACTTTCTCATTCAATGGGGCATTTATCGCCCCAGACCGGGCCTCGTTC TTACGAGGTAAATCCATGGGGATTCCAAGTGGATGCCAACTGCGAAGGCGATTGCTACCACTCTGGTGGGACAATCAT CTCGAACTTGCCGTTCCAAAACATCGATTCCCGAGCAGTGGGGAAATGCCCCAGATACGTAAAACAAAGGTCGCTGCTCCTTGCTACCG GCATGAAAAACGTCCCTGAAATCCCAAAGGGTCGTGGTCTGTTTGGCGCAATTGCTGGGTTTATTGAGAACGGCTGGGAAGGCCTGATA GACGGGTGGTATGGATTTCGTCATCAGAATGCACAGGGCGAGGGACCGCAGCCGATTACAAGAGTACCCAGTCCGCTATTGACCAGAT AACAGGGAAACTGAACCGGCTGATTGAGAAGACCAACCAGCAGTTCGAGTTGATTGACAATGAGTTCAACGAAGTCGAGAAGCAGATCG GGAATGTAATAAATTGGACAAGAGACAGCATTACAGAGGTGTGGAGCTACAATGCAGAGCTGTTAGTGGCCATGGAGAACCAACACACG ATTGACCTTGCCGATTCCGAGATGGACAAGTTGTACGAGAGAGTAAAGAGGCAGCTGAGGGAGAATGCTGAAGAAGACCGGAACAGGCT GCTTTGAAATCTTCCACACAAGTGTGATGATGCTTCGATACGCAATAATACATACGACCATAGCAAGTATCGGGAGGAAGCCA TGCAGAATAGAATTCAGATTGATCCCGTGAAACTAAGCTCGGGATACAAGGACGTGATACTATGGTTTTCATTTGGCGCCTCCTGTTTCAT CCTCCTGGCTATTGTCATGGGTTTGGTTTTTATTTGTGTTAAAAACGGCAACATGCGGTGTACTATTTGCATC

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2907	ATGAACACGCAGATACTGGTTTTTCGCACTCATTGCAATCATCCCTACGAACGCCGACAAGATTTGTCTGGGCCACCACGCTGTCTCTAAC GGCACCAAGGTGAACACCCTGACCGAGCGCGCGAGTGGAAGTGGTCAATGCGACAGAAACTGTGGAACGGACAAACATTCCACGGATCT GTAGCAAAGGCAAGAAGACAGTGGATCTGGGGCAGTGCGGCCTACTGGGCACCATCACCGGACCTCCTCAATGCGATCAGTTTCTTGAG TTTTCCGCCGATTTGATTATAGAAAGACGGGAGGGATCCGATGTCTGCTACCCAGGCAAGTTTGTCAACGAGGAGGCCCTAAGACAGATT CTGCGGGAATCTGGCGGGATCGACAAGGAGGCAATGGGCTTCACCTACAGCGGGATCAGGACAAACGGAGCCACAAGCGCTTGTAGGC GCTCTGGTTCCTCGTTTTACGCAGAAATGAAGTGGTTACTTTCAAATACGGACAATGCGGCCTTCCCCCAGATGACCAAATCATATAAGAA TACTCGCAAGAGCCCGGCATTGATTGTCTGGGCATCCATCATTCTGTGTCTACTGCTGAACAGACTAAACTGTATGGCTCTGGCAACAA GCTGGTGACTGTCGGAAGCAGTAACTACCAACAGAGCTTCGTGTGCCTAGCCCAGGGCAAGACCCCAGGTCAACGGGCAGAGCGGGCG TATTGACTTTCACTGGCTGATGCTGAACCCAAACGACACTGTGACATTCAGTTCAATGGGGCCTTTATAGCCCCTGACAGGGCCAGCTT CTTGAGGGCAAGTCCATGGGAATACAGTCTGGTGTCCAGGTCGATGCCAATTGCGAGGGGGACTGTTATCATAGCGGCGGCACAATCA TCTCAAATCTGCCTTTCCAGAATATCGATAGTCGTGCCGTGGGAAAATGCCCCCGTTATGTAAAGCAAAGATCCTTGCTAGCTACCG GGATGAAGAATGTGCCAGAAATTCCAAAGGACGAGGCCTGTTCGGCGCTATTGCTGGCTTCATTGAGAACGGGTGGGAAGGCCTGATA GATGGGTGGTACGGGTTCAGGCACCAGAACGCACAGGGCGAGGGTACAGCTGCCGACTATAAATCTACGCAGAGCGCAATTGACCAGA TCACCGGGAAGCTAAACCGTCTGATTGAAAAGACCAATCAACAATTTGAGCTCATAGATAATGAGTTCAACGAAGTTGAAAAGCAGATTGG GAACGTCATCAACTGGACACGGGATAGTATAACGGAAGTGTGGAGTTATAACGCCGAATTACTGGTGGCGATGGAAAACCAGCACACTA TCGATTTGGCCGACTCCGAGATGGATAAGCTGTACGAGCGGGTTAAACGCCAGTTAAGGGAGAATGCTGAGGAGGATGGCACAGGTTG CTTTGAGATTTTCCATAAATGCGATGACGATTGCATGGCCTCTATTCGAAATAACACATACGACCACTCGAAGTACCGTGAGGAGGCAAT GCAAAATCGAATCCAGATTGACCCAGTGAAACTCTCCAGTGGCTATAAGGATCTGATCTTGTGGTTCTCTTTTGGGGCCTCATGTTTTATT CTCCTTGCGATCGTGATGGGATTGGTTTTTATCTGTGTCAAGAATGGAAACATGAGATGCACGATCTGTATC

Ing. Ines Sanglacomo
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SEQ ID NO.	Sequenza di acido nucleico
2908	ATGAATACACAGATCTTAGTTTTTGCACTAATAGCTATCATCCCCACAACGCCGACAAAATTTGTCTGGGTCATCATGCTGTGTCTAACG GTACCAAGGTTAATACCCTGACCGAACGCGCGGGTTGAGGTGGTTAACGCGACTGAAACGGTGGAACGCACGAATATACCCAGGATCTGT TCAAAAGGCAAAAAAGACCGTTGATCTGGGTCAGTGCGGCCTTCTGGGGACAATCACCGGCCCCCCCCCAGTGCGACCAGTTCCTCGAGTT TAGTGCTGATTTGATCATTGAGCGAAGAGAGGGGTCCGACGTGTGCTATCCAGGGAAGTTTGTTAATGAAGAGGCGTTGCGCCAGATCC TACGCGAATCCGGGGGAATCGATAAGGAAGCAATGGGCTTCACCTATTCTGGCATTAGAACCAACGGAGCTACATCCGCCTGTAGAAGG AGTGGCTCGTCTTTCTATGCAGAGATGAAATGGCTGCTGTCCAACACCGACAATGCCGCTTTCCCCCAGATGACTAAAAGCTACAAGAAT ACCCGAAAAAGTCCAGCTCTGATCGTCTGGGGCATCCACCACTCAGTTAGTACAGCCGAACAGACAAAGTTGTATGGCAGTGGCAACAA ACTAGTCACAGTTGGCTCGTCCAACTATCAGCAGAGTTTTGTGCCCAGTCCCGGGGCACGTCCGCAGGTCAATGGACAGAGCGGCCGG ATTGATTTCCATTGGCTGATGCTGAACCCTAACGATACAGTGACATTTTCCTTCAACGGCGCGTTCATCGCACCCGATCGCGCTTCATTCC TGAGGGGGAAGAGCATGGGGATTCAGTCGGGAGTTCCAGGTTGACGCCAACTGTGAAGGAGACTGCTACCATTCAGGGGGGACAATCAT CTCCAACCTACCATTCCAGAACATTGATTCAAGAGCTGTTGGAAAGTGTCCAAGATATGTCAAGCAAAGGTCTCTATTGCTAGCTACCGGT ATGAAGAATGTCCCTGAAATACCGAAGGGGAGGGGTCTGTTCGGTGCCATAGCTGGTTTTATCGAAAATGGGTGGGAGGGTCTTATCGA CGGGTGGTATGGATTTCGCCACCCAGAACGCCCAGGGGGAAGGCACTGCAGCTGACTATAAGTCGACTCAGTCTGCCATCGACCAGATC ACCGGTAAATTAAATAGACTGATTGAGAAGACAAATCAGCAATTCGAGCTCATCGATAATGAGTTCAACGAGGTCGAGAAGCAGATTGGA AATGTGATTAACTGGACGCGGGGATTCCATTACCGAGGTGTGGAGCTATAACGCGGAGTTGTTAGTGGCGATGGAGAATCAGCATACAATT GATCTAGCGGACAGTGAAATGGACAAGCTGTACGAGAGAGTTAAACGACAGCTGCGCGAGAACGCCGAGGAGGATGGGACAGGGTGTT TTGAGATCTTCCATAAGTGTGACGATGATTGTATGGCTAGCATTAGAAATAACACTTACGATCATAGCAAATACAGGGAGGAGGGCCATGCA GAACCGAATTCAAATCGACCCCGTGAAGCTGTCTTCGGGCTACAAAGACGTTATTCTCTGGTTTAGCTTTGGTGCGTCATGCTTCATTCTG CTGGCGATTGTAATGGGGTTGGTTTTCATATGCGTTAAGAACGGCAACATGCGGTGCACTATTTGTATT

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Tabella 18: Sequenze codone-ottimizzate codificanti per emoagglutinina H10

Seq ID No.	Sequenza di acido nucleico
3077	5'$^{7Me}G_{ppp}G_{2'OMe}$GGAAAUAAGAGAGAAAAGAAGAGUAAGAAGAAAUAUAAGAGCCACCAUGUACAAAAUCGUCGUCAUUAUCGCAUUGCUGG GCGCUGUCAAGGGACUCGACAAGAUCUGUCUCGGACACCACGCGGUGGCUAACGGAACCAUCGUCAAGACCCUGACUAACGAGCAGGA AGAAGUGACCAACGCCACCGAAACUGUGGAAUCCACCGGGAUCAACAGAUUGUGCAUGAAGGGUCGGAAGCACAAGGAUCUGGGAAAC UGCCACCCGAUUGGAAUGCUCAUCGGCACCCCGGCAUGCGAUCUGCAUCUGACUGGGAUGUGGGAUACCCUUAUCGAGCGGGAAAAC GCGAUCGCAUACUGUUACCCCGGUGCCACCGUGAACGUGGAGGCGCUCAGACAGAAGAUUAUGGAGUCAGGCGGCAUCAACAAGAUUU CCACGGGCUUCACCUACGGGUCCUCCAUUAACUCCGCCGGUACCACUCGGGCCUGCAUGCGGAACGGAGGGAACUCCCUUUUACGCCG AGCUCAAGUGGCUUGUGUCAAAAUCCAAGGGACAGAAUUUCCCCCAAACCACCAACACCUAUAGGAACACCGACCCGAACAUCUC AUUAUGUGGGGCAUCCAUCACCCUUCGAGCACACAGGAGAAGAAUGACCUCUACGGCACCCAGUCGCUGAGCAUCUCCGUGGGCUCAU CGACCUAUCGCAACAACUUCGUGCCUGUGGUCGCGCCCGACCUCAAGUCAACGGACAGUCCGGACGCAUUGACUUCCAUUGGACUCU GGUGCAACCGGGAGACAACAUCACUUUCUCCCACAACGGCGGACUGAUUGCCCCAAGCCGCGUGUCAAAGCUGAUCGGUAGAGGGCUG GGUAUUCAGUCGGAUGCUCCCAUCGGAUAACAACUGCGAAUCCAAGUGCUUUUGGAGAGGCGGCUCCAUCAAUACUCGGCUGCCGUUUC AGAACCUGAGCCCGAGGACCGUGGGGCAGUGCCCAAAAUACGUGAAUCGCCGGUCACUGAUGCUGGCGACCGGAAUGAGGAACGUGC CUGAACUCAUCCAGGACGGGGGCUGUUCGGCGCCAUCGCCGGCUUCCUGGAAAACGGAUGGGAGGGAAUGGUGGACGGUUGGUAC GGCUUCCGCCACCAAAACGCCCAGGGAACUGGACAGGCCGCCGACUACAAGUCCACACAGGCCGCAAUAGACCAGAUCACUGGGAAGC UCAACCGCCUUGUGGAAAAGACUAACACUGAAUUCGAGUCGAUCGAGUCUGAGUUCUCCGAGAUCGAACACCAGAUUGGGAACCAGCACAUCG CAACUGGACGAAGGACUCCCAUUACCGACAUCUGGACCUACCAGGCGGAACUGCUCGUGGCGAUGGAGAACCAGCACACUAUCGACACAUG GCCGACUCCGAGAUGCUGAAUCUGUACGAACGCGUGCGGAAGCAACUGAGACAAAACGCUGAAGAAGAUGGAAAGGGUUGUUUCGAGA UCUACCACGCCUCGCGACAGCAGCUGCAUGGAAAGCAUUAGGAACAAUACCUACGACCACUCGCAGUACCGGGAGGAGCCCCUUCUGAA CCGGCUGAACAUUAACCCCGUGACCUUGAGCUCCGGCUACAAGGACAUCAUCCUGUGGUUCUCGUUUGGAGCCAGCUGCUUCGUGCU GCUGGCCGUCGUGAUGGGAUUGUUCUUCUUCUGCCUGAAAACGGAAACAUGCGCUGCACCAUCUGUAUUUGAUAAUAGGCUGGAGCC UCGGUGGCCAUGCUUCUUGCCCCUUGGGCUCCCCCCCAGCCCCUCCUCCCCUUCCUGCACCCGUACCCCGUGGUCUUUGAAUAAAG UCUGAGUGGGCGGCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA AAAAAAAAAAAAAAAAAAAAUCUAGOH3'

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3075	ATGTACAAGATCGTCGTGATTATCGCCCTTCTGGGGGCAGTCAAGGGACTAGACAAAATATGCCTGGGCCATCATGCAGTGGCTAACGGGA CGATAGTGAAGACGCTGACCAACGAACAGGAGGAGGTCACTAACGCCACTGAGACAGTGGAGTCGACGGGCATCAATCGTTTGTGCATGA AAGGCCGGAAACACAAAGACTTAGGTAATTGTCATCCGATAGGGATGCTGATAGGCACCCCTGCATGCGACCTCCATCTCACTGGGATGTG GGACACCCTGATCGAAAGGGAAAATGCAATAGCCTATTGCTACCCCGGTGCTACCGTTAATGTCGAGGCGCTGAGACAGAAATCATGGAA TCCGGGGGAATCAACAAGATTAGCACGGGGTTTACATATGGGAGCTCAATAAATTCCGCCCGGTACTACCCGAGCATGCATGCGGAACGGC GGAAATAGTTTTTATGCCGAACTCAAGTGGCTTGTCTCCAAGTCTAAGGGACAAAATTTCCCGCAGACAACAAATACGTATCGTAACACTGAT ACCGCCGAGCATCTTATCATGTGGGGCATCCATCACCCTAGCTCAACGCAGGAGAAAAACGACTTGTACGGTACTCAGTCTCTATCTATCTC CGTGGGATCTTCCACCTATAGAAACAATTTTTGTGCCCGTCGTAGGGCCCCGCCCTCAGGTGAATGGCCAGTCAGGCCGTATAGACTTCCAT TGGACTCTCGTACAGCCCCGGGGATAATATAACCTTTAGTCATAACGGAGGCCTCATTGCTCCCAGCAGGGTTTCTAAGTTGATCGGTCGCG GGCTGGGCATTCAGTCTGATGCCCCAATTGATAACAACTGTGAAAGCAAGTGCTTCTGGAGGGGTGGGAGTATCAATACTAGACTCCCATT CCAGAACTTGTCTCCGCGGACTGTAGGACAGTGCCCAAAGTATGTGAATCGTCGGTCTCTCATGCTGGCAACCGGTATGAGAAATGTTCCT GAGCTAATACAGGGAAGAGGACTTTTTTGGAGCAATCGCCGGATTTTTTAGAAAATGGTTGGGAGGGGATGGTTGACGGATGGTACGGTTTCA GGCACCAGAACGCCCAGGGAACCGGCCAGGCCGCGGACTACAAAAGCACACAGGCAGCCATTGATCAGATTACTGGCAAGCTGAACCGC TTAGTCGAGAAGACCAACACGGAATTTGAATCAATCGAGTCAGAATTTAGCGAAATCGAACATCAGATTGGGAACGTAATTAATTGGACAAA AGATAGCATCACAGATATTTGGACCTACCAGGCTGAGCTACTGGTGGCTATGGAGAACCAACACACTATTGATATGGCCGACAGCGAAATG TTAAATTTGTATGAACGGGTACGGAAGCAGCTTAGACAGAACGCAGAAGAAGATGGCAAGGGCTGCTTTGAAATTTACCACGCTTGCGATG ACAGTTGCATGGAGTCTATTAGGAACAATACATATGATCACTCTCAGTACAGAGAGGAGGGCCTTGCTCAATAGGCTGAATATCAACCCTGTC ACCCTGAGCAGTGGTTATAAGGACATCATCCTGTGGTTCAGCTTTGGCGCTTCATGTTTCGTGCTGCTGGCTGTCGTCATGGGCCTTTTCTT TTTTTGTTTGAAGAACGGCAACATGCGTTGCACTATCTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3076	ATGTACAAGATCGTGGTGATCATCGCTCTGCTCGGCGCCGTTAAGGGACTGGATAAGATTTGTTTAGGGCACCATGCAGTGGCAAACGGGA CCATTGTCAAGACACTCACCAATGAACAGGAGGAAGTGACCAACGCGACTGAGACTGTTGAGTCCACCGGCATAAACAGGCTTTGTATGAA AGGCAGAAAGCACAAGGATTTGGGTAATTGTCACCCAATAGGAATGCTAATTGGGACTCCTGCCTGCGATCTCCACCTGACAGGCATGTGG GACACCCTGATTGAACGGGAGAATGCTATCGCATACTGCTACCCAGGTGCAACCGTAAACGTGGAGGCCCTGCGACAGAAGATAATGGAG AGCGGAGGCATCAACAAGATCAGTACGGGATTTACCTACGGGTCTTCTATCAATTCGGCTGGCACAACACGTGCTTGCATGAGAAACGGAG GCAACTCCTTCTACGCTGAACTCAAATGGTTGGTGAGTAAGAGTAAGGGTCAGAATTTCCCACAGACGACCAACACATACAGGAACACCGAT ACGGCCGAACACCTCATCATGTGGGCATACACCACCCTAGTAGTACACAAGAGAAAAACGACCTGTATGGGACACAATCCCCTTTCAATCA GTGTTGGTAGCTCGACCTACCGTAATAATTTCGTCCCTGTGGTGGGTGCTAGACCGCAGGTCAATGGCCAGTCAGGAAGGATCGATTTCCA CTGGACCCTCGTGCAGCCAGGTGATAACATTACTTTTTCTCATAATGGCGGACTAATTGCGCCTAGCAGGGTGTCAAAGCTTATTGGGAGAG GCCTAGGCATACAAAGCGACGCCCCAATCGATAACAATTGCGAGTCGAAGTGTTTCTGGAGGGCGGATCAATTAACACACGTCTGCCCTT CCAGAATCTGTCACCAAGGACTGTGGGCCAGTGTCCAAAGTATGTTAATCGACGTTCACTCATGCTTGCCACCGGCATGCGGAATGTGCCT GAACTGATTCAGGGCCGCGGGACTTTTTGGCGCCATTGCAGGTTTCTTGGAGAACGGGTGGGAAGGTATGGTCGACGGATGGTATGGCTTC AGACACCAGAACGCCCAAGGAACTGGCCAGGCCGCCGATTATAAGAGCACCCAGGCTGCGATCGATCAAATTACCGGTAAACTCAACCGG CTGGTCGAGAAGACTAATACAGAGTTTGAGTCAATAGAATCCGAGTTTTCCGAAATAGAACATCAGATCGGTAATGTAATCAACTGGACCAA GGACAGCATCACCGACATATGGACATACCAGGCCGAACTGCTCGTCGCCATGAGAATCAACACACGATTGACATGGCCGATTCGGAAATG CTGAATCTGTACGAAAGGGTGCGTAAACAGTTGCGGCAGAATGCAGAAGATGGAAAGGGTGTTTTGAAATCTACCACGCCTGCGACG ATAGCTGCATGGAATCTATCCGGAATAACACCTATGACCATTCCCAATACCGAGAAGAGGCCCTGCTCAACCGCTTGAACATTAATCCCGTT ACATTGTCATCCGGATACAAGGACATCATCTTGTGGTTCTCTTTCGGGGCTTCCTGTTTTGTGCTTCTAGCAGTTGTGATGGGTCTGTTTTTC TTCTGCTTAAAGAACGGCAATATGAGATGTACTATTTGCATC

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Seq ID No.	Sequenza di acido nucleico
2909	ATGTACAAGGTAGTGGTAATTATCGCTCTGCTAGGTGCCGTTCGTGGCTTGGACAAGATTTGTTTGGGGCACCATGCCGTAGCCAACGGAA CAATTGTGAAGACACTGACTAACGAACAAGAGGAAGTAACCAACGCTACAGAAACAGTCGAATCTAAAAGTTTGGGCAAGTTATGTATGAAA GGGCCGGAGTTACAACGACCTCGGAAATTGCCACCCCATCGGAATTTTAATCGGCACTCCAGCCTGCGATCTGCACTTAACAGGAACCTGGG ACACCCTCATCGAACGCGAAAATGCCGTTGCATACTGTTACCCAGGTGCGACTGTCAACGAGGAAGCGCTCCGCCAGAAGATCATGGAAAG CGGGGGGATTTCAAAAATCTCTACCGGGTTTACATACGGGACTTCCATCAACAGCGCTGGCACCACACAAAGGCCTGCATGCGCAATGGCGGT AACAGCTTCTACGCTGAGCTCAAGTGGCTGGTCAGCAAAAACAAAGGCCAGAACTTCCCCCAAACTACTAATACCTACAGAAACACAGATAC CGCCGAGCACCTCATAATTTGGGGGATCCATCACCCATCTAGCACTCAGGAGAAAAACGATCTCTATGGCACACAGTCTCTCAGCATTTCAG TGGGAAGCTCGACATACCAGAATAACTTTGTTCCCGTGGTGGGCGCAAGACCACAGGTCAACGGCCAGTCCGGGAGAATTGATTTCCATTG GACGCTGCTGCAACCTGGAGACAACATCACCTTTTCTCATAATGGCGGCCTAATTGCGCCTTCCAGAGTTAGCAAGCTGATCGGCCGGGGC CTAGGTATTCAGAGCGAGGCCCCAATTGACAACGGTTGCGAATCAAAGTGCTTCTGGAAAGGCGGATCCATTAACACGAAGTTGCCCTTCC AGAACTTATCACCCAGAACCGTGGGGCAGTGTCCCAAATACGTGAATAAGAGGTCCCTGATGCTCGCTACCGGTATGCGGAATGTGCCTGA GATAATGCATGGAAGAGGACTGTTTGGGGCAATCGCTGGGTTTATCGAAAACGGTTGGGAAGGGATGGTTGATGGATGGTACGGGTTTCG GCATCAGAATGCCACAGGGAACTGGTCAGGCCGCCGATTACAAATCAACGCAAGCCGCCATCGACCAGATAACTGGAAAGCTGAATAGGCT CATCGAAAAAACCAACACCGAGTTCGAATCAATTGAGTCTGAGTTCTCTGAGATCGAGCACCAAATCGGGAATATCATCAATTGGACCAAAG ATAGCATTACTGATATCTGGACATATCAGGCTGAGCTGGTCGCCATGGAGAACCAGCATACAATCGACATGGCAGACTCGGAGATGCCT TAACCTGTATGAGAGGGTGCGTAAACAATTGCGACAGAATGCCGAAGAGGATGGTAAGGGTTGCTTCGAAATCTACCACGCTTGCGACGAT TCTTGCATGGAAAGTATAAGAAATAATACCTATGATCATTCACAATACCGCGAAGAGGCTTTGCTGAACAGACTCAACATCAATCCGGTGAAG CTTTCCTCTGGGTACAAGGATATAATTCTGTGGTTTTCCTTTGGAGCTTCCTGTGTCTCATATTATTGGCTGTTGTTATGGGCCTCGTTTTTTTTT GCCTGAAGAACGGTAACATGCGCTGTACAATATGTATC

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Seq ID No.	Sequenza di acido nucleico
2910	ATGTACAAAATTATCGTGATCATCGCTCTTCTGGGCGCCGTCAAAGGTCTCGATAAAATTTGCCTTGGGCACCATGCTGTGGCAAACGGAAC TATTGTAAAAACTCTTACGAATGAGCAAGAAGAGGTGACCAATGCCACCGAAACCGTCGAGTCCACCGGGATCAATAGGTTGTGCATGAAG GGGCGTAAACACAAGGACCTTGGCAATTGCCATCCGATCGGCATGTTGATCGGAACACCAGCTTGTGACCTTCACTTGACCGGAACATGGG ACACTCTGATCGAGCGAGAAGAACGCAATTGCATATTGCTATCCGGAGCAACCGTGAATGTGGAGGCCCTGCGGCAGAAGATCATGGAAT CCGGAGGTATCGACAAAATCTCTACCGGATTCACCTACGGATCTTCAATTAACTCCGCTGGCACTACACGCGCTTGCATGCGAAATGGCGG TAACTCATTCTACGCCGAGCTGAAGTGGCTGGTGTCCAAGTCTAAAGGGCAGAATTTCCGCAGACCACTAACACCTACAGAAACACTGATA CCGCCGAACATCTCATTATGTGGGGAATCCACCACCCATCAAGCACTCAAGAAAAAAACGACTTGTATGGTACACAGTCACTAAGCATTTCC GTGGGCAGCTCTACCTACCGCAACAACTTTGTCCCCGTGGTTGGCGCCCGACCCCCAAGTAAATGGTCAGTCCGGCAGGATCGATTTTCATT GGACCCTGGTGCAGCCAGGGGATAACATCACTTTTAGCCATAACGGCGGCTTGATAGCGCCGTCAAGGGTGTCCAAACTGATCGGAAGAG GGCTGGGAATTCAGAGTGACGCACCCATCGATAACAACTGCGAAAGCAAATGTTTCTGGCGGGGGGGTTCGATCAACACCCGATTACCTTT CCAGAACCTCTCCCCCAGGACTGTTGGTCAGTGCCCGAAATATGTTAATCGACGCAGCTTGATGCTCGCCACCGGGATGCGCAATGTTCCC GAGCTCATTCAGGGGCGTGGCCTCTTTGGCGCAATAGCTGTGGTTCCTCGAGAATGGTTGGGAAGGCATGGTGGATGGATACGGCTTC CGGCATCAAAACGCACAGGGCACAGGCCAGGCGCAGATTACAAGTCTACACAGGCCGCCATTGATCAGATTACAGGTAAACTGAACAGG CTAGTGGAAAAGACCAATACCGAGTTCGAATCCATCGAATCTGAGTTCTCAGAGATAGAGCACCAGATCGGGAACGTTATCAACTGGACCAA GGACAGCATTACCGACATTTGGACCTACCAGGCAGAGCTCCTGGTCGCCATGGAAAATCAGCATACCATCGACATGGCCGATTCAGAGATG CTTAACCTTTATGAGCGGGTGAGGAAACAGCTGAGGCAGAATGCAGAAGAAGATGGTAAGGGTTGCTTCGAAATTTACCATGCTTGTGATG ATAGTTGTATGGAGAGTATCCGTAACAATACTTACGATCACAGCCAGTACAGGCGAAGAAGCACTCCTCAATCGCCTCAACATCAATCCTGTA ACTCTCTCGTCTGGTTACAAAGATATCATCTTATGGTTCTCTTTTGGGGCCTCATGTTTCGTGCTCCTGGCCGTGGTGATGGGCCTGTTCTTT TTCTGCTTAAAGAATGGAAATATGAGGTGCACAATCTGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2911	ATGTACAAGATAGTCGTTATCATCGCCTTACTCGGAGCAGTTAAAGGTTTAGATAAGATCTGCCTGGGGCACCACGCCGTCGCTAACGGCA CTATTGTGAAGACGCTGACCAATGAACAAGAGGAAGTCACTAACGCAACAGAAACCGTGGAGAGCACTGGCATCAATCGCCTCTGTATGAA AGGGCGCAAGCATAAGGACCTCGGCAATTGCCACCCTATAGGCATGCTGATTGGAACGCCTGCTTGTGACCTTCACCTGACAGGGATGTG GGATACCCTAATTGAACGAGAGAACGCGATCGCATACTGCTATCCTGGTGCCACTGTGAACGTGGAAGCCTTACGCCAAAAAATCATGGAG AGCGGAGGGATCAATAAAATCAGTACAGGTTTCACCTACGGATCCTCCATCAACAGTGCCGGTACTACACGCGCCTGTATGAGAAACGGAG GCAACAGCTTCTATGCTGAGCTGAAATGGTTAGTGAGCAAATCCAAAGGTCAGAATTTTCCCCAGACCACAAATACTTACCGAAATACGGAC ACCGCCGAGCATCTGATAATGTGGGGCATCCACCATCCTAGTTCTACTCAGGAGAAAAACGACCTTTATGGAACGCAGAGCCTGTCTATAA GCGTGGGGTCTTCAACATACAGGAATAACTTTGTCCCTGTAGTGGGCGCCGGTCCTCAGGTGAATGGGCAAAGCGGCCGCATCGATTTTCA CTGGACCCTGGTTCAACCTGGAGACAATATTACGTTCAGTCACAACGGCGGCCTTATTGCCCCTTCCAGAGTCTCTAAGCTCATTGGCAGG GGACTCGGTATCCAATCCGACGCCCCTATTGACAACAACTGCGAGTCCAAATGCTTCTGGAGGGGAGGAAGCATCAACACCCGCCTGCCAT TTCAGATCTTTCACCTCGAACCGTGGGCCAGTGTCCTAAATACGTCAATCGGAGAAGCTTGATGTTGGCCACTGGGATGCGGAACGTACC CGAGCTTATCCAAGGCAGAGGCCTTTTCGGTGCCATCGCAGGGTTCTTGGAAAATGGCTGGGAAGGCATGGTCGATGGCTGGTATGGCTT TCGCCATCAAAATGCTCAGGGCACGGGCCAGGCCGCTGACTACAAAAGTACACAAGCTGCCATCGATCAGATTACAGGCAAGCTCAATAGG TTGGTGGAGAAGACAAACACCGAGTTTGAGTCAATCGAGAGCGAGTTTAGCGAGATCAGATCGGCAACGTGATTAACTGGACTA AGGACTCTATAACAGACATTTGGACGTACCAGGCAGAGCTCCTTGTAGCAATGGAAAATCAGCACACAATTGACATGGCTGACTCTGAAATG CTCAACCTGTATGAGCGGGTTCGGAAGCAGCTGAGGCAGAATGCAGAGGAAGATGGTAAGGGCTGCTTTGAAATCTACCATGCCTGTGATG ACAGTTGCATGGAGAGTATTCGAAATAACACATACGATCATTCGCAGTACAGAGAGGAAGCCTTGTTGAACCGCCTGAATATCAACCCCGTG ACATTATCCTCAGGCTATAAAGACATCATCCTCTGGTTTTCGTTTGGGGCCTCGTGCTTTGTCTTGCTGGCTGTTGTCATGGGGCTGTTTTTC TTTTGTTTAAAGAACGGGAACATGCGATGCACAATCTGTATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2912	ATGTACAAGATTGTGCTGGTACTTGCACTTCTGGGTGCCGTTCACGGCCTCGACAAAATCTGCCTAGGCCACCACGCTGTGCCTAACGGGA CCATTGTGAAAACCCTGACTAACGAGAAGGAGGAGGTTACCAACGCAACCGAGACTGTAGAGTCTAAGTCCTTGGATAAACTGTGCATGAA GAACCGAAACTACAAAGACCTGGGCAATTGCCATCCTATCGGGATGGTCGTCGGAACTCCAGCCTGCGATCTCCACCTAACTACTGGCACCTGG GACACCCTCATCGAGAGGGACAATTCAATTGCATACTGCTATCCTGGGGCTACCGTGAGTGAAGAAGCACTGCGACAAAAAATCATGGAGT CAGGAGGGATCGACAAAATATCGACGGGATTCACATACGGCTCATCTATTAATTCAGCAGGAACCACGAAAGCTTGTATGCGCAACGGAGG TAACTCCTTCTATAGCGAACTCAAGTGGTTAGTGTCTAAGAATAAGGGACAGAACTTTCCACAGACAACAAACACTTACCGGAACACAGACA GCGTAGAACACCTCATAATATGGGGGATCCACCACCCAAGCTCCACACAGGAGAAGAACGATTTATACGGCACTCAGTCCCTGAGCATCAG CGTCGGATCAAGCACCTACCAGAACAACTTCGTCCCCGTGGTGGGAGCTCCGCCCACAGGTGAATGGCCAGAGCGGACGCATCGATTTCCA CTGGACTATGGTCCAGCCGGGTGACAACATCACCTTCTCTCACAATGGGGGGCTGATTGCTCCGAACCGAGTGTCCAAGCTGAAAGGGAG GGGGTAGGAATCCAGAGCGGCGCCTCGGTAGACAACGACTGCGAGAGCAAATGTTTCTGGAAAGGTGGCTCGATTAATACCAAGCTTCCC ATTTCAGAATTTATCTCCTAGAACTGTCGGCCAGTGTCCAAAATACGTCAACAAAAAGTCTCTGCTCCTCGCAACAGGCATGCGGAATGTTC CCGAAGTTGCACAGGGCCGAGGCCTGTTTGGTGCCATTGCCGGGTTTATCGAGAACGGATGGGAGGGCATGGTGGATGGATGGTACGGA TTCCGACACCAGAATGCGCAGGGGACGGGCCAAGCAGCGGATTACAAGTCCACACAAGCAGCAATTGACCAAATCACTGGCAAGTTGAAT CGCCTCATAGAGAAAACTAATACAGAGTTCGAATCTATCGAAAGTGAGTTTTCCGAGATCGAACACCAGATCGGGAATGTGATCAACTGGAC GAAGGATTCTATTACTGACATATGGACCTACCAGGCCGAGCTCCTGGTGGCTATGGAAAACCAACATACAATTGACATGGCTGACTCTGAAA TGCTGPATCTGTACGAACGAGTGAGGAAGCAGCTCCGCCAAAACGCAGAGGAAGACGGAAAGGGTTGTTTTGAGATATATCACAAGTGCGA CGACAACTGCATGGAGTCCATCCGAAACAATACTTACGACCATACACAATACAGAGAGGAGGCCCTGCTGAACCGCCTGAATATCAATCCC GTGAAGCTCAGTTCCGGTTACAAGGACGTCATTTTATGGTTCAGCTTTGGAGCGTCCTGCTTCGTGCTTCTGGCCGTCATCATGGGCCTTGT CTTCTTTTGTCTGAAAAACGGTAATATGAGATGCACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2913	ATGTATAAAATTGTCGTGATCATCGCCCTGCTCGGGGCCGTCAAGGGATTGGATAAGATATGTCTCGGTCATCATGCAGTGGCTAACGGCA CGATCGTGAAGACCCTGACCAACGAGCAGGAGTGACTAATGCCACCGAAACCGTTGAGTCTACTGGTATCAATAGGCTGTGTGCATGAA AGGGAGAAAGCACAAGGACCTCGGCAATTGTCACCCAATCGGGATGCTCATTGGGACACCCGCATGTGACCTCCACCTGACAGGCATGTG GGATACACTGATTGAGCGCGAAAATGCCATCGCGTACTGCTACCCTGGCGCCACCGTGAATGTGGAAGCTCTGCGACAGAAAATAATGGAG AGTGGGGGGATTAATAAGATCTCTACAGGGTTTACGTACGGATCAAGTATTAACTCCGCCGGGACTACTCGAGCATGTATGCGCAATGGCG GCAATTCCTTTTACGCCGAGCTGAAGTGGCTTGTGTCGAAGTCAAAAGGACAGAATTTTCCCCAGACAACAAACACATATCGCAATACCGAT ACTGCAGAACACTTGATTATGTGGGGGATTCACCACCCCGTCATCTACTCAGGAGAAGAACGATCTGTATGGCACTCAGAGCCTGAGTATCTC AGTAGGCAGCAGCACCTACAGAAATAACTTCGTGCCGGTTGTCGGGGCCCCGCCCACAAGTGAATGGCCAGTCAGGGCGGATCGACTTTCA CTGGACGCTGGTTCAGCCTGGAGATAACATTACGTTTAGTCACAATGGCGGGCTCATCGCGCCAAGTCGGGTATCCAAACTGATCGGCCGA GGACTTGGGATACAATCGGACGCCCCCATCGATAACAATTGCGAATCCAAATGTTTTTGGAGAGGAGGATCCCATAAATACACGACTGCCCTT TCAGAACCTGTCTCCTCGGACAGTTGGGCAGTGTCCAAAGTACGTAAACCGGAGGTCTCTCATGCTCGCGACAGGAATGCGTAATGTGCCA GAACTGATTCAGGGCCGCGGCCTCTTCGGTGCGATCGCGGGGTTCCTCGAGAATGGTTGGGAAGGCATGGTGGACGCGGTGGTATGGTTTT CGTCATCAGAACGCTCAAGGCACTGGGCAGGCCGCCGATTACAAGTCCACGCAGGCGGCAATTGACCAAATCACCGGGAAGTTAAACCGG CTTGTCGAGAAAACCAATACCGAGTTTGAATCCATAGAGTCCGAGTTTTCCGAGATCGAGCACCAAATCGGAAACGTTATAAATTGGACCAA GGACTCTATCACCGACATCTGGACCTACCAGGCCGAACTCCTGGTCGCCATGGAAAATCAGCACACAATAGACATGGCAGATTCAGAGATG CTGAACCTGTACGAGCGGGTGCGTAAGCAGCTCCGGCAGAATGCGGAAGAGGACGGCAAGGGATGTTTCGAAATATACCACGCTTGTGAT GATTCATGTATGGAGTCGATCAGGAACAATACATACGACCATTCCCAGTACAGGGAAGAGGCCCTCCTGAACAGGCTTAACATCAACCCCG TCACCCTGTCCAGCGGCTACAAGGATATTATCCTTTGGTTTTCATTCGGCGCAAGCTGCTTCGTCTTACTGGCCGTGGTAATGGGACTATTC TTTTTTTGCCTGAAAAACGGCAACATGAGGTGTACCATTTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2914	ATGTACAAAATCGTGCTCGTTCTGGCCCTGCTCGGCGCCGTGCACGGCCTCGACAAGATTTGCCTGGGACATCACGCTGTGCCCAACGGT ACTATTGTCAAGACACTGACGAACGAAAAAGAAGAGGTTACAAACGCTACCGAAACCGTTGAATCTAAGAGCTTGGATAAACTGTGCATGAA AAATCGCAACTATAAAGACCTCGGTAATTGTCACCCTATAGGGATGGTGGTCGGCACCCCAGCTTGCGACCTGCATTTGACAGGTACTTGG GATACTTTGATCGAACGGGATAACAGTATCGCCTACTGTTATCCGGGAGCCACGGTGTCGGAAGAGGCTCTGCGTCAGAAAATCATGGAGA GCGGCGGGATAGACAAGATCTCCACTGGCTTCACTTATGGCTCCAGCATTAATAGCGCAGGTACAACCAAGGCTTGCATGAGAAATGGGGG GAACTCCTTCTACTCAGAACTGAAATGGCTGGTGTCCAAAAATAAGGGACAGAATTTCCCGCAGACGACAAACACCTATAGAAACACAGACT CTGTAGAGCACCTCATTATTTGGGGTATCCATCACCCAAGCTCCACCCAGGAAAAGAATGACCTGTACGGCACACAGTCCTTGAGCATTTCA GTGGGCAGCTCCACATATCAGAATAACTTTGTGCCAGTCGTTGGCGCACGACCCCAGGTGAATGGGCAGTCAGGTCGCATTGACTTCCACT GGACTATGGTGCAGCCCGGCGATAACATTACCTTCTCCCATAACGGGGGGACTGATAGCCCCCAATAGGGTCTCTAAGCTCAAGGGTCGGG GTTTGGGCATCCAGTCCGAGCATCCGTCGATAACGACTGTGAGTCGAAATGCTTTTGGAAAGGTGGATCCATCAATACAAAGCTACCTTTC CAAAATTTATCCCCTCGAACGGTCGGACAGTGCCCTAAATACGTAAACAAGAAGTCACTGCTCCTCGCTACCGGCATGCGCAATGTACCTGA AGTTGCCCAAGGACGGGGGCTTTTCGGCGCAATCGCTGGCTTCATTGAGAATGGATGGGAGGGGCATGGTTGACGGCTGGTACGGCTTTAG GCACCAGAATGCTCAGGGTACCGGTCAGGCAGATTATAAAAGCACCCAGGCTGCCATCGATCAGATAACCGGGAAGTTGAACAGGCT GATCGAGAAGACCAACACTGAGTTTGAGAGCATTGAATCGGAGTTCTCGGAAATCGAACATCAAATCGGCAATGTGATCAATTGGACTAAGG ATTCTATCACCGACATCTGGACGTACCAGGCAGAACTGTTAGTTGCAATGGAAAATCAGCATACTATTGATATGGCAGACAGTGAGATGCTG AACCTGTACGAGCGTGTTAGAAAGCAGCTCAGACAGAACCGCCGAGGAGGACGGGAAAGGATGCTTTGAAATCTATCACAAATGTGATGATA ATTGCATGGAGTCAATCAGGAATAATACATACGATCACACGCAATACAGAGAGGAGGCTCTCCTGAACCGCCTTAATATCAACCCCGTGAAA CTCAGCTCCGGATATAAAGACGTCATCCTCTGGTTTTCTTTTGGAGCAAGCTGCTTCGTGCTGCTCGCCGTTATCATGGGGTTGGTGTTCTT CTGCCTGAAGAATGGTAACATGAGATGCACCATTTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2915	ATGTACAAGATTGTGCTCGTTCTGGCACTATTGGGCGCAGTGCATGGTCTGGATAAAATCTGTCTGGGTCATCACGCAGTGCCCAACGGTA CTATCGTCAAAACACTAACGAACGAGAAGGAAGTAACTAATGCAACGGAGACAGTGGAGTCAAAAAGTCTGGACAAGTTATGTATGAAG AACAGAAACTATAAGGATCTCGGTAATTGCCACCCCATCGGTATGGTTGGGACCCCAGCCTGCGACCTTCACCTGACGGGAACCTGG GACACCCTCATCGAGCGGGACAACTCCATTGCCTATTGCTATCCTGGGCCCACCGTCTCCGAGGAGGCACTGAGGCAGAAAATTATGGAAT CCGGCGGGATTGACAAGATTTCTACCGGCTTTACCTATGGCTCCTCAATCAACAGCGCTGGGACAACTAAAGCCTGCATGAGGAACGGAGG AAATTCTTTTTACTCTGAGTTGAAGTGGTTGGTGAGCAAAAATAAGGGCCAAAATTTTCCTCAGACGACCAATACCTACCGTAATACTGACTC AGTTGAGCACCTCATCATTTGGGGAATTCATCATCCCAGCAGCACTCAGGAGAAGAATGATCTGTACGGGACCCAATCGTTGAGTATATCCG TGGGATCTAGTACTTATCAGAACAACTTTGTACCTGTAGTGGGTGCCCGCCCACAGGTAAACGGACAGTCGGGGCGTATTGACTTTCATTG GACAATGGTGCAGCCCGGGGATAATATCACTTTTAGCCATAATGGAGGCCTGATCGCACCAAACCGAGTGAGCAAGCTGAAGGGTAGAGG ATTGGGAATCCAGTCTGGAGCCAGCGTTGATAACGACTGTGAGTCTAAATGCTTCTGGAAAGGGGGTAGCATAAATACCAAGCTGCCCTTC CAAAACCTGAGCCCTCGGACCGTGGGCCAGTGCCCAAAGTACGTGAATAAGAAAAGCCTCCTGCTCGCTACAGGCATGAGAAATGTGCCC GAGGTTGCACAGGGCAGAGGGCTCTTCGGCGCTATAGCTGGATTCATTGAAAATGGCTGGGAAGGTATGGTTGGTACGGCTTC AGACACCAGAATGCTCAGGGAACCGGACAGGCTGCTGATTATAAATCTACCCAGGCTGCTATCGATCAGATCACTGGGAAATTGAACCGGC TGATCGAAAAAACAAACACCGAATTCGAGAGTATTGAATCCGAGTTTAGCGAAATTGAACATCAGATCGGCAATGTGATAAACTGGACTAAG GATAGTATAACTGACATCTGGACATACCAAGCTGAGCTCCTGGTGGCCATGGAGAATCAACACACGATCGACATGGCAGACTCTGAAATGTT GAACCTGTACGAGAGGGTGCGGAAGCAGCTCAGACAAAACGCTGAGGAGGACGGCAAGGTTGCTTCGAAATCTACCATAAGTGCGACGA TAACTGTATGGAGAGTATTAGAAACAATACCTACGACCACACGCAGTATAGGGAGGAGGCTCTGTTGAATAGGTTAAATATCAACCCTGTGA AACTATCCAGCGGCTATAAGGACGTGATTTTATGGTTCTCGTTTTGGTGCCAGCTGTTTTGTCCTACTGGCAGTGATCATGGGTCTTGTTTTTT TTTGCCTGAAGAACGGCAACATGAGATGCACGATATGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2916	ATGTACAAGATCGTTGTGATTATCGCCCTGCTCGGCGCGCGTCAAAGGATTAGACAAGATCTGTCTAGGCCATCACGCCGTTGCGAACGGAA CCATCGTGAAGACCCTGACAAATGAGCAGGAAGAAGTTACCAATGCCACTGAGACCGTAGAAAGCACCGGGATCAACAGACTATGTATGAA AGGCCGCAAGCATAAGGATCTGGGAAACTGCCATCCTATCGGAATGCTCATTGGAACTCCCGCCTGTGACCTGCACCTGACCGGCATGTG GGACACACTGATTGAGCGGGAGAACGCCATCGCTTACTGTTATCCTGGTGCAACTGTGAACGTCGAAGCTTTGCGGCAGAAAATAATGGAA TCGGGGGGGATTAATAAAATAAGTACCGGATTCACATATGGAAGCTCAATTAACTCCGCAGGAACTACAAGAGCATGTATGCGAAACGGCG GCAACTCATTCTACGCTGAACTTAAGTGGCTGGTGTCTAAGTCAAAGGGGCAGAACTTTCCGCAAACCACTAATACATATCGCAATACAGAC ACAGCCGAGCACCTCATCATGTGGGGAATTCACCACCCAAGTAGTACCCAGGAGAAGAACGACCTGTACGGCACTCAGTCGCTTAGCATAA GTGTTGGCTCATCGACTTATCGGAATAACTTCGTCCCAGTGGTTGGTGCTCGTCCCCAAGTGAATGGTCAGTCCGGCAGAATTGATTTTCAT TGGACACTGGTGCAACCCGGTGACAACATCACTTTTAGCCATAATGGTGGTCTAATCGCCCCGTCCCGGTGTCCAAGTTAATTGGGAGAG GTCTGGGTATCCAGAGTGATGCTCCAATCGATAATAATTGCGAGAGTAAGTGCTTCTGGCGCGGCGGAAGTATCAACACCCGGCTCCCTTT CCAGAATCTATCACCTAGAACTGTTGGGCAGTGCCCTAAATATGTTAATCGCCGCTCACTTATGCTGGCAACCGGGATGCGAAACGTTCCAG AACTGATCCAAGGGCGGGGGCTTTTCGGGGCTATTGCCGGGTTTTTGGAGAACGGCTGGGAAGGGATGGTCGATGGTTGGTATGGCTTCC GCCATCAGAATGCACACGGGTACCGGCCAGGCCGCCGACTACAAGTCAACGCAGGCTGCAATTGACCAAATCACTGGGAAACTGAACCGGC TCGTTGAAAAGACTAACACTGAGTTTGAAAGCATAGAAAGTGAATTCAGTGAAATTGAGCATCAAATCGGCAACGTGATCAATTGGACCAAG GACTCAATCACGGATATCTGGACATACCAGGCCGAGCTGCTCGTTGCGATGGAGAACCAACACACCATCGATATGGCAGACTCTGAGATGC TAAATCTCTACGAAAGAGTGAGAAAGCAGTTGCGACAAAATGCGGAGAGGAGGTTGCTTCGAAATTTACCATGCCTGCGACGA CAGTTGCATGGAATCCATTAGGAACAATACCTACGATCATTCGCAGTATAGGGAGGAGGCCCTCTTAAACCGCCTGAACATCAACCCAGTAA CCTTGAGCAGCGGGGTATAAAGATATAATCCTGTGGTTTAGCTTCGGTGCCTCCTGCTTTGTTCTGCTGGCCGTAGTCATGGGTCTGTTTTTTT TCTGCCTGAAGAATGGTAATATGCGCTGCACCATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2917	ATGTACAAGATCATTGTAATCATCGCCTTGTTGGGAGCCGTCAAAGGGCTCGATAAAATTTGCTTGGGCCATCATGCAGTCGCCAACGGGA CAATAGTCAAGAACGCTCACGAATGAACAGGAGGAAGTGACAAACGCCACAGAAACCGTTGAAAGTACAGGGATTAATAGGCTGTGTATGAA AGGGCGCAAACATAAGGATTTGGGCAATTGTCACCCAATAGGGATGCTTATTGGGACACCAGCTTGTGATCTCCATCTCACTGGAACATGG GACACCCTAATCGAGCGCGAAAACGCTATTGCATATTGCTATCCGGGAGCGACGGTTAACGTGGAGGCACTCCGACAGAAATCATGGAGA GCGGGGGATCGACAAGATTTCCACAGGCTTACTTACGGCTCTAGTATAAATTCCGCCGGGACCACAAGGGCCTGTATGAGAAACGGTG GCAACAGTTTTTTACGCTGAGTTAAAATGGCTCGTTAGCAAGAGCAAGGGTCAGAACTTTCCGCAGACCACAAACACATACCGGAACACCGAT ACAGCAGAGCATCTAATCATGTGGGGCATACATCATCCTTCCAGTACCCAGGAGAAGAACGATTTATACGGGACCCAATCCCTGAGCATCA GCGTTGGGTCATCTACTTACCGCAATAATTTTTGTCCCGGTTGTGGAGCAAGGCCCCAAGTGAATGGTCAGAGTGGCAGGATTGACTTTCA CTGGACACTGGTGCAACCTGGTGACAACATTACCTTCAGCCATAACGGAGGACTGATCGCGCCTTCACGGGTGAGCAAGCTTATTGGTAGA GGACTCGGGATCCAAAGTGATGCCCCAATCGACAATAACTGTGAGAGCAAATGCTTTTGGCGAGGGGGATCCATCAATACACGCCTCCCCT TTCAAAACCTGAGCCCACGCACTGTGGGGCAATGCCCTAAGTACGTAAACCGCAGGTCTCTAATGCTTGCAACCGGGATGAGAAACGTTCC AGAATTAATTCAGGGACGGGGACTGTTTGGGGCGATCGCCGGCTTTCTGGAAAATGGCTGGGAAGGGATGGTGGATGGCTGGTATGGCTT CCGGCACCAAAATGCCCAGGGCACAGGCAGGCTGCAGATTACAAATCAACTCAGGCTGCCATCGACCAAATCACAGGCAAGCTGAATAG GCTCGTGGAGAAAACGAACACGGAATTCGAGTCTATTGAATCTGAGTTCTCCGAAATCGAGCACCAGATCGGGAATGTAATTAACTGGACCA AGGACTCAATCACTGACATTTGGACCTATCAGGCAGAATTACTGGTAGCGATGGAGAACCAACACACAATTGACATGGCAGATTCTGAAATG CTCAACCTCTATGAACGAGTGAGGAAACAGCTCCGGCAGAACGCCGAGGAGGATGGAAAGGGATGTTTCGAGATCTATCACGCATGTGAC GATAGCTGTATGGAATCTATACGGAATAACACATACGATCATTCTCAATATCGGGAGGAGGCTCTGCTTAACCGACTCAACATAAACCCAGT CACTCTATCCAGTGGCTACAAGGATATTATCCTGTGGTTTAGCTTTGGCGCCTCGTGCTTCGTCTCGCTGTTGTCATGGGCCTGTTCT TCTTCTGTCTGAAGAACGGGAATATGCGGTGCACCATTTGCATC

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Seq ID No.	Sequenza di acido nucleico
2918	ATGTATAAAATCGTGGTTATTATCGCATTGCTGGGTGCTGTGAAAGGCCTCGATAAAATTTGCCTCGGGCATCACGCCGTGGCCAACGGCA CAATTGTGAAGACACTGACAAACGAACAGGAAGAAGTTACCAACGCTACTGAGACCGTGGAATCCACAGGTATTAATAGGCTTTGTATGAAG GGTCGGAAGCACAAAGACCTGGGGAATTGCCACCCTATCGGAATGCTCATTGGAACTCCGGCCTGTGACCTGCACCTCACAGGTATGTGG GATACTCTGATTGAGCGAGAGAACGCGATTGCCTACTGTTACCCGGGAGCAACCGTGAACGTGGAGGCGCTCCGGCAGAAGATCATGGAG TCTGGCGGCATTAACAAGATCAGTACCGGGTTCACATATGGAAGTTCAATCAATAGTGCCGGCACTACCAGGGCATGTATGCGCAACGGAG GAAATAGCTTCTACGCGGAATTGAAATGGTTAGTCAGCAAGAGCAAGGGACAGAAGAACTTTCCTCAGACTACGAACACTTACCGTAATACTGAT ACTGCCGAACATCTAATTATATGTGGGGATCCATCACCCATCCAGCACCCAGGAAAAGAACGATTTGTACGGCACCCAGTCTTTATCTATTTC CGTGGGGAGTTCGACATATAGAAATAACTTTGTGCCCGTTGTCGGTGCTGGGCCCCAAGTTAACGGCCAATCGGGACGTATCGATTTCCAC TGGACACTGGTTCAGCCAGGGGACAAATATCACCTTTTCTCACAACGGAGGTCTTATAGCTCCATCTCGTGTGTCTAAACTCATTGGACGGGG GCTTGGGATCCAAAGCGATGCCCCCCATCGACAATAATTGCGAAAGTAAGTGCTTCTGGCGGGGAGGTTCTATTAATACTAGGCTTCCTTTCC AGAACCTCTCACCACGAACAGTCGGCCAATGCCCCAAGTACGTTAATCGACGTTCACTCATGCTGGCCACGGGAATGCGCAACGTGCCCG AGCTTATCCAGGGGCGCGGATTGTTCGGCGCCATCGCTGGCTTCTTGGAGAACGGTTGGGAGGGTATGGTCGATGGGTGGTACGGCTTTC GCCACCAAAACGCTCAAGGGACAGGACAGGCCGCCGATTATAAGAGCACTCAGGCCGCCATAGATCAGATTACGGGCAAGCTAAACAGGC TGGTCGAGAAAACCAATACGGAATTCGAGTCCATTGAATCAGAGTTCTCTGAGATCGAGCACCAGATCGGCAACGTAATCAACTGGACCAAA GATTCTATCACCGATATTTGGACATATCAGGCAGAACTACTGGTCGCCATGGAAAACCAGCATACCATCGATATGGCGGACAGTGAGATGCT TAATCTCTACGAAAGAGTACGAAAGCAGCTGCGACAAAACGCCGAGGAAGACGGTAAAGGCTGCTTCGAAATTTATCACGCGTGCGACGAC TCTTGTATGGAATCTATACGAAACAACACATACGATCACTCCCAATACCGGGAGGAGGCTCTCCTCAATAGACTGAATATCAACCCAGTCAC TTTGAGTAGTGGGTATAAGGACATTATTCTTTGGTTCTCCTTCGGGGCTTCTTGTTTTGTCCTTCTGGCAGTGGTTATGGGGCTCTTCTTTTTT TGCCTCAAGAACGGCAACATGCGCTGTACTATATGTATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2919	ATGTATAAAGTCGTTGTGATCATCGCTTTGTTGGGAGCTGTCCGGGGTTTGGATAAGATCTGCCTCGGCCATCACGCAGTAGCAAATGGAA CCACTGTGAAGACCCTAACTAACGAACAAGAGGAAGTCACAAATGCCACTGAGACTGTCGAGTCTACTAGCCTGAATAAACTGTGCATGAAG GGGAGGAGGTACAAAGATCTTGGAAATTGCCACCCAATCGGAATGCTGATAGGCACCCCTGTGTGTGATCTCCATCTGACCGGAACATGGG ATACCCTGATTGAGAGAGAGAATGCTACTGCATACTGCTACCCTGGAGTCACTATCAATGAAGAGGCCCTGCGTCAAAAGATCATGGAGTC CGGGGGTATTTCTAAGATGCGCACCCGGCTTTACCTACGGACCATCTATCAATTCGGCAGGTACTACCCGGTCATGTATGCGCAATGGAGGC AACTCCTTCTATGCCGAACTGAAGTGGCTGGTCTCGGGCACTAAGGGTCAGAACTTCCCGCAGACTACTAATACATACCGAAATACCGACA CTGCCGAGCACCTGATTATCTGGGGAATTCACCATCCCTCGTCCACTCAAGAGAAGAATGACCTTTATGGCACACAGAGCCTCTCGATCAG CGTGGGCTCCTCGACTTACCAGAATAACTTTGTCCCGGTAATTGGCGCTAGGCCTCAGGTGAACGGCCAGTCCGGCAGAATCGAGTTCCAT TGGACTCTGGTGCGCCCAGGCGACAATATCACATTCAGCCATAATGGGGGTCTGATCGCACCTGACCGAGTTAGTAAACTGATTGGCAAGG GGATCGGGATCCAATCAGGGGCTGTGATCGACAAAGACTGTGAGTCAAAGTGCTTCTGGAGGGGCGGAAGCATAATTACGGAGCTGCCTT TTCAGAACCTGAGCCCAAGAACTGTTGGACAATGCCCTAAGTACGTTAAGAAGCGATCTCTCTTGTTGGCCACTGGAATGAGGAACGTGCC GGAAGTGGTTCAGGGGCGCGGCCTCTTCGGGGCTATAGCCCGGATTCATAGAAAACGGCTGGGAGGGGATGGTGGATGGCTGGTACGGCT TCAGACACCAAAATGCGCAGGGCATCGGCCAGGCTGCTGATTACAAGTCTACCCAAACTGCGATTGATCAGATCACCGGAAAACTGAATCG ACTGATCGAAAAAACTAACACTGAGTTCGAAAGCATCGAAAGTGAATTTAGCGAGATTGAACATCAGATCGGCAATGTCATAAATTGGACCA AGGATTCCATTACAGATATTTGGACATACCAGGCCGAGCTCCTCGTGGCAATGGAAAATCAGCATACTATTGATATGGCCGATTCGGAAATG CTGAACCTCTACGAACGTGTCCGGAAACAGCTGCGCCAGAACGCTGAGGAGGACGGAAAGGGATGCTTTGAGATTTACCACACACCTGCGAC AATTCTTGTATGGAGAGTATACGCAATAATACATATGACCATTCACAATACCGCGAAGAAGCCCTTCTGAATCGTCTCAATATCAATCCCGTC AAACTGTCCTCAGGGTATAAAGACATTATCCTATGGTTCAGTTTTGGTGCCAGCTGCTTTGTGCTGGCTGTCATCATGGGGCTGGGCTT TTTTTGTCTAAAAAACGGAAACATGCGGTGCACGATCTGCATT

Ing. Ines Sangiacomo
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Seq ID No.	Sequenza di acido nucleico
2920	ATGTATAAGATCGTAGTGATCATTGCGCTGCTTGGCGCTGTCAAGGGCCTAGATAAGATATGTCTCGGACACCATGCTGTTGCCAATGGGA CAATTGTGAAGACTCTAACTAACGAACAGGAAGAAGTTACGAATGCTACAGAAACTGTGGAGTCCACTGGAATCAATAGACTCTGTATGAAA GGCCGGAAACACAAGGATCTGGGCAACTGCCACCCCATTGGTATGCTTATAGGAACACCTGCGTGCGATCTGCACCTCACTGGAATGTGG GATACCCTCATCGAGCGGGAGAACGCAATCGCGTACTGTTACCCCGGAGCTACGGTTAACGTCGAAGCTCTTCGGCAGAAGATCATGGAAT CCGGGGGGATCAATAAGATCTCTACTGGATTCACATATGGGTCTTCAATTAACTCCGCTGGGACGACCGTGCCTGCATGAGGAACGGCGG TAACTCTTTCTATGCTGAGCTGAAGTGGCTGGTCAGTAAAAGTAAAGGACAGAACTTTCCGCAGACCACCAACACGTATCGGAACACTGATA CAGCAGAGCACCTTATCATGTGGGGAATCCACCATCCCTCTTCTACACAAGAAAAGAATGACCTGTACGGCACTCAGAGCCTTTCAATCTCA GTGGGCAGTTCCACCTATCGAAACAACTTCGTGCCCGTGGTTGGAGCACGCCCACAGGTGAACGGCCAATCCGGGCGCATTGATTTTCATT GGACCCTGGTTCAGCCAGGGGATAACATAACTTTCAGTCATAATGGTGGGCTCATCGCACCAAGCCGTGTTTCCAAGTTAATCGGCCGGGG GCTGGGCATCCAGAGCGACGCTCCTATCGACAATAACTGCGAAAGTAAATGCTTCTGGCGCGGAGGTAGCATCAACACCCGACTACCCTTC CAGAATCTTAGCCCACGAACCGTGGGACAATGCCCAAAATACGTCAACCGCAGGTCTCTTATGCTAGCTACCGGTATGCGTAATGTCCCTG AGCTGATTCAGGGCCGCGGGGCTTTTTGGGGCCATTGCAGGATTTCTTGAGAATGGATGGGAAGGTATGGTTGACGGATGGTATGGCTTTAG ACACCAGAACGCGCAGGGCACTGGTCAAGCTGCAGATTACAAGTCCACACAGGCTGCTATAGACCAGATAACAGGCAAGCTGAATAGATTA GTGGAGAAAACCAACACAGAATTCGAGTATTGAGTCTGAATTTAGCGAGATTGAGCATCAGATTGGGAACGTGATCAATTGGACTAAAGA CAGCATCACGGACATCTGGACATACCAGGCTGAACTTTTGGTGGCCATGGAGAATCAGCACACAATCGATATGGCAGACTCAGAGATGCTC AATTTGTATGAACGGGTGAGAAAGCAATTACGCCAGAACGCGGAAGAGGATGGCAAAGGCTGCTTTGAGATATACCACGCATGTGACGACT CATGCATGGAATCCATCAGGAACAACACCTATGACCATTCCCAGTACCGGGAGGAAGCTCTGTTGAACCGCCTCAACATAAACCCGGTGAC ACTGTCTAGCGGTTATAAAGATATCATCCTTTGGTTCTCATTCGGGGCGTCTTGTTTTGTTCTCCTTGCAGTGGTTATGGGCCTATTCTCTT CTGCCTGAAGAATGGAAATATGAGATGTACAATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2921	ATGTATAAAGTTGTTGTTATCATAGCGCTGCTAGCGCTGTCAAGGGGTTAGACAAAATTTGTCTGGGCCATCACGCAGTGGCTAACGGCAC AATAGTTAAGACATTGACCAATGAACAGGAGGAGGTTACAAATGCAACCGAGACCGTGGAATCAACCGGCATTAATAGACTATGTATGAAGG GCCGGAAGCATAAGGATCTGGGGAACTGCCATCCAATCGGTATGCTGATCGGCACGCCAGCTTGCGATTTGCACCTAACGGGAACCTGGG ACACTTTAATCGAGAGGGAGAATGCTATAGCTTATTGCTACCCCGGCGCTACCGTTAATGTTGAGGCACTTCGGCAGAAGATCATGGAAAG CGGGGGGATCGATAAAATCAGCACAGGATTCACCTACGGGAGTTCTATCAACTCTGCCGGGACTACACGTGCATGTATGAGAAACGGCGGT AATTCCTTCTATGCCGAGCTCAAATGGCTTGTTTCCAAGAATAAGGGCCAGAACTTCCCACAGACCACTAATACTTACAGGAATACCGACAC TGCGGAGCACCTCATTATGTGGGCATACATCACCCTTCTTCGATCCAAGAAAAGAATGACCTCTATGGTACTCAGTCCCTCAGCATATCTG TGGGGAGCAGTACTTACCGGAATAATTTCGTACCCGTTGTGGGAGCACGCCCACAGGTGAACGGCCAGTCTGGTAGAATTGATTTCCATTG GACTTTGGTGCAGCCGGGGGATAACATCACCTTTTCCCATAACGGGGGACTGATCGCTCCAAGCAGAGTTTCCAAACTTATTGGGAGAGGT TTAGGGATCCAGTCAGACGCCCCAATTGATAACAACTGTGAGTCGAAGTGCTTTTGGAGAGGGGGCAGCATCAATACGCGGCTGCCTTTCC AGAACCTGTCACCCAGGACTGTCGCCAGTGCCCAAAGTACGTGAACAGACGATCCTTGATGCTTGCCACCGGAATGCGTAATGTGCCCG AGCTGATACAGGCCGTGGACTTTTCGGAGCCATCGCGGGATTTCTGGAGAATGGTTGGGAAGGAATGGTCGACGGCTGGTATGGATTCC GCCATCAAAACGCCCAAGGAACAGGCCAGGCCGCTGACTATAAAAGCACGCAGGCTGCTATTGACCAGATCACAGGTAAGCTGAACCGCC TGGTCGAAAAGACCAACACTGAATTTGAGTCCATCGAGAGCGAGTTTAGCGAAATCGAACACCAAATCGGCAATGTAATCAACTGGACCATG GACAGCATAACCGATATTTGGACTTACCAGGCGGAATTACTGGTCGCCATGGAAAATCAGCACACAATCGATATGGCAGACAGCGAAATGTT GAACCTCTATGAGAGAGTCAGAAAACAATTGCGGCAGAATGCTGAAGAGGATGGCAAAGGCTGCTTCGAAATCTATCACGCATGCGATGAT AGTTGCATGGAATCAATTCGGAATAATACGTATGACCATAGCCAGTACAGGGAAGAGGCCCTTCTCAACCGACTTAATATCAATCCTGTGAC ACTTAGTCTGGATATAAGGACATTATTCTCTGGTTCTCTTTTGGAGCATCATGTTTTGTGCTAGCCGTGGTGATGGGCCTGGTGTTCTT TTGTCTCAAGAACGGTAACATGAGGTGTACTATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2922	ATGTATAAAATCGTGGTTATTATCGCCTTGCTAGGGGCCGTCAAAGGCCTGGACAAGATCTGTTTGGGCCACCATGCTGTGGCAAATGGCA CAATTGTTAAGACACTTACCAATGAGCAGGAGGAAGTGACCAATGCTACCGAGACCGTCGAGTCTACCGGCATTAACAGGCTGTGTATGAA GGGGCGGAAACACAAAGACCTGGGAAACTGCCACCCAATCGGAATGCTGATTGGGACTCCTGCTTGCGACTTACACCTGACCGGAATGTG GGATACCCTCATAGAGAGAGAGAACGCGATAGCCTACTGTTATCCTGGGGCGACCGTGAATGTTGAGGCCCTGAGACAGAAGATTATGGAA TCTGGGGGCATCAACAAAATTTCTACCGGATTTACATACGGCAGTTCCATCAACTCAGCCGGCACAACCCGCGCGTGTATGAGAAACGGGG GGAACAGCTTTTACGCCGAGCTGAAGTGGCTGGTTTCCAAAAGCAAAGGGCAGAATTTTCCGCAGACTACGAATACCTACAGAAATACAGAT ACTGCCGAACACCTCATAATGTGGGGCATCCATCATCCGTCCAGTACACAGGAGAAAAATGACTTATATGGTACCCAGTCTTTATCAATTTCT GTAGGCTCCTCAACTTACCGTAACAATTTCGTGCCCGTGGTCGGAGCTCGCCCGCAGGTGAACGGCCAGAGTGGGCGCATTGACTTTCATT GGACCCTCGTACAACCAGGCGACAACATCACTTTTTCTCATAATGGTGGTCTCATCGCCCCAAGCCGAGTCTCTAAGCTGATTGGGCGGGG TCTTGGGATCCAATCAGATGCACCTATCGATAACAACTGCGAAAGTAAATGTTTTTGGCGTGGCGGTTCAATCAACACCCGGCTGCCGTTCCC AGAACCTGAGTCCAAGAACAGTTGGTCAGTGCCCCAAGTACGTAAACCGGAGGTCTTTGATGCTGGCCACCGGAATGCGGAACGTGCCAG AACTGATCCAGGGCCGAGGCCTTTTCGGAGCCATTGCTGGCTTTCTCGAGAACGGTTGGGAAGGAATGGTAGATGGTTGGTACGGGTTCA GACACCAGAACGCCCAGGGCACCGGTCAGGCCGCTGATTATAAATCAACCCAGGCCGCTATAGACCAAATCACCGGCAAGCTCAACAGAC TCGTGGAAAAAACGAATACGGAGTTCGAGAGCATCGAGTCAGAGTTTTCGGAAATCGAACACCAAATAGGGAATGTCATTAACTGGACTAAG GACAGCATCACCGACATTTGGACATATCAGGCAGAATTATTAGTGGCGATGGAGAATCAGCATACCATCGATAGTGGCAGACAGCGAAATGC TCAATCTGTACGAACGAGTACGCAAACAACTTCGCCAAAACGCAGAGGAGGATGGGAAGGGCTGCTTCGAGATATACCATGCATGCGATGA TTCTTGCATGGAGAGTATCCGTAACAATACATACGATCATTCCCAGTACCGAGAAGAGGCCCTGCTGAACCGGCTGAATATCAACCCAGTTA CACTCTCATCTGGCTACAAGGATATTATCCTCTGGTTCAGTTTTTGGGGCATCTTGTTTCGTCCTGCTAGCTGTGTCGTCATGGGCCTGTTCTTTT TCTGTCTCAAAAACGGCAATATGCGGTGTACCATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2923	ATGTATAAAATTGTGGTCATTATCGCCCTTCTTGGTGCCGTGAAGGGACTTGACAAAATCTGCCTGGGCCACCACGCCGTCGCAAACGGTA CTATTGTGAAAACTCTTACAAATGAGCAGGAGGAAGTGACAAATGCTACCGAGACCGTTGAAAGCACAGGTATCAACAGACTTTGTATGAAG GGACGCAAACACAAGGATCTCGGTAATTGTCATCCAATCGGTATGCTGATCGGCACTCCAGCATGTGACCTCCACCTCACCGGCATGTGGG ATACTCTAATTGAGAGAGAAGCGGATCGCTTACTGCTATCCCGGTGCGACTGTCAATGTGGAAGCCCTTCGACAGAAGATCATGGAGTC GGGCGGCATTAACAAAATTTCTACAGGTTTCACCTATGGCAGCAGTATTAACTCTGCCGGAACAACAAGAGCCTGCATGAGGAACGGCGGA AACAGTTTCTACGCTGAACTTAAATGGTTGGTCAGCAAGAGCAAAGGCCAGAATTCCCGCAGACCACTAACACATATCGCAACACCGACAC CGCTGAGCACCTTATTATGTGGGGAATACACCACCCCTCCAGCACCCAGGAGAAGAACGACTTGTACGGTACTCAGAGCCTCTCTATCTCC GTGGGATCCTCCACATACCGCAATAACTTTGTCCCCGTGGTTGGTGCCCGCCCCCAGGTAAACGGACAGTCAGGCAGGATTGACTTCCACT GGACCCTGGTGCAACCCGGTGACAACATTACATTCAGCCATAACGGCGGCCTAATCGCTCCCTCTCGCGTGAGTAAACTGATTGGACGGG GACTGGGGATTCAATCCGATGCTCCCATCGACAACAATTGCGAATCCAAGTGCTTTTGGCGAGGAGGGTCCATTAACACCAGGCTGCCGTT CCAAAACTTGTCTCCCCGTACGGTGGGGCAGTGTCCCAAATACGTTAACCGCCGGTCCTTAATGCTCGCTACAGGGATGAGAAATGTGCCC GAGCTGATCCAGGGTAGAGGCCTCTTCGGTGCCATTGCTGGATTCCTGGAGAATGGAGGGGTATGGTCGACGGCTGGTACGGTTTT CGGCATCAAAATGCTCAGGGAACAGGCGGCGATTATAAGAGCACCCAAGCTGCTATCGATCAGATTACAGGAAAGCTGAATAGGC TGGTCGAGAAGACAAACACGGAGTTCGAAAGTATCGAATCAGAGTTTAGCGAGATTGAACATCAGATTGTGATTAATTGGACCAAG GACTCAATTACCGATATCTGGACCTATCAGGCCGAGCTGCTTGTGGCCATGGAGAATCAGCATACAATCGATATGGCCGATTCAGAAATGCT GAACCTGTACGAGCCGTGTGCGTAAACAGCTGCCGCAGAATGCCGAGGAGGACGGAAAGGGGTGTTTTGAGATCTACCACGCGTGTGACGA CTCATGTATGGAGAGTATCCGGAACAATACTTACGACCATTCACAGTATCGCGAAGAGGCATTATTAAACCGCCTTAATATCAACCCCGTGA CACTCAGCAGCGGGTATAAGGACATCATTCTGTGGTTCTCATTTGGGGCCTCCTGCTTCGTTCTGCTGGCCGTGGTGATGGGGTTATTCTTT TTTTGTCTAAAGAACGGTAATATGAGGTGCACAATATGTATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2924	ATGTATAAGGTAGTAGTGATCATCGCCCTGCTGGGGGCCGTGAGAGGCCTTGATAAGATCTGTTTGGGTCACCACGCCGTTGCAAACGGGA CCACTGTTAAGACCCTTACCAATGAGCAGGAGGTGACGAATGCAACCGAGACCGTCGAGTCCACAAGTCTGAACAAGCTGTGTATGAA AGGGAGGAGGTATAAAGATCTGGGGAACTGCCACCCCATCGGAATGTTGATTGGAACCCCAGTCTGCGATCTGCACTTGACCGGCACCTG GGATACACTGATTGAGCGGGAGAACGCTACCGCCTACTGCTATCCCGGGGTCACTATTAATGAGGAAGCCTTGAGACAGAAGATCATGGAG AGTGGAGGGATATCCAAGATGCGGACAGGGTTCACCTACGGTCCCTCCATCAATTCCGCTGGCACCACCCGGTCATGCGCAATGGC GGCAATTCCTTTTACGCCGAGCTGAAATGGCTGGTTAGCGGGACTAAGGGACAGAACTTCCCACAAACCACTAACACCTATAGAAATACTGA TACCGCGGAGCATCTGATCATATGGGGAATTCATCATCCTTCATCGACCCAGGAGAAAAACGACCTGTACGGGACTCAGTCCCTGTCCATAT CCGTGGGAAGTTCCACTTATCAGAACAATTTCGTGCCTGTTATCGGAGCCCGACCTCAGGTTAACGGACAATCGGGACGGATTGAGTTCCA CTGGACTTTAGTGAGACCGGGCGACAACATCACCTTTTCTCATAACGGCGGCCTGATTGCCCCCGATAGAGTCAGCAAATTAATCGGCAAG GGAATCGGCATACAGAGCGGGGCTGTTATTGACAAGGACTGCGAATCTAAATGCTTTTGGCGTGGTGGCTCCATTATCACTGAACTGCCCT TCCAGAATCTCAGCCCTAGAACTGTGGCCAGTGCCCGAAGTATGTGAAAAGAGGTCTCTTCTTCTTGCTACAGGTATGAGGAACGTCCC TCAGGTTGTCCAGGGGCGCGGCTTGTTCGGCGCTATCGCCCGGGTTCATCGAAAACGGGTGGGAGGGCATGGTGGACGGCTGGTATGGCT TTCGACACCAGAATGCTCAAGGGATCGGGCAGGCAGCCGACTACAAATCCACCCAGACAGCTATAGACCAGATCACGGGGAAACTTAATCG TCTGATCGAAAAGACAAATACGGAGTTTGAGTCTATCGAGTCCGAATTCTCGGAGATTGAGCACCAGATTGGTAATGTCATCAATTGGACTA AGGACAGTATTACTGACATCTGGACTTATCAAGCAGAGCTGCTGGTAGCTATGGAAAACCAACATACAATCGATATGGCCGATAGCGAGATG CTGAACCTTTACGAACGAGTAAGGAAACAGCTGAGGCAGAACGCCGAAGAGGACGGCAAAGGTTGCTTTGAAATTTACCACACACCTGTGACA ATTCCTGTATGGAAAGCATACGAAATAATACCTATGATCACTCCCAGTACAGAGAGGAAGCGCTCCTGAACCGACTGAATATCAACCCCGTG AAACTGAGTTCCGGATACAAGGATATCATCCTATGGTTCTCATTCGGCGCCAGCTGTTTCGTTCTGTTAGCGGTTATAATGGGTCTGGGGTT TTTTTGTCTCAAAAATGGCAATATGCGTTGTACCATTTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2925	ATGTACAAGGTTGTGGTCATCATCGCCCTGCTTGGTGCTGTGAAAGGGCTTGATAAGATATGTTTGGGCCACCATGCCGTGGCTAACGGAA CCATTGTGAAGACCTTGACCAACGAGCAGGAGGAAGTGACTAATGCCACAGAAACTGTAGAGTCTACCGGTATAAACAGGCTGTGCATGAA GGGAAGGAAGCACAAAGATCTCGGCAATTGTCATCCCATAGGCATGCTGATCGGTACCCCCGCCTGCGATCTGCACTTGACTGGCACCCTG GGACACGCTGATCGAGAGGGAAAACGCTATAGCCTATTGTTACCCTGGGGCTACCGTTAATGTGGAAGCGCTGCGACAAAAGATAATGGAG AGCGGGCGGCATTGATAAAATTTCAACCGGATTTACCTACGGCTCTAGTATCAACTCTGCGGGTACTACGCGAGGCATGCATGAGAAACGGGG GGAATTCCTTTTATGCAGAGCTTAAGTGGCTGGTTAGCAAGAACAAGGGTCAGAATTTCCCCCAAACTACTAACACTTACAGAAACACAGAT ACCGCCGAACATCTGATCATGTGGGGCATTCATCACCCATCCTCTATTCAAGAGAAGAATGACCTTTATGGCACTCAAAGCCTCTCTATCTC CGTGGGAAGCAGCACTTACCGCAATAATTTCGTGCCCGTCGTTGGGGCACGACCGCAGGTCAATGGCCAGAGTGGCAGGATCGATTTCCA TTGGACCTTAGTCCAGCCGGGCGATAATATTACCTTCAGCCATAACGGAGGACTTATTGCGCCGTCCAGAGTGTCAAAACTGATCGGGAGA GGACTCGGCATCCAGAGCGATGCTCCTATTGATAATAATTGCGAGTCCAAGTGTTTTTGGCGTGGGGGTTCGATCAATACTAGACTACCTTT CCAGAACTTGAGCCCACGCACTGTGGGCCAGTGCCCCAAATATGTAAATAGAAGGTCCCTTATGCTCGCTACAGGTATGAGGAACGTCCCA GAACTCATTCAGGGCCGAGGTTTGTTTGGCGCAATCGCCGGATTTCTGGAGAACGGGTGGGAGGGCATGGTCGACGGCTGGTACGGATTC CGCCACCAGAACGCCCAAGGTACAGGTCAGGCCGCCGACTATAAGAGCACGCAGGCTGCTATAGATCAGATTACAGGAAAGCTAAACCGA CTTGTGGAGAAGACAAATACAGAGTTCGAGTCAATAGAGAGTGAGTTCAGTGAGATAGAGCATCAGATCGGTAATGTCATTAACTGGACAAT GGATAGCATCACCGATATTTGGACTTATCAGGCCGAATTGCTGGTGGCTATGGAAAATCAGCACACCATTGATATGGCAGACTCTGAGATGC TAAATCTTTACGAGCGGGTGCGAAAGCAGTTGCGGCAGAACGCAGAAGAAGACGGAAAAGGCTGCTTCGAAATATATCACGCTTGCGACGA TTCCTGTATGGAAAGCATCAGAAATAACACATATGACCACAGTCAGTATCGCGAGGAGGCTCTCCTGAACAGACTCAATATCAATCCGGTCA CCCTCTCCTCAGGTTACAAGGACATTATTCTCTGGTTTTCTTTCGGTGCGTCTTGCTTTGTGCTACTCGCTGTGGTGATGGGCTTGGTGTTCT TCTGCCTGAAGAACGGCAATATGCGGTGCACTATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2926	ATGTACAAAATTGTGGTCATCATCGCTTTACTAGGAGCTGTGAAAGGCTTGGATAAAATTTGTCTGGGACATCATGCTGTCGCTAACGGGAC CATAGTGAAAACACTCACGAACGAACAGGAGGAAGTTACCAATGCCACCGAAACGGTCGAGTCAACAGGGATTAACCGGCTGTGTATGAAG GGAAGAAAGCATAAAGATCTGGGGAACTGCCACCCTATAGGAATGTTGATAGGCACGCCTGCTTGTGACCTGCACCTGACTGGGATGTGG GATACCCTGATCGAAAGAGAGAAACGCTATAGCCTATTGCTATCCCGGTGCAACAGTGAACGTGGAGGCATTGAGACAGAAAATAATGGAAA GTGGAGGGATCAATAAGATCTCAACCGGTTTTTACCTATGGATCTAGTATATAAATAGTGCAGGGACCACACGTGCCTGCATGAGAAATGGGGG CAATTCTTTCTACGCGGAACTGAAGTGGCTGGTGAGCAAATCTAAGGGGCAGAATTTTCCACAGACGACGAATACATATCGTAACACAGACA CCGCGGAGCACTTGATTATGTGGGGTATCCACCACCCCAGCAGCACGCAGGAAAAAAACGATCTCTACGGTACTCAGAGCCTGTCTATCTC AGTAGGCTCATCAACATACCGGAATAACTTTGTTCCAGTTGTGGGGCCCGGCCTCAGGTGAATGGCCAGTCTGGACGCATTGATTTTCATT GGACGCTGGTACAGCCAGGAGACAATATCACATTTAGTCATAATGGCGGTTTGATCGCCCCGAGTAGAGTGTCTAAGCTGATCGGCCGAGG CCTTGGCATTCAGTCCGACGCCCCCATCGACAATAACTGCGAAAGCAAATGCTTTTGGAGAGGAGGTTCTATTAATACACGCCTGCCATTTC AAAACTTGAGCCCTAGAACTGTGGGTCAGTGTCCCAAGTACGTGAATCGCCGCTCCCTGATGTTAGCCACCGGGATGAGGAATGTGCCTGA GCTGATCCAGGGCAGGGGCCTATTTGGAGCCATCGCTGGTTTCTTGGAGAATGGTTGGGAGGGTATGGTAGATGGATGGTATGGGTTTCG GCATCAGAATGCGCAAGGCACTGGCCAGGCCGCGGATTACAAAAGCACTCAGGCTGCCATTGACCAGATAACCGGAAAACTCAACAGACT GGTTGAGAAGACCAACACTGAATTTGAGAGCATTGAGTCAGAGTTTAGCGAAATAGAACACCAGATCGGGAACGTTATTAACTGGACAAAG GACTCCATTACGGACATATGGACATCAGGCAGAGCTGCTAGTGGCAATGGAGAACCAACACACTATTGACATGGCCGACTCTGAGATGC TGAACCTCTATGAGCGCGTCAGAAAGCAGCTAAGGCAGAATGCAGAAGAGGATGGTAAAGGGTGTTTTGAAATCTATCATGCATGCGACGA TTCATGCATGGAAAGCATCAGGAACAATACTTATGACCATTCCCAATACCGAGAGGAAGCCCTGCTGAACAGACTGAATATTAACCCAGTGA CCCTATCCAGTGGCTATAAGGATATCATCCTGTGGTTCAGCTTTGGCGCTAGCTGTTTCGTGTTACTCGCGGTCGTCATGGGACTGTTTTTT TTTTGTTTGAAGAACGGGAATATGAGATGCACAATCTGTATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2927	ATGTATAAAATCGTAGTGATTATTGCGTTGCTTGGCGCTGTGAAAGGGCTAGATAAGATCTGCCTGGGCCACCACGCCGTAGCTAACGGAA CCATCGTCAAAACTTTGACTAACGAGCAGGAAGAGGTCACCAATGCTACTGAGACAGTCGAGTCTACAGGCATAAATAGACTCTGTATGAAG GGTAGAAAGCACAAGGATCTTGGGAATTGCCACCCCATTGGTATGCTGATTGGGACACCCGCCTGCGACCTGCACCTCACAGGGATGTGG GACACCTTAATTGAGCGAGAGAATGCAATCGCCTACTGTTACCCCCGGGGCTACTGTTAACGTCGAAGCTCTGCGCCAGAAAATCATGGAGA GCGGGGGGATCAACAAGATCTCCACCGGCTTCACCTATGGCTCATCTATCAATTCTGCAGGCACTACCAGAGCGTGCATGAGAAATGGAGG AAATTCCTTCTATGCGGAATTGAAATGGCTTGTGTCAAAATCTAAAGGGCAAAATTTTCCGCAGACCACAACACCTACAGGAACACCGATA CTGCAGAGCATCTGATTATGTGGGGGATTCACCACCCTTCATCCACTCAGGAAAAGAACGATCTCTATGGGACACAATCATTGTCCATTAGC GTGGGCTCTTCCACTTACAGAAACAACTTCGTGCCTGTCGTTGGGGCGCGACCGCAAGTTAATGGGCAATCCGGGCGAATTGATTTCCACT GGACGCTGGTTCAACCTGGAGACAATATCACTTTCTCACATAATGGAGGGTTAATTGCTCCCTCCCGCGTCTCCAAACTGATTGGAAGAGGC CTGGGCATTCAGTCCGATGCCCCAATCGACACAACAATTGCGAATCCAAGTGTTTCTGGCGCGGGGGCTCAATCAATACCCGCCTGCCCTTCC AAAACCTGAGTCCCCGCACAGTGGGCCAATGCCCTAAATATGTCAACCGTCGATCCCTCATGCTTGCCACAGGCATGAGGAACGTCCCAGA GCTGATCCAGGGCCGCGGACTCTTTGGAGCTATCGCAGGCTTTCTTGAAAACGGGTGGGAGGGCATGGTCGATGGTTGGTATGGATTTCG GCATCAGAATGCACAAGGTACTGGACAGGCCGCTGATTACAAGTCAACCCAGGCGGCCATTGACCAGATAACCGGGAAGCTCAACCGGTT GGTCGAGAAGACTAATACTGAGTTTGAATCCATCGAAAGTGAGTTCTCTGAGATAGAACATCAGATTGGTAATGTCATAAATTGGACTAAAGA TAGCATAACGGACATTTGGACCTATCAGGCAGAATTACTGGTGGCAATGGAAAATCAACACACCATCGACATGGCCGATTCTGAAATGCTCA ACCTATACGAAAGAGTCAGAAAGCAGCTCAGACAGAACGCCGAGGAAGACGGCAAAGGGTGCTTTGAAATTTACCATGCTTGTGACGATTC TTGTATGGAGAGTATACGCAATAACACTTATGACCATTCACACGTACCGAGAGGAGGCACTCCTGAATCGACTGAACATCAACCCCGTCACAC TGTCCTCAGGCTACAAGGATATTATCCTTTGGTTAGTTTTGGTGCGTCGTGCTTCGTCCTCCTGGCCGTCGTGATGGGGTTATTCTTTTTTT GCTTGAAAAATGGAAATATGGGTTGCACCATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2928	ATGTATAAGATAGTCGTCATAATCGCTCTGCTCGGCGCAGTGAAAGGGCTGGATAAAATTTGTCTGGGTCACCACGCCGTAGCGAATGGCA CCATCGTGAAGACACTGACTAACGAGCAAGAGGAGGTGACTAATGCCACAGAAACCGTCGAGTCTACAGGAATTAACCGCCTCTGCATGAA AGGCAGGAAACACAAAGATCTCGGCAACTGTCACCCGATCGGAATGCTCATAGGGACTCCAGCCTGTGATCTCCACCTTACCGGAATGTGG GATACTCTCATAGAGAGGGAGAATGCCATCGCTTATTGTTACCCCGGCGCGACAGTTAACGTGGAAGCTCTCAGACAGAAGATCATGGAAA GTGGGGCATTAACAAGATATCCACCGGATTCACTTACGGTTCATCCATTAATTCTGCGGGAACCACTCGGGCCTGTATGCGGAACGGTGG CAATTCTTTCTATGCCGAGCTGAAGTGGCTGGTCTCCAAGTCCAAGGGCCAGAATTTCCCACAGACTACCAACACATATAGAAACACTGACA CTGCCGAGCATCTGATCATGTGGGGATCCATCACCCAAGTTCAACTCAGGAGAAGAATGACCTCTACGGTACCCAGAGCTTATCTATTAGT GTTGGCTCCTCTACTTACCGCAATAATTTTGTGCCAGTAGTCGGTGCTCGCCCTCAGGTGAATGGGCAGTCCGGCAGGATCGACTTCCACT GGACTCTAGTCCAACCCGGGGATAACATCACATTCAGTCATAACGGGGGATTGATCGCTCCAAGTAGAGTTTCAAAACTCATAGGTAGGGG CCTCGGGATTCAGTCGGACGCTCCTATCGACAACAATTGCGAGTCTAAGTGTTTCTGGCGAGGGGGAAGCATAAATACCCGACTCCCCTTC CAGAATCTCAGCCCAAGGACTGTGGGTCAGTGCCCAAAATACGTTAACCGCCGGAGCCTAATGCTGGCGACTGGCATGAGAACGTCCCC GAACTGATTCAAGGTCGCGGACTCTTCGGGGCAATCGCGGGGATTTCTGGAAAACGGCTGGGAGGGAATGGTGGACGGCTGGTACGGCTTC CGACACCAGAACGCTCAAGGGACAGGCCAAGGCGGCTGACTACAAGTCCACCCAGGCCGCGATTGACCAAATCACAGGGAAATTGAATAGG CTGGTAGAAAAGACGAATACAGAGTTCGAATCCATAGAGAGTGAATTTTCCGAGATCGAACACCAAATAGGAAATGTCATCAATTGGACGAA GGACAGCATTACGGACATCTGGACATACCAGGCAGAGCTCCTCGTGGCGATGGAAAATCAGCACACAATCGACATGGCTGACTCAGAGAT GCTCAATCTGTACGAGCGGGTCCGCAAACAGTTGAGGCAGAATGCTGAAGAAGACGGTAAAGGGTGTTTTGAAATCTATCATGCCTGCGAC GATTCATGCATGGAATCTATTAGAAACAATACGTACGATCACTCCCAGTATAGGGAGGAAGCTCTGCTGAATAGACTGAACATAAACCCCGT CACCCTGTCTTCCGGTTACAAGGACATCATACTTTGGTTCTCGTTCGGTTGCAAGCTGCTTCGTTCTGCTGTTGTCATGGGCCTGTTCT TCTTCTGTTTGAAAAACGGCAATATGCGATGCACCATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2929	ATGTATAAAATTGTCGTAATCATTGCCCTGCTGGGAGCGGGTTAAGGGGCTTGATAAGATATGCTTGGGGCATCACGCCGTAGCTAATGGTAC AATCGTCAAAACACTAACTAATGAACAGGAGGAAGTAACAAACGCAACTGAAACTGTTGAGTCTACGGGAATCAACAGGCTCTGTATGAAAG GCCGAAAGCACAAAGACTTGGGTAATTGTCACCCGATCGGGATGCTCATCGGACACCTGCATGCGACCTCCACCTCACCGGCATGTGGG ATACACTTATTGAACGGGAGAACGCGATCGCCTACTGCTACCCTGGGGCAACGGTGAATGTAGAAGCTCTCCGGCAGAAGATCATGGAAAG CGGCGGAATTAATAAAATTAGTACCGGATTTACCTACGGGTCATCCATAAACAGCGCCGGGACCACACGCGCCTGCATGAGGAACGGCGG CAACAGCTTTTATGCCGAGCTCAAGTGGCTTGTCTCCAAATCCAAAGGACAGAACTTTCCTCAGACAACGAACACATATCGTAATACTGATAC CGCAGAACATCTGATCATGTGGGGAATCCACACCCCAGTAGCACCCAAGAGAAGAACGATCTATACGGAACTCAGTCTCTTTCCATCAGC GTTGGGTCCTCTACTTACAGGAACAATTTTGTACCGGTCGTGGGAGCCCGCCCCCAGGTGAATGGGCAGTCCGGAAGGATTGATTTTCACT GGACTTTAGTACAGCCTGGAGACAACATAACCTTTTCCCACAACGGAGGTCTCATAGCCCCTTCTCGAGTGAGCAAGTTGATAGGGCGTGG GTTGGGAATCCAGTCTGACGCTCCGATCGACAATAATTGTGAGTCCAAGTGCTTTTGGAGGGGCGGCTCTATCAATACGAGATTGCCTTTCC AGAACCTTAGTCCAAGAACCGTGGGGCAATGTCCAAAGTATGTCAATCGACGCTCACTAATGTTAGCAACCGGCATGAGGAATGTTCCCGA GCTAATCCAAGGCCCGGGACTCTTTGGCGCCATCGCGGGCTTCTTGGAGAACGGTTGGGAAGGAATGGTCGATGGGTGGTATGGCTTCC GGCACCAAAACGCCCAGGGTACAGGCCAGCCGACTATAAATCCACACAGGCAGCCATCGATCAGATCACCGGCAAGCTCAATAGGC TCGTGGAAAAAACAAACACTGAGTTCGAGTCCATTGAATCCGAGTTCTCGGAGATCGAGCACCAAATCGGGAACGTCATCAATTGGACTAAG GACAGTATTACAGATATCTGGACATATCAGGCCGAACTTTTGGTCGCTATGGAAAATCAACATACGATTGACATGGCAGACTCAGAGATGTT AAACCTGTATGAGAGAGTGCGCAAACAGCTGCGGCAGAATGCCGAAGAAGATGGGAAGGGATGTTTCGAGATTTACCATGCCTGTGACGAT TCCTGCATGGAGTCGATTCGTAATAATACTTATGATCATTCCCAATATAGAGAGGAAGCATTATTAAACCGGCTGAATATTAACCCCGTGACC CTGAGCTCCGGGTACAAGGACATTATTCTGTGGTTCTCATTCGGGCGCATCTTGTTTCGTCTTACTCGCAGTGGTCATGGGACTGTTTTTTCTTT TGTCTGAAGAATGGGGAACATGCGCTGTACCATTTGTATC

Seq ID No.	Sequenza di acido nucleico
2930	ATGTACAAGATTGTCGTCATCATAGCCCTCCTAGGTGCTGTTAAAGGGCTCGATAAGATCTGCCTTGGACATCACGCCGTGGCAAATGGAAC AATAGTAAAGACACTCACAAACGAGCAGGAAGAAGTGACGAATGCCACCGAAACCGTCGAGAGTACCGGCATCAACAGACTGTGCATGAAG GGCAGGAAGCATAAAGACCTGGGCAACTGCCACCCTATCGGCATGCTAATCGGTACACCAGCCTGCGATTTACACCTGACCGGAATGTGG GACACACTGATTGAACGAGAGAAAATGCCATTGCTTACTGTTATCCTGGCGCTACCGTGAATGTGGAGGCTCTCAGGCAGAAAATTATGGAGA GTGGGGGGATCAACAAGATTAGTACTGGCTTTACCTACGGCTCTAGCATCAACTCTGCTGGCACAACGCGCGCTTGTATGAGAAATGGCGG CAATTCATTCTACGCCGAGCTTAAGTGGCTGGTTAGCAAGTCCAAGGGACAGAACTTTCCTCAAACGACGAATACATACCGCAACACCGATA CTGCTGAGCATCTGATCATGTGGGGCATCCATCATCCCTCCTCAACTCAGGAAAAAAATGACCTCTACGGGACTCAGTCCCTATCAATCTCC GTTGGTAGTAGCACTTATCGGAACAACTTTGTGCCTGTGGTGGGCGCTAGACCTCAGGTCAATGGGCAGTCTGGGCGGATCGACTTTCACT GGACTCTCGTACAACCTGGTGACAACATAACTTTCTCACACAATGGCGGCCTCATCGCCCCAAGCCGAGTCAGTAAATTAATGGGCCGGGG TCTGGGCATCCAGAGCGACGCACCAATTGATAACAATTGTGAATCCAAATGCTTCTGCGGGGCGGGAGCATTAACACTCGGTTACCCTTT CAGAACTTGAGTCCTCGCACCGTGGGACAATGCCCGAAGTACGTGAACCGCGCCGCTCACTCATGCTGGCAACCGGCATGCGGAACGTCCCC GAACTCATCCAGGGCAGAGGCTCTTTGGCGCCATCGCTGGATTTCTGGAGAACGGATGGGAGGGCATGGTCGATGGCTGGTACGGCTTC AGGCATCAGAACGCCCAGGGGACCGGCCAAGCCGCTGATTACAAATCTACTCAGGCTGCCATAGACCAAATCACAGGGAAGCTTAATCGC CTGGTGGAAAAGACCAATACAGAATTTGAAAGCATCGAGTCTGAGTTCAGTGAAATTGAACATCAGATCGGGAACGTGATCAATTGGACCAA AGACAGCATTACCGATATTTGGACCTACCAGGGCAGAGTTGCTCGTTGCCATGGAGAACCAGCACACTATTGATATGGCCGACTCCGAGATG CTGAATCTCTATGAGAGGGTTCGCAAACAACTGAGACAAAATGCGGAAGAAGATGGAAAGGGCTGTTTTGAGATCTATCACGCCTGCGATG ATAGTTGCATGGAAAGTATCAGAAATAACACATACGATCACTCTCAGTACCGGGAAGAGGCCCTCCTGAACAGGCTTAATATTAACCCCGTG ACGCTTTCATCTGGCTATAAGGACATCATTTTGTGGTTCTCATTTGGCGCCAGCTGCTTTGTGCTGCTGGCTGTATGGTTATTGGGCTTATTCTTC TTCTGCCTGAAGAACGGAAACATGAGATGTACCATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2909	ATGTATAAAATTGTGGTCATAATTGCCCTGCTTGGGGCAGTGAAGGGGTTAGACAAAATTTGCTTGGGGCACCACGCAGTGGCCAACGGGA CAATTGTCAAAACACTGACAAATGAACAGGAGGAAGTGACAAACGCCACAGAAACCGTTGAATCAACCGGAATCAATAGACTTTGTATGAAG GGCAGAAAGCACAAAGATTTGGGCAATTGCCATCCAATTGGAATGTTGATCGGCACCCCTGCCTGTGACCTGCATCTGACTGGGATGTGGG ACACCCTGATCGAACGGGAGAACGCAATTGCGTACTGTTATCCCGGCGCTACAGTTAATGTGGAGGCCCTCCGACACAGAAGATCATGGAGA GTGGCGGCATTAACAAGATAAGCACCGGCTTCACCTATGGCTCCAGCATAAACTCAGCTGGCACTACTCGGGCATGCATGAGGAACGGCG GGAACTCCTTCTACGCTGAACTCAAGTGGCTGGTGTCGAAATCTAAGGGACAGAACTTCCCGCAAACCACCAACACTTACCGGAATACGGA CACAGCAGAGCATCTGATCATGTGGGGCATACACCATCCATCCAGCACGCAGGAAAAAACGACCTGTATGGAACACAGAGCTTGTCTATC TCGGTGGGGAGCAGCACCTACAGGAACAATTTCGTCCCTGTTGTTGGAGGCCGGGGCCCCAAGTTAATGGCCAGAGTGGCAGAATCGACTTT CATTGGACACTGGTGCAGCCTGGAGATAATATTACTTTTAGCCACACAACGGTGGACTCATTGCTCCCAGTAGGGTCTCGAAGTTGATCGGTC GTGGCCTGGGTATTCAGAGGCGACGCTCCCATTGACAATAATTGCGAGAGCAAATGTTTCTGGCGGGGAGGGTAGTATTAATACTAGGCTCCC TTTCCAGAATCTGTCACCGCGCACCGTTGGCCAGTGTCCGAAATATGTCAACCGGCGATCCCTAATGCTAGCCACTGGCATGCGGAACGTC CCTGAACTCATTCAAGGCAGGGGACTGTTCGGCGCTATCGCTGGGTTTCTGGAAAATGGATGGGAGGGCATGGTTGATGGCTGGTATGGC TTCAGGCACCAGAACGCTCAGGGCACCGGGCAAGCCGCCGATTATAAATCCACTCAGGCGGCCATCGATCAAATAACTGGCAAACTAAATA GGCTGGTCGAAAAGACAAACACTGAGTTTGAGAGCATTGAGAGCGAATTTTCTGAAATTGAGCACCAGATCGGTAACGTTATTAACTGGACC AAGGATTCAATTACAGATATTTGGACCTACCAGGCAGAGCTTCTGGTCGCCATGGAAAACCAGCACACAATTGATATGGCCGACAGCGAAAT GTTGAACCTTTACGAGAGAGTGCGGAAGCAGTTGAGACAGAACGCTGAGGAGGATGGGAAAGGGTGCTTCGAGATTTACCATGCCTGCGA TGATTCTTGTATGGAGAGCATCAGGAACAATACCTATGACCACAGCCAGTATCGCGAAGAGGCCCTGCTGAACAGACTGAACATCAACCCC GTGACACTCTCTTCTGGCTATAAGGATATAATGCCTGTGGTTTAGCTTCGGAGCCAGCTGCTTTGTCCTCTAGCAGTTGTCATGGGGCTCTT CTTTTTCTGCCTGAAGAATGGAAACATGAGATGTACAATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2910	ATGTACAAAGTGGTGGTCATCATTGCCTTGTTGGGTGCTGTCCGGGGGTTAGACAAGATCTGTCTGGGGCATCACGCCGTAGCCAATGGAA CTACTGTCAAGACCTTAACCAACGAGCAAGAAGAGGTCACAAATGCCGACGGAGACCGTGGAAAGCACATCGCTTAATAAGCTGTGCATGAA GGGGCGTCGCTACAAAGATCTGGGAAATTGCCATCCAATCGGCATGCTGATTGGAACTCCCGTCTGTGATCTACACCTGACTGGAACTTGG GATACTTTGATTGAAAGAGAGAACGCTACGGCTTACTGTTATCCAGGGGTAACCATCAATGAGGAGGCCCTGCGTCAGAAGATTATGGAGA GTGGGGGAATCAGCAAAATGCGGACAGGATTCACCTATGGGCCGTCCATTAATTCTGCCGGTACCACGAGAAGCTGCATGCGGAACGGTG GAAACTCGTTTTACGCAGAACTGAAATGGTTGGTCTCTGGCACGAAAGGACAGAACTTCCCACAGACTACAAACACCTATCGAAATACCGAT ACCGCCGAGCACCTGATCATTTGGGGGATCCACCACCCTAGCAGCACCCAGGAAAAAAATGACTTATATGGCACTCAATCCCTGAGCATCT CTGTGGGCTCCTCTACTTATCAAAACAATTTTGTGCCTGTGATTGGAGCCAGGGCCCCAGGTGAATGGACAATCCGGACGCATTGAGTTCCA CTGGACACTTGTCAGACCCGGGGATAATATCACCTTTTCTCACAACGGCGGTCTTATAGCGCCAGACCGTGTTAGCAAGCTGATTGGCAAG GGGATCGGCATCCAATCAGGTGCTGTGATCGACAAGGATTGTGAGTCTAAGTGCTTTTGGAGGGGTGGGTCCATCATTACCGAGCTGCCTT TTCAGAACCTAAGCCCACGCACCGTCGGACAGTGCCCCCAAATATGTGAAAAAAAGATCTTTACTGTTGGCCACCGGAATGAGAAATGTGCC AGAGGTGGTCCAAGGTCCGGGGCTTGTTCGGGGCGATTGCAGGCTTTATAGAGAACGGCTGGGAGGGCATGGTGGACGGTTGGTACCGGTT TCCGGCACCAGAACGCACAGGGAATTGGGCAAGCCGCCGACTACAAGTCAACCCAAACAGCCATAGACCAGATTACGGGAAAACTGAACA GATTAATCGAGAAAACTAATACAGAATTTGAGAGCATCGAATCTGAGTTTTCCGAAATCGAGCACCAGATAGGGAATGTCATCAATTGGACTA AGGACTCCATTACAGACATCTGGACTTACCAGGCCGAGTTGCTCGTCGCCATGGAGAATCAGCATACAATTGATATGGCTGACAGCGAAAT GCTCAACCTGTACGAGCGCGTAAGGAAGCAACTGCGCCAGAATGCTGAGGAAGACGGGAAGGGTTGCTTTGAGATTTACCACACACCTGTGA CAACTCATGTATGGAAAGCATCCGGAACAACACTACGATCACTCTCAATATCGCGAGGAGGCGCCCTTCTGAATCGGCTGAATATAAACCCAG TTAAATTGTCTTCAGGCTATAAAGACATCATCCTGTGGTTCTCGTTCGGGGCTAGCTGTTTCGTGCTGGCCGTGATAATGGGCCTTGGA TTCTTTTGTCTCAAGAACGGCAATATGAGGTGCACCATATGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2911	ATGTACAAGGTCGTTGTTATCATCGCCCTGTTGGCGCGGGTGAGGGGACTCGATAAGATTTGTCTGGGCCACCACGCCGTCGCCAACGGC ACGACTGTGAAGACATTGACCAACGAGCAGGAGGAGGTTACTAATGCCACCGAAACTGTGGAGAGTACCAGTCTGAACAAGTTGTGCATGA AGGGCCGCGGTATAAGGATCTGGGAAATTGCCACCCCATCGGAATGCTCATTGGTACCCCAGTGTGTGATCTTCACCTCACAGGAACCTG GGATACCCTCATCGAGCGTGAGAACGCCAACCGCGTATTGCTATCCCGGCGTGACCATAAATGAGGAAGCCCTGAGACAGAAGATCATGGA GAGCGCGCGCATAAGTAAGATGAGGACCGGCTTCACTTATGGCCCCTCAATTAACAGTGCGCGGAACAACCCGGTCCTGCATGAGAAATGG CGGCAATAGTTTCTATGCTGAACTGAAGTGGCTTGTGAGCGGAACAAGGGACAGAATTTTCCTCAGACAACGAACACGTATCGCAACACT GATACCGCTGAACACCTGATCATCTGGGGCATCCATCATCCCAGTTCTACTCAGGAGAAAAATGACTTGTATGGTACCCAATCTTTGTCTATA TCCGTCGGGAGTTCCACATACCAGAACAACTTCGTCCCTGTGATTGGGGCGCGACCTCAAGTGAACGGCCAGTCGGGCCGCATAGAGTTT CACTGGACCTTGGTCCGACCAGGCGATAACATTACATTTTCGCACAATGGCGGCTTGATCGCCCCCGATCGCGTGAGCAAACTTATCGGGA AGGCGATCGGAATCCAGAGCGGCGCAGTGATAGACAAGGACTGCGAAAGCAAATGCTTCTGGCGCGGTGGATCTATCATCACTGAATTGC CTTTCCAAAACCTGTCCCCCCGAACAGTGGGTCAGTGCCCGAAGTATGTGAAGAAGCGCAGTTTGCTATTAGCGACTGGCATGCGGAACGT GCCTGAGGTGGTTCAGGGGCGCGGTCTCTTTGGCGCCATCGCAGGATTTATTGAGAATGGCTGGGAGGGCATGGTCGACGGCTGGTACG GATTTAGACATCAGAATGCTCAGGGAATTGGGCAGGCCGCCGATTACAAGAGTACCCAGACAGCAATTGACCAGATCACAGGCAAACTTAA CAGGCTTATTGAGAAAACCAACACCGAGTTCGAGTCCATCGAGTCAGAGTTTAGCGAGATCGAACATCAAATCGGCAATGTGATTAATTGGA CAAAAGATTCTATTACCGATATCTGGACCTACCAGGCAGAGCTGCTGGTGGCTATGGAAAACCAGCACACCATAGACATGGCAGACAGTGA GATGCTGAACCTATATGAGCGTGTGAGGAAACAATTGAGACAAAATGCCGAGGAAGACGGGAAGGGATGCTTCGAAATATACCACACATGT GATAACTCCTGTATGGAATCAATTCGGAACAATACTTACGACCACAGCCAGTATCGCGAGGAAGCCTTACTTAATCGTTTAAATATTAATCCC GTTAAGCTGAGCTCCGGTTATAAAGACATCATTCTGTGGTTCTCCTTTGGAGCCAGTTGCTTCGTTTTTGCTCGCCGTTATCATGGGCCTGGG GTTTTTCTGTCTCAAGAATGGAAATATGCGATGCACCATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2912	ATGTATAAGATTGTCGTGATTATCGCTCTCCTTGGTGCCGTTAAGGGCCTGGACAAGATCTGTCTTGGACACCACGCTGTGGCCAATGGCA CTATTGTCAAAACCCTCACTAATGAGCAGGAGGAGGTCACCAACGCAACGGAGACAGTAGAAAGCACCGGGATCAACCGTCTGTGCATGAA GGGGCGGAAACATAAAGACCTCGGAAACTGCCATCCGATTGGAATGCTGATCGGACCCCAGCTTGCGACCTCCATCTGACAGGGATGTG GGACACGCTTATCGAACGCGAGAATGCCATTGCCTATTGTTATCCTGGGGCTACTGTGAACGTAGAAGCCCTGCGTCAGAAGATTATGGAG TCCGGCGGATCAATAAAATCAGCACAGGGTTCACCTATGGCTCTTCAATCAACAGTGCCGGAACAACCCGCGCCTGCATGCGGAACGGC GGGAATTCCTTCTACGCCGAATTAAAGTGGTTGGTTCTAAAAGTAAAGGGCAAAACTTCCCTCAGACCACGAACACCTATCGTAACACAGA CACCGCCGAGCATCTCATCATGTGGGGATCCCACCATCCCAGCAGTACACAGGAAAAGAATGATCTGTACGGCACACAGTCGCTGTCGATC TCAGTTGGGAGTAGCACTTACCGCAACAACTTTGTGCCCGTCGTGGGGCGAGGCCGCAGGTAAATGGGCAATCTGGACGTATAGACTTC CACTGGACTCTAGTGCAACCCGGCGACAACATCACATTTTCTCATAACGGGGGCCTTATAGCCCCGTCTCGAGTGTCCAAACTGATTGGCC GCGGCCTCGGAATCCAGTCCGATGCCCCCCATCGACAATAATTGCGAGTCTAAATGTTTTTGGCGAGGGGGGAGCATTAACACACGGCTCCC ATTTCAAAATTTGAGTCCGCGCACCGTCGGTCAGTGTCCAAAATATGTGAACAGACGCAGCTTGATGCTCGCAACGGGCATGAGAAACGTT CCTGAATTGATCCAGGGTCGGGGACTGTTTGGGGCCATCGCAGGCTTTTTGGAGAACGGTTGGGAAGGAATGGTGGACGGATGGTACGGC TTTAGACACCAGAACGCACAGGGAACCGGTCAGGCAGCTGACTACAAGTCAACTCAGGCCGCCATTGACCAGATCACAGGCAAGCTGAAT CGACTCGTCGAGAAGACCAACACCGAATTTGAGTCTATCGAATCAGAGTTTTCGGAGATCGAGCACCAGATCGGCAATGTGATCAATTGGA CAAAGGATTCTATCACCGATATCTGGACGTATCAGGCGGAATTGCTGGTAGCCATGGAGAATCAACACACAATAGATATGGCCGATTCTGAG ATGCTTAACCTGTACGAACGGGTCCGGAAGCAACTCCGCCAGAATGCAGAGGATGGGAAGGGCTGCTTCGAGATTTACCACGCTTGT GATGACTCCTGCATGGAGTCAATTCGAAACAACACTTACGATCACTCACAGTACCGCGAGGAAGCACTTCTTAATAGGCTGAACATCAATCC TGTTACTCTCTCCAGCGGATATAAAGATATCATTCTGTGGTTCAGCTTCGGTGCCAGCTGCTTTGTGCTACTGGCAGTGGTCATGGGGCTCT TCTTCTTCTGCCTTAAAAATGGGAATATGCGTTGCACCATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2913	ATGTATAAAGTGGTAGTGATCATCGCTCTGCTGGTGCCGTGCGAGGCCTTGATAAGATCTGTCTTGGCCACCATGCAGTGGCCAACGGGA CCATAGTTAAGACATTAACCAACGAACAGGAGGAGGTTACCAACGCTACCGAAACTGTCGAGAGCAAATCTCTGGGTAAGCTGTGTATGAA GGGCCGTAGCTACAATGATCTTGGTAACTGTCATCCTATCGGCATACTAATTGGGACCCCAGCCTGTGACTTGCACCTTACTGGTACTTGGG ACACCTTGATAGAACGTGAAAATGCCGTGGCTTACTGTTACCCGGGCGCCACTGTGAACGAGGAGGCCCTGCGGCAGAAAATTATGGAGT CAGGTGGCATCTCTAAGATTTCAACAGGCTTCACCTACGGGACAAGTATTAATTCAGCTGGGACTACCAAAGCCTGTATGCGAAATGGGGG TAACTCTTTTTATGCCGAGCTTAAGTGGCTGGTTCTAAAAATAAAGGACAGAATTTTCCACAAACTACAAACACTTATCGGAACACGGACAC CGCCGAGCACCTGATTATTTGGGGAATCCACCATCCATCTAGCACTCAGGAAAAAAATGATCTGTATGGTACTCAGAGCCTGAGCATTAGCG TAGGCAGCTCTACATATCAGAATAACTTTGTGCCTGTTGTAGGGGCTAGGGCCTCAAGTGAACGGGCAGAGCGGTAGGATTGATTTCCACTG GACCCTGTTGCAGCCCGGAGACAATATAACCTTCTCGCATAACGGAGGGCTGATAGCCCCGTCCAGAGTGAGTAAGCTGATCGGTAGAGG ACTGGGAATTCAGAGCGAAGCCCCAATTGATAACGGCTGCGAGAGTAAGTGCTTCTGGAAGGGCGGTAGCATTAACACGAAGTTGCCATTT CAGAATCTCAGTCCACGTACGGTGGGCCAGTGTCCCAAATACGTCAACAAACGCTCTCTGATGCTTGCTACTGGGATGAGGAATGTCCCCG AGATAATGCATGGACGCCGGGTTGTTTGGCGCCATCGCCCGGGTTTATTGAGAATGGCTGCTGGGAGGGCATGGTAGATGGATGGTACGGTTTTC GGCATCAGAATGCCCCAGGGGACCGGACAGGCTGCGGATTACAAGTCTACACAGGCAGCCATCGATCAGATCACAGGCAAGTTGAACCGAC TGATCGAAAAGACAAACACAGAGTTCGAATCAATTGAGAGCGAGTTTTCCGAGATAGAGCATCAGATTGGCAACATTATTAATTGGACTAAA GATAGCATTACCGATATATGGACCTATCAGGCAGAACTGCTCGTCGCAATGGAGAATCAGCACACTATCGATATGGCCGATTCAGAGATGCT AAACCTGTACGAACGCGTTCGCAAGCAACTCAGACAGAATGCTGAGGAGGATGGCAAGGGTTGTTTCGAGATCTACCATGCGTGCGACGAT AGTTGTATGGAGAGCATTCGGAATAATACCTACGATCACTCCCAGTACAGGGAAGAGGCTTTGTTAAATAGACTGAATATAAACCCTGTCAA GCTATCATCAGGTTACAAAGACATCATTCTTTGGTTCTCTTTTGGCGCTTCCTGTCTGATCCTTCTAGCCGTGGTGATGGTCTGGTTTTCTT TTGCCTCAAAAATGGAAACATGCGGTTGTACGATATGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
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Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2915	ATGTATAAGATTGTCGTCATCATCGCCCTACTGGGCGCGGTGAAAGGGCTAGATAAGATATGTCTCGGGCACCATGCAGTGGCTAACGGAA CAATTGTTAAAACCTTAACGAATGAACAGGAGAAGGTTACCAACGCTACTGAAACAGTTGAGTCAACTGGCCTCAACAGACTGTGCATGAAG GGTCGCAAACACAAAGATTTAGGCAACTGCCACCCCATTGGTATGTTAATCGGAACCCCAGCCTGTGATCTCCATCTGACCGGCACATGGG ATACGATAATTGAGAGGGAGAATGCTATTGCCTACTGTTACCCTGGCGCCACCGTCAATGAAGAGGCCCTCAGACAGAAGATCATGGAGTC CGGGGGTATCGACAAAATTTCCACCGGTTTCACCTACGGTAGCTCCATCAATAGTGCCGGCACTACACGCGCATGCATGCGCAATGGGGG CAACTCATTCTACGCGGAGCTAAAGTGGCTCGTTAGTAAGAGCAAAGGACAGAACTTCCCACAGACTACTAACACTTATAGGAACACTGATA CGGCAGAACATTTAATTATGTGGGGCATACACCATCCTAGCTCAACGCAGGAGAAGAATGACCTATACGGTACCCAATCCCTCTCCATCAGT GTGGGGAGCTCTACTTATAGAAACAACTTCGTGCCCGTCGTAGGCGCTCGACCTCAGGTCAATGGACAGTCTGGCAGAATCGACTTCCACT GGACTCTGGTACAACCTGGCGATAATATTACCTTTAGCCACAATGGCGGCTTAATAGCACCATCTCGTGTGAGCAAGTTGATTGGGCGAGG ATTGGGCATTCAGTCGGACGCGCCCATTGATAACAACTGTGAATCCAAATGCTTCTGGCGTGGAGGGTCAATCAATACCCGCCTCCCCTTC CAGAACCTGTCCCCGAGGACTGTGGGCCAATGTCCCAAATATGTGAACAAGAGGTCTCTGATGCTGGCAACCGGGATGAGAAATGTGCCC GAACTGATCCAGGGACGCGGGCTATTCGGGGCTATAGCAGGTTTTCTCGAAAATGGATGGGAGGGCATGGTGGACGGGTGGTACGGCTTT CGCCACCAGAATGCACAGGGAACCGGCCCAGGCCGCAGATTACAAATCCACCCAGGCGGCCATCGATCAGATAACCGGCAAATTGAACAGG CTGGTTGAAAAAACAAATACAGAATTCGAATCCATTGAGTCTGAGTTTAGCGAGATAGACACCAGATAGGCAATGTCATAAACTGGACCAA AGATTCCATTACAGATATCTGGACATATCAGGCAGAGCTGCTCGTGGCAATGGAGAATCAGCATACTATTGATATGGCAGACAGCGAGATGC TCAATCTGTATGAACGGGTAAGGAAACAGCTGCGTCAGAATGCTGAGGAGGACGGTAAGGGGTGTTTTGAAATATACCACGCTTGCGATGA CAGTTGCATGGAATCTATTCGCAACAATACGTACGACCACTCTCAGTACCGCGAGGAGGCCCTTCTTAACAGGCTGAACATTAATCCCGTCA CACTAAGCTCCGGTTATAAGGACATCATTCTTTGGTTTTCATTTGGCGCTAGCTGCTTCGTTCTGCTTGCCGTGGTTATGGGCCTGGTCTTTT TCTGCCTTAAGAACGGAAATATGAGGTGTACAATCTGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2916	ATGTACAAGATAGTGGTCATTATTGCTCTGTTGGGAGCTGTGAAAGGGCTTGATAAGATTTGCCTGGGCCACCACGCGGTGGCGAATGGGA CGATCGTGAAAACTCTCACAAACGAGCAGGAAGAAGTGACTAACGCTACAGAGACCGTGGAAAGCACGGGGATCAATAGGCTGTGCATGA AGGGCCGGAAGCATAAGGATCTAGGCAACTGCCACCCAATTGGCATGCTCATCGGGACGCCCGCATGCGATCTGCACCTGACAGGGATGT GGGACACCCTTATCGAGCGTGAGAACGCCATCGCCTATTGCTACCCCGGGGCAACAGTGAATGTGGAAGCACTGAGGCAGAAGATCATGG AGAGCGGGGGAATCAACAAGATATCCACAGGCTTCACATATGGATCATCAATCAACAGCGCCGGCACCACCCGGGCATGTATGCGGAACG GGGGCAATAGTTTCTACGCTGAGCTCAAATGGCTTGTTAGTAAGTCTAAGGGGCAGAACTTTCCACAGACTACGAATACGTACCGCAATACG GATACTGCAGAACACTTAATAATGTGGGGAATCCACCACCCAAGTTCCACCCAGGAGAAAAACGATTTGTACGGAACCCAATCCCTGTCAAT ATCCGTGGGAAGCTCTACCTATAGGAACAATTTCGTCCCGGTCGTGGGAGCTCGGCCACAGGTGAACGGACAGAGTGGAAGGATCGACTT CCACTGGACGCTCGTGCAACCAGGTGATAATATCACGTTCAGTCACAACGGCGGGACTGATTGCTCCAAGCCGCGTCAGCAAGCTGATAGG CCGGGGGCTGGGGATCCAGTCAGACGCCCCTATTGACAATAATTGTGAGTCCAAATGTTTCTGGAGAGGTGGCTCTATCAATACCCGCCTT CCCTTTCAGAACTTGTCCCCACGGACAGTGGGACAGTGCCCCAAGTATGTCAATCGCAGGTCACTGATGCTGGCAACCGGGATGAGGAAC GTTCCCGAACTCATTCAAGGCCGGGGTCTATTTGGCGCAATCGCCGGCTTCCTGGAAAATGGCTGGGAAGGAATGGTGGACGGGTGGTAT GGTTTCCGGCACCAGAATGCTCAGGGCACAGGCCAGGCTGCTGATTATAAGTCTACTCAGGCAGCCATTGACCAGATCACCGGTAAGCTCA ATAGATTGGTAGAAAAAACAAACACGGAGTTCGAGAGCATCGAGTCTGAATTTTCCGAGATCGAACATCAGATCGGGAACGTCATCAATTGG ACCAAGGACTCTATTACGGACATTTGGACTTACCAAGCTGAGCTCCTGGTGGCAATGGAGAACCAGCATACCATTGATATGGCCGACTCTG AGATGCTGAACTTATACGAACGGGTGCGAAAGCAACTGAGGCAGAACGCCGAGGAGGATGGTAAGGGCTGCTTTGAGATATATCATGCCT GTGATGATTCTTGCATGGAGAGCATCCGTAATAATACTTACGACCATAGCCAGTATCGAGAGGAAGCGCTACTCAATCGATTAAATATCAAC CCTGTGACCCTATCTTCGGGTTACAAGGACATAATTCTGTGGTTCTCATTCGGCGCATCTTGTTTCGTATTGCTCGCAGTGGTGATGGGCCT TTTTTTCTTCTGTCTGAAAAATGGTAACATGCGCTGTACTATATGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2917	ATGTACAAAATAGTGGTGATTATCGCCCTCCTGGGTGCTGTCAAGGGCCTGGATAAGATCTGTCTTGGCCATCACGCTGTCGCAAATGGCA CTATAGTCAAAACTCTGACAAACGAGCAGGAGGTGACCAACGCAACCGAGACGGTGGAATCTACTGGAATTAACAGGCTGTGTATGAA GGGTAGGAAGCATAAGGATCTAGGTAATTGCCATCCCATCGGTATGCTGATCGGAACTCCCGCGTGCGACTTACATCTCACTGGAATGTGG GACACGTTGATCGAGCGGGGAGAATGCTATTGCGTACTACCCCGGCGCTACGGTGAACGTCGAGGCTTTGCGTCAGAAGATCATGGAG AGCGGGGGTATCAACAAAATAAGTACCGGATTCACATACGGAAGCAGTATCAATTCCGCCGCGCATGCATGCGGAACGGT GGTAATTCCTTCTATGCTGAACTCAAGTGGCTCGTGTCAAAGAGCAAGGGACAAAACTTTCCCCAAACGACCAATACCTATAGAAATACAGA CACTGCTGAGCATCTGATCATGTGGGCATTCACCATCCATCATCTACTCAGGAAAAAAACGACCTGTACGGTACCCAGAGCCTGTCTATTA GCGTCGGATCATCGACCTACAGGAATAACTTCGTGCCAGTCGTTGGGGCCCGCCCTCAGGTGAACGGCCAGAGCGGACGGATTGATTTTC ACTGGACCCTGGTCCAGCCAGGTGATAACATCACCTTCTCACATAACGGAGGCCTGATCGCCCCCAGCCGAGTTAGTAAACTAATCGGAAG GGGACTTGGTATCCAGAGTGACGCACCCATCGACAACAACTGTGAGTCTAAGTGTTTTTGGCGAGGCGGGAGTATCAATACTAGACTGCCG TTTCAGAATTTGAGTCCCAGAACAGTGGGCCAGTGCCCTAAGTACGTGAACCGGAGGTCTCTGATGCTCGCAACCGGGATGCGGAATGTTC CCGAGCTGATCCAGGGACGCGGTCTCTTCGGTGCCATCGCTGGGTTTCTCGAAAACGGCTGGGAGGGAATGGTGGATGGTTGGTACGGCT TCAGACATCAAAACGCTCAAGGAACTGGCCAGGCCGCTGACTATAAGTCAACTCAGGCTGCAATCGATCAGATCACCGGGAAACTGAATCG CCTCGTGGAGAAGACAAACACCGAGTTCGAGTCAATCGAGTCCGAGTTCTCCGAGATCGAACACACCAAATAGGCAACGTTATAAACTGGACG AAGGACTCCATTACGGACATCTGGACATACCAGCCGAGCTCCTCGTTGCTATGGAGAACCAACACACAATCGATATGGCTGATTCCGAGA TGCTCAATCTCTACGAGAGGGTGAGGAAACAGTTGAGGCAGAATGCAGAAGAGGATGGAAAGGGATGCTTTGAAATCTACCATGCCTGCGA CGACTCATGCATGGAGTCCATTAGAAATAACACTTATGACCATTCGCAATACAGAGAAGAAGCTCTTCTCAACAGGCTCAACATCAACCCGG TCACCCTTAGCTCCGGCTACAAGGACATTATCCTCTGGTTCTCTTTCGGGGCATCATGCTTTGTTCTCCTGGCAGTGGTGATGGGTCTCTTC TTCTTCTGTCTCAAAAACGGCAACATGAGATGTACGATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2918	ATGTATAAGATCGTGGTGATCATAGCGCTCCTGGGCGCCGTGAAGGACTGGATAAAATTTGTCTGGGGCATCATGCAGTCGCCAACGGAA CCATCGTAAAGACTTTGACTAATGAGCAGGAAAAGGTTACCAATGCAACCGAAACCGTGGAGAGCACCGGTCTGAACCGCCTCTGCATGAA GGGCCGTAAACACAAAGATCTGGGCAATTGTCATCCCATCGGAATGCTAATCGGCACTCCTGCCTGTGACCTACACTTGACCGGGACTTGG GATACCATTATAGAGAGAGAGAATGCTATTGCCTACTGTTACCCCGGGGCAACCGTGAACGAAGAAGCTTTGAGACAGAAAATTATGGAGA GTGGCGGAATAGATAAGATTAGCACAGGGTTCACCTACGGAAGCTCTATTAATAGTGCGGGCACCCACAAGGGCATGCATGCGGAACGGCG GTAACTCTTTCTATGCTGAGTTGAAGTGGCTCGTGAGCAAGTCTAAAGGGCAGAACTTTCCACACAAACCCACCAACACTTACAGAAACACGGAT ACTGCCGAGCACCTCATCATGTGGGGCATCCACCATCCTTCATCAACACAAGAGAAGAACGACTTATATGGTACTCAGAGTCTGTCGATTAG CGTCGGCTCTTCAACGTACAGGAACAATTTCGTTCCTGTAGTCGGCGGCCCGGGCACACAAGTAAATGGACAGAGCGCGGAGGATTGATTTCCAT TGGACGCTGGTCCAGCCCGGAGATAACATAACTTTCTCTCATAACGGAGGACTCATAGCTCCATCAAGGGTGAGCAAACTGATTGGCAGGG GATTGGGAATCCAGTCTGACGCTCCCATCGACAACAATTGTGAGAGTAAGTGCTTTTGGCGGGGCGGTTCCATCAACACACGACTGCCTTT CCAGAATCTGAGTCCCAGAACTGTGGGGCAGTGCCCAAAGTATGTGAATAAAAGATCTTTGATGTTAGCTACTGGAATGAAATGTGCCTG AGCTAATACAGGGTAGAGGTCTGTTCGGAGCAATAGCAGGGTTCCTGGAGAATGGGTGGGAAGGCATGGTCGACGGATGGTACGGTTTCC GGCATCAGAACGCACAAGGTACAGGGCAGGCGGCTGATTACAAATCTACACAAGCCGCTATTGACCAAATCACCGGCAAATTGAACCGGCT CGTGGAGAAGACGAATACGGAGTTTGAAATCTATTGAGAGTGAGTTCAGTGAGATTGAACATCAGATTGGCAACGTTATAAATTGGACCAAGG ACAGCATAACTGATATATGGACCTATCAAGCCGAGCTTCTCGTGGCCATGGAAAATCAGCATACTATCGACATGGCTGACTCTGAGATGCTC AACTTATACGAACGTGTAAGGAAGCAGCTGCGGCAAAAACGGCCGAGGAAGACGGTAAGGGCTGCTTCGAGATTTATCACGCGTGCGATGAC TCTTGTATGGAGTCCATCAGAAACAACACCTACGATCACTCACACAGTATAGAGAAGAGGCTTTGTTGAATCGGCTCAACATCAATCCAGTTAC CCTTTCAAGTGGTTACAAGGACATCATCCTATGGTTTAGCTTCGGTGCCTCTTGTTTCGTGTTGCTGGCGGTCGTTATGGGGTTGGTCTTTTT TTGCTTGAAAAATGGTAATATGCGGGTGTACCATTTGCATC

Seq ID No.	Sequenza di acido nucleico
2919	ATGTACAAGATTGTGGTGATCATCGCGCTGCTTGGTGCTGTGAAGGGACTCGACAAAATATGCCTGGGCATCATGCTGTCGCCAATGGGA CAATTGTGAAGACATTGACGAACGAGCAGGAGGAAGTCACTAACGCAACAGAGACAGTTGAGACGCACCGGGATTAACCGACTGTGTATGAA CGGTCGGAAGCACAAGGACTTGGGTAACTGTCACCCGATCGGCATGTTAATCGGAACCCCCTGCCTGTGACCTGCATCTGACCGGCATGTG CGACACACTGATAGAAAGGGAAAACGCCATTGCATACTGCTACCCCGGGGCTACGGTAAATGTGGAGGCTCTCCGGCAGAAGATAATGGA CTCAGGCGGCATCAACAAGATCTCTACCGGGTTCACGTACGGCTCTTCTATCAATTCAGCTGGAACTACCCGCGCATGCATGAGAAACGGT CGGAACTCCTTTTACGCCGAACTGAAATGGCTAGTGTCCAAATCTAAGGGCCAGAATTTCCCACAGACCACTAATACTTACAGAAACACGGA TACAGCCGAACACTTGATAATGTGGGGGATTCATCACCCATCATCTACACAGGAAAAAAATGATTTGTACGGTACCCAGAGCCTTAGCATTT CTGTGGGCAGCTCTACCTACAGAAATAACTTCGTGCCAGTAGTAGGTGCTCGACCGCAGGTTAATGGCCAAAGCGGTAGAATCGATTTTCA CTGGACATTGGTGCAGCCGGGCGACAACATAACCTTTTCCCATAATGGGGGACTTATTGCACCTTCCAGGGTGTCCAAACTCATAGGCCGC GGCCTCGGCATTCAAAGCGATGCTCCCATTGACAATAATTGTGAATCAAAGTGCTTCTGGCGTGGAGGAAGTATAAACACACGGCTGCCCT TCCAGAACTTAAGCCCAAGAACCGTGGGGCAGTGCCCTAAGTACGTTAATAGGCGGTCGCTTATGCTTGCAACAGGTATGAGGAACGTCCC GAGCTTATCCAAGGCAGGGGACTTTTCGGAGCTATCGCCGGTTTTTTAGAGAACGGATGGGAAGGAATGGTGGACGGTTGGTATGGATT CGGCACCAAAATGCTCAGGGCACCGGGCAGGCGGCTGACTACAAATCTACACAGGCGGCTATCGATCAGATTACGGGAAAGCTGAATAG TTAGTGGAAAAAACAAACACAGAGTTTGAGAGCATCGAAAGCGAGTTTTCTGAGATAGAGCATCAGATCGGTAATGTAATCAACTGGACCA AAGACAGCATCACAGACATATGGACGTACCAGGCTGAGCTTCTAGTCGCCATGGAAAACCAGCACACTATTGATATGGCAGATTCTGAGAT GCTTAATCTGTATGAACGAGTGCGAAAACAGCTGCGGCCAGAACGCCGAAGAGGATGGGAAGGGCTGTTTCGAAATCTACCACGCCTGCGA CGACTCCTGCATGGAAAGCATTAGAAATAATACCTACGATCATTCGCAATATCGGGAAGAGGCCCTCCTGAATCGCCTAAATATCAATCCTG TTACACTAAGCAGCGGCTACAAAGACATTATTTTATGGTTCTCCTTCGGCGCCTCCTGCTTCGTACTATTAGCCGTAGTTATGGGTCTGTTCT TCTTTTGCCTTAAGAACGGTAACATGAGATGCACAATCTGTATA

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2920	ATGTACAAAATTGTTGTGATCATTGCCCTCCTGGGGGCAGTGAAGGGACTGGACAAAATCTGCCTGGGTCACCACGCCGTGGCGAACGGC ACCATTGTGAAGACCCTGACCAATGAACAGGAAGAGGTGACCAATGCTACCGAGACTGTAGAGAGTACAGGCATCAATAGGTTATGCATGA AAGGCCGCAAACACAAGGACTTGGGAAACTGCCACCCTATAGGCATGTTGATCGGGACGCCAGCTTGCGACTTGCACCTTACAGGAATGTG GGATACCTTGATAGAAAGGGAAAACGCTATCGCTTACTGCTACCCGGGCGCTACCGTCAATGTGGAAGCACTGCGACAGAAAATTATGGAG AGTGGTGGCATAAATAAAATATCAACTGGGTTCACATACGGAAGCTCAATCAATAGCGCGGGCACAACACGAGCCTGCATGCGTAACGGAG GAAACAGCTTTTATGCAGAGCTCAAATGGTTAGTTTCAAAATCTAAGGGGCAGAACTTTCCTCAAACCACTAACACGTATCGGAATACCGACA CAGCAGAGCACTTAATAATGTGGGGCATACATCATCCCTCAAGCACACAGGAAAAGAACGACCTGTACGGAACGCAGTCCTTATCAATCTCT GTGGGGTCCAGCACATACCGAAACAACTTTGTACCAGTCGTGGGTGCTCGCCCACAAGTGAACGGCCAGTCTGGGCGCATCGACTTTCAC TGGACTTTGGTTCAGCCTGGTGATAATATCACCTTTAGCCATAATGGCGGACTCATAGCGCCAAGCAGGGTGTCCAAACTTATCGGACGTG GGTTGGGTATTCAGAGCGACGCACCAATCGACAATAACTGCGAGTCAAAGTGTTTTTGGAGAGGCGGGTCAATCAACACCGCGCCTGCCCTT CCAGAACCTGTCTCCCCGTACGGTGGGGCAGTGTCCAAAGTACGTGAATAGGCGGAGCCTGATGCTGGCCACAGGGATGCGCAACGTGC CTGAGCTCATTCAAGGCCGGGGCTTGTTTGGAGCCATCGCGGGTTTTCTCGAAAACGGGTGGGAAGGGATGGTCGATGGCTGGTACGGCT TTCGGCACCAGAATGCTCAGGGAACGGGGCAGGCTGCCGACTACAAGTCAACGCAGGCGGCCATCGATCAAATCACCGGCAAGCTCAACA GGCTCGTGGAAAAAACCAATACGGAGTTCGAAAGTATCGAAAGCGAGTTCAGCGAAATTGAGCACCAGATCGGCAATGTAATCAATTGGAC TAAGGATAGCATCACCGATATCTGGACATACCAAGCTGATGTTAGTCGCCATGGAGAATCAGCATACAATAGACATGGCTGATAGTGAAA TGTTGAATCTGTACGAGAGGGTTAGGAAACAGCTGCGCCAGAATGCTGAGGAAGACGGAAAGGGCTGCTTTGAAATCTATCACGCTTGCGA CGATTCCTGTATGGAGTCCATACGAAATAATACGTACGACCATTCCCAGTACCGCGAAGAGGCTCTCCTGAATCGGCTGAACATCAACCCTG TGACACTTAGCTCGGGCTATAAGGACATAATTTTGTGGTTCTCTTTTGGGGCATCATGTTTTGTCTTGCTGGCCGTCGTTATGGGGCTCTTCT TCTTCTGTCTAAAAAATGGAAACATGCGGTGCACCATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2921	ATGTATAAAATCGTGGTGATCATTGCTCTGTTAGGCGCCGTGAAGGGCCTGGACAAGATTTGCCTAGGACATCATGCCGTCGCTAACGGCA CTATCGTGAAGACTCTGACCAATGAGAAAGAGGAGGTGACTAACGCAACAGAAACAGTTGAGTCAACTGGCCTGAACCGGCTCTGCATGAA AGGGAGAAAGCATAAAGACCTAGGCAATTGCCATCCTATTGGTATGCTCATTGGCTCTCCCGCCTGTGACCTGCATCTTACTGGAACGTGG GACACCCTGATTGAAAGAGAAAACGCCATCGCGTATTGCTACCCGGGGCCACCGTGAACGGAGAAGCGTTACGCCAAAAGATCATGGAG TCAGGCGGCATCGATAAGATCAGCACTGGCTTTACCTACGAAAGTAGCATCAACAGCGCTGGAACCACCCGCGCCTGTATGAGAAACGGG GGTAATTCCTTCTATGCGGAGCTGTGAAATGGCTTGTGTCTAAATCCAAAGGCCAGAACTTTCCACAGACAACGAACACTTATCGGAATACTGA CACAGCAGAGCATCTTATCATGTGGGGGATCCACCATCCTAGTTCCACGCAGGAGAAGAATGACCTGTATGGGACACAAAGCCTGTCTATT AGCGTGGGATCATCAACTTACAGGAACAATTTTGTCCCTGTGGTGGGCGCCAGGGCCCCAGGTAAACGGACAGAGTGGACGCATCGACTTT CATTGGACTCTCGTGCAGCCTGGGGATAATATTACCTTCAGCCATAATGGTGGCCTGATAGCACCCTCAAGAGTGTCAAAACTCATCGGTCG CGGATTGGGGATTCAATCTGACGCCCCTATAGATAACAATTGCGAGAGCAAGTGCTTTTGGAGAGGAGGCAGCATCAACACCCGGCTTCCC TTTCAGAATCTGAGTCCCCGGACGGTTGGGCAGTGTCCTAAATATGTCAATAAGCGGTCACTCATGTTGGCAACTGGCATGCGCAACGTAC CTGAGCTCATGCAGGGAAGGGGCCTCTTTGGAGCTATTGCAGGGTTCCTGGGAGAACGGCTGGGAGGGGATGGTAGACGGATGGTACGGA TTCCGGCATCAAAATGCGCAAGGCACTGGTCAAGCTGCTGATTATAAGTCCACCCAGGCCGCTATTGATCAGATTACCGGAAAGCTGAACC GGCTGGTGGAAAAGACCAATACAGAATTTGAGAGCATTGAATCGGAGTTTAGCGAAATCGAACATCAAATTGGGAACGTCATAAACTGGACA AAAGACAGCATCACCGATATCTGGACATACCAGGCGGAGCTGCTAGTGGCGATGGAGAATCAGCACACGATTGATATGGCCGACTCTGAGA TGCTGAATCTGTATGAGCGGGTTAGAAAGCAGCTGAGGCAAAAOGCAGAGAAGAATGGTAAAGGATGCTTTGAGATCTATCATGCCTGCGA TGACTCATGTATGGAATCTATCCGTAACAATACATACGATCACAGTCAGTATCGGGAGGAAGCTCTGCTGAATAGGCTAAACATCAATCCCG TGACCCTCTCGAGTGGCTATAAGGATATCATCTTGTGGTTCTCTTTCGGCGCCAGCTGTTTCGTGCTACTGGCCGTCGTGATGGGGCTGGT ATTCTTCTGCCTGAAGAACGGTAATATGCGCTGCACCATATGTATT

Seq ID No.	Sequenza di acido nucleico
2922	ATGTACAAGATCGTGGTCATCATTGCACTGCTTGGCGCTGTGAAAGGATTAGACAAGATTTGCCTCGGCCACCACGCCGTCGCCAATGGGA CCATCGTTAAGACATTAACAAATGAACAAGAAGAGGTAACCAACGCCACCGGAGACCGTGGAGTCGACAGGCATCAACCGGTTATGCATGAA AGGGCGGAAACACAAAGATCTGGGGAACTGCCATCCAATCGGAATGCTCATTGGCACCCCCAGCGTGCGATCTCCCATCTCACTGGCATGTG GGATACATTAATTGAGAGGGAGAATGCAATCGCATATTGCTACCCTGGCGCCACTGTCAACGTCGAGGCCCTGCGCCAGAAAATAATGGAA TCAGGTGGCATAAACAAGATTTCCACCCGGATTTACTTATGGCTCTTCCATCAACAGCGCTGGCACCACACGGGCTTGTATGCGAAACGGGG GCAACTCATTTTATGCAGAACTGAAGTGGCTTGTCTCAAAAAGTAAGGGTCAGAACTTTCCACAGACAACAAATACATACAGGAATACCGAC ACTGCAGAGCATCTGATCATGTGGGGCATCCACCATCCTAGTTCGACACAGGAGAAGAACGACCTGTATGGCACCCAATCACTGAGTATCT CTGTGGGGAGTAGTACTTATCGGAACAATTTTGTGCCAGTCGTGGGCGCAAGACCACAAGTCAATGGCCAGAGTGGCCGTATCGACTTCCA TTGGACCCTGGTACAGCCTGGTGATAACATCACCTTTAGCCACAACGGAGGACTGATTGCACCGTCAAGAGTTTCAAAACTGATCGGCCGA GGCCTGGGAATCCAGAGCGACGCTCCCATCGATAATAATTGTGAAAGTAAGTGCTTCTGGCGGGGTGGATCCATCAACACCCGTCTACCCT TTCAGAATCTGTCACCCCGGACCGTCGGACAGTGCCCAAAATACGTGAACAGGCGCAGTTTGATGTTAGCTACAGGGATGAGAAACGTGCC AGAACTGATTCAGGGACGCGGACTGTTCGGCGCCATCGCCGGCTTCCTCGAAAACGGTTGGGAGGGTATGGTGGACGGTTGGTATGGCTT CAGGCATCAGAACGCCCAGGGGACAGGCCAGGCCGCTGACTATAAGAGCACTCAGGCGGCTATCGACCAGATCACTGGGAAGCTCAATC GTCTCGTCGAGAAAACGAATACCGAGTTTGAGAGCATCGAAAGTGAATTCTCTGAGATAGAGCACCAGATCGGTAATGTGATCAATTGGACA AAGGACTCGATTACTGACATCTGGACGTACCAAGCCGAGCTGCTCGTCGCCATGGAAAATCAGCATACCATTGATATGGCTGACTCAGAGA TGCTTAACTTGTACGAACGGGTCCGGAAACAACTGAGACAGAATGCCGAAGAGGACGGGAAAGGCTGTTTTGAAATCTATCACGCCTGTGA TGATTCTTGTATGGAAAGCATTAGAAACAATACATACGACCATTCACAGTACAGGGAGGAGGCTTTACTCAATCGCCTGAACATCAATCCCG TAACATTGAGCTCTGGATATAAAGACATTATCCTCTGGTTCTCCTTTGGTGCCTCTTGTTTTGTACTCCTGGCAGTGGTTATGGGTCTCTTCTT CTTTTGTCTAAAGAACGGTAATATGAGGTGTACCATTTGCATA

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Seq ID No.	Sequenza di acido nucleico
2923	ATGTACAAGATCGTGGTGATTATTGCCCTGTTGGGGGCCGTGAAGGGCTTGGACAAGATATGCCTTGGTCACCATGCTGTGGCCAACGGCA CTATCGTCAAAACACTGACAAACGAGCAGGAAGAGGTGACCAACGCCACGGAGACTGTAGAAAGCACCGGGATTAACCGACTATGTATGAA AGGCCGCAAACACAAGGACCTCGGGAACTGCCATCCCATCGGCATGTTAATAGGCACCCCCCGCTTGCGATCTGCACCTGACAGGGATGTG GGATACCCTAATTGAGCGCGAGAACGCAATTGCCTATTGTTACCCAGGAGCCACAGTAAATGTAGAAGCTTTAAGGCAGAAGATTATGGAGA GTGGAGGGATTAACAAGATCAGCACGGGCTTCACATACGGTTCCTCCATCAATTCTGCTGGAACCACCAGGGCATGCATGCGTAATGGGGG AAACTCATTCTACGCAGAGGCTAAAGTGGCTGGTTTCCAAGTCTAAGGGACAGAACTTCCCGCAGACAACGAATACTTATCGGAACACCGACA CTGCCGAACATTTAATCATGTGGGGATCCACCACCCCAGTTCTACCCAGGAGAAAAATGATCTCTACGGTACTCAGTCCCTGTCCATCTCC GTTGGTTCCTCCACCTATCGGAATAATTTTGTCCCTGTTGTGGGAGCACGGCCACAGGTGAATGGCCAGTCCGGGAGGATAGACTTTCACT GGACCCTTGTTCAGCCCGGGGACAAATATCACTTTCTCACATAATGGGGGCCTGATTGCTCCTTCCAGAGTGAGTAAATTGATAGGCCCGGG GCTGGGCATCCAATCAGATGCACCCATTGATAACAACTGCGAGTCCAAATGCTTCTGGCGCGGAGGCAGCATCAATACCCGACTGCCCTTC CAGAACCTGTCTCCTAGGACAGTTGGCCAGTGTCCCAAATATGTAAACCGCAGATCACTGATGCTGGCTACCGGTATGAGAAACGTCCCAG AGCTAATTCAAGGCCGAGGACTTTTTGGCGCTATTGCAGGATTCCTTGAGAACGGGTGGGAGGGCATGGTCGACGGCTGGTACGGGTTCA GACACCAAAACGCTCAGGGAACAGGCCAAGCCGCGGACTATAAATCAACACACAAGCGGCCATTGATCAGATAACCGGCAAGCTGAATAGGC TGGTGGAAAAGACTAACACTGAGTTTGAAAGCATCGAGTCGGAATTCTCTGAGATTGAACACCAGATTGGAAATGTAATCAACTGGACAAAG GATTCCATCACCGACATCTGGACTTATCAAGCAGAACTGTTAGTGGCCATGGAAAATCAGCATACCATCGACATGGCCGACAGCGAGATGC TGAATCTGTACGAACGGGTTCGTAAACAGCTGAGGCAGAACGCAGAGGAGGACGGTAAGGGATGCTTTGAAATTTATCACGCTTGTGACGA TAGTTGTATGGAGAGCATTAGGAACAACACTTACGACCACTCTCAGTATAGGGAAGAAGCACTCCTTAACAGGCTGAACATCAACCCTGTGA CGCTCTCTTCCGGGTATAAAGACATCATCCTGTGGTTTTCATTTGGCGCTTCATGTTTTGTACTGCTAGCAGTGGTGATGGGTCTCTTCTTTT TTTGCCTCAAAAACGGGAACATGAGGTGCACTATTTGCATC

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Seq ID No.	Sequenza di acido nucleico
2924	ATGTACAAGATCGTAGTGATAATCGCTCTACTAGGAGCTGTCAAAGGTCTCGATAAGATATGTCTGGGGCACCATGCGGTAGCCAATGGAA CGATCGTGAAAACACTTACTAACGAGCAGGAGGAGGTCACCAACGCCACAGAAACGGTGGAATCTACGGGGATCAACCGCTTATGCATGAA GGGGAGGAAGCATAAGGATTTGGGCAATTGCCACCCGATTGGAATGCTGATTGGGACTCCTGCTTGCGATCTGCACTTAACCGGCATGTGG GATACGCTAATAGAGCGCGAAAACGCCATCGCCTACTGTTATCCCGGCGCGACAGTAAACGTAGAGGCACTAAGACAGAAGATTATGGAGT CCGGGGGAATAAACAAGATAAGCACGGGCTTTACCTATGGATCATCCATCAATTCTGCTGGAACAACACGCGCCTGCATGCGGAACGGAGG CAATTCTTTCTATGCAGAGCTGAAATGGCTCGTGTCCAAAAGTAAAGGTCAGAACTTCCCGCAGACTACAAACACTTATAGGAACACTGACA CAGCTGAGCATCTAATCATGTGGGGTATTCACCACCCAAGTTCAACCCAAGAAAAAAATGATCTCTACGGCACGCAGTCACTTTCCATCTCT GTGGGCTCTAGCACCTACAGAAACAACTTTGTCCCAGTGGTGGGAGCTCGGCCTCAAGTGAACGGACAGTCCGGTAGGATCGATTTTCATT GGACCCTCGTACAGCCCGGGGATAACATCACTTTTAGTCACAATGGTGGCCTGATTGCCCCCTCCAGGGTGTCTAAGTTGATTGGGCGCGG CCTAGGTATACAGAGTGACGCCCCCATAGATAATAATTGCGAGAGCAAATGTTTCTGGAGGGGCGGAAGTATCAATACTCGGCTGCCTTTTC AGAACCTTAGCCCACGTACTGTGGGCCAGTGTCCCAAGTACGTTAATCGAAGAAGCCTGATGCTTGCAACCGGAATGAGGAACGTGCCCGA ACTGATCCAAGGTCGTGGCTTATTCGGAGCCATCGCCGGATTCCTGGAGAACGGATGGGAAGGGATGGTGGATGGGTGGTACGGGTTCCG ACACCAGAACGCCCAGGGAACAGGTCAAGCCGCGATTACAAATCAACACAAGCGGCCATCGATCAGATTACTGGAAAACTGAACAGGTTG GTGGAGAAGACTAACACAGAGTTCGAGTCAATCGAAAGCGAATTTAGCGAGATTGAGCACCAAATCGGGAACGTGATCAACTGGACAAAGG ATTCCATTACCGACATATGGACCTACCAGGCTGAGCTGTTGGTGGCAATGGAAAATCAGCATACTATCGATATGGCCGATTCTGAGATGCTG AATCTGTACGAGCGGGTCAGAAAGCAGCTGAGACAAAATGCTGAGGAAGACGGTAAGGGTTGTTTCGAGATCTACCATGCCTGCGACGACT CTTGCATGGAGACATCAGGAACAACACATACGATCACTCCCAGTATAGAGAAGAAGCTCTGTTGAATAGGCTTAACATCAACCCAGTGACG CTTAGTAGCGGTTACAAAGATATCATTCTGTGGTTTAGTTTTGGGGCCTCATGTTTCGTGCTTTTGGCAGTAGTTATGGGGCTGTTTTTTCTTC TGTCTCAAAAATGGTAATATGCGATGCACGATTTGTATT

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Seq ID No.	Sequenza di acido nucleico
	ATGTACAAAATCGTGGTCATTATCGCCCTGCTGGGCGCGGTGAAAGGCTTGGATAAAATCTGCCTCGGGCATCACGCCGTGGTGAATGGAA
	CGATCGTGAAGACTCTGACCAACGAACAGGAAGAGGTTACCAACGCAACGGAAACAGTCGAATCAACCGGACTCAATCGTTTATGTATGAA
	GGGCAGAAATCACAAGGACCTTGGAAACTGCCACCCAATAGGGATGCTTATAGGAACCCCAGCTTGCGACCTGCACCTAACCGGCACCTG
	GGACACTCTTATTGAGAGAGAGAACGCAATTGCTTACTGTTACCCCGGCGCAACAGTGAACGAAGAGGCCCTCAGGCAGAAGATTATGGAG
	TCTGGAGGGATAAACAAGATATCGACCGGTTTCACCTATGGATCCTCTATCAATTCTGCAGGGACAACCCGCGCCTGTATGAGAAATGGCG
	GAAACTCCTTTTATGCCGAACTGAAGTGGCTTGTTTCCAAAAGCAAAGGTCAGAACTTTCCTCAAACAACTAATACGTACAGGAACACCGATA
	CCGCCGAGCACCTGATCATGTGGGGAATCCATCACCCTAGCAGTACCCAAGAAAAAAACGACCTATATGGTACCCAGTCCCTCAGCATCTC
	AGTGGGCTCATCAACCTATCAAAACAACTTCGTGCCTGTTGTCGGCGCACGACCCCAGGTGAACGGTCAAAGCGGAAGGATCGATTTCCAT
	TGGACCCTGGTTCAGCCCGGCGACAATATCACATTTAGTCACAATGGCGGTCTGATTGCACCTTCCCGCGTGAGTAAACTGATCGGTCGGG
	GGCTTGGAATTCAAAGCGACGCCCCCATCGACAACAATTGTGAGAGCAAGTGTTTTTGGAGAGGCGGGTCAATAAACACCAGGCTGCCCTT
	TCAGAACCTAAGTCCCAGGACTGTAGGCCAGTGTCCCAAATACGTCAATAAGCGTTCACTAATGTTGGCCACGGGAATGAGAAACGTGCCC
	GAGCTGATGCAAGGCAGAGGCCTGTTCGGGGCCATCGCGGGGTTCATCGAGAACGGTTGGGAAGGCATGGTTGATGGTTGGTATGGATTT
	AGGCACCAGAACGCTCAGGGCACAGGACAGGCCGCTGACTATAAGAGTACTCAAGCCGCAATTGACCAGATCACCGGGAAGTTGAACCGA
	CTCATCGAGAAGACGAACACAGAATTCGAGAGCATAGAGTCAGAGTTCTCGGAGATCGAACACCAAATTGGCAACGTTATCAATTGGACTAA
	GGACTCGATCACTGACATCTGGACATACCAGGCTGAGCTGTTGGTGGCCATGGAAAACCAGCACACCATAGACATGGCCGACAGCGAGAT
	GCTGAATCTCTACGAAAGAGTTCGCAAACAGCTCAGGCAGAATGCCGAAGAAGACGGTAAAGGATGCTTTGAAATCTATCACGCTTGTGAC
	GATTCCTGCATGGAGAGGCATCAGAAACAATACCTACGATCACAGCCAGTACCGGGAAGAAGCACTCCTGAATAGGCTGAACATAAATCCAG
	TAACTCTTTCGTCCGGATACAAAGACATAATACTCTGGTTTTCGTTTGGTGCATCCTGCTTCGTGCTGCTCGCAGTGGTGATGGGGCTTGTC
2925	TTTTTCTGTTTGAAGAACGGAAATATGCGGTGCACCATATGCATC

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Seq ID No.	Sequenza di acido nucleico
2926	ATGTACAAGATCGTTGTGATAATTGCCTTGCTGGGCGCAGTCAAAGGACTCGATAAGATCTGTCTCGGCCATCACGCCGTTGCCAATGGAA CCATTGTGAAGACTCTCACTAACGAGAAAGAGGAGGTTACAAACGCTACCGAAACTGTGGAGAGTACTGGTCTGAACCGACTGTGTATGAA GGGCAGAAAGCATAAGGATCTGGGTAATTGTCACCCCATCGGAATGTTAATCGGTAGCCCAGCCTGTGATTTGCACCTTACAGGGACCTGG GATACACTCATAGAGAGGGAAAACGCCATCGCATATTGTTATCCCGGGGCCACGGTGAACGGAGAAGCTTTACGCCAGAAGATCATGGAGT CCGGGGGATCGATAAGATCAGCACCGGATTCACCTACGAGAGTAGTATAAACTCAGCGGGCACCACCAGAGCGTGCATGCGGAATGGCG GCAATAGCTTTTATGCTGAGCTTAAGTGGTTGGTGTCCAAATCTAAGGGACAGAATTTCCCCCAGACCACCAATACGTACCGCAATACAGAC ACAGCCGAGCATTTAATCATGTGGGGAATCCACCACCCATCGTCTACCCAGGAAAAGAACGACTTGTATGGGACTCAGAGTCTTTCCATCTC CGTCGGATCCTCAACCTACCGGAACAATTTCGTGCCCGTGGTAGGGGCGCGTCCCCAAGTTAACGGCCAATCTGGCAGGATAGATTTCCAT TGGACTCTGGTGCAGCCTGGCGACAACATTACCTTCTCGCATAACGGGGGACTGATCGCCCCCCTCTCGCGTTTCTAAGCTGATCGGCCGC GGTCTGGGCATCCAGTCTGACGCTCCCCATTGACAATAACTGCGAATCAAAGTGCTTTTTGGAGAGGAGGGTCTATTAATACTAGGTTGCCCTT TCAGAATCTGTCCCCCCGAACCGTCGGGCAGTGTCCGAAATATGTCAACAAACGCTCATTAATGCTTGCTACTGGCATGAGGAATGTCCCT GAGTTGATGCAGGGCAGGGGGCTGTTCGGCGCCATAGCAGGGTTTCTCGAGAACGGGTGGGAGGGCATGGTAGATGGGTGGTACGGCTT TAGGCATCAGAATGCTCAAGGTACCGGCCAAGCCGGCGACTACAAATCCACACAGGCCGCAATTGACCAGATCACAGGTAAATTGAATCGG CTTGTGGAGAAGACCAATACTGAATTCGAAAGTATTTGAATCCGAATTTTCTGAGATAGAGCACCAAATCGGTAACGTGATCAACTGGACTAA AGATTCTATCACCGACATTTGGACATATCAGGCGGAATTGCTGGTGGCTATGGAGAACCAGCACACGATTGATATGGCTGACAGCGAGATG CTGAACCTTTACGAGCGAGTGCGTAAGCAACTGAGGCAGAACGCAGAGGAGGATGGTAAGGGGTGCTTCGAGATATATCACGCATGTGAT GATTCATGCATGGAGTCCATTCGCAACAATACATACGATCACAGCCAGTATCGGGAGGAAGCTCTGCTAAACCGATTGAACATTAATCCGGT AACTTTGTCCTCCGGTTACAAGGACATTATCCTCTGGTTCTCGTTCGGGGCAAGTTGCTTCGTTCTTTTGGCAGTCGTTATGGGTCTGGTTTT TTTTTGCCTGAAGAACGGCAATATGCGCTGCACAATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2927	ATGTATAAGATTATAGTAATCATAGCTCTTCTAGGCGCTGTCAAAGGACTAGACAAGATCTGTTTAGGCCATCATGCTGTTGCAAATGGAACA ATCGTGAAAACATTAACAAACGAACAGGAAGAGGTAACAAATGCTACTGAGACAGTCGAAAGCACTGGCATCAACAGGCTGTGCATGAAGG GGCGTAAACACAAGGACCTTGGCAACTGCCATCCCATCGGAATGCTCATCGGCACCCCCGCATGCGATCTGCACCTAACCGGAACCTGGG ACACTCTCATCGAGCGCGCGAAAACGCAATCGCCTACTGCTACCCCGGCGCTACGGTGAACGTCGAGGCGTTGCGACAGAAGATTATGGAAT CAGGTGGAATCGATAAGATCTCCACTGGATTTACATACGGATCGTCTATCAACAGCGGCCGGTACAACTCGCGCCTGTATGCGTAACGGCGG AAACTCATTTTACGCGCGAATTAAAGTGGCTGGTGAGCAAAAGTAAAGGGCAGAACTTTCCGCAAACAACAAATACCTATAGAAATACAGACA CTGCCGAGCACCTCATTATATGTGGGGTATACACCACCCTAGCAGCACGCAGGAGAAAAACGACCTCTACGGAACCCAGTCACTGAGCATCTC AGTTGGTTCCTCCACATACCGGAACAATTTCGTGCCCGTCGTGGGCGCACGCCCTCAGGTCAATGGACAGTCTGGTCGTATAGACTTTCAT TGGACGCTTGTGCAGCCAGGCGATAACATCACATTTAGCCATAACGGGGGGGTTGATTGCTCCCTCACGGGTGAGCAAGCTAATAGGTAGG GGCCTCGGTATCCAGTCCGATGCACCTATTGATAACAACTGCGAGTCTAAATGTTTTTGGCGAGGTGGGTCCATCAATACGCGGCTGCCTTT TCAGAATCTTTCTCCTCGAACTGTCGGGCAATGCCCAAAATACGTCAACCGTCGTAGTCTTATGTTGGCTACAGGGATGCGGAACGTACCG GAACTTATTCAGGGCAGAGGCCTGTTTGGTGCGATAGCCGGCTTCCTGGAAAACGGATGGGAGGGAATGGTCGATGGATGGTACGGTTTT CGACATCAAAATGCCCAGGGAACCGGGCAGGCAGCGGACTATAAGTCTACCCAGGCAGCCATAGACCAGATTACAGGAAAGCTCAATAGA CTCGTGGAGAAAACTAACACACAGAGTTTGAATCAATCGAGAGCGAGTTCAGCGAGATTGAACATCAAATCGGGAACGTGATCAACTGGACCA AAGATTCTATCACAGACATTTGGACATACCAAGCTGAACTCCTAGTTGCCATGGAAAATCAACACACTATCGATATGGCCGATTCAGAAATGT TGAATCTGTATGAGCGCGTGAGAAAACAACTCCGCCAAAACGCAGAAGAGGATGGCAAGGGCTGTTTTGAGATCTACCACGCCTGTGATGA CTCTTGTATGGAGTCCATTCGGAATAATACCTACGATCATAGCCAGTATCGGGAAGAGGCTCTGCTTAACCGATTGAACATTAATCCCGTGA CCTTGTCAAGCGGTTACAAAGACATAATTCTATGGTTCTCATTTGGCGCCTCCTGCTTTGTGCTCGCTGTTGTCATGGGCCTCTTTTTTT TTTGTCTGAAAAATGGAAATATGCGATGTACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2928	ATGTATAAAATTGTCGTGATCATAGCTCTCCTTGGGGCTGTGAAAGGCCTGGATAAGATCTGTCTGGGACACCACGCGGTGGCAAATGGCA CTATCGTCAAAACCCTGACAAACGAGCAGGAGGAGGTTACTAACGCCACGGAAACGGTTGAGTCCACCGGGATTAACAGACTTTGCATGAA GGGCAGGAAACACAAGGATCTCGGTAACTGTCACCCCCATTGGCATGCTGATTGGGACTCCCCGCATGTGACCTTCACTTAACCGGAATGTGG GACACTCTGATCGAGCGTGAAAACGCCATTGCCTACTGTTATCCCGGGGCAACAGTGAACGTCGAGGCGTTGAGGCAAAAGATCATGGAAA GCGGCGGCATCAACAAAATCAGCACTGGGTTCACATACGGATCTAGCATTAACAGCGCCGGCACTACACGTGCATGTATGAGGAATGGCG GCAATTCTTTTTACGCCGAACTGAAGTGGCTTGTTTCCAAATCCAAGGGTCAGAACTTTCCACAAACCACGAATACCTATCGGAATACTGACA CTGCAGAGCATCTAATTATGTGGGGCATCCACCACCCCAGTTCAACTCAGGAGAAGAATGACTTGTACGGGACCCAGAGCCTGAGTATTTC TGTTGGGAGTTCAACCTACAGAAATAACTTCGTCCCTGTCGTCGGGGCTAGACCTCAAGTTAATGGTCAGTCCGGCCGTATCGACTTTCACT GGACTCTGGTACAGCCGGGGGATAACATTACATTCTCACACAATGGGGGTCTCATCGCACCCAGCCGGGTGTCCAAACTCATTGGCCGAG GATTGGGGATCCAATCCGATGCCCCCATAGACAACAATTGCGAGTCTAAATGCTTTTGGAGGGGCGGCTCTATAAACACACGCCTGCCATT CCAGAACCTCAGTCCCCGGACCGTCGGGCAGTGCCCAAAATATGTGAATCGAAGGAGTCTTATGCTGGCTACTGGCATGCGTAACGTGCCT GAGCTGATACAGGGAAGGGGCCTTTTCGGGGCTATCGCCGGATTTTTAGAGAATGGATGGGAGGGGATGGTTGACGGGTGGTATGGATTT CGGCACCAGAATGCACAGGGTACAGGACAAGCCGCGCCGATTACAAGTCTACCCAAGCTGCAATAGATCAGATCACCGGCAAACTCAACCGG CTTGTTGAAAAGACCAACACAGAATTCGAATCAATCGAGAGCGAGTTCTCTGAAATAGAGCATCAGATTGGCAACGTGATCAACTGGACAAA AGACTCTATTACAGACATCTGGACTTACCAGGCTGAGTTGCTCGTGGCCATGGAGAACCAACATACAATCGATATGGCAGACTCAGAGATG CTTAACCTGTATGAACGTGTGAGGAAGCAGCTCCGCCAGAATGCTGAAGAGGACGGAAAAGGGGTGTTTTGAGATATACCATGCCTGCGACG ATAGCTGCATGGAGTCCATCAGGAACAATACGTACGATCACTCCCAATACAGAGAGGAGGCCTTGCTGAATCGGCTTAATATCAACCCCGT CACGCTGAGTTCCGGATACAAGGATATTATACTATGGTTCTCATTTGGCGCTTCATGCTTCGTGCTCCTCGCCGTGGTGATGGGCCTGTTTT TCTTTTGCCTGAAGAACGGTAACATGAGGTGTACAATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2929	ATGTACAAAATCGTGGTCATTATTGCCCTGCTGGGCGCCGTAAAAGGCCTCGATAAGATTTGTCTGGGACATCACGCGGTGGCTAACGGAA CAATTGTTAAAACCCTGACTAACGAGCAGGAAGAAGTCACAAACGCTACGGAGACCGTGGAGAGTACCGGAATCAATCGCCTGTGCATGAA GGGCCGTAAGCACAAGGACCTGGGTAACTGCCATCCAATCGGGATGCTTATCGGCACGCCTGCTTGCGATTTGCATCTGACTGGGATGTG GGACACTCTGATCGAGCGTGAGAACGCTATAGCTTACTGCTACCCCGGAGCCACCGTCAATGTTGAAGCACTGCGTCAGAAGATCATGGAA AGCGGTGGCATCAACAAGATCTCTACCGGATTCACTTATGGCTCTTCCATAAACTCAGCAGGCACCACACGGGCATGCATGCGGAATGGCG GCAACTCTTTCTACGCCGAACTAAAATGGCTGGTGAGTAAGAGCAAGGGGCAAAACTTTCCACAGACCACTAATACATACAGGAATACTGAC ACCGCAGAGCACCTCATCATGTGGGAATCCACCATCCTTCAAGTACCCAAGAGAAAAACGATCTCTACGGGACACAGTCACTTAGTATATC CGTTGGCTCAAGCACTTACAGAAATAATTTTGTGCCCGTGGTCGGCGCCCGCCCCCAGGTTAATGGACAGAGCGGACGGATTGACTTTCAT TGGACCCTGGTCCAGCCCGGAGACAACATAACTTTTTAGCCACAATGGCGGGTTGATCGCACCCAGCAGAGTTTCCAAGCTGATAGGAAGAG GGCTGGGTATCCAATCCGATGCCCCCCATCGATAACAATTGTGAGTCAAAATGCTTCTGGCGCGGAGGGTCAATCAACACACGCCTTCCCTT TCAAAACCTCTCACCTCGGACCGTGGGTCAGTGTCCGAAATATGTTAATCGACGGAGCCTGATGCTGGCCACCGGGATGCGCAACGTGCC CGAGTTGATCCAGGGTAGGGGCTTATTTGGTGCAATCGGCCGGGTTCCTGGAGAACGGATGGGAAGGCATGGTAGACGGCTGGTATGGATT CCGCCATCAGAACGCCCAGGGGACAGGCCAGGCAGCCGATTATAAAAGCACCCAGGCTGCAATCGACCAGATCACGGGAAAGCTGAACC GGCTGGTGGAGAAGACTAATACGGAATTCGAATCTATTGAGTCTGAATTCAGTGAGATTGAGCATCAGATCGGCAACGTGATTAATTGGACT AAGGATAGCATCACCGACATTTGGACCTATCAGGCCGAGCTGCTGGTGGCTATGGAAAATCAGCATACAATCGACATGGCTGACTCTGAGA TGCTGAACCTCTACGAGAGAGTCAGAAAACAGTTACGTCAGAACGCCGAGGAGGAGTGGCAAGGGGTGCTTTGAGATCTATCACGCGTGCG ACGATAGTTGCATGGAGTCAATTAGGAACAATACCTATGACCATAGTCAATACCGGGAGGAGGCCCTGTTGAACCGGCTGAACATCAACCC TGTGACACTGTCCTCGGGGTATAAGGACATCATCCTTTGGTTCTCATTTGGAGCTAGCTGCTTCGTGTTATTGGCCGTTGTGATGGGCCTTT TCTTCTTCTGTCTCAAAAATGGGAAACATGCGCTGTACCATTTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2930	ATGTACAAAATCGTGCTCGTTCTGGCTCTTCTTGGGGCTGTGCACGGGCTGGATAAAATTTGCCTGGGCCACCATGCCGTCCCAAATGGCA CTATTGTTAAGACTTTAACCAACGAGAAAGAGGAAGTGACTAATGCTACCGAGACAGTGGAAAGCAAAAGCCTGGACAAGCTTTGTATGAAA AATAGGAATTACAAGGATCTGGGCAATTGTCATCCAATTGGCATGGTCGTCGGCACTCCCGCCTGCGATCTGCACCTTACAGGCACGTGGG ATACCCTCATCGAGCGCGATAACAGCATTGCATATTGTTACCCAGGGCGCCACGGTTAGTGAGGAAGCATTGAGACAGAAGATCATGGAGAG TGGTGGCATCGATAAGATTTCAACAGGGTTCACCTATGGATCTTCTATCAATAGTGCAGGTACCACTAAGGCTTGCATGCGCAACGGCGGC AACTCATTTTACTCTGAGTTGAAGTGGCTCGTCAGTAAAAATAAGGGCCAGAACTTTCCGCAGACAACAAATACTTACCGAAACACGGATAG TGTGGAACACCTCATAATTTGGGGAATCCACCACCCCTCCAGCACACAGGAGAAGAACGACTTGTATGGCACTCAAAGCCTATCAATTAGC GTGGGATCATCTACTTACCAAAACAACTTTGTCCCAGTCGTGGGTGCCAGGCCACAAGTGAATGGCCAGAGTGGTCGGATTGATTTCCACT GGACGATGGTCCAACCCGGCGATAACATTACATTTTCTCATAATGGAGGCCTCATTGCTCCTAACAGGGTGTCTAAGCTGAAGGGCAGAGG ACTCGGAATCCAATCCGGCGCCTCAGTGGATAATGATTGTGAGAGCAAGTGTTTTTGGAAGGGGGGTTCTATCAATACTAAGCTCCCCTTCC AGAACCTGAGCCCACGCACCGTAGGACAATGCCCCAAATACGTGAACAAGAAGTCCCTGCTCCTCGCAACAGGCATGCGGAACGTTCCAG AAGTGGCACAGGGCAGGGGGGTTATTTGGGGCTATCGCTGGTTTTATTGAGAACGGATGGGAGGGGATGGTGGCTGGTACGGTTTCC GCCATCAGAACGCCCAGGGGACTGGCCAAGCGGCAGACTACAAGTCCACACAGGCAGCCATAGATCAGATAACTGGAAAGCTTAATAGGC TCATTGAGAAGACAAATACCGAGTTTGAAAGCATCGAATCCGAATTTTCCGAGATTGAGCATCAAATTGGCAACGTAATCAACTGGACAAAG GACAGCATTACTGACATCTGGACGTACCAGGCCGAACTGCTGGTGGCGATGGAAAACCAGCACACTATCGATATGGCAGATAGTGAAATGC TGAACTTATATGAGCGCGTGCGAAAGCAACTGAGGCAAAACGCTGAAGAGGACGGCAAAGGGTGTTTCGAAATTTACCATAAGTGCGATGA TAATTGTATGGAGAGTATCCGGAATAACACGTATGATCATACCCAGTATCGCGAAGAAGCTCTCCTTAACAGGCTTAATATTAATCCAGTCAA GCTAAGTTCCGGATATAAGGACGTCATTCTCTGGTTTAGTTTTGGCGCTTCCTGCTTTGTATTGCTGGCTGTGATCATGGCCTGGTCTTCTT CTGTCTCAAGAACGGGAACATGCGATGCACCATATGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2931	ATGTATAAAATTGTGGTCATCATCGCTTTATTGGGAGCAGTTAAGGGGCTCGATAAGATCTGTCTGGGCCACCACGCCGTTGCAAACGGGA CCATTGTGAAGACTCTCACCAATGAGCAGGAGAAAGTTACTAATGCAACAGAGACCGTCGAATCTACAGGCCTGAATCGGCTTTGTATGAAG GGACGCAAGCATAAGGACCTGGGCAATTGCCACCCTATAGGCATGCTAATTGGGACGCCGGCCTGCGACTTGCACCTCACAGGTACGTGG GACACTATCATCGAAAGGCGAGAACGCTATCGCCTACTGTTACCCAGGCGCTACCGTGAACGAGGAAGCGGCTGAGACAGAAAATCATGGAAT CCGGTGGAATCGATAAGATATCTACTGGCTTTACTTACGGCTCATCCATTAATTCCGCTGGCACCACTCGCGCCTGTATGCGGAACGGCGG CAATTCCTTCTACGCTGAACTTAAATGGCTCGTGTCCAAGAGCAAAGGCCAGAACTTTCCACAGACCACCAATACTTATAGAAATACAGACA CGGCCGAGCACCTGATCATGTGGGGGATCCATCACCCTAGTAGTACACAGGAGAAAAATGACTTATACGGCACCCAATCCCTTAGTATATCT GTTGGGTCAAGCACGTACAGAAACAATTTCGTGCCTGTAGTGGCGCCAGGCCACAGGTCAACGGGCAGTCAGCAGGATTGATTTCCATT GGACACTGGTGCAACCTGGTGATAATATCACTTTCTCCCACAACGGCGGTTTAATTGCTCCCAGCAGAGTAAGTAAGCTCATCGGCGAGG ACTCGGCATTCAGAGCGACGCACCCATAGATAAATAACTGCGAATCTAAATGTTTTTGGAGGGGGGCTCTATCAATACACGCCTCCCTTTTC AGAACCTGTCTCCTAGGACTGTAGGGCAGTGCCCCAAGTACGTAAACAAAAGATCGCTGATGTTAGCCACCGGGATGCGGAACGTCCCTGA GCTCATTCAGGGAAGGGGCCTGTTCGGAGCCATTGCAGGGTTCTTGGAGAATGGATGGGAAGGAATGGTTGACGGGTGGTACGGGTTCCC GACATCAGAATGCCCAAGGCACCGGACAGGCCGCTGACTACAAAAGCACCCAGGCAGCCATAGACCAGATTACCGGCAAACTAAATCGTTT AGTGGAGAAGACCAATACCGAATTTGAATCCATAGAGAGCGAATTCAGCGAGATAGAGCATCAAATCGGCAATGTGATTAACTGGACAAAAG ATTCCATAACCGACATTTGGACTTATCAGGCCGAGTTGCTAGTCGCAATGGAGAATCAGCATACAATCGACATGGCTGACTCTGAGATGTTTG AATCTGTACGAGAGGGTTCGGAAGCAGCTGCGGCAGAACGCCGAGGAAGACGGGAAAGGGTGTTTTGAGATCTACCATGCGTGTGATGAT AGCTGTATGGAAAGCATTCGCAATAACACCTATGACCACTCACAGTATCGGGAAGAGGCGTTGTTAAACAGGCTGAACATCAACCCAGTAAC ACTGTCTAGCGGTTATAAGGACATAATATTGTGGTTCTCCTTTGGTGCAAGCTGCTTTGTCTTGCTGGCGGTCGTGATGGGGCTGGTGTTCT TTTGTCTGAAAAACGGTAACATGAGGTGTACTATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2932	ATGTATAAGATCGTTCTCGTGTTGGCTCTACTGGGTGCCGTCCATGGTTTGGACAAGATCTGCCTGGGCCACCATGCAGTGCCAAACGGTA CCATAGTGAAAAACCTTGACTAATGAAAAAGAAGAGGTGACTAATGCCACCGAGACCGTGGAGTCGAAATCCCTCGATAAACTGTGTATGAAG AACAGGAACTACAAGGACCTGGGCAATTGCCATCCAATTGGCATGGTGGTGGGACACCTGCCTGCGACTTACACCTCACCGGGACATGG GACACTTTGATCGAGAGGGATAATTCAATTGCGTACTGCTATCCCGGGGCCACTGTGAGTGAGGAGGCGCTGAGGCAAAAGATCATGGAGT CTGGGGGCATAGACAAGATTAGCACCGGCTTCACATATGGAAGCTCCATCAACTCAGCTGGCACGACGAAAGCTTGCATGCGGAACGGTG GGAACTCCTTTTATTCTGAGCTGAAGTGGTTAGTAGCAAGAACAAAGGCCAGAACTTCCCCCAGACTACAAACACATATAGAAACACAGAC TCAGTGGAGCATTTGATCATTTGGGGGATTCACCATCCATCGTCCACACAGGAAAAGAACGACCTGTATGGCACCCAATCGCTGAGCATCT CAGTCGGGTCCAGTACTTATCAGAATAACTTCGTGCCCGTGGTGGCGCTCGCCCACAGGTAAACGGGCAAAGCGGGAGAATCGACTTCCC ATTGGACTATGGTGCAGCCTGGGGATAATATTACCTTCTCCCACAATGGAGGTCTTATAGCCCCCAATCGAGTTAGCAAACTGAAAGGCCGA GGACTGGGTATCCAGAGCGGCGCAAGCGTGGATAATGATTGTGAGTCCAAATGTTTTTGGAAGGGAGGATCAATTAATACCAAATTGCCCT TCCAGAACTTGAGCCCTCGCACTGTTGGCCAGTGTCCAAAGTACGTTAACAAGAAATCATTACTGCTAGCCACCGGCATGCGTAACGTGCC TGAGGTCGCCCAGGGGCGCGGTCTCTTCGGAGCAATAGCAGGATTCATAGAGAATGGTTGGGAGGGAATGGTGGACGGCTGGTATGGATT CCGCCATCAGAATGCTCAAGGAACCGGCCAGGCTGCGGACTATAAAAGCACGCAAGCTGCGATAGACCAAATTACGGGAAAGCTGAACCG CCTGATTGAAAAGACCAATACTGAGTTTGAATCTATTGAGTCTGAGTTCTCCGAAATCGAACATCAGATTGGGAATGTTATCAACTGGACTAA AGACAGTATAACTGACATTTGGACGTACCAGGCGGAGCTTCTAGTGGCCATGGAAAATCAGCACACCATAGATATGGCAGATTCTGAAATGC TGAACCTCTACGAACGAGTGCGAAAGCAATTGCGTCAGAACGCCGAGGAGGACGGCAAGGATGTTTCGAGATTTACCACACAAATGTGACGA CAACTGCATGGAAAGCATTAGGAATAACACTTACGACCATACACAGGGAAGAGGCCCTGCTCAACCGCCTCAATATTAACCCGGTG AAACTATCTTCTGGGTACAAGGATGTTATTCTGTGGTTTAGCTTCGGCGCCTCCTGTTTTGTACTGCTTGCCGTGATTATGGGTTTGGTTTTC TTCTGCCTCAAGAATGGCAATATGAGATGTACAATTTGCATA

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2933	ATGTACAAGATCGTGGTCATCATTGCGCTCCTGGGTGCCGTGAAAGGGCTTGACAAGATCTGCCTGGGTCACCATGCTGTCGCCAATGGGA CAATAGTGAAGACTCTTACCAACGAGAAGGAAGAAGTCACCAACGCAACAGAGACTGTCGAGAGTACCGGCTTAAACAGACTTTGTATGAAA GGGCGCAAGCACACAAGGACCTGGGGAACTGTCACCCAATTGGCATGCTGATAGGGTCTCCAGCCTGTGATCTGCACCTAACTGGCACATGG GACACCCTGATTGAGAGAGAAAACGCCATTGCATACTGTTATCCAGGTGCCACCGTTAATGGGGAGGCATTGAGGCAGAAAATCATGGAGT CCGGAGGAATAGACAAGATATCAACAGGGTTCACATATGAGAGGCTCTATCAACTCGGCTGGGACAACCAGGGCATGTATGCGCAACGGAG GAAATTCGTTCTATGCCGAGCTGAAAATGGCTTGTTAGCAAGTCTAAGGGCCAGAATTTTCCTCAGACTACCAATACATCCGCAACACCGAC ACTGCCGAGCATCTGATTATGTGGGGGATTCACCACCCCTCTAGTACTCAGGAGAAGAACGACTTGTACGGGACACAAGCCTGTCAATTA GTGTCGGGAGCTCTACATACCGGAATAATTTCGTTCCTGTTGTCCGGGGCGAGGCCACAGGTGAAGCGGCCAGAGTGGGAGGATCGACTTCC ACTGGACTCTCGTCCAACCAGGGGACAACATCACTTTCAGCCACAACGGAGGCCTTATTGCTCCTTCGAGAGTCAGTAAGCTGATTGGCAG GGGTTTGGGCATTCAAAGTGATGCCCCAATTGATAATAACTGCGAAAGCAAGTGCTTCTGGCGAGGGGGCTCTATTAATACTCGATTGCCTT TTCAGAACCTGAGCCCGAGAACAGTTGGGCAATGTCCCAAGTACGTTAATAAGAGGTCTCTGATGCTGGCGACAGGGATGAGAAATGTCCC TGAGCTGATGCAAGGGCGCGGGACTGTTTGGCGCTATAGCGGGCTTCCTCGAAAACGGATGGGAGGGAATGGTTGATGGATGGTATGGGTT CCGACACCAGAATGCACAGGGCACCGGGCAAGCTGCTGATTACAAGTCTACTCAAGCCGCCATCGACCAGATCACCGGCAAACTTAACCG CCTGGTCGAGAAAACAAATACAGAATTTGAATCTATTGAATCCGAGTTCTCTGAGATAGAACACCAAATCGGCAACGTGATTAATTGGACCAA GGATAGTATCACAGATATCTGGACCTATCAAGCGGGAGCTGCTGGTGGCCATGGAGAACCAGCACACAATCGATATGGCTGACTCAGAGATG CTTAATTTGTATGAGCGGGTTCGCAAGCAGCTCCGACAAAATGCTGAGGAGGATGGAAAGGGATGTTTTGAGATCTATCATGCCTGCGACG ACTCATGCATGGAAAGCATTCGCAATAATACCTATGATCATTCACAGTACAGAGAAGAGGCCTCTCCTGAACAGGCTGAACATAAACCCCGTT ACACTTTCTAGCGGGTACAAAGACATTATCTTATGGTTCAGTTTCGGAGCATCTTGGCTTCGTACTACTGGCCGTTGTCATGGGCCTGGTGTT CTTCTGTCTAAAGAATGGGAACATGCGCTGCACCATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2934	ATGTACAAGATCGTCGTGATTATCGCCTTATTGGGAGCAGTCAAGGGGCTCGATAAGATCTGTTTAGGGCATCATGCGGTTGCAAACGGCA CTATCGTTAAGACCTTGACAAATGAACAGGAGGAAGTGACGAATGCCACTGAAACCGTTGAGTCCACTGGGATTAATCGGCTGTGCATGAA AGGACGAAAGCATAAGGACCTTGGAAACTGCCACCCCATTGGCATGCTGATTGGGACCCCTGCTTGCGACCTGCATCTGACTGGAACCTG GGATACCCTTATTGAGCGAGAAAATGCCATCGCCTATTGCTATCCAGGCGCCACAGCAAACGTCGAGGCCCTCAGACAGAAAATCATGGAG TCCGGTGGAATTGACAAAATCTCTACCTACCGGGCTTTACCTAGCATCAATTCCGCAGGGACTACGAGGGCATGTATGAGAAATGGCG GCAACAGCTTCTATGCCGAGCTTAAATGGCTTGTTTCAAAATCCAAGGGACAGAACTTCCCTCAGACTACAAACACTTATCGGAATACAGATA CAGCAGAACACTTGATTATGTGGGCATTCACCACCCAAGCAGTATCCAGGAGAAAAATGACCTCTACGGCACGCAGTCACTGAGTATATC CGTGGGCTCTTCAACCTACAGGAACAATTTTGTCCCCGTCGTCGGTGCGAGGCCTCAAGTGAACGGGCAATCGGGAAGGATCGACTTCCAT TGGACACTGGTGCAACCTGGAGATAATATCACGTTTAGCCACAACGGAGGCTTGATTGCTCCATCCAGAGTGAGCAAACTGATCGGCAGGG GCCTAGGGATCCAATCAGACGCACCAATCGATAACAACTGTGAGTCTAAGTGTTTCTGGAGAGGTGGCAGCATTAACACCCGGTTGCCCTT CCAGAATTTGAGCCCCCGGACTGTCGGTCAGTGCCCAAAGTACGTGAATCGGCGCTCTCTTATGCTGGCCACCGGAATGAGGAACGTCCC CGAGCTCATACAGGGCCGGGGTTTATTCGGGGCAATTGCTGGGTTCCTGGAGAACGGCTGGGAAGGCATGGTGGATGGCTGGTACGGATT TAGGCACCAGAACGCACAAGGCACTGGCCAAGCCGCGGACTACAAATCAACTCAAGCTGCCATCGATCAGATAACCGGGAAGTTGAACAG ACTGGTAGAAAAAACCAATACCGAGTTCGAGTCAATTGAGTCCGAGTTTAGTGAGATAGAACACCAGATCGGTAACGTGATCAACTGGACAA TGGATAGTATTACTGACATTTGGACCTATCAAGCAGAACTGCTGGTGGCGATGGAGAACCAGCACACTATCGACATGGCAGACAGCGAAAT GCTTAACCTGTACGAACGGGTGCGGGAAACAGCTAAGACAAAACGCCGAAGAGGACGGCAAAGGTTGCTTCGAAATCTACCACGCCTGTGA CGACTCTTGTATGGAAAGCATAAGGAACAATACCTACGATCACTCCCAGTACCGAGAGGAGGCGTTACTCAATAGACTGAACATCAACCCTG TGACCCTGAGCTCTGGATATAAAGACATCATTCTCTGGTTTTCTTTTGGGGCCAGCTGCTTCGTGCTTCTCGCAGTCGTTATGGGACTCGTG TTCTTCTGCTTGAAGAACGGTAATATGAGATGCACAATCTGCATA

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Seq ID No.	Sequenza di acido nucleico
2935	ATGTATAAGATTGTCGTGATTATTGCCCTGTTAGGGGCCGTGAAAGGACTAGATAAAATTTGCCTGGGCCACCATGCTGTCGCCAATGGCAC GATCGTTAAAACTTTAACAAACGAGCAGGAGGAAGTAACGAACGCAACAGAGACAGTTGAGAGTACAGGAATCAATAGACTGTGTATGAAG GGGAGGAAACACAAGGATTTAGGAAATTGCCACCCTATCGGAATGCTCATCGGAACTCCAGCATGTGATCTGCATCTGACAGGCATGTGGG ACACACTGATCGAGCGGGAAAATGCGATTGCCTATTGCTATCCCGGGGCTACAGTGAATGTCGAGGCTCTGCGGCAGAAGATCATGGAATC CGGCGGCATCAATAAAATTTCTACTGGTTCACTTACGGGAGTTCTATTAATAGTGCCGGCACGACCAGAGCCTGCATGCGGAACGGCGGC AACTCGTTCTATGCAGAGCTGAAATGGCTGGTTTCAAAATCTAAAGGACAGAACTTTCCACAAACAACAAATACTTATAGGAACACCGACACC GCCGAGCATCTGATTATGTGGGGAATCCATCACCCAAGTAGCACACAGGAAAAGAACGACCTTTACGGCACTCAGTCACTGAGCATAAGCG TTGGGTCCTCTACTTACCGCAATAATTTCGTGCCAGTCGTCGGCGCTAGACCACAAGTCAATGGGCAATCAGGGAGAATCGATTTTCACTGG ACCCTTGTGCAGCCTGGTGATAATATCACTTTCAGCCACAACGGGGGCCTGATTGCTCCAAGTAGAGTCTCCAAGCTTATTGGACGGGGAC TCGGGATTCAGTCTGATGCTCCCATAGATAATAATTGTGAGTCGAAGTGCTTTTGGCGAGGAGGGTCCATCAACACGCGGTTGCCCTTCCA GAACCTCTCACCTCGGACCGTGGGGCAGTGCCCCAAATACGTGAACAGGAGGAGTCTGATGCTGGCCACCGGGATGCGCAACGTGCCCG AATTGATCCAGGGGAGAGGCCTTTTCGGCGCTATAGCGGGGGTTTTTAGAAAACGGGTGGGAGGGCATGGTGGACGGCTGGTACGGATTTC GCCATCAGAATGCCCAGGGTACTGGTCAAGCCGCCGATTACAAATCTACCCAGGCTGCCATCGACCAGATTACAGGAAAGTTGAACCGACT GGTGGAAAAGACCAACACTGAGTTTGAGAGTATTGAAAGTGAATTCTCTGAGATCGAACACCAGATTGGGAACGTTATCAACTGGACGAAAG ATTCCATCACAGACATCTGGACCTACCAAGCCGAACTCCTTGTGGCCATGGAGAATCAACACACGATCGACATGGCTGACTCAGAAATGCT GAATTTGTACGAAAAGAGTGAGAAAACAGCTGAGGCAAAATGCCGAGGAGGATGGCAAAGGCTGTTTCGAGATTTATCACGCCTGCGATGAT TCCTGTATATGGAATCAATCAGGAATAATACCTACGACCACTCTCAGTACCGCGAGGAAGCCCTATTGAACCGACTTAACATAAACCCTGTGAC TTTGTCCAGTGGTTACAAGGATATCATTCTTTGGTTTCGTTCCGAGCTTCCTGCTTCGTACTCCTCGCGGTGGTAATGGGCTTATTCTTTTT TTGCCTAAAGAACGGAAATATGAGGTGTACGATCTGCATC

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Seq ID No.	Sequenza di acido nucleico
2936	ATGTACAAAATTGTGGTGATTATTGCTCTCTGCTCGGAGCCGTCAAGGGCCTGGATAAGATCTGTCTGGGCCACCACGCCGTGGCCAACGGAA CAATTGTGAAGACACTCACAAACGAGCAGGAAGAAGTGACTAATGCCACCGAGACCGTTGAAAGTACCGGGATAAACCGCCTTTGCATGAA GGGTCGGAAACATAAAGACCTGGGGAACTGCCACCCTATAGGTATGCTTATTGGAACACCCGCTTGTGATCTACACCTTACTGGGATGTGG GACACCCTTATAGAGCGCGAGAACGCCATCGCATACTGTTATCCTGGTGCCACGGTTAACGTGGAGGCTCTTAGGCAGAAGATCATGGAGT CAGGCGGTATTAATAAGATTTCCACAGGCTTTACTTACGGGAGCTCAATAAACAGCGCCGGACCACGAGGGCCTGCATGCGGAACGGCG GGAACTCCTTTTACGCGGAATTGAAATGGCTGGTGTCAAAGTCCAAAGGACAAAACTTCCCTCAAACCACTAATACCTACAGGAATACCGAC ACTGCAGAACATCTTATCATGTGGGCATACACCACCCGTCGTCTACACAAGAGAAGAACGATCTTTATGGGACCCAGTCTCTGTCCATCAG CGTGGGGTCATCCACTTACCGAAATAATTTTGTGCCTGTGGTTGGGGCTAGGCCACAGGTGAATGGGCAGTCTGGCCGTATTGATTTCCAC TGGACACTTGTGCAGCCAGGGGATAATATAACATTCAGCCACACAATGGGGCCTAATCGCTCCATCCCGGGTGTCTAAGTTGATCGGTCGCG GACTTGGAATCCAATCTGACGCTCCAATCGACAACAATTGTGAGTCTAAATGCTTTTGGCGCGGCGGCTCTATCAACACTAGACTGCCATTC CAAAATCTGTCTCCTCGCACCGTTGGCAGTGTCCTAAGTATGTAAACAGACGGTCCCTGATGCTTGCGACAGGAATGCGGAATGTACCTG AACTCATCCAGGGAAGAGGGCTGTTCGGAGCTATTGCCGGCTTTCTGGAGAATGGTTGGGAGGGAATGGTAGACGGCTGGTACGGCTTTC GGCATCAAAATGCGCAGGGAACAGGCCAGGCAGCAGACTACAAATCAACCCAGGCTGCCATTGACCAGATTACAGGGAAGCTCAATAGAC TTGTGGAGAAAACAAACACCGAGTTCGAATCCATCGAGTCCGAGTTCAGTGAGATCGAGCACCAGATTGGGAACGTGATAAACTGGACGAA AGATTCTATCACCGATATTTGGACATACCAGGCTGAGCTCCTGGTCGCCATGGAGAATCAACATACAATTGATATGGCGGACAGCGAGATG CTGAACCTATATGAGCGCGTACGAAAGCAATTGAGACAGAACGCCGAGGAGGACGGTAAGGGGTGCTTTGAAATATATCATGCTTGTGACG ACTCATGCATGGAATCAATTAGAAATAATACATATGACCACTCTCAATATAGAGAGGAGGCCCTCTTGAATCGCTTGAACATCAATCCGGTGA CTCTCTCTAGTGGGTACAAAGACATTATACTGTGGTTCAGTTTCGGGGCCAGCTGCTTCGTGCTGGCAGTAGTTATGGGGCTCTTCTTT TTTTGCCTGAAAAATGGCAATATGCGATGTACCATTTGTATC

Seq ID No.	Sequenza di acido nucleico
2937	ATGTATAAAATTGTCGTGATTATTGCCTTGCTAGGCGCCGTCAAGGGCCTGGACAAAATCTGCCTGGGACACCACGCTGTGGCGAACGGCA CTATCGTTAAGACTCTGACCAATGAGCAGGAAAAGGTCACAAACGCTACAGAAACGGTCGAATCTACAGGCCTGAACAGGCTGTGTATGAA AGGTAGAAAGCACAAAGACCTGGGAAATTGCCACCCAATAGGGATGTTAATCGGCACCCCAGCATGCGATTTGCACCTGACAGGTACATGG GACACCATCATCGAAAGGGAGAATGCCATTGCTTACTGTTATCCCGGAGCCACACAGTGAATGAGGAGGCCCTCAGACAAAAAATAATGGAAT CCGGCGGAATCGACAAGATAAGTACAGGATTTACCTATGGGAGCTCTATTAATTCCGCCGGCACTACAAGAGCTTGTATGAGGAACGGTGG AAATTCGTTTTACGCAGAGCTTAAATGGCTAGTGAGCAAGTCCAAAGGACAGAACTTTCCTCAGACAACAAATACTTATCGGAACACCGATA CGGCTGAACACTTAATAATGTGGGGGATCCACCATCCGTCGTCAACGCAGGAGAAAAATGATCTGTACGGTACGCAATCACTGTCCATCTC CGTAGGCAGCTCCACCTACAGAAATAATTTTGTTCCAGTTGTCCGGTGCTCGGCCACAAGTGAATGGCCAGAGCGGCCGAATCGACTTTCAC TGGACCCTGGTGCAGCCAGGGGATAACATCACCTTCAGCCACAACGGTGGCCTTATCGCCCCCTCTAGGGTGAGTAAGCTGATCGGGCGG GGCCTCGGAATCCAATCTGACGCACCCATTGATAACAACTGCGAGAGCAAGTGTTTCTGGCGGGGTGGTTCTATCAATACCCGACTCCCGT TTCAGAATCTATCTCCTAGGACCGTCGGCCAGTGCCCAAAATATGTGAACAAGCGCAGCCTTATGCTAGCAACTGGAATGAGGAATGTTCCC GAGCTGATTCAGGGCCGAGGTCTCTTCGGAGCTATTGCCGGGTTTCTCGAGAACGGATGGGAAGGCATGGTGCACGGGTGGTACGGTTTT CGGCACCAGAACGCCCAGGGAACCGGACAAGCAGCCGATTACAAGAGCACCCAGGCTGCTATCGATCAGATTACCGGCAAGCTCAATCGC TTGGTGGAGAAAACCAATACTGAATTTGAGTCCATTGAATCAGAGTTCAGCGAGATCGAGCATCAGATCGGGAACGTCATTAATTGGACAAA GGATAGCATCACCGATATCTGGACATACCAGGCTGAGCTTCTGGTTGCAATGGAAAATCAGCATACTATCGACATGGCTGATAGCGAAATGT TGAATTTGTATGAAAGGGTGCGTAAGCAGCTGCGGCAGAACGCCGAGGAGGACGGCAAGGGATGCTTCGAGATCTACCACGCATGTGACG ACTCATGCATGGAGAGCATTCGGAACAACACTTATGATCACTCTCAATATCGTGAAGAGGCACTCCTAAACAGACTAAATATAAACCCGGTC ACCCTCAGCAGCGGCTATAAGGACATCATTCTTTGGTTCTCTTTTTGGTGCAAGCTGTTTCGTCCTCCTCGCCGTGGTTATGGGCCTGGTGTT TTTTTGCCTGAAGAATGGCAATATGCGGTGCACCATTTGCATC

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Seq ID No.	Sequenza di acido nucleico
2938	ATGTATAAGATTGTGGTGATTATTGCGTTGCTGGGGGCTGTGAAAGGCCTGGATAAGATCTGTCTTGGGCATCATGCCGTAGCTAACGGCA CAATTGTGAAAACTCTGACAAATGAGCAGGAGGAGGTGACAAACGCAACCGAGACCGTTGAGAGCACAGGGATTAATCGCCTGTGCATGAA GGGGCGCAAACACAAGGACCTGGGGAACTGTCACCCTATCGGAATGCTGATCGGGACCCCAGCCTGTGATTTACACCTAACAGGAATGTG GGACACACTCATTGAAAGAGAGAACGCGATAGCATACTACTGCTACCCCGGAGCTACTGTGAATGTGGAAGCACTGCGCCAGAAGATTATGGAA TCCGGAGGCATAAAATAAGATTTCCACTGGGTTCACCTATGGCTCCTCTATCAACAGTGCAGGAACGAGACGAGAGCCTGCATGCGCAATGGGG GAAATAGTTTCTACGCCGAGCTGAAGTGGCTGGTGTCTAAGTCAAAGGGTCAAAACTTTCCCCAAACTACCAATACGTACCGAAATACTGAC ACGGCAGAACACCTAATAATGTGGGGGATTCACCATCCCAGCACCCAGGAGAAGAATGATTTGTATGGGACTCAGTCTCTGTCGATTT CCGTGGGCAGCACGTACCGAAATAATTTCGTACCCGTGGTTGGAGCTCGACCTCAGGTGAACGGCCAGTCCGGCAGAATTGATTTTCA CTGGACACTAGTTCAGCCAGGCGATAATATAACATTTTCGCACAACGGAGGTCTGATCGCACCTTCACGCGTGTCCAAGCTTATCGGTCGG GGCCTGGGGATCCAGAGTGATGCTCCCATCGATAACAATTGCGAGTCTAAATGTTTTTGGCGAGGTGGATCCATCAATACCCGTCTGCCCT TCCAGAACCTGTCTCCACGCACAGTCGGTCAGTGCCCCAAGTATGTGAATAGAAGGTCCCTGATGCTCGCCACAGGAATGAGAAACGTTCC GGAACTAATTCAGGGCCGTGGACTATTCGGGGCCATAGCAGGGTTCCTGGAGAATGGCTGGGAGGGTATGGTTGACGGTTGGTACGGCTT TCGGCATCAGAACGCCCAAGGGACCGGGCAGGCCGCCGACTACACAAAGTACCCAGGCTGCAATCGACCAGATCACGGGGAAACTGAACC GACTCGTGGAGAAGACTAACACTGAGTTTGAGTCCATCGAGTCTGAGTTTAGCGAAATCGAGCATCAGATTGGGAACGTTATTAACTGGACA AAGGACAGCATCACCGATATATGGACCTACCAGGCAGAACTATTAGTGGCAATGGAGAACCAGCACACAATTGACATGGCGGACAGCGAGA TGCTGAATCTTTATGAGCGTGTCCGGAAACAGCTGAGACAGAACGCCGAAGAAGATGGCAAAGGCTGCTTTGAGATATACCATGCGTGCGA TGATTCATGCATGGAGTCTATTCGCAATAATACATACGATCACAGTCAGTACAGAGAGGAAGCTCTACTGAATCGGCTCAACATCAATCCAG TCACCCTGTCTTCCGGCTACAAGGACATCATTCTGTGGTTCAGCTTTGGAGCCTCCTGTTTTGTACTTCTAGCCGTTGTGATGGGCTTGTTTT TTTTCTGTTTGAAGAACGGGAATATGAGATGTACCATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2939	ATGTACAAGATCGTGGTAATTATCGCTCTGCTAGGAGCCGTGAAGGGGCTAGACAAGATATGTCTCGGGCACCACGCCGTGGTTAACGGAA CCATTGTGAAGACATTGACTAACGAACAGGAGGAGGTGACCAATGCGACGGAAACAGTTGAGTCAACAGGATTGAATAGGCTGTGTATGAA GGGGCGTAACCACAAAGACCTGGGCAATTGCCATCCAATCGGAATGCTTATTGGAACTCCCGCTTGCGACTTACACCTGACCGGCACATGG GATACCCTGATAGAAGAGAAAACGCTATTGCGTATTGCTACCCAGGAGCTACCGTAAACGAAGAGGCCCTTCGGCAGAAAATAATGGAGT CCGGGGGAATTAACAAAATATCTACTGGCTTTACTTATGGATCGTCCATCAACAGCGCTGGAACTACACGCGCTTGCATGCGTAACGGAGG TAATTCATTTTATGCCGAACTGAAGTGGCTGGTGTCAAAGTCAAAGGGACAGAACTTCCCCCAAACTACAAATACATACAGGAATACCGACA CTGCTGAACACCTGATTATGTGGGGTATTCACCACCCCTCAAGCACCCAGGAAAAGAATGACCTGTACGGAACTCAGAGTTTGTCTATCAGC GTGGGAAGTTCAACCTACCAAAATAACTTCGTTCCGGTGGTTGGCGCCAGGCCCCCAGGTGAACGGACAGTCGGGGCGCATCGACTTTCAT TGGACTTTAGTCCAGCCTGGCGACAATATCACATTCTCCCACAACGGAGGGCTTATCGCCCCGAGTCGCGTGAGCAAGCTCATTGGTCGGG GGTTGGGAATTCAGAGCGATGCCCCTATTGACAACAACTGCGAAAGCAAGTGCTTCTGGAGAGGCGGTTCTATTAACACAAGACTCCCATT CCAAAACCTGAGCCCACGGACAGTCGGGCAGTGCCCCAAGTACGTAAATAAAAGGTCACTCATGTTGGCTACCGGGATGCGGAATGTCCC AGAACTGATGCAGGGAAGGGGGCTGTTCGGCGCAATCGCCGGCTTTATTGAGAATGGCTGGGAGGGAATGGTTGACGGATGGTATGGTTT CAGGCACCAGAATGCCCCAGGGTACCGGTCAGGCAGCCGATTATAAATCCACCCAGGCAGCGATTGACCAGATTACTGGAAAGTTGAACCG GCTTATTGAAAAAACCAACACTGAGTTCGAGAGCATCGAGAGTGAGTTCAGCGAGATCGAACATCAGATCGGTAACGTGATAAACTGGACC AAGGACTCCATCACTGATATTTGGACCTACCAGGCTGAGTTATTGGTTGCCATGGAGAACCAGCACACCATCGACATGGCCGATTCTGAAAT GCTGAATCTCTATGAGAGAGTTCGGAAACAGCTGAGACAAAATGCAGAGGAGGATGGGAAGGGCTGTTTTGAGATTTACCACGCCTGTGAC GACAGTTGTATGGAGTCTATTAGAAATAATACCTACGATCATTCTCAATATCGAGAAGAGGCCTTGTTAAATAGGCTGAATATTAACCCAGTC ACCCTAAGCAGCGGGTACAAAGATATCATACTGTGGTTCTCGTTTGGAGCCTCTTGCTTTGTGCTATTGGCAGTCGTGATGGGTTTGGTGTT CTTCTGCCTCAAAAACGGGAATATGAGATGTACGATTTGCATC

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2940	ATGTATAAGATTGTCCTTGTGCTCGCCCTGCTCGGAGCAGTGCACGGCCTCGATAAAATCTGTCTGGGCACCACGCCGTGCCTAACGGCA CCATCGTCAAGACTCTCACAAACGAGAAGGAGGAAGTGACAAACGCTACTGAAACAGTAGAAAGTAAGAGCCTGGACAAACTTTGCATGAA AAACAGGAATTATAAAGACTTGGGTAATTGTCACCCGATTGGCATGGTCGTCGGAACGCCTGCTTGTGACCTCCATCTGACGGGAACCTGG GATACCTTGATCGAGCGGGACAACTCAATTGCATACTGCTATCCAGGCGCCACCGTTAGTGAGGAGGCTTTGAGACAGAAGATCATGGAGT CTGGAGGGATTGACAAAATTTCCACCGGCTTTACATATGGTAGCTCAATCAACTCGGCTGGGACTACAAAAGCTTGTATGAGGAACGGTGG AAATAGCTTTTACTCGGAACTAAAATGGTTGGTGTCTAAAAACAAGGGTCAGAACTTTCCTCAGACGACCAACACTTATCGAAATACTGACTC CGTGGAGCACCTGATTATTTGGGGATCCATCATCCCAGCAGCACACAAGAGAAGAATGACCTGTATGGGACGCAGTCTCTGTCCATTTAGC GTCGGCAGTTCAACTTACCAGAATAATTTCGTGCCTGTGGTGGGAGCGGCGCCCCCAAGTCAATGGGCAGAGCGGAAGGATTGATTTCCACT GGACTATGGTCCAGCCCGGCGATAACATTACTTTCAGCCACAACGGAGGGCTCATTGCACCAAACCGTGTCTCAAAACTGAAGGGCAGGG GGCTTGGTATTCAGAGCGGAGCTAGTGTGGACAATGACTGCGAATCTAAGTGTTTTTGGAAAGGAGGATCAATTAACACTAAGCTTCCGTTT CAAAACCTGAGTCCACGCACAGTCGGACAGTGCCCTAAATATGTGAACAAAAAGTCGCTTCTGCTAGCTACCGGGATGAGGAACGTGCCAG AGGTCGCCCAGGGCAGAGGTTTGTTCGGCGGCGATCGCCGGTTTCATCGAAAACGGATGGGAGGGAATGGTGGATGGCTGGTACGGATTTC GTCATCAAAACGCACAGGGAACGGGTCAGGCCGCAGATTATAAATCTACTCACAGGCCGCTATAGATCACAGATCACAGGCAAGCTGAATAGGTT AATAGAGAAGACGAATACCGAGTTTGAGAGCATCGAAAGCGAGTTCAGTGAAATAGAGCATCAGATTGGCAATGTGATCAATTGGACAAAAG ATTCGATCACTGATATTTGGACATATCAGGCAGAACTTCTTGTGGCAATGGAGAACCAGCATACGATTGATATGGCCGATTCCGAAATGCTG AATCTTTACGAGAGAGTCAGAAAACAGCTGCGCCAAAATGCTGAGGAAGACGGGAAGGGGTGCTTTGAAATATACCATAAATGTGACGACA ACTGCATGGAGTCGATCCGCAACAACACATATGACCATACCCAGTACCGTGAGGAAGCTCTGTTAAATAGACTTAACATCAATCCAGTTAAA CTGTCCTCTGGGTATAAAGATGTGATTTTGTGGTTCTCTTTCGGCGCTTCATGCTTTGTCCTCCTCGCCGTCATCATGGGACTGGTGTTTTTT TGCCTCAAAAACGGGAATATGCGATGTACGATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2941	ATGTATAAAATAGTAGTGATCATCGCTCTGTTAGGAGCGGGTGAAAGGGCTCGACAAGATTTGTCTGGGCCACCACGCCGTTGCTAACGGCA CCATCGTCAAGACCCTCACTAATGAACAGGAGGAGGTCACTAACGCCACTGAGACAGTTGAATCGACCGGGATTAACCGGTTGTGTATGAA AGGCCGGAAGCATAAAGATCTCGGGAATTGCCACCCAATAGGGATGCTTATCGGCACACCAGCATCGCGACCTCCATCTCACGGGCATGTG GGACACCCTTATCGAAAGAGAAAATGCCATTGCCTATTGCTATCCGGGCGCAACCGTGAATGTGGAGGCCCTTCGACAAAAAATCATGGAA AGCGGCGGCATTAACAAAATCAGCACGGGATTCACCTACGGGTCTAGTATCAATTCAGCAGGCACGACCAGAGCTTGTATGCGTAACGGGG GTAATTCTTTCTACGCAGAGCTGAAATGGCTCGTGTCTAAGAGCAAAGGTCAGAATTTTCCCCAGACTACTAATACATATAGGAATACCGACA CTGCGGAGCATCTTATAATGTGGGGCATCCACCACCCATCCTCCACACAGGAAAAGAACGACCTGTATGGTACGCAGTCACTGAGTATAAG CGTTGGGTCCAGCACTTATCGAAATAACTTTGTGCCCGTAGTGGGAGCCCGCCCACAGGTTAACGGCCAGAGTGGCAGAATCGACTTCCAT TGGACCCTGGTGCAGCCCGGCGACAACATCACTTTCTCACATAACGGAGGGTTAATAGCTCCATCCAGGGTATCCAAACTCATTGGTAGGG GGCTGGGCATCCAATCCGACGCCCCCCATTGACAATAATTGTGAGAGCAAATGTTTCTGGAGGGGTGGAAGCATCAATACCAGACTCCCATT CCAGAATTTATCTCCCCGCACAGTAGGGCAGTGCCCCAAATATGTTAACAGAAGATCCCTGATGCTCGCGACAGGAATGCGGAATGTGCCC GAGCTGATCCAGGGCCGCGGGTTGTTTGGCGCCATAGCTGGTTTCTCGAGAATGGTTGGGAAGGGATGGTTGACGGCTGGTATGGGTTT CGCCATCAGAACGCTCAGGGAACAGGACAAGCTGCCGACTACAAGAGCACTCAAGCAGCAATCGATCAAATCACGGGGAAGCTCAACAGG CTTGTTGAAAAGACTAATACTGAGTTCGAAAGCATTGAGTCCGAGTTTTCCGAGATTGAGCATCAGATTGGGAACGTCATCAACTGGACCAA AGACAGTATCACGGACATATGGACTTATCAAGCCGAACTCCTGGTGCCATGGAAAACCAGCACACAATCGATATGGCTGATTCTGAGATG CTTAACCTGTACGAGCGCGTGCGGAAACAACTGCGGCAAAACGCAGAGGAAGACGGAAAAGGATGTTTTGAAATATACCACGCATGTGATG ATAGCTGCATGGAGAGCATTCGTAACAACACTTATGATCATTCTCAGTACCGCGAGGAAGCTCTCCTAAACAGACTCAACATTAATCCAGTG ACCCTGAGCTCTGGATATAAAGACATTATTCTGTGGTTTAGTTCGGCGCCAGCTGCTTTGTGCTGCTGGCGGTGGTTATGGGACTGTTCTT CTTCTGTTTGAAAAACGGAAATATGAGATGTACTATTTGCATC

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Seq ID No.	Sequenza di acido nucleico
2942	ATGTATAAGATAGTAGTAATTATTGCTCTCTTGGGGCGGTGAAAGGGCTGGATAAAATCTGCCTGGGGCATCACGCCGTGGCCAATGGCA CCATTGTAAAAACGCTTACAAATGAGCAGGAAGAGTGACCAACGCCACAGAAACTGTGGAGAGCACTGGCATCAACCGGCTCTGTATGAA GGGTAGAAAGCACAAGGATCTGGGAATTGCCACCCCATCGGCATGTTAATAGGCACTCCGGCTTGCGATTTGCACCTTACCGGAATGTGG GACACACTAATCGAGAGGGAAAATGCCATTGCGTACTGCTACCCAGGTGCCACCGTGAATGTCGAGGCACTGAGGCAGAAAATCATGGAAT CAGGAGGAATAAACAAGATCTCTACCGGCTTTACGTATGGCTCATCCATCAACTCTGCAGGTACCACTCGAGCTTGCATGCGGAACGGCGG CAATTCCTTCTACGCAGAACTAAAGTGGCTTGTGTCCAAAAGTAAGGGTCAGAATTTCCCCCAAACTACCAATACGTACAGGAACACTGACA CGGCAGAACACCTGATCATGTGGGGCATCCATCATCCCTCCTCTACCCAGGAAAAAAAATTGACCTGTACGGGACACAGAGCCTGTCCATATC TGTAGGCTCAAGTACATATCGTAACAACTTCGTGCCCGTTGTGGGCGCACGTCCACAGGTTAACGGCCAAAGCGGACGCATTGATTTCCAT TGGACCCTAGTCCAGCCCCGGAGACAATATAACCTTCTCGCATAATGGAGGACTGATCGCTCCCTCTCGCGTGTCTAAGCTGATCGGTCGGG GATTGGGGATTCAGAGCGACGCTCCTATTGATAACAACTGCGAATCCAAGTGCTTTTGGAGAGGGGGCAGCATCAATACTAGATTGCCTTTT CAGAACCTTTCTCCCCGCACAGTGGGGCAATGCCCTAAATACGTCAATAGAAGGTCTCTTATGCTTGCCACCGGAATGCGTAATGTACCAGA ACTCATACAAGGTAGAGGGTTATTCGGCGCCATCGCTGGCTTTCTGGAAAATGGCTGGGAGGGGATGGTTGACGGCTGGTATGGTTCAGA CACCAAAATGCTCAGGGTACAGGTCAGGCCGCCGATTACAAGTCCACACAGGCAGCTATTGATCAGATCACAGGCAAGTTGAACCGCCTCG TGGAAAAGACTAACACAGAGTTTGAGTCTATTGAATCCGAATTCTCTGAGATTGAACACCAAATTGGAAATGTTATCAACTGGACAAAGGACT CTATTACCGATATTTGGACCTATCAAGCCGAGTTGTTGGTCGCCATGGAGAATCAACATACTATTGACATGGCGGACTCTGAAATGCTAAAT CTCTACGAGAGAGTAAGAAAGCAGCTTCGACAGAACGCAGAAGAAGACGGAAAGGGATGTTTTTGAGATCTATCATGCTTGTGACGATTCGT GCATGGAATCCATTCGGAATAATACATATGACCATTCTCAGTATAGAGAAGAAGCCCTGCTTAACCGGCTAAACATCAATCCCGTGACGCTA TCATCCGGGTATAAAGATATCATCCTGTGGTTCTCATTCGGGGCTTCGTGTTTTGTGCTCCTGGCGGTCGTGATGGGCCTGTTCTTTTTCTG TCTTAAAAACGGGAACATGCGATGCACCATATGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2943	ATGTACAAGGTCGTAGTTATTATCGCGCTGCTAGGTGCAGTTCGGGGGCTCGATAAGATTTGCCTGGGGCACCATGCGGTCGCCAACGGA ACTATCGTTAAGACATTAACCAACGAACAGGAGGAGGTGACAAATGCAACCGAGACCGTGGAATCTAAATCCCTGGGTAAGCTGTGCATGA AAGGGAGGAGTTATAACGACCTTGGAAACTGTCACCCAATCGGCATTCTTATCGGGACCCCCGCTTGTGATCTCCATTTAACCGGCACCTG GGATACACTCATTGAGCGCGAAAATGCTGTTGCCTACTGTTACCCAGGAGCTACAGTAAACGAGGAAGCTCTTAGACAGAAGATAATGGAG TCCGGAGGGATTTCCAAGATCAGCACTGGCTTCACCTATGGCACATCAATCAACAGCGCAGGGACGACAAAGGCCTGTATGAGGAACGGC GGCAACTCATTCTACGCCGAGCTGAAATGGCTGGTGTCAAAGAACAAGGCCAGAACTTCCCACAAACCACGAACACCTACAGGAACACCG ATACCGCAGAGCATCTTATAATATGGGGAATCCACACCACCCTCTTCCACCCAGGAGAAAAATGATCTTTATGGCACTCAATCTTTATCTATAT CAGTAGGGTCTTCAACTTACCAGAACAATTTCGTGCCTGTGGTGGGAGCGCGGCCGCAAGTGAACGGTCGTATAGACTTTCA CTGGACCCTGCTGCAGCCAGGTGACAACATCACCTTCTCTCACAATGGTGGGCTAATTGCTCCCTCCAGAGTCAGCAAGCTTATAGGGAGA GGCCTCGGGATACAGTCAGAAGCCCCCTATCGACAATGGGTGCGAGTCGAAGTGTTTCTGGAAGGGTGGATCTATTAACACAAAACTTCCTT TTCAGAACTTATCTCCGAGGACTGTGGGCCAATGCCCTAAATACGTTAACAAGCGCAGTTTAATGCTTGCTACGGGTATGAGGAATGTCCCA GAGATCATGCACGGCCGCGGCTCTTCGGGGCCATTGCCGGATTTATTGAGAACGGGTGGGAGGGCATGGTAGATGGATGGTACGGGTT CCGCCACCAAAACGCACAGGGAACGGACAGGCAGCTGACTACAAATCAACACACAAGCGGCTATCGACCAGATAACAGGCAAGCTGAATAG ACTGATCGAGAAAACTAATACAGAGTTCGAGAGCATAGAGAGCGAATTTTCCGAGATCGAGCATCAGATCGGTAACATTATAAATTGGACTA AGGATAGCATTACTGATATTTGGACCTATCAGGCTGAGCTGCTGGTTGCCATGCAAAACCAACATACGATATGGCCGATTCAGAAATG CTGAATCTATATGAGAGAGTGAGGAAGCAGCTGAGACAGAAGAACGCTGAGGAGGACGGTAAAGGCTGTTTCGAAATTTACCATGCATGCGACG ACTCTTGTATGGAATCTATCCGCAACAACACATACGACCACTCCCAGTACAGGGAGGAAGCCCTGCTGAATCGACTGAACATTAATCCAGTC AAGCTTTCCTCTGGTTATAAGGACATCATCTTATGGTTCAGCTTCGGGGCTTCGTGTCTCATTCTCTTGGCTGTGGTAATGGGCTTAGTTTTC TTTTGTCTTAAGAACGGCAACATGAGGTGCACAATTTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2944	ATGTATAAAATCGTGGTTATATTGCACTGCTAGGGGCCGTCAAGGGCTTAGATAAGATTTGCCTGGGCCACCACGCGGTGGCCAATGGGA CCATTGTGAAAACTCTGACCAACGAGCAGGAAGAAGTGACTAACGCCACCCGAGACTGTGGAATCAACAGGAATCAATCGTCTGTGCATGAA AGGCAGAAAGCATAAGGACCTTGGAAACTGTCATCCTATTGGGATGCTGATCGGCACCCCAGCTTGTGATTTGCACCTCACCGGTATGTGG GATACTCTTATCGAAAGGGAAAACGCTATCGCTTATTGTTACCCAGGAGCGACTGTCAATGTCGAGGCCCTACGCCAGAAAATAATGGAAAG TGGAGGGATTAATAAGATAAGCACTGGTTTCACGTATGGCAGTTCGATCAATAGTGCCGGAACAACTCGCGCTTGCATGCGTAATGGTGGA AACTCATTTTACGCAGAGCTCAAATGGCTAGTTTCGAAGTCCAAAGGTCAGAACTTTCCACAGACGACCAACACCTATCGCAATACCGACAC TGCAGAGCACCTGATCATGTGGGGAATTCATCACCCGTCAAGCACTCAAGAGAAGAACGATCTTTATGGAACCCAGAGTCTCAGTATTTCCG TTGGCTCGAGTACGTACCGCAATAACTTCGTTCCTGTCGTGGGTGCCAGGCCTCAGGTTAACGGGCAGTCCGGGCGCATCGATTTTCACTG GACTCTCGTTCAGCCCGGGGATAATATCACATTCAGTCACAACGGTGGGCTGATCGCGCCGTCCAGAGTGTCAAAACTGATCGGCAGGGG CCTGGGCATTCAGAGCGACGCACCAATTGATAACAATTGTGAGAGCAAATGTTTCTGGCGTGGAGGCAGCATCAATACCCGACTCCCGTTT CAGAATCTGAGCCCCAGAACTGTCGGACAATGTCCTAAATATGTGAATCGGCGCTCCCTGATGCTCGCAACTGGCATGCGGAACGTGCCCG AGTTGATTCAAGGACGCGGGCTGTTCGGTGCCATCGCTGGGTTCCTGGAAAACGGCTGGGAAGGCATGGTAGATGGATGGTACGGGTTCA GGCACCAGAACGCCCAAGGGACAGGACAGGCCGCCGACTACAAGAGTACTCAAGCTGCTATTGACCAAATTACCGGAAAACTGAATAGGC TGGTGGAAAAGACCAATACAGAGTTCGAGTCTATCGAGAGCGAGTTTAGCGAGATCGAGCATCAGATTGGTAATGTGATTAACTGGACGAA AGATAGTATCACCGACATCTGGACATATCAAGCAGAACTTCTTGTGGCTATGGAGAATCAACATACTATTGACATGGCTGATAGCGAGATGT TGAATCTTTACGAGAGAGTGCGCAAACAGCTGCGGCAGAATGCTGAGGAAGATGGCAAAGGTTGTTTCGAGATCTACCATGCCTGCGACGA CAGTTGTATGGAGAGCATTAGCAATAACACTTACGACCACTCACACAATATCGAGAAGAGGCTCTACTCAACAGGCTAAACATCAATCCAGTGA CCCTCTCCTCCGGTTATAAGGATATCATTCTCTGGTTCTCCTTCGGAGCTTCCTGTTTTGTCCTTCTGGCAGTGGTGATGGGATTATTTTTTTT CTGCCTTAAGAATGGGAATATGAGATGTACAATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2945	ATGTACAAGATCGTAGTGATTATCGCATTACTTGGCGCCGTGAAGGGACTCGATAAGATTTGCTTGGGCCATCATGCTGTGGCCAATGGCA CTATAGTGAAGACACTCACCAATGAACAGGAAGAAGTGACCAACGCCACCGAGACCGTGGAGTCTACAGGCATCAACAGGCTCTGTATGAA GGGCCGTAAGCACAAGGATCTTGGCAACTGCCATCCTATCGGAATGCTCATTGGAACACCAGCTTGTGATCTCCACTTAACAGGCATGTGG GACACACTGATTGAGCGGGAGAATGCGATTGCCTACTGTTATCCCGGGGCCACCGTGAACGTTGAGGCTCTGCAGACAGAAAATCATGGAGA GCGGCGGGATAAACAAGATAAGCACAGGCTTCACTTACGGTTCTAGCATTAATTCGGCAGGAACCACACAGGGCCTGCATGCGCAACGGCG GCAATTCATTTTACGGCCGAACTTAAGTGGCTGGTGTCCAAGAGCAAGGGCCAGAACTTCCCCCAGACCACTAATACTTACCGCAACACCGA CACAGCAGAGCCACCTTATCATGTGGGGTATACACCATCCTAGCAGTACCCAAGAAAAAAACGATCTGTACGGAACACAAAGCCTTTCAATTT CTGTAGGAAGTTCCACATATAGGAACAACTTTGTCCCGGTGGTGGGCGCTGGCCCTCAGGTTAATGGCCAGTCCGGGAGGATCGATTTCCA TTGGACACTCGTGCAGCCTGGGGACAACATTACTTTCTCTCACAACGGGGGTTTAATCGCCCCCTCAAGGGTCTCTAAGCTCATCGGGCGC GGTCTGGGAATCCAATCCGACGCTCCTATTGACAACAACTGCGAGTCAAAGTGCTTCTGGAGAGGTGGATCCATCAACACGCGCCTCCCAT TTCAGAACTTGTCCCCGCGTACAGTGGGCCAGTGTCCCAAGTATGTGAATCGACGGAGCTTGATGCTGGCCACTGGGATGAGGAACGTGC CTGAACTTATCCAGGGAAGGGGCCTCTTCGGAGCCATCGCTGGCTTCCTGGAAAACGGCTGGGAGGGGATGGTGGACGGGTGGTACGGC TTTCGACATCAGAATGCCCAGGGGACTGGACAGGCAGATTATAAGAGTACCCAAGCCGCCATTGACCAGATCACAGGGAAGCTAAACA GGTTGGTCGAAAAGACTAACACAGAATTCGAATCCATCGAGAGCGAGTTTTCCGAGATTGAGCACCAGATCGGTAACGTGATTAACTGGAC GAAAGACTCAATAACCGATATCTGGACATATCAGGCGGAGTTGCTTGTGGCGATGGAGAACCAGCACACTATTGATATGGCAGACTCTGAG ATGCTCAACCTGTATGAGCCGGTTCGGAAGCAGCTGCGACAAAATGCTGAGGAAGACGGAAAGGGGTGTTTCGAAATCTATCACGCCTGTG ATGACTCTTGCATGGAGTCGATTAGGAACAATACCTATGATCACTCTCAATATAGAGAGGAGGCTTTACTAAATCGGCTCAACATAAATCCAG TGACCCTGTCCAGCGGATATAAAGACATTATTCTATGGTTCTCTTTCGGAGCGAGCTGCTTTGTGCTTCTCGCTGTGGTGATGGGTCTCTTC TTTTTTTGCCTGAAGAATGGTAACATGCGCTGCACTATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2946	ATGTACAAGGTGGTAGTGATTATTGCCCTGCTGGGAGCAGTTAGAGGCTTAGATAAAATTTGCCTCGGGCATCATGCTGTTGCTAATGGTAC AATTGTCAAGACCTTAACAAATGAGCAGGAGGAGGTAACCAATGCGACCGAGACGGTGGAGTCTAAGTCTTTGGGGAAACTGTGTATGAAG GGAAGATCATATAACGACCTAGGCAATTGCCACCCCATCGGGATTCTGATTGGGACCCCCGCCTGTGATCTGCACCTGACAGGCACATGGG ACACCCTGATCGAACGGGAAAACGCGGTGGCCTATTGCTACCCCTGGGGCGCACAGTCAACGAGAGGAAGCTTTGAGGCAGAAAATCATGGAGA GCGGGGGCATCTCTAAAATCTCCACCGGGTTCACGTATGGTACCTCCATTAATTCAGCCGGAACGACCAAGGCATGTATGCGTAATGGAGG CAACTCCTTCTACGCCGAGCTCAAGTGGCTTGTTTCCAAAAATAAGGGGCAGAATTTCCCTCAGACAACGAACACATACCGGAATACTGACA CTGCAGAGCACCTAATCATCTGGGGAATTCACCACCCATCCAGTACGCAGGAAAAAAACGACCTCTACGGGACTCAGTCTCTGTCAATTTCT GTGGGCTCCTCAACATACCAAAATAACTTCGTTCCAGTGGTGGGCGCCCCGGCCCCAGGTCAATGGACAGAGCGGAAGGATAGACTTCCAC TGGACACTCCTTCAGCCGGGGGACAATATCACGTTCTCTCACAACGGGGGACTGATAGCTCCATCTAGGGTGAGCAAACTGATTGGACGG GGATTGGGCATACAATCAGAAGCGCCCATAGACAATGGATGCGAAAGCAAATGCTTTTGGAAGGGAGGTTCAATAAACACAAAACTCCCATT CCAGAATCTGTCTCCTAGAACAGTGGGGCAGTGCCCCAAATATGTTAATAAGAGATCTCTCATGCTTGCTACTGGCATGCGGAACGTCCCC GAAATTATGCATGGGAGGGGCCTCTTCGGGGCGATTGCCGGCTTCATTGAAAATGGCTGGGAAGGAATGGTCGATGGATGGTATGGCTTT CGACATCAGAACGCACAGGGCACTGGGCAGGCAGCAGACTACAAAAGTACTCAGGCCGCAATAGACCAGATAACCGGAAAGCTCAATCGC CTCATCGAAAAGACAAACACTGAATTCGAAAGTATTGAATCCGAATTCTCTGAAATAGAGCACCAGATTGGTAATATCATCAACTGGACCAAG GATAGTATTACTGATATCTGGACATACCAAGCCGAACTGCTGGTAGCAATGGAGAATCAGCACACGATTGATATGGCAGATTCTGAAATGCT GAACCTGTATGAGCGAGTGCGCAAGCAGCTGCGCCAAAACGCTGAAGAGGATGGGAAAGGCTGCTTCGAAATCTACCACGCTTGCGACGA TTCCTGCATGGAGAGTATCCGGAATAACACCTACGATCATAGCCAGTACAGGGAGGAAGCCCTTCTGAACAGACTGAACATTAACCCAGTTA AGCTTAGTAGTGGATACAAAGACATAATCCTCTGGTTCTCCTTTGGCGCTTCATGCTTAATTTTACTTGCCGTCGTAATGGGACTGGTGTTTT TCTGCCTTAAGAACGGCAATATGAGGTGCACGATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2947	ATGTACAAGATCGTGGTTATTATTGCCTTGTTGGGCGCCGTGAAGGGTCTCGATAAGATTTGTCTGGGCCATCATGCTGTAGCCAATGGCAC CATTGTGAAGACGCTCACTAACGAGCAGGAAGAGGTTACGAACGCAACCGAGACAGTGGAGAGCACTGGGATAAACAGACTGTGCATGAA AGGACGTAAACACAAGGACCTTGGTAATTGCCACCCTATCGGGATGCTGATTGGGACACCCGCATGCGACTTGCATTTGACCGGAATGTGG GATACATTGATTGAGCGCGAGAACGCAATTGCCTACTGTTACCCAGGAGCCACCGTCAATGTTGAGGCCCTGCGGCAGAAGATCATGGAGA GCGGCGGCATTTAACAAGATATCTACAGGCTTTACATATGGATCATCCATAAATTCAGCAGGAACTACGCGCGCATGCATGCAACGGCGG CAACAGCTTTTACGCTGAGCTTAAGTGGCTCGTCAGTAAGTCAAAGGGCCAGAATTTCCCCCAAACCACCAATACATACAGAAACACCGACA CGGCAGAGCACCTGATCATGTGGGGAATCCATCACCCATCTTCCACGCAAGAGAAGAATGACCTATACGGGACTCAGAGCCTCTCCATATC CGTCGGGTCCTCCACCTACAGGAACAACTTTGTACCTGTTGTAGGGGCTCGCCCCCCAGGTGAATGGCCAGAGGCGGGACGGATCGACTTTCA TTGGACACTTGTTCAGCCCGGCGACAACATTACTTTCTCCCACAACGGAGGTCTGATCGCCCCCAGCAGGGTAAGTAAACTGATTGGCCGC GGCTTAGGAATACAGAGCGACGCCCCAATCGATAACAATTGTGAATCTAAGTGCTTTTGGAGGGGGGCAGTATAAACACCCGGCTACCCT TTCAGAATCTGAGTCCACGCACCGTGGGGCAGTGTCCAAAGTATGTGAACCGGAGAAGTTTAATGCTGGCAACCGGCATGAGAAATGTCCC TGAGCTAATTCAGGGTCGCGGGCTTTTCGGCGCAATCGGCAGGCTTTCTCGAAAACGGTTGGGAGGGCATGGTGGACGGGTGGTACGGGTT CCGGCACCAAAACGCCCAGGGAACTGGGCAGGCCGCCGATTACAAAAGCACTCAGGCAGCTATAGACCAGATCACAGGCAAACTGAATCG GCTGGTGGAAAAGACAAATACAGAGTTCGAGAGCATTGAGAGCGAGTTTAGCGAGATCGAACATCAGATCGGAACGTTATTAACTGGACC AAGGATAGCATCACTGATATTTGGACCTACCAGGCTGAACTGTTGGTCGCCATGGAGAACCAGCACACAATCGACATGGCAGACTCGGAGA TGCTTAACCTCTATGAGCGGGGTGAGAAAGCAGCTCCGACAGAACGCCGAAGAGGACGGGAAGGGGTGCTTCGAAATTTATCATGCATGTG ACGATAGTTGTATGGAGTCAATCCGCAATAATACTTATGATCATAGCCAGTATCGTGAGGAGGGCCCTGCTCAATCGTCTGAATATAAATCCC GTGACCCTGAGTTCGGGCTACAAAGACATAATACTCTGGTTTTCGTTTTGGCGCGAGTTGCTTCGTGCTGTTAGCTGTTGTAATGGGATTGTT CTTTTTCTGCCTAAAAAACGGCAACATGAGGTGTACTATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2948	ATGTACAAGATTGTCCTGGTGCTTGCTCTGCTGGGAGCCGTGCACGGCCTCGATAAAATCTGCTTAGGCCACCACGCTGTCCCTAATGGCA CCATTGTTAAGACCTTGACAAACGGAAAGGAAGAGGTGACCAACGCCACTGAGACTGTGGAATCCAAGTCACTCGACAAATTATGTATGAAG AACAGGAACTATAAAGATCTTGGTAACTGCCATCCAATTGGCATGGTGGTAGGAACTCCTGCTTGCGATCTACACCTGACGGGCACATGGG ACACCCTGATTGAGAGGGACAACTCTATTGCATACTGCTATCCAGGTGCGACCGTTTCCGAAGAAGCACTCCCGGCAGAAGATTATGGAGTC CGGCGGCATCGATAAAATCTCCACCGGCTTCACATACGGAAGTAGCATCAACTCTGCTGGGACGACCAAAGCGTGTATGAGGAACGGGGG GAATAGTTTCTACTCAGAACTCAAGTGGCTGGTCAGTAAGAACAAGGGGCAGAACTTCCCTCAAACGACCAACACATACCGAAATACAGATT CTGTGGAGCACTTAATCATCTGGGGGATTCATCATCCATCCAGCACGCAGGAGAAAAACGATCTCTATGGTACACAGTCTCTCAGCATCAGT GTGGGAAGCAGTACGTATCAGAACAATTTTGTCCCCGTCGTTGGCGCCCGGCCACAAGTGAACGGACAAAGTGGTCGTATTGATTTTCATT GGACCATGGTCCAACCTGGTGATAATATAACATTTTCACACAATGGAGGACTGATAGCTCCTAACAGAGTATCCAAGCTGAAGGGAAGGGG GTTGGGGATTCAGTCCGGAGCATCAGTGGACAATGATTGCGAGAGCAAGTGCTTCTGGAAGGGAGGTTCCATCAACACGAAGCTGCCTTTC CAGAATCTGAGCCCACGAACAGTGGGACAGTGCCCGAAGTATGTGAATAAGAAGAGCCTTCTGCTTGCGACTGGCATGAGGAATGTTCCTG AAGTTGCGCAGGGAAGGGGGCTATTCGGGGCAATCGCCGGATTCATCGAGAACGGCTGGGAGGGCATGGTGGACGGGTGGTACGGGTTC AGGCACCAGAACGCCCAGGGTACAGGGCAGGCCGCTGATTACAAGTCAACACAGGCGGCGATAGACCAGATCACCGGCAAACTGAATAG GCTAATAGAGAAGACTAACACTGAATTTGAATCTATTGAGAGCGAGTTCTCGGAAATTGAACACCAGATCGGAAATGTGATCAATTGGACCA AGGATTCCATTACCGATATCTGGACTTATCAGGCAGAGCTGTTAGTGGCAATGGAAAACCAGCATACCATAGACATGGCTGATTCTGAGATG TTGAACCTCTACGAGCGGGTACGGAAACAACTGAGACAGAATGCAGAGGAAGACGGCAAGGGCTGTTTCGAAATCTACCACACAAGTGCGAC GATAATTGTATGGAAAGTATACGCAACAATACCTATGATCACACACAATATAGGGAAGAGGCTCTTCTGAACCGACTGAACATCAATCCCGT GAAACTTAGCTCAGGATACAAGGACGTGATCCTTTGGTTTTCTTTCGGGGCTAGTTGCTTCGTGCTGCTTGCGGTTATCATGGGGCTTGTTT TCTTTTGTCTAAAGAATGGGAATATGAGATGCACAATCTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2949	ATGTACAAAATCGTGGTGATCATCGCCCTCCTGGGAGCTGTGAAGGCGCCTTGACAAAATCTGCCTCGGCCACCACGCCGTCGCCAATGGAA CCATCGTGAAGACTCTGACCAATGAGCAGGAGGAAGTTACCAATGCAACTGAGACCGTGGAAAGTACCGGGATAAATCGCCTCTGCATGAA GGGAAGGAAACATAAAGACCTGGGGAACTGTCATCCGATTGGGATGCTGATTGGGACCCCTGCCTGTGATTTGCACCTTACCGGGCACATGG GACACACTGATCGAGCGAGAAAATGCTATCGCATATTGTTATCCCGGGGCAACCGCAAACGTAGAGGCCCTACGGCAGAAAATTATGGAGT CCGGTGGCATAGACAAAATAAGCACAGGATTTACCTACGGCTCGAGCATCAACTCTGCTGGCACCACCAGAGCTTGCATGAGGAATGGCG GGAACTCCTTTTACGCTGAGTTGAAGTGGCTGGTGAGCAAGAGTAAAGGGCAGAACTTTCCTCAGACGACTAATACATATAGAAACACCGAC ACAGCAGAGCACCTCATAATGTGGGGAATCCATCACCCATCTTCAATTCAGGAGAAGAATGACCTTTATGGTACTCAGAGCCTCAGTATTTC CGTGGGATCTTCTACGTACAGAAACAACTTTGTGCCAGTTGTCGGCGCAAGACCTCAGGTCAGGGAGAATTGACTTTCAT TGGACACTGGTGCAACCTGGGGATAATATCACTTTTAGCCATAATGGAGGACTGATTGCTCCCAGTAGAGTCTCTAAACTGATTGGGAGGG GACTCGGTATCCAGTCGGATGCTCCTATCGATAATAACTGTGAGAGCAAGTGTTTTTGGCGAGGGGGATCTATCAATACACGGTTGCCATTT CAGAATCTATCGCCCCGCACGGTTGGTCAGTGCCCCAAGTACGTTAATCGTCGTCGCTGATGCTGGCTACGGGAATGAGGAATGTTCCAG AACTGATTCAAGGACGCGGTTTGTTCGGCGCCATCGCAGGTTTCCTTGAAAACGGCTGGGAAGGTATGGTTGACGGTTGGTACGGATTCCG ACATCAGAACGCCCAGGGTACGGGACAGGCGCGCTGACTACAAAAGCACCCAGGCAGCAATTGATCAGATCACGCGGGAAGCTCAATAGACT GGTGGAAAAGACCAACACGGAATTTGAATCAATTGAGTCCGAATTTTCCGAGATTGAACATCAGATCGGCAATGTCATTAATTGGACAATGG ATAGCATCACTGACATATGGACTTATCAGGCCGAGCTGCTGGTTGCAATGGAGAATCAGCACACTATCGACATGGCTGATTCCGAGATGCT GAACCTTTACGAGAGAGTGCGCAAGCAGCTCCGGCAGAACGCCGAAGAAGATGGAAAGGGGTGCTTTGAGATTTATCACGCGTGCGACGA CAGTTGCATGGAATCCATCCGGAACAATACTTATGATCATTCTCAGTACCGCGAGGAAGCACTGCTCAACAGACTGAATATTAACCCAGTGA CCCTAAGCTCAGGGTACAAGGACATCATTCTGTGGTTCTCTTTCGGCGCGTCATGCTTCGTGCTGCTGGCAGTTGTGATGGGACTCGTGTT CTTTTGCCTCAAAAATGGGAAACATGAGATGTTACCATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2950	ATGTATAAAGTCGTAGTGATCATCGCACTGTTAGGAGCTGTAAAGGGACTGGACAAGATCTGCTTAGGACACCACGCAGTGGCAAACGGGA CCATAGTCAAGACATTGACTAATGAACAAGAGGAAGTCACCAACGCGACTGAAACAGTCGAATCTACAGGAATCAACAGACTTTGTATGAAA GGACGGAAACATAAAGATCTGGGCAACTGTCACCCCATAGGAATGCTGATTGGTACACCAGCTTGTGACTTGCATCTGACCGGCACATGGG ACACGCTGATCGAGAGAGAAAATGCCATTGCCTACTGTTACCCTGGGGCTACAGTAAACGTCGAGGCGCTGCGTCAGAAGATCATGGAATC TGGGGCATCGATAAAATCAGCACGCGGTTCACATACGGATCCAGTATTAATTCTGCTGGCACTACCCGTGCTTGTATGCGGAACGGTGGA AACTCCTTCTATGCAGAGCTCAAATGGCTGGTTTCTAAGAACAAGGGGCAGAATTTTCCCCAGACGACAAATACATATAGAAATACAGACAC TGCTGAGCACCTAATCATGTGGGGCATCCACCACCCAAGTAGTATCCAGGAGAAAAACGACCTGTACGGCACACAAAGCCTGTCAATCTCA GTGGGCTCCTCAACTTACCGCAATAATTTTGTGCCAGTTGTGGGCGCCAGGCCCCAGGTTAATGGTCAGTCTGGGCGCATCGATTTTCATT GGACTCTGGTGCAACCTGGCGACAATATTACATTCTCTCACAACGGAGGACTCATCGCCCCATCCAGAGTGTCTAAGTTGATAGGACGAGG GTTAGGCATCCAAAGCGATGCCCCCCATTGACAATAACTGCGAATCAAAGTGCTTTTGGCGGGAGGATCCATTAACACACGGTTGCCTTTC CAGAATCTGTCTCCAAGGACCGTAGGGCAGTGCCCAAAATACGTGAACAGGCGGTCTCTTATGCTGGCCACGGGGATGCGCAACGTGCCA GAGCTCATCCAGGGGCGTGGATTATTTGGAGCTATTGCCGGATTTCTGGAAAATGGCTGGGAGGGGATGGTTGACGGTTGGTACGGTTTC AGGCACCAGAACGCACAGGGCACAGGACAGGCCGCGCGACTATAAAAGTACCCAGGCAGCGATTGATCAGATAACCGGAAAGCTGAACAGG TTGGTGGAAAAAACCAATACTGAGTTCGAGTCTATCGAGAGCGAATTCTCGGAAATCGAACACCAGATTGGAAATGTAATCAACTGGACTAT GGATAGCATCACCGATATCTGGACCTACCAGGCTGAACTGTTGGTGGCTATGGAGAATCAACACACGATCGATATGGCTGACAGCGAGATG CTCAACCTGTATGAACGTGTTAGGAACAGCTAAGGCAAAACGCTGAAGAAGACGGAAAGGGATGTTTTGAAATATCATGCATGCGATGA CTCATGTATGGAGTCAATCCGGAACAATACATATGACCATTCTCAGTATAGGGAGGAGGCCCTCCTGAACAGACTGAATATTAATCCCGTTA CCCTATCCAGCGGGTATAAGGACATCATCCTCTGGTTCTCTTTTGGTGCCAGTTGTTTCGTTTTGCTTGCTGTTGTGATGGGACTCGTCTTTT TCTGTCTGAAGAACGGGAACATGAGATGCACCATTTGCATC

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Seq ID No.	Sequenza di acido nucleico
2951	ATGTACAAAATTGTCGTCATCATAGCACTTCTAGGTGCCGTGAAAGGTTTGGATAAGATCTGTCTAGGCCATCATGCTGTCGCAAACGGCAC TATCGTGAAAACTTTGACTAACGAACAAGAGGAAGTGACTAACGCTACGGAGACAGTCGAATCGACCGGGATCAACAGACTGTGCATGAAA GGCCGCAAACACAAAGATTTGGGGAACTGCCATCCTATAGGCATGCTGATTGGGACACCAGCTTGCGACCTCCACCTGACGGGAATGTGG GACACCCTCATTGAGCGGGAGAATGCGATCGCGTACTGTTACCCGGGGGCTACCGTCAATGTGGAGGCACTCAGGCAAAAGATCATGGAG TCTGGCGGCATCAATAAGATTTCCACTGGGTTCACCTATGGATCTAGCATTAATTCTGCAGGTACAACTAGAGCTTGTATGAGAAATGGGGG GAATAGTTTCTACGCCGAACTTAAATGGCTGGTGAGCAAGTCAAAGGGACAAAACTTCCCCCAGACAACGAATACTTACAGGAATACGGATA CCGCAGAGCACTTGATCATGTGGGGGATTCATCATCCATCAAGCACACAGGAAAAAAACGATTTGTATGGGACTCAGTCACTGTCTATTAGC GTGGGATCTAGTACTTACAGAAACAACTTCGTACCTGTGGTGGGAGGCCCGACCACAGGTGAATGGACAGAGTGGGAGGATTGACTTTCACT GGACCCTGGTGCAACCTGGTGATAATATTACATTTAGCCACAATGGCGGATTGATCGCACCATCCCGAGTCAGTAAGCTCATAGGCCGGGG ACTTGGCATACAGAGCGACGCTCCTATCGATAACAATTGCGAGTCCAAATGCTTCTGGCGGGGAGGAAGTATAAACACACGGCTGCCATTT CAGAACCTTTCGCCCCCGCACGGTCGGCCAGTGCCCCAAATATGTGAATAGGCGTTCACTCATGCTCGCAACAGGAATGAGAAATGTGCCTG AGCTGATTCAGGGCAGGGGGCTTTTCGGTGCTATAGCGGGATTTTTAGAGAACGGCTGGGAAGGGATGGTTGATGGGTGGTACGGGTTCC GGCACCAAAATGCGCAGGGAACAGGACAGGCTGCCGACTACAAATCTACCCAGGCTGCAATTGATCAAATAACTGGCAAACTCAATAGGTT GGTGGAAAAGACGAACACCGAGTTCGAGTCAATCGAATCTGAATTCAGCGAGATTGAACACCAAATCGGAAATGTGATTAACTGGACCAAG GACTCCATCACCGACATCTGGACCTATCAGGCCGAACTGCTCGTCGCTATGGAGAACCAGCATACCATAGATATGGCCGACAGCGAGATGC TCAACCTTTACGAGCGCGTCAGGAAACAGCTTAGGCAGAATGCTGAAGAAGACGGGAAGGGATGTTTTGAGATCTATCACGCTTGCGATGA TTCCTGTATGGAGTCCATAAGGAACAACACCTATGACCATTCACAGTACCGTGAAGAGGCCTTGCTTAACCGCCTCAACATAAATCCCGTTA CTCTCAGCTCAGGTTATAAGGATATCATCCTGTGGTTTAGCTTTGGAGCCTCCTGCTTTGTGCTCCTCGCCGTCGTGATGGGCCTATTCTTTT TTTGTCTGAAAAACGGGAATATGCGATGCACTATATGTATA

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2952	ATGTATAAGATCGTGGTGATCATTGCACTCCTGGGAGCCGTCAAGGGCCTGGATAAAATATGCCTGGGGCACCACGCCGTTGCCAACGGAA CTATAGTAAAGACCCTGACCAATGAACAGGAAGAAGTGACCAACGCAACCGAAACCGTGGAGAGTACAGGCATAAATCGCCTTTGCATGAA GGGTCGAAAGCACAAAGACCTGGGGAATTGCCACCCCATAGGGATGCTGATCGGCACCCCGGCTTGTGATTTGCACTTGACTGGGATGTG GGATACACTCATTGAGCGCGAAAACGCAATCGCATATTGCTACCCCGGGGCAACCGTGAACGTCGAGGCCCTGCGGCAGAAAATTATGGA GTCTGGCGGAATAAATAAGATTTCAACCGGTTTTACATACGGAAGTTCTATTAATAGCGCAGGCACAACAAGGGCGTGTATGAGGAACGGT GGTAATAGTTTCTATGCAGAACTAAAATGGTTGGTGTCTAAATCGAAAGGTCAAAATTCCCCCAAACTACCAACACCTACCGCAATACTGAT ACTGCCGAACACTTGATTATGTGGGTATTCACCACCCATCCTCAACACAGGAAAAGAACGATTTGTACGGGACACAGAGTCTGAGTATTAG TGTAGGCTCTAGCACCTACAGAAATAACTTTGTCCCAGTGGTGGGCGCTCGGCCTCAGGTGAATGGCCAATCTGGAAGAATTGACTTCCAT TGGACACTTGTGCAGCCAGGTGATAACATCACTTTTAGCCATAATGGTGGGCTGATTGCCCCTTCCAGGGTGAGTAAACTTATTGGTCGCG GGCTGGGGATACAATCGGATGCCCCTATCGACAATAATTGCGAATCCAAGTGTTTTTGGAGGGGCGGGTCAATCAATACCAGGCTACCTTT CCAGAATCTGAGTCCACGTACCGTCGGGCAGTGTCCTAAGTATGTCAATCGACGGTCACTGATGCTCGCTACCGGCATGCGGAATGTCCCA GAGCTGATCCAAGGGCGTGGTCTGTTCGGCGCAATTGCCGGCTTCCTCGAGAATGGATGGGAGGGCATGGTAGATGGATGGTATGGTTTT AGACACCAAAACGCCCAAGGAACTGGGCAGGCGGCGATTATAAATCCACTCAGGCCGCAATTGATCAGATTACTGGCAAGCTAAACCGTT TAGTTGAGAAAACGAACACCGAATTCGAGAGCATAGAGAGTGAATTTAGTGAGATCGAGCATCAAATTGGGAATGTGATTAACTGGACCAAA GACTCAATAACCGATATCTGGACCTACCAGGCAGAGTTACTGGTAGCTATGGAGAACCAGCATACCATCGACATGGCCGACTCTGAGATGC TCAATTTGTATGAGAGGGTCAGGAAACAACTGCGGCAGAATGCTGAAGAAGATGGAAAAGGGTGCTTTGAAATATATCACGCATGCGACGA TAGTTGCATGGAGTCCATACGAAACAATACCTACGATCACTCACAGTATAGAGAGGAAGCCCTCTTAAATAGGCTAAATATAAACCCTGTCAC ACTGAGCTCTGGGTACAAAGATATTATCTTATGGTTCTCATTTGGGGCTAGTTGTTTCGTGCTCCTGGCGGTCGTGATGGGCCTGTTCTTCT TCTGTCTAAAGAACGGTAATATGAGATGTACTATCTGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2953	ATGTATAAAGTGGTGGTTATTATAGCGTTGCTGGGCGCTGTTAAAGGTTTGGACAAGATCTGCTTGGGACATCATGCTGTCGCCAACGGGA CAATCGTCAAGACCCTGACAAACGAACAGGAAGAGGTCACAAACGCGACTGAAACCGTGGAGAGCACAGGAATTAATCGGCTCTGTATGAA AGGCCGCAAACACAAAGATCTTGGAAATTGCCACCCAATTGGGATGCTCATTGGCACACCAGGCCTGTGATCTACATCTGACCGGCACATGG GACACTCTCATCGAACGCGAGAACGCTATCGCATATTGTTACCCCGGGCGACCGTGAATGTTGAGGCCCTGCGCCAGAAGATTATGGAG AGTGGAGGCATCGATAAGATATCGACCGGCTTCACTTACGGAAGCTCCATTAACTCCGCTGGTACCACCCGGGCCTGCATGAGGAACGGC GGCAATTCCTTTTACGCCGAACTGAAGTGGTTAGTGTCTAAAAATAAGGGGCAGAATTTTCCCCAAACCACAAACACATACCGAAACACCGA CACGGCCGAGCATCTGATCATGTGGGGGATTCACCATCCTTCTTCCATCCAGGAAAAGAACGATCTGTACGGAACTCAATCTCTCTCCATCT CCGTTGGTTCCTCCACGTATAGGAACAATTTCGTACCCGTGGTCGGCGCCCGACCACAAGTAAACGGCCAGTCCGGCCGCATCGACTTCCC ACTGGACACTTGTGCAGCCAGGAGACAACATTACATTCTCCCATAATGGCGGGCTGATTGCACCCAGCCGGGTCTCCAAGCTTATCGGCCG CGGCCTGGGGATCCAGTCAGACGCGCCCATCGATAACAACTGCGAAAGCAAGTGTTTTTGGCGGGGTGGATCTATTAACACCCGTCTGCCT TTCCAGAATCTTAGTCCCCGGACAGTGGGGCAGTGCCCCAAGTATGTGAATCGAAGGTCTCTGATGCTGGCCACAGGCATGAGAAATGTGC CAGAGTTGATTCAGGGCCGGGGTCTCTTTGGAGCCATTGCCGGTTTTCTTGAAAACGGTTGGGAGGGTATGGTCGACGGTTGGTACGGTTT CCGGCACCAGAACGCACAGGGCACTGGTCAGGCTGCAGATTATAAATCTACACAAGCCGCTATCGACCAGATCACGGGCAAACTAAATAGA CTGGTCGAGAAGACTAACACTGAATTTGAGATCGGAGTTTTCCGAGATTGAACACCAGATCGGAAATGTGATTAATTGGACAAT GGACTCAATTACTGACATCTGGACATACCAAGCCGAACTGCTGGTTGCGATGGAGAACCAGCACACCATCGATATGGCCGATAGCGAAATG CTAAATCTGTATGAGAGGGTAAGGAAGCAGCTGCGCCAGAATGCCGAAGAAGACGGGAAGGGTTGTTTTGAGATCTACCATGCTTGTGACG ACAGTTGCATGGAAAGCATTCGAAACAACACTTATGACCACTCGCAATATCGCGAAGAGGCCCTTTTGAATCGGCTCAACATAAACCCAGTG ACACTTTCTTCCGGTTACAAGGATATTATCCTGTGGTTCTCTTTTGGAGCATCGTGTTTTGTACTGCTCGCTGTCGTTATGGGCTTGGTCTTC TTTTGTCTGAAAAATGGCAATATGCGGTGTACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2954	ATGTATAAGATTGTGGTGATCATTGCACTGCTGGGGGCTGTGAAGGGACTCGACAAGATTTGCCTGGGCCACCATGCCGTTGCAAACGGGA CCATCGTCAAAACATTGACAAACGAGCAGGAAGAGGTGACAAACGCCACTGAAACAGTCGAAAGTACGGGGATTAACCGGCTATGTATGAA GGGGAGGAAACATAAAGATCTAGGCAACTGCCACACCCATAGGCATGCTTATCGGCACCCCGGCCTGCGACCTTCACCTGACCGGAATGTG GGATACCTTGATCGAGAGGGAAAACGCCATCGCTTATTGCTACCCAGGAGCCACGGTGAACGTAGAGGCTCTACGACAAAAGATTATGGAG AGCGGCGGAATAAATAAAATATCCACGGGATTCACCTACGGTTCCTCGATAAATTCAGCGGCCACCACCAGAGCCTGCATGCGCAACGGCG GCAATTCCTTTTATGCCGAGCTTAAGTGGCTCGTTTCCAAAAGCAAGGGGCAGAACTTTCCTCAGACCACACAAACACCTATAGGAATACCGAC ACCGCGGAGCACCTGATTATGTGGGGGATCCACCATCCCTCAAGTACACAGGAAAAGAACGATCTCTATGGAACCCAGAGCCTGAGTATCA GCGTGGGGTCCAGCACATATCGCAACAACTTTGTCCCAGTGGTCGGAGCCCGCCCACAGGTTAACGGCCAATCCGGTCGCATTGACTTTC ACTGGACCTTGGTGCAACCAGGGGATAATATTACCTTCAGCCACAATGGTGGACTGATTGCCCCAAGTCGTGTTTCCAAGCTGATCGGAAG AGGGTTAGGTATCCAGAGTGACGCCCCCAATTGATAATAACTGCGGAGAGCAAAATGCTTCTGGCGGGGGGGATCGATTAATACGCGTCTCCCC TTTCAGAACCTCTCCCCACGTACGGTCGGGCAGTGTCCAAAGTATGTGAACAGACGTTCACTGATGCTGGCAAACAGGGATGAGAAACGTAC CCGAGCTGATCCAGGGGAGAGGGCTGTTCGGTGCCATTGCCGGATTTCTCGAAAATGGTTGGGAGGGAATGGTGGACGGTTGGTACGGAT TCCGGCACCAGAACGCTCAGGGGACCGGCCAAGCAGCTGATTATAAATCTACCCAGGCCGCCATTGATCAGATCACCGGCGAAGTTGAACC GCCTCGTGGAGAAGACTAACACAGAGTTCGAGTCTATCGAATCAGAGTTCAGCGAGATTGGAACCAGATTGGGAACGTGATTAACTGGAC CAAGGACTCCATCACCGACATTTGGACATATCAAGCCGAGCTGCTGGTAGCCATGGAGAACCAGCACACCATAGATATGGCAGATAGTGAG ATGCTGAACCTCTATGAACGCGTGCGAAAGCAACTGCGACAAAATGCTGAGGAGGGATGGGAAGGGATGCTTTGAAATCTACCACGCGTGC GACGATTCTTGTATGGAAAGTATCCGGAATAATACTTATGATCACTCTCAGTATAGGGAGGAGGCACTACTAAATCGTCTGAATATCAACCCA GTGACCTTATCCTCCGGATACAAGGACATTATCCTGTGGTTCAGTTTTTGGCGCTTCCTGTTTCGTGGCTGTAGTGATGGGCTTATT TTTCTTCTGCCTGAAAAACGGAAATATGCGGTGCACCATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2955	ATGTATAAGATAGTCGTAATTATCGCACTCCTCGGGGCTGTTAAGGGCCTGGACAAAATCTGTCTGGGTCACCATGCAGTCGCCAACGGAA CAATAGTCAAGACTCTGACCAATGAACAGGAGAGGAGGTTACGAATGCCACGGAAACCGTGGAAAGTACAGGGATCAACCGCCTGTGTATGAA AGGGAGAAAGCATAAAGACTTGGGTAATTGCCATCCAATCGGGATGCTGATTGGAACACCCGCTTGTGACCTCCATTTGACCGGTATGTGG GACACACTGATCGAAAGAGAGAAGAATGCCATCGCGTATTGTTACCCTGGTGCCACTGTGAACGTGGAGGCACTGCGCCAGAAGATCATGGAAT CCGGCGGAATCAATAAGATCTCCACCGGATTTACCTACGGATCCAGTATAAATTCAGCCGGGACGACAAGAGCATGCATGAGAAACGGCGG CAACAGTTTTTACGCCGAGCTGAAGTGGCTTGTGTCCAAGTCTAAAGGCCAGAACTTTCCTCAGACAACCAACACCTACCGTAACACTGATA CAGCAGAGCATCTGATCATGTGGGGCATTCACCATCCATCTTCCACCCAAGAAAAGAATGATCTGTACGGAACACAGAGCCTGTCTATTAGT GTTGGATCGTCAACCTACCGGAATAACTTTGTTCCCGTAGTGGGCGCACCGCCCCCAGGTGAATGGGCAGTCAGGTCGAATTGATTTTCACT GGACCCTCGTGCAGCCTGGCGACAATATTACATTCAGTCATAACGGGGGACTGATCGCCCCAAGCCGCGTTTCTAAGCTGATTGGGAGAG GTTTGGGAATTCAGAGCGACGCACCTATCGATAACAATTGCGAATCAAAGTGCTTTTGGCGGGGGGGCAGCATAAATACCAGACTGCCCTT TCAGAACCTTAGCCCTAGGACAGTCGGGCAGTGTCCCAAATACGTCAACCGCCGGAGTCTGATGCTCGCTACAGGAATGAGAAATGTTCCA GAGCTAATCCAGGGACGAGGACTCTTCGGAGCCATCGCTGGATTTCTGGAGAATGGCTGGGAGGGGATGGTTGATGGGTGGTATGGCTTT AGACATCAGAACGCCCAGGGGACAGGTCAGGCCGCCGATTACAAGTCTACCCAGGCCGCGATTGACCAGATCACTGGCAAATTGAATAGG CTGGTTGAGAAAACTAACACTGAATTTGAGTCAATCGAGAGCGAGTTTTCTGAGATCGAACACCAGATCGGGAACGTGATTAATTGGACTAA AGACTCTATAACGGACATTTGGACCTATCAAGCCGAGTTATTAGTCGCGATGGAGAACCAGCACACAATAGATATGGCAGACTCTGAGATGC TGAACCTGTACGAGAGGGTGCGGAAGCAATTAAGGCAGAATGCCGAAGAGGATGGGAAGGGATGCTTCGAAATATACCATGCCTGCGACG ACTCGTGCATGGAGAGGCATTAGAAACAATACATACGACCATAGCCAGTATCGCGAGGAAGCACTACTGAATCGGCTGAATATCAATCCAGTC ACACTCTCTTCTGGGTACAAAGATATCATTCTGTGGTTTAGCTTCGGCGCCTCCTGCTTCGTCCTTCTGGCCGTGGTTATGGGGCTGTTTTTT TTCTGTCTTAAGAACGGAAATATGAGGTGTACCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2956	ATGTATAAGATTGTGGTGATCATTGCCCTCCTAGGCGCCGTAAAAGGGTTAGATAAAATCTGCCTGGGACACCACGCCGTGGCCAACGGCA CTATAGTCAAGACCCTCACTAACGAGCAGGAAAAAGTGACCAATGCTACGGAAACAGTGGAATCTACAGGCCTGAATCGCCTTTGCATGAAA GGCAGGAAACACAAAGACTTAGGGAATTGTCACCCCCATTGGAATGTTAATTGGGACTCCAGCTTGCGATCTGCACCTCACTGGTACATGGG ATACAATTATTGAACGGGAGAATGCCATCGCATACTGCTACCCTGGGGCGACCGTCAATGAGGAAGCTCTGCGGCAGAAGATCATGGAGTC TGGTGGCATTGATAAAATCTCCACCGGGTTCACGTATGGGTCTTCAATTAATAGCGCTGGAACGACTAGAGCTTGTATGCGCAATGGTGGAA ATTCCTTTTACGCTGAGCTTAAATGGCTCGTCTCGAAATCCAAGGGACAGAACTTTCCGCAAACTACAAACACTTATAGAAACACAGACACC GCAGAACACCTCATCATGTGGGGGATTCACCACCCTTCTAGTACCCAAGAAAAGAATGACCTCTATGGCACACAGAGCCTGTCCATCTCGG TCGGCAGCAGCACCTACCGGAACAACTTTGTGCCCGTGGTGGGCGCGGCGCCCCCAAGTTAACGGACAGTCCGGTCGGATAGATTTCCACT GGACACTGGTCCAGCCCGGGGATAACATAACGTTCTCTCACAACGGAGGGCTGATAGCTCCTTCTCGAGTGTCAAAATTGATTGGAAGGGG CTTGGGGATCCAGTCCGATGCCCCAATAGACAATAACTGCGAGTCTAAATGTTTTTTGGAGGGGCGGTTCTATAAATACCCGTCTGCCTTTTC AGAATCTTAGCCCCAGAACAGTGGGACAGTGTCCCAAGTACGTAAATAAAAGAAGTCTGATGCTTGCAACCGGCATGAGGAATGTCCCTGA GCTGATCCAGGGTCGTGTGGCTTGTTCGGTGCCATTGCGGGCTTCTTGGAAAATGGTTGGGAGGGAATGGTAGACGGATGGTATGGGTTCCG CCACCAAAATGCTCAGGGGACGGGCCAAGCTGCCGACTATAAGAGTACGCAAGCCCGCTATTGACCAGATCACTGGCAAATTGAACAGACTT GTTGAAAAAACAAATACAGAATTCGAAAGCATCGAATCAGAATTTAGCGAGATTGAGCACCAAATCGGCAACGTGATCAATTGGACAAAAGA CTCCATAACCGATATTTGGACCTACCAGGCCGAGCTGCTCGTGGCTATGGAGAACCAGCACACCATCGACATGGCTGATAGCGAGATGCTG AATCTATATGAAAGGGTTCGGAAGCAGTTGCGTCAGAATGCGGAGGAGGATGGGAAGGGTTGCTTTGAAATCTATCACGCCTGCGATGACA GCTGTATGGAGAGCATACGAAATAATACCTATGACCATTCACAGTACCGCGAGGAGGCCCTGCTCAATCGGCTGAACATCAATCCGGTGAC ACTGAGCTCTGGCTACAAGGACATCATTCTGTGGTTCTCATTCGGGGCGAGCTGCTTTGTTTTGTTAGCCGTCGTGATGGGCCTCGTTTTCT TCTGCCTGAAGAATGGGAATATGCGCTGTACAATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2957	ATGTACAAGATTGTCGTGATTATCGCTTTGCTCGGCGCCGTGAAGGGACTGGATAAAATCTGTCTGGGGCATCACGCTGTGGCTAATGGAA CAATTGTGAAGACCCTCACCAATGAGCAGGAGGAAGTGACAAACGCTACAGAGACAGTCGAGTCCACCGGAATCAACAGGCTGTGCATGAA GGGCCGGAAACATAAGGACCTCGGGAACTGCCACCCTATTGGGATGCTGATAGGCACACCTGCCTGTGACTTACACCTTACCGGGATGTG GGATACACTGATAGAACGGGAGAATGCCATAGCATACTGCTACCCAGGAGCTACGGTGAATGTGGAAGCTCTCCGCCAGAAAATTATGGAA TCAGGCGGGATTAATAAGATTTCTACGGGCTTCACTTATGGAAGTTCAATAAATTCAGCCGGAACAACCCGGGCTTGTATGAGAAATGGTGG AAATTCTTTCTACGCAGAACTCAAGTGGCTTGTTAGCAAGTCCAAGGGCCAAAACTTCCCTCAGACCACTAATACTTACAGGAATACTGACAC CGCCGAACACCTTATCATGTGGGGTATCCACCATCCATCTAGCACCCAGGAGAAAAATGATCTTTACGGTACCCAATCACTGAGCATCAGCG TGGGGAGCTCAACTTATCGCAACAATTTCGTGCCTGTGGTGGGTGCCCGACCACAGGTTAACGGACAAAGTGGACGAATTGACTTTCATTG GACCCTGGTGCAGCCTGGCGACAACATCACATTCTCGCATAATGGAGGTTTGATCGCTCCCTCCCGTGTGTCTAAGCTGATAGGGAGAGGC CTCGGTATACAGTCCGACGCTCCCATCGATAAATAATTGTGAAAGCAAGTGCTTTTGGCGAGGTGGCAGCATTAACACGCGGTTACCCTTTCA GAACCTCAGCCCACGCACAGTCGGCCAATGCCCTAAGTATGTAAACCGCCGGAGCTTGATGCTGGCAACGGGCATGAGAAACGTCCCCGA GCTAATCCAGGGCAGAGGACTGTTCGGCGCCATTGCTGGCTTTCTTGAGAACGGATGGGAGGGAATGGTGGACGGCTGGTACGGATTCCG GCACCAGAACGCCCAGGGCACCGGCCAGGCCGCCGATTATAAGTCCACCCAAGCTGCCATCGACCAGATCACCGGCAAACTGAATCGGCT TGTAGAGAAAACCAACACCGAATTCGAGTCAATCGAGTCCGAATTTAGCGAGATCGAACACCAGATCGGCAATGTGATTAACTGGACAAAG GACAGTATCACTGATATCTGGACCTACCAAGCAGAATTACTGGTCGCTATGGAAAATCAGCCACACCATTGATATGGCCGACAGCGAGATGCT CAACCTATATGAACGCGTCCGCAAGCAGCTGCGTCAGAACGCAGAGGAAGATGGAAAAGGCTGCTTCGAGATCTACCATGCTTGCGATGAC TCTTGTATGGAGTCCATCCGCAATAACACATACGACCACTCCCAGTACAGGGAGGACGCGCTTTTGAACAGACTGAATATAAATCCTGTTAC TCTTTCATCGGGGTATAAAGACATCATCCTGTGGTTCTCCTTCGGCGCCTCCTGTTTCGTCCTGCTGGCGGTAGTTATGGGCCTATTTTTTTT TTGTCTGAAGAATGGGAACATGCGCTGTACAATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2958	ATGTACAAAATTGTTGTCATCATTGCTCTGCTGGGGCTGTGAAAGGACTGGACAAAATCTGCTTAGGCCATCACGCTGTAGCCAATGGTAC CATTGTGAAGACACTGACCAATGAACAGGAAAAAGTAACAAATGCTACCGAGACGGTCGAGTCCACAGGGCTGAACCGATTGTGCATGAAG GGACGCAAGCACAAGGATCTGGGAAATTGCCACCCGATTGGTATGCTGATTGGGACTCCAGCCTGCGATCTGCATCTGACCGGGACTTGG GATACTATCATAGAACGGGAGAACGCCATCGCCTACTGCTACCCAGGTGCCACTGTAAACGAGGAAGCCTTGCGCCAGAAAATTATGGAGT CAGGTGGGATTGACAAGATTTCCACTGGGTTCACTTATGGGAGCAGTATTAACTCAGCTGGCACAACCCGTGCTTGTATGCGGAACGGAGG AAACTCATTCTACGCAGAGCTGAAATGGCTGGTTAGCAAAAGCAAGGGCCAGAATTTCCCACAGACAACCAATACATATCGGAACACTGATA CCGCAGAGCACCTGATTATGTGGGCATTCACCACCCATCCTCCACGCAAGAGAAGAATGATCTGTATGGAACTCAGAGCCTGTCAATCTC CGTGGGATCTAGCACATATAGAAATAATTTTGTGCCTGTGGTCGGCGCGCGACCACAGGTTAATGGACAATCAGGACGCATTGATTTCCACT GGACCTTGGTTCAGCCCGGGGACAATATAACATTCAGCCACAACGGTGGCCTGATCGCCCCCTCGCGGGTGAGTAAGCTGATTGGCAGAG GACTCGGTATTCAGAGCGATGCCCCTATTGATAATAACTGCGAAAGCAAATGTTTTTTGGAGAGGCGGGTCGATCAACACCAGATTACCCTTT CAGAATCTCTCCTAGAACCGTTGGTCAGTGCCCGAAATATGTCAACAAGCGTAGTTTGATGCTAGCCACTGGAATGCGCAACGTACCAGA ACTCATCCAGGGAAGGGGTTTGTTCGGAGCGATTGCAGGTTTCCTGGAAAATGGGTGGGAGGGAATGGTGGACGGGTGGTATGGGTTTCG CCATCAGAACGCACAGGGAACAGGTCAGGCAGCCGACTATAAGTCTACACAAGCCGCCATAGATCAGATCACGGGAAAGCTAAACCGCTT GGTGGAGAAGACAAATACCGAGTTCGAGTCTATAGAGAGTGAGTTTTCCGAGATAGAACATCAAATCGGTAATGTGATCAACTGGACTAAAG ACTCGATAACAGACATCTGGACCTACCAGGCGGAACTGCTCGTCGCCATGGAGAACCAGCACACTATCGATATGGCTGATTCAGAAATGCT GAACCTGTATGAACGCGTACGGAAACAGCTGCGCCAGAATGCAGAGGAGGATGGGAAAGGCTGTTTTGAAATCTACCACGCCTGCGACGA TAGCTGCATGGAAAGCATCCGCAATAACACATATGACCACTCTCAGTATCGCGAGGAAGCTCTTCTGAACCGTCTCAACATCAATCCAGTGA CGTTGTCATCTGGATACAAAGACATCATATTATGGTTTTCCTTCGGCGCAAGTTGCTTCGTGCTCCTGGCAGTTGTCATGGGCCTGGTCTTC TTCTGTCTCAAGAATGGGAATATGAGATGCACGATCTGTATC

Seq ID No.	Sequenza di acido nucleico
2959	ATGTACAAGATTGTTGTGATCATCGCTCTGCTCGGTGCCGTCAAAGGGTTGGATAAGATTTGCCTCGGCCACCATGCAGTAGCCAACGGCA CAATTGTGAAAACTCTCACCAACGAGCAGGAAGAGGTCACCAATGCCACCCGAAACAGTCGAGTCAACTGGCATTAATCGATTATGTATGAAA GGAAGAAAGCATAAAGACTTGGGAAACTGTCATCCTATCGGGATGCTCATCGGAACACCAGCATGTGACCTCCATTTAACCGGAATGTGGG ACACATTAATCGAGCGTGAGAACGCAATTGCCTATTGCTACCCTGGCGCAACAGTTAACGTCGAAGCTTTGAGACAGAAGATTATGGAGTCA GGAGGCATCAATAAAATCTCGACCGGGTTTACCTACGGCTCCTCCATCAACTCGGCTGGCACAACCAGAGCCTGCATGCGTAACGGAGGC AATAGTTTCTACGCTGAGCTTAAGTGGCTGGTAAGTAAATCAAAAGGTCAAAATTTCCCACAGACTACGAATACTTACAGAAATACAGACACA GCCGAACACCTTATCATGTGGGGATCCACCACCCTAGCAGTACTCAGGAAAAAAACGATCTGTACGGCACCCAGAGCCTGTCGATCTCTG TGGGAAGTTCAACTTACCGAAATAATTTCGTCCCTGTCGTTGGTGCAAGGCCTCAGGTCAATGGCCAGTCAGGACGCATCGATTTCCATTGG ACTCTGGTGCAACCGGGCGACAACATTACCTTTTCACATAATGGCGGCCTTATCGCCCCCTCCCGAGTGAGTAAGCTGATCGGTCGGGGAT TGGGAATCCAGTCTGATGCACCCATTGATAATAACTGTGAATCTAAATGTTTCTGGAGAGGAGGTTCCATTAATACACGGCTGCCCTTTCAG AACCTGTCCCCTCGAACCGTCGGACAGTGCCCCAAGTACGTGAACAGGAGAAGTCTCATGCTGGCGACAGGGATGAGAAACGTTCCCGAA CTGATTCAGGGACGGGGCTTATTCGGGGCTATTGCAGGCTTTCTGGAAAACGGCTGGGAGGGGATGGTGGACGGCTGGTACGGATTCAG GCATCAGAACGCACAGGGCACCGGCCAAGCAGCCGACTACAAGAGCACTCAGGCAGCCATCGACCAGATTACAGGAAAACTTAATAGGCT TGTGGAGAAAACCAATACCGAATTCGAGTCAATTGAATCCGAGTTTAGCGAGATCGAACATCAAATCGGCAACGTGATTAACTGGACAAAGG ACTCCATCACGGACATATGGACTTACCAGGCCGAACTGTTGGTGGCCATGGAAAATCAACATACAATTGATATGGCAGACAGTGAGATGCT GAACCTGTACGAGAGGGTCAGAAAGCAGCTACGTCAGAACGCTGAAGAGGACGGGAAGGGCTGTTTCGAAATTTATCACGCCTGTGACGA CTCCTGCATGGAATCTATCCGCAATAATACTTATGACCACAGTCAGTATCGCGAAGAGGCCCTCTTAAACAGATTAAACATCAATCCGGTGA CTCTTAGCAGTGGCTACAAGGACATTATTTTATGGTTTTCGTTCGGAGCTAGCTGTTTCGTCCTCCTCGCCGTGGTGATGGGTCTGTTCTTCT TTTGCCTCAAGAATGGAAATATGAGATGTACAATCTGTATA

Seq ID No.	Sequenza di acido nucleico
2960	ATGTATAAGATAGTCGTGATCATTGCGCTTCTGGGAGCAGTAAAGGGTCTTGACAAGATTTGTCTGGGCCACCATGCTGTGGCCAACGGGA CTATTGTTAAGACTCTGACTAATGAACAGGAAGAAGTTACAAACGCTACTGAGACGGTGGAGAGCACTGGCATAAATAGATTGTGTATGAAA GGGAGGAAACACAAAGACTTGGGTAATTGCCACCCGATTGGGATGCTAATTGGGACTCCCGCTTGTGACCTGCACCTTACTGGCATGTGGG ATACCCTAATAGAACGTGAGAACGCCATTGCCTATTGTTACCCAGGCGCTACTGTCAATGTGGAGGCACTTAGGCAGAAGATCATGGAAAG CGGCGGCATCAACAAGATCTCCACCGGATTTACCTATGGTTCAAGTATCAACAGTGCCGGTACCACCCGCGCTTGTATGCGCAACGGAGGA AACAGTTTTTATGCTGAGCTCAAATGGCTAGTAAGTAAGTCTAAGGGACAAAATTTCCCTCAGACCACCAACACTTATCGTAACACAGACACC GCAGAGCATCTCATTATGTGGGGATACACCATCCCAGCAGCACACAGGAGAAGAACGATCTGTATGGCACCCAATCGCTCTCCATCTCAG TGGGTTCTTCTACCTATAGAAATAACTTCGTGCCTGTCGTGGGCGCACGGCACAGGTGAACGGGCAGAGTGGCAGAATCGATTTTCATTG GACGCTGGTCCAGCCCGGCGATAACATTACCTTCTCACACAATGGGGGATTGATCGCCCCTTCTAGGGTATCAAAATTGATCGGCAGGGGA CTTGGGATCCAAAGCGATGCCCCTATTGACAACAACTGCGAAATCGAAATGCTTCTGGCGGGGGCGGCAGCATTAATACACGGCTGCCCTTCC AAAATTTATCCCCCAAGAACAGTTGGCCAGTGCCCTAAATACGTCAACCGTCGCAGCCTTATGTTAGCCACAGGAATGCGGAACGTCCCGGA GCTTATTCAGGGCAGGGGCCTGTTCGGCGCAATCGCGGGCTTTCTGGAAAATGGTTGGGAAGGGATGGTTGACGGCTGGTACGGGTTCAG GCACCAGAATGCCCCAGGGAACAGGTCAGGCCGCTGACTATAAGTCAACACACAAGCAGCCATCGACCAAATTACCGGCAAGCTGAATAGACTT GTGGAAAAAACGAATACAGAATTCGAGAGTATTGAAAGTGAATTTAGTGAGATTGAACACCAAATTGGCAATGTCATTAACTGGACGAAAGAT TCAATCACCGACATCTGGACCTATCAGGCTGAACTCTTGGTCGCAATGGAAAACCAACATACCATCGACATGGCTGATTCTGAGATGCTCAA CTTATACGAGCGAGTTCGAAAGCAACTGCGGCAGAATGCCGAGGAGGATGGGAAGGGGTGTTTCGAAATTTATCATGCCTGCGACGACAG TTGTATGGAGAGCATCCGTAATAATACTTATGACCATAGTCAATACAGAGAGGAGGCTCTTCTGAACAGGCTGAACATCAACCCTGTGACCT TAAGCTCCGGATACAAGGACATTATCTTGTGGTTCAGTTTTGGAGCCTCATGTTTCGTTCTGTTGGCAGTTGTGATGGGCCTCTTCTTCTCT GCCTGAAAAACGGAAACATGCGTTGCACTATATGCATC

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Seq ID No.	Sequenza di acido nucleico
2961	ATGTACAAGATTGTGGTCATCATTGCCCTGCTTGGGGCCGTCAAGGGCCTGGACAAAATTTGCTTGGGGCACCATGCCGTGGTTAATGGCA CCATCGTCAAAACCCCTTACGAACGAACAAGAAGMGGTCACCAACGCCACTGAGACAGTTGAAAGTACAGGCCTCAATCGATTGTGCATGAA AGGTAGGAATCACAAAGATCTGGGGAACTGTCACCCCATAGGGATGCTGATTGGCACACCAGCCTGTGATCTGCATTTGACAGGGACCTGG GATACTCTAATTGAGAGAGAGAACGCTATTGCCTACTGCTACCCCGGCGCCACAGTTAACGAAGAGGCTCTGCGGCAGAAAATAATGGAAT CCGGTGGTATTAACAAGATTAGTACAGGGTTTACATACGGATCGTCTATTAATTCAGCTGGTACAACTCGGGCTTGCATGAGGAACGGTGGC AACTCATTCTATGCAGAACTGAAGTGGTTGGTAAGTAAGTCGAAAGGTCAAAATTTTCCCCAGACAACAAATACATATCGCAATACCGACACC GCGGAACATTTGATCATGTGGGGCATCCACCATCCATCAAGTACACAGGAGAAGAAATGACCTTTACGGTACTCAGAGTCTGAGCATTTCAGT TGGATCCAGTACATACCAAAATAACTTCGTTCCTGTCGTCGGAGCCCCGCCCGGCAGGTAAATGGTCAGTCCGGGCGCATTGACTTTCATTGG ACCCCTCGTGCAGCCCGGCGATAACATAACCTTCTCACACAATGGAGGACTGATCGCACCCAGCAGAGTGAGCAAACTTATCGGGAGAGGT CTGGGGATCCAAAGTGACGCCCCCATTGATAACAACTGTGAGTCCAAATGTTTCTGGCGAGGGGGTTCAATTAACACCCGCTTGCCTTTCC AAAACCTGAGCCCTCGGACGGTGGGCCAGTGTCCAAAGTATGTGAATAAACGGTCTCTGATGTTTAGCTACTGGCATGAGAAACGTTCCTGA GTTGATGCAGGGAAGGGGTCTCTTCGGCGCAATCGCTGGCTTTATTGAGAACGGGTGGGAGGGAATGGTGGACGGCTGGTATGGTTTTAG GCATCAGAATGCCCAGGGCACCGGACAGGCGGCTGATTATAAATCAACTCAAGCCGCCATCGACCAAATCACCGGGAAACTAAACCGTCTG ATCGAAAAAACCAATACTGAGTTCGAGTCTATCGAGAGCGAGTTTAGTGAAATCGAACACCAGATTGGAACGTGATCAATTGGACAAAAGA TAGCATTACCGATATTTGGACCTACCAGGCCGAATTGCTGGTGGCGATGGAAAATCAGCACACAATCGACATGGCAGACTCGGAGATGTTG AATCTGTATGAGAGAGTGACGGAAGCAGCTGCGCCAGAATGCCGAAGAGGATGGAAAGGGATGCTTCGAGATCTACCATGCATGTGACGAC TCCTGTATGGAAAGCATCAGAAATAATACATACGATCACTCTCAATATCGAGAGGAGGCGCTTCTTAAATGTTTAAATATCAATCCCGTCACA CTGTCCTCTGGTTATAAGGACATAATTTTGTGGTTCTCGTTCGGTGCCAGTTGTTTCGTCCTGCTAGCGGTCGTGATGGGCCTGGTGTTTTT TTGCCTTAAAAACGGGAACATGCGGTGCACCATCTGCATC

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Seq ID No.	Sequenza di acido nucleico
2962	ATGTACAAGATTGTCGTCATTATCGCGCTGTTGGGGGCCGTCAAGGGACTGGATAAGATTTGTCTGGGCCATCACGCCGTGGCCAACGGCA CAATCGTCAAGACTCTGACCAACGAACAGGAAGAGGTCACCAACGCCACAGAAACCGTGGAGAGTACGGGTATTAACCGCCTCTGCATGAA GGGTCGGAAGCATAAGGACCTCGGTAACTGTCATCCAATCGGCATGTTGATTGGCACACCCGCCTGCGACCTGCACCTGACTGGCATGTG GGACACACTGATTGAAAGGGAAAACGCAATCGCGTACTGTTACCCAGGTGCAACGGTGAACGTTGAAGCACTGAGGCAGAAGATCATGGA GAGCGGGGGCATCAACAAAATTAGCACGGGCTTCACATACGGTAGCAGTATCAACAGCGCTGGCACCACACGGGCCTGCATGCGGAATGG AGGGAACAGTTTCTACGCTGAACTGAAGTGGTTAGTGAGCAAATCTAAGGGTCAGAATTTCCCCCAAACCACTAATACCTACCGCAACACTG ACACCGCCGAGCACTTAATAATGTGGGGCATCCATCATCCTTCAAGCACGCAGGAGAAGAACGACCTGTACGGCACCCAGTCTCTGAGTAT CTCGGTGGGTTCGTCCACCTATAGAAACAATTTTGTGCCAGTGGTGGGGGCCAGGCCACAGGTCAATGGACAATCGGGACGTATCGACTTT CATTGGACCCTCGTGCAGCCTGGTGATAACATTACATTCAGCCATAATGGGGGCCTCATCGCCCCCAGTAGGGTCTCCAAGCTCATTGGGA GAGGACTCGGAATCCAGAGTGATGCACCTATTGACAACAACTGTGAGAGCAAATGTTTTTTGGAGAGGCCGGGTCTATTAACACTCGATTGCCT TTCCAAAATCTCTCACCTAGGACCGTCGGTCAGTGTCCTAAGTACGTGAATAGGAGAAGCCTCATGCTCGCGACAGGCATGAGAAACGTGC CCGAACTGATCCAGGGCAGGGGACTCTTCGGGGCTATCGCAGGATTCTTAGAGAATGGGTGGGAAGGAATGGTGGATGGATGGTATGGCT TTAGGCATCAGAACGCTCAGGGCACTGGCCAAGCTGCGGACTACAAGAGCACTCAGGCCGCAATAGACCAGATTACCGGCAAGTTGAATC GCCTAGTTGAAAAGACTAATACAGAGTTTGAGAGCATTGAAAGCGAGTTTAGCGAAATTGAACATCAGATCGGCAATGTTATAAACTGGACA AAGGACTCCATAACTGATATATGGACTTACCAGGCAGAGCTACTAGTCGCCATGGAGAACCAGCATACTATCGACATGGCCGACTCAGAGA TGCTGAACCTATACGAAAGAGTTCGGAAGCAGTTAAGACAAAACGCCCGAGGAGGACGGAAAGGGTTGCTTCGAAATCTACCACGCATGTGA CGACTCATGCATGGAATCTATCAGGAATAACACATACGATCATTCACAGTATAGGGAGGAGGCTTTGCTGAATCGGCCTCAATATCAATCCCG TCACTTTATCTAGCGGCTACAAGGACATTATCTTGTGGTTCAGTTTTTGGTGCCTCTTGCTTTGTGCTCCTGGCAGTGGTGATGGGACTCTTTT TTTTCTGTTTGAAGAACGGTAAATATGCGTTGTACAATTTGCATC

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Seq ID No.	Sequenza di acido nucleico
2963	ATGTACAAGATTGTGGTGATCATCGCACTGCTGGGTGCTGTGAAAGGCCTGGACAAAATATGTTTGGGTCACCACGCCGTGGCAAATGGCA CCATAGTCAAAACCCTCACCAACGAACAAGAGGAAGTGACGAATGCGACTGAAACAGTGGAGTCGACCGGCATCAACCGTCTGTGTATGAA AGGCAGAAAACATAAGGATCTCGGCAATTGCCATCCCATTGGAATGTTAATAGGGACGCCTGCGTGCGATTTGCATCTGACTGGGATGTGG GATACCCTAATAGAGCGGGGAGAAGCGCCATAGCCTATTGCTACCCAGGAGCTACCGTCAATGTGGAAGCCCTACGGCAGAAAAATTATGGAAA GCGGTGGTATCAATAAGATTTCCACCGGATTTACATACGGGTCCTCCATCAATTCAGCCGGGACGACTCGTGCTTGCATGCGCAACGGAGG TAACTCGTTCTATGCCGAACTCAAATGGCTGGTGAGCAAGTCTAAGGGACAGAATTTTCCACAAACAACCAACACCTACCGTAATACCGATA CCGCTGAACACCTTATCATGTGGGGCATTCACCACCCTTCCAGCACACAGGAGAAAAACGACTTGTACGGCACACAGTCCCTCAGTATTTC CGTTGGTAGCTCTACTTACAGAAACAATTTTGTTCCCGTCGTCGGTGCCCGTCCTCAAGTCAACGGACAGTCCGGCAGAATTGACTTTCATT GGACGTTAGTGCAGCCTGGGGACAACATTACCTTCAGCCACAATGGGGGTCTGATTGCGCCGTCCCGCGTTAGCAAGCTGATAGGCCGAG GGCTGGGCATTCAGAGCGATGCACCCATCGACAATAATTGCGAATCCAAATGCTTTTGGCGGGGTGGGAGTATTAATACTCGCCTCCCCTT TCAAAATCTCTCACCACGCACTGTTGGGCAGTGTCCCAAATACGTGAATCGGCGTAGCTTAATGCTGGCTACAGGGATGAGGAACGTGCCC GAACTGATTCAAGGCCGTGGTCTTTTTGGAGCCATTGCCGGCTTTTTAGAGAATGGCTGGGAGGGCATGGTTGACGGTTGGTATGGGTTTA GGCACCAGAACGCCCAGGGCACTGGACAGGCGATTATAAGTCCACACAGGCCGCTATTGATCAGATTACTGGAAAATTGAATAGACT CGTGGAGAAAACTAACACCGAGTTCGAGTCTATTGAGTCAGAATTTTCTGAGATTGAGCACCAGATCGGTAATGTTATCAATTGGACAAAGG ACAGCATCACTGACATTTGGACGTACCAGGCCGAGCTGCTGGTGGCAATGGAGAACCAGCACACCATCGACATGGCGGACTCAGAGATGC TGAACCTATATGAAAGGGTGCGTAAACAGCTTAGGCAAAATGCTGAGGAGGACGGCAAAGGATGTTTCGAGATTTATCATGCCTGCGATGA CTCCTGCATGGAATCAATTCGCAATAATACTTATGACCATTCACAGTATCGCGAAGAAGCGCTTCTGAATCGGCTAAATATTAACCCCGTAAC TCTGTCTTCTGGATACAAGGATATTATCCTGTGGTTTAGTTTTGGAGCTTCATGTTTCGTATTGTTGGCCGTGGTGATGGGGCTGTTCTTTTT CTGTCTTAAGAACGGCAACATGAGGTGTACAATTTGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2964	ATGTACAAGATCGTCGTGATCATTGCCCTGCTCGGGGCCGTGAAGGGCCTTGACAAGATTTGTCTAGGCCACCATGCAGTTGCTAACGGAA CTATTGTCAAGACATTGACCAACGAACAGGAGGAAGTGACAAATGCCACAGAGACAGTTGAGTCTACTGGGATAAACAGATTGTGTATGAAA GGCAGGAAACACAAAGATCTCGGAAATTGTCATCCTATCGGAATGCTGATAGGAACTCCCGCTTGCGATTTGCATTTGACAGGAATGTGGG ACACACTGATCGAACGAGAAAACGCCATCGCGTACTGCTACCCCGGTGCCACTGTGAACGTGGAGGCCCTTCGGCAAAAGATCATGGAAT CAGGAGGAATCAATAAGATCTCTACCGGGTTCACTTATGGCAGCTCTATCAACTCCGCCGGTACTACTAGGGCCTGCATGAGAAATGGGGG AAATAGCTTCTACGCAGAACTGAAGTGGCTGGTGAGCAAGTCGAAGGGGCAGAACTTCCCTCAGACTACGAATACCTATCGCAATACCGAT ACTGCTGAGCATTTGATTATGTGGGGCATCCATCATCCGTCGTCGACGCAAGAGAAAAATGACCTTTATGGCACACAGTCCTTGTCTATTTC TGTAGGGTCTTCTACCTATCGCAATAACTTTGTGCCTGTTGTCGGCGCCAGGCCACAGGTAAATGGACAGTCTGGCAGAATTGATTTCCACT GGACGCTCGTACAGCCTGGGGATAATATTACATTCTCACACAACGGCGGGACTTATCGCCCCGAGCCGTGTCTCAAAGCTGATTGGAAGGGG ACTCGGCATTCAGTCCGATGCGCCCATTGACAACAATTGCGAGAGCAAGTGTTTTTGGCGCGGTGGATCCATCAATACCCGCCTTCCTTTTC AGAATTTATCACCACGTACCGTCGGCCAGTGTCCCAAATATGTGAATCGAAGATCTCTGATGCTGGCCACAGGCATGCGGAACGTCCCTGA GCTGATCCAGGGAAGGGGGCTTTTCGGAGCGATTGCCGGGTTTCTGGAAAATGGATGGGAAGGAATGGTGGACGGCTGGTACGGCTTCA GACATCAGAATGCCCAGGGAACCGGGCAGGCTGCGGATTACAAATCTACCCAAGCTGCTATCGGACCAGATCACAGGTAAGCTGAATCGGC TCGTGGAGAAAACTAACACTGAATTTGAGTCCATAGAAAGCGAATTTAGTGAAATCGAACACCCAAATCGGAAATGTGATTAACTGGACAAAA GATAGCATTACCGATATCTGGACCTACCAAGCTGAATTGCTGGTCGCCATGGAGAACCAACACACTATTGACATGGCAGACTCCGAAATGCT AAATTTGTACGAGCGCGTCCGCAAACAGTTGCGGCAAAACGCAGAAGAAGATGGAAAGGGCTGCTTTGAGATCTACCACGCCTGTGACGAT TCCTGCATGGAATCGATACGAAACAATACTTATGACCATAGCCAGTATCGTGAAGAAGCTCTGCTAAATCGCCTCAACATTAACCCTGTGAC ATTGAGCAGTGGGTACAAGGATATTATTCTCTGGTTTTCTTTCGGTGCCTCGTGCTTTGTTCTGCTGGCGGTGGTGATGGGACTCTTCTTCTT CTGCCTCAAAAATGGGAATATGCGGTGTACAATCTGTATC

Seq ID No.	Sequenza di acido nucleico
2965	ATGTACAAGATCGTCGTTATCATTGCCCTGCTGGGAGCAGTAAAAGGACTGGACAAAATTTGCTTAGGCCATCACGCGGTGGCAAATGGGA CCATCGTAAAGGACACTGACCAACGAGCAGGAGGAGGTGACAAACGCTACAGAAACAGTAGAATCGACCGGGATCAACAGGCTCTGTATGAA GGGCCGGAAACATAAGGATCTGGGGAATTGCCATCCTATCGGAATGCTCATTGGTACGCCTGCTTGTGACCTCCACCTCACTGGAATGTGG GACACACTCATCGAGCGCGAGAACGCAATAGCATATTGTTATCCGGGCGCAACTGTCAACGTTGAGGCACTGAGGCAGAAGATTATGGAGA GTGGGGGCATCAACAAGATATCAACAGGCTTTACATATGGATCGAGCATCAATTCAGCAGGGACGACCCGGGCGTGCATGAGGAATGGAG GGAATAGCTTTTACGCCGAATTGAAATGGCTCGTGTCTAAGAGCAAAGGCCAAAATTTTCCACAGACAACTAATACCTATCGCAACACCGAT ACGGCCGAACATCTAATCATGTGGGGAATTCACCACCCAAGTTCGACCCAGGAAAAGAACGATCTCTACGGCACCCAGAGTCTGAGCATCT CGGTGGGATCCTCGACGTACCGGAACAATTTTCGTCGTGCCTGTCGTGGGAGCGCGGACCGCAGGTTAATGGGCAATCCGGGAGGATCGATTTTC ACTGGACGCTAGTCCAACCCGGGGACAACATCACTTTCAGCCACAACGGTGGACTTATTGCTCCTTCCCGAGTCAGTAAACTCATCGGCCG GGGACTTGGGATTCAAAGCGATGCACCAATAGATAATAACTGTGAGTCTAAGTGCTTCTGGCGGGGAGGTAGTATTAACACACGACTCCCA TTTCAGAACCTGTCCCCAAGGACCGTGGGTCAGTGCCCTAAGTACGTGAACAGACGAAGCCTGATGTTGGCAACCGGAATGAGAAACGTCC CCGAGCTGATCCAGGGGAGGGGACTGTTTGGGGCAATAGCGGGATTTCTGGAGAACGGATGGGAAGGGATGGTTGACGGATGGTACGGG TTTAGGCACCAGAACGCCCAAGGGACTGGACAGGCTGCAGATTATAAAAGTACACAAGCGGCCATCGATCAGATCACCGGTAAACTGAATA GACTTGTCGAGAAAACCAATACAGAGTTCGAGTCGATAGAATCGGAATTCAGCGAGATCGAACACCAGATCGGCAATGTGATCAATTGGACT AAAGACAGCATCACCGATATCTGGACCTATCAAGCTGAGCTCCTAGTAGCTATGGAGAATCAACACACACAATAGACATGGCTGACTCGGAAAT GTTGAACCTGTATGAACGTGTCCGCAAGCAGCTGAGGCAGAACGCCGAGGAGGACGGTAAGGGATGCTTCGAGATCTACCATGCTTGTGA CGATTCTTGTATGGAAAGTATCAGAAACAACACCTACGACCATAGCCAGTACAGGGAAGAGGCCCTGCTGAATAGACTGAATATCAACCCAG TGACCCTCAGCTCTGGGTATAAAGATATCATTCTGTGGTTCTCATTCGGTGCATCGTGCTTCGTACTGCTGGCCGTTGTCATGGGACTCTTT TTCTTTTGTCTTAAAAATGGCAATATGCGATGCACAATTTGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2966	ATGTATAAAATAGTTGTCATCATCGCCCTCCTAGGTGCAGTTAAGGGGCTCGACAAAATTTGTTTAGGCCACCACGCCGTGGCAAACGGCAC CATCGTCAAGACCCTTACTAATGAACAAGAGGAGGTGACTAATGCTACAGAGACCGTGGAGTCTACCGGCATAAATCGACTATGTATGAAAG GCCGAAAGCACAAAGATTTGGGGAACTGTCATCCTATCGGAATGCTGATTGGAACCCCAGCCTGCGATCTGCACCTCACCCGGCATGTGGGA TACCCTGATCGAACGTGAAAATGCTATCGCATACTGTTACCCTGGAGCCACAGTCAACGTTGAGGCATTGAGGCAAAAGATCATGGAGAGC GGTGGAATCAATAAGATCTCAACAGCGGTTTACCTACGGCAGCTCTATAAACTCCGCTGGCACAACAAGAGCCTGTATGCGCAATGGGGGAA ATTCCTTTTATGCCGAACTGAAATGGCTTGTATCAAAGAGCAAGGGCCAGAACTTCCCCCAAACGACTAATACTTATCGCAACACAGATACA GCTGAGCACCTGATAATGTGGGGTATCCACCATCCATCATCAACGCAAGAAAAGAACGATCTGTACGGGACTCAAAGCCTGTCTATCTCCGT CGGCAGCAGCACATATAGGAATAACTTTGTGCCCGTCGTCGGCGCTAGACCGCAGGTTAACGGACAGAGTGGCCGGATAGACTTCCACTG GACTCTGGTCCAGCCTGGCGATAACATCACCTTCAGCCACAATGGCGGTTTGATAGCACACCCTCTCGTGTGTCTAAGCTGATCGGAAGAGGC CTCGGGATTCAGTCCGACGCCCCGATCGACAATAACTGCGAGAGTAAATGTTTTTGGAGAGGAGGATCCATTAACACCCGGCTGCCGTTCC AGAATTTGAGCCCTAGGACAGTGGGGCAGTGTCCCAAATATGTCAACCGCCGAAGTCTGATGCTAGCGACTGGCATGAGGAACGTTCCCG AGCTCATCCAGGGACGCGGGCTGTTTGGCGCCATTGCCGGTTTTCTGGAAAACGGATGGGAAGGTATGGTAGATGGCTGGTATGGATTTC GCCACCAGAACGCGCAGGGCACTGGGCAGGCGGCGGATTACAAGTCCACACAGGCAGCGATTGATCAGATCACCGGCAAACTGAATCGC CTGGTGGAGAAAACAAATACAGAGTTTGAGTCCATCGAAAGCGAGTTTAGCGAAATTGAGCATCAAATTGGCAACGTCATTAATTGGACAAA AGACAGCATTACCGATATCTGGACATACCAGGCGCGGAGCTACTGGTCGCAATGGAGAACCAGCATACCATCGATATGGCCGACAGTGAAATG CTGAACCTCTATGAGAGAGTGCGAAAGCAGTTAAGACAGAATGCGGAAGAGGATGGGAAAGGTTGTTTTGAGATCTATCACGCCTGTGACG ACTCTTGCATGGAAAGCATTCGAAATAATACCTACGACCATAGTCAGTATCGAGAAGAGGCTCTGTTAAACCGATTAAATATTAACCCGGTAA CTTTGTCGAGTGGGTACAAGGATATTATCCTTTGGTTTTCCTTCGGGGCATCCTGTTTTTGTGTTGCTGGCTGTGGTAATGGGACTGTTCTTTT TTTGCTTAAAGAACGGTAATATGAGATGCACAATCTGTATA

Seq ID No.	Sequenza di acido nucleico
2967	ATGTATAAAGTAGTTGTGATCATCGCTTTACTGGGCGCAGTCAAAGGTTTGGACAAGATTTGTCTGGGTCACCATGCCGTTGCCAATGGGAC CATAGTTAAAACCTTAACAAATGAGCAGGAAGAGGTCACAAACGCTACAGAGACTGTGGAGTCCACTGGGATAAACAGACTGTGTATGAAA GGACGCAAGCACAAGGACCTCGGAAAATTGTCACCCAATTGGAATGCTGATTGGCACTCCTGCCTGCGATTTACATCTAACCGGCACATGGG ACACCCTGATCGAGCGGGAGAACGCGATCGCCTACTGCTACCCCGGAGCCACCGTCAACGTAGAGGCATTACGGCAGAAGATCATGGAGA GTGGAGGCATAGATAAGATCTCCACCGGATTCACCTATGGTTCTAGCATTAACTCCGCAGGTACAACAAGAGCTTGCATGCGAAATGGAGG GAATAGCTTTTACGCTGAGCTCAAATGGCTTGTGAGCAAAAACAAGGGACAGAATTTTCCCCAGACCACTAATACTTATAGAAACACTGACA CCGCTGAGCACTTAATCATGTGGGGAATCCACCACCCCTCCAGTATCCAAGAAAAGAACGACCTGTATGGAACACAGAGCTTAAGTATCAG CGTGGGGTCATCTACCTACCGGAACAACTTCGTTCCTGTGGTTGGGGCTAGACCACACAGGTGAATGGTCAGAGCGGCAGAATCGATTTCCAC TGGACCCTCGTCCAGCCAGGAGACAACATCACCTTCAGCCATAATGGCGGCCTGATTGCCCCTTCTAGGGTTTCCAAATTGATTGGACGCG GCCTCGGGATTCAATCAGACGCTCCCATTGATAAATAATTGTGAGAGCAAATGCTTCTGGAGGGGAGGATCCATTAACACCCGATTGCCATTC CAGAATTTATCCCCACGGACCGTGGGCCAGTGCCCTAAATACGTGAATAGGCGATCCCTGATGTTGGCAACAGGCATGAGAAACGTCCCTG AGCTGATCCAAGGGCGCGGACTATTTGGAGCAATAGCCGGCTTCTTAGAGAACGGATGGTGGAAGGAATGGTTGGTACGGTTTCC GACACCAGAACGCCCAAGGAACTGGACAGGCTGCCGATTACAAATCTACTCAGGCCGCTATAGATCAGATTACAGGAAAACTGAATAGGCT GGTTGAGAAGACGAATACGGAATTTGAATCCATTGAGAGTGAATTCAGTGAGATCGAACACCAGATTGGCAATGTGATTAACTGGACAATGG ACTCCATCACTGATATTTGGACTTACCAGGCCGAGCTGCTTGTAGCGATGGCAGAATCAACATACTATCGACATGGCAGACTCCGAGATGCTG AACCTGTATGAAAGAGTGCGCAAGCAGCTGAGACAGAACGCCGAAGAAGACGGCAAAGGCTGTTTTGAAATTTACCATGCCTGCGACGACT CCTGTATGGAGTCCATTCGCAACAATACATACGATCACACAGCCAGTACAGGGAGGAAGCGTTGCTGAACAGGTTGAACATAAATCCCGTGAC ACTTAGCTCTGGTTACAAGCATATTATACTCTGGTTTTCCTTTGGAGCTTCTTGCTTCGTGCTGCTCGCAGTCGTGATGGGTCTGGTTTTTTT TTGCCTCAAGAATGGCAACATGCGTTGCACTATATGTATC

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2968	ATGTACAAGATCATCGTCATCATCATCGCTCTCCTCGGTGCGGTGAAGGGTCTGGATAAGATTTGCTTGGGTCACCACGCTGTTGCCAATGGCA CGATTGTAAAGACCCTGACTAACGAGCAAGAAGAAGTTACTAATGCCACACAGAAACCGTGGAGTCTACCGGCATTAACAGATTATGCATGAAA GGTCGGAAACATAAAGATTTGGGGAATTGCCACACCCTATAGGGATGCTCATCGGGACTCCTGCGTGCGACCTCCACCTTACCGGAACCTGG GACACTCTGATTGAGCGCGAAAATGCAATTGCCTATTGTTATCCCGGGGCAACAGTGAACGTCGAGGCCTTGCGGCAGAAGATAATGGAAT CCGGCGGAATCGACAAGATTAGCACCGGCTTCACCTACGGCTCCTCTATTAATTCTGCTGGAACAACTAGGGCTTGCATGAGAAACGGCGG CAACTCATTCTACGCCGAGCTCAAGTGGCTTGTGTCTAAGTCTAAAGGACAAAATTTCCCACAGACCACCAATACGTATCGCAATACAGACA CTGCGGAACATCTAATCATGTGGGGCATCCATCACCCGAGTAGTACCCAGGAAAAGAACGACCTCTACGGCACTCAATCACTGTCCATCAG CGTTGGCTCTAGCACATACCGGAACAATTTCGTCCCTGTGGTAGGAGCTAGACCCCAGGTTAACGGACAGTCAGGCCGTATCGACTTTCAT TGGACCTTAGTACAACCAGGGGATAACATTACCTTTTCCCATAACGGGGGACTGATCGCCCCTAGCCGCGTCAGTAAGCTCATCGGACGTG GACTCGGAATCCAGTCAGACGCCCCCATCGATAACAACTGCGAGTCAAAATGCTTTTGGCGAGGAGGATCTATCAACACTAGGCTGCCCTT TCAAAATCTGTCCCCTCGCACAGTGGGTCAGTGTCCTAAATACGTGAACCGCAGATCACTCATGCTCGCCACCCGAATGAGGAATGTGCCC GAACTCATCCAAGGGAGGGGCCTCTTCGGTGCCATCGCGGGATTCCTCGAAAATGGATGGTGGAGGGGATGGTGGTACGGCTTT CGGCACCAAAACGCTCAGGGCACCGGCAGGCCGCCGATTATAAATCTACGCAGGCAGCTATAGACCAAATAACCCGCAAATTAAATCGG CTGGTAGAAAAGACCAACACCGAATTCGAGAGCATAGAGAGCGAATTTTCAGAAATAGAGCACCAGATTGGGAACGTAATTAACTGGACAAA GGACTCTATAACCGATATCTGGACATACCAGGCGGAACTCTTGGTGGCCATGGAGAATCAGCACACCATTGACATGGCCGATAGTGAGATG CTGAATCTCTACGAGAGGGTGCGAAAACAGCTAAGGCAAAATGCCGAAGAGGACGGCAAGGGTTGCTTTGAGATCTACCACGCCTGCGAC GACTCTTGTATGGAGTCCATTCGAAACAACACCTACGACCATTCTCAATACAGGGAGGAAGCTTTGCTCAATCGGCTCAACATCAATCCAGT CACGCTGTCTTCCGGTTATAAGGACATCATCCTCTGGTTTAGTTTCGGAGCTTCTTGTTTTGTACTCTTAGCCGTGGTGATGGGCCTGTTCTT CTTCTGCCTAAAAAACGGCAACATGCGGTGCACAATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2969	ATGTACAAAATAGTGGTCATCATAGCCCTTCTGGGTGCCGTGAAGGGGCTAGACAAAATCTGTTTGGGACATCACGCAGTAGCGAACGGCA CCATCGTCAAAACGCTGACGAACGAGCAAGAAGAGGTTACCAATGCTACAGAGACTGTGGAGTCTACTGGCATCAATAGGCTCTGCATGAA AGGACGGAAACACAAGGACCTGGGCAATTGTCACCCTATCGGCATGTTGATCGGAACTCCCGCCTGTGATCTGCACCTTACAGGGATGTGG GATACGCTGATCGAGCGGGAAAATGCCATAGCTTACTGCTACCCCGGAGCGACCGTTAACGTGGAGGCCTTAAGACAGAAGATCATGGAG TCCGGCGGGATCAATAAGATTTCCACTGGCTTTACGTACGGTTCCAGTATCAACTCCGCAGGGACGACGCGCGCGTGCATGAGAAACGGC GGCAACAGCTTTTACGCTGAACTCAAGTGGCTGGTTAGCAAGTCAAAGGGCCAGAATTTCCCTCAGACCACTAACACATACAGGAATACTGA CACCGCCGAGCACCTCATCATGTGGGGAATTCACCACCCTTCCTCCACCCAGGAAAAGAACGATCTATACGGGACCCAGTCTTTGTCCATA TCTGTGGCCAGTTCAACATACCGGAACAACTTTGTGCCTGTGGTGGGTGCTAGGCCACAGGTCAACGGGCAATCCGGTAGGATTGATTTTC ACTGGACTCTGGTCCAGCCCGGGGACAATATAACTTTTTTCGCATAAATGGCGGGCTGATCGCTCCCTCCCGGGTGTCAAAGCTGATTGGACG GGGCCTTGGTATACAGTCTGACGCGCCCATTGATAACAACTGCGAGTCTAAGTGTTTTTGGCGGGGGAGGCAGCATCAATACTCGCCTCCCT TTTCAAAACCTCTCCCCCTAGAACAGTGGGGCAATGCCCAAAATACGTCAATAGGAGGTCCCTCATGCTAGCAACCGGTATGCGCAACGTTC CCGAACTGATCCAGGGCCGAGGGCTGTTCGGAGCTATCGCAGGGTTTCTCGAAAACGGCTGGGAAGGAATGGTCGATGGCTGGTATGGGT TCAGACATCAGAATGCCCAGGGCACAGGCAGCAGATTACAAAAGTACTCAGGCCGCCATCGACCAGATCACCGGCAAACTTAATAG GCTGGTGGAAAAAACCAACACCGAGTTTGAGAGTATAGAGAGCGAGTTTTCAGAGATCGAGCATCAGATTGGGAATGTTATCAACTGGACC AAGGATTCCATTACTGATATTTGGACTTACCAGGCGGAACTGCTGGTTGCCATGGAGAATCAGCACACGATCGATATGGCCGACTCCGAAAT GTTGAATTTATATGAGCGGGTGAGAAAGCAGCTCAGGCAGAACGCAGAAGAGGACGGAAAGGGGTGCTTCGAGATCTACCATGCTTGTGA CGATTCCTGTATGGAGTCAATTAGAAACAATACCTACGACCACTCCCAGTATAGAGAGGACGCTCTGCTAAACCGCCTTAATATCAACCCGG TTACCCTGTCAAGCGGATACAAGGATATTATATTGTGGTTTTCTTTTGGCGCATCTTCGCTTGGTGTTACTCGCTGTGGTGATGGGTTTATTCT TCTTTTGTCTGAAGAATGGGAACATGCGGTGTACCATTTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2970	ATGTACAAGGTGGTGGTCATCATTGCCCTGCTGGGGCAGTCAGGGGCTTAGATAAGATTTGTCTTGGCATCACGCCGTGGCCAACGGA ACGACCGTGAAAACCCTCACAAATGAGCAGGAGGAAGTTACGAATGCCACCGAGACTGTGGAGTCTACTTCTCTGAACAAACTGTGCATGA AAGGCCGGCGTTATAAAGATCTGGGAAATTGTCATCCTATCGGCATGCTGATTGGTACTCCTGTATGTGACCTGCACCTCACGGGCACTTG GGATACACTGATCGAGAGGGAAAATGCCACAGCTTACTGCTACCCCGGAGTCACAATTAACGAGGAGGCACTCAGACAGAAAATCATGGAG AGCGGTGGTATCAGCAAAATGCGCACCGGCTTTACTTATGGCCCAAGCATCAACTCTGCCGGTACAACACGAAGTTGCATGAGGAACGGCG GCAATAGCTTCTACGCTGAACTCAAGTGGTTAGTCTCCGGTACGAAGGGGCAGAATTTTCCGCAGACTACAAATACATACCGAAATACAGAT ACAGCTGAGCACCTGATCATCTGGGGCATCCACCACCCTAGTTCAACCCAGGAGAAAAACGATTTGTATGGAACGCAATCTCTCTCCATTTC CGTAGGGTCCTCCACCTATCAAAACAACTTTGTCCCGGTTATTGGGGCTAGACCTCAGGTCAATGGCCAGAGCGGTAGGATTGAGTTTCATT GGACTCTCGTCAGACCAGGGGACAACATCACGTTTTCCCATAATGGCGGACTCATCGCTCCAGACAGGGTTTCCAAGCTCATCGGAAAGGG GATTGGGATTCAGTCAGGGCAGTAATAGATAAGGACTGTGAGTCTAAATGTTTTTGGCGGGGAGGTTCCATAATTACCGAACTGCCATTTC AGAATCTCTCCCCTAGAACAGTGGGGCAGTGTCCCAAATACGTTAAAAAAAGGAGTTTGCTGCTGGCAACAGGCATGCGGAACGTCCCTGA GGTAGTACAGGGGCGGGGATTATTCGGAGCAATAGCCGGGTTTATCGAAAACGGGTGGGAAGGTATGGTGGATGGATACGGCTTCCG TCACCAAAATGCTCAGGGGATCGGACAGGCCGCCGACTACAAATCTACTCAGACTGCCATAGATCAGATTACCGGTAAACTCAACAGGCTC ATCGAAAAAACAAATACTGAGTTTGAAAGCATTGAGTCTGAGTTTTCTGAGATTGAGCATCAGATTGGCAACGTCATCAACTGGACCAAGGA TTCCATTACAGATATCTGGACGTACCAAGCCGAGCTGCTCGTGGCAATGGAGAACCAGCATACAATAGACATGGCTGATTCTGAAATGCTGA ATCTGTACGAACGTGTGTGAGAAAGCAACTGAGGCAGAACGCTGAGGAGGACGGCAAGGGCTGTTTCGAGATCTATCATACCTGCGATAACTC ATGTATGGAATCCATCCGGAATAATACTTATGATCACAGTCAGTATCGCGAGGAAGCCCTGCTGAATAGATTAAATATCAATCCTGTGAAACT GAGTTCTGGGTACAAAGATATCATCCTGTGGTTCAGCTTTGGGGCCAGCTGTTTCGTACTGCTGGCCGTAATCATGGGGCTAGGATTCTTTT GCCTGAAGAACGGCAATATGCGCTGCACGATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2971	ATGTACAAAATTGTGGTGATAATTGCCCTTTTAGGCGCCGTGAAGGGCCTCGATAAAATTTGCCTTGGCCATCATGCAGTCGCTAACGGGAC TATCGTAAAGACCCTGACCAACGAACAGGAAGAAGTTACCAATGCCACTGAAACTGTGGAGAGTACAGGCATTAACAGGCTGTGCATGAAG GGACGCAAGCACAAGGATTTAGGAATTGCCATCCGATCGGAATGCTGATCGGGACCCCCCGCGTGCGACCTGCACCTGACAGGAATGTGG GACACCCTTATTGAGAGAGAAAATGCTATCGCTTATTGCTACCCTGGTGCCACTGTCAACGTGGAGGCCTTACGTCAGAAGATTATGGAATC CGGAGGCATAAATAAGATTAGTACCGGGTTCACATATGGCTCTTCCATAAACTCTGCCGGCACCACTAGAGCATGTATGAGGAACGGTGGG AATAGCTTCTATGCTGAGCTCAAGTGGTTGGTCAGCAAGTCCAAAGGTCAGAACTTTCCGCAGACAACTAATACCTACCGAAATACAGACAC CGCTGAGCACCTCATTATGTGGGGCATTCACCACCCGAGCTCAACTCAAGAGAAGAATGACTTGTACGGAACACAATCTCTGTCCATCTCTG TGGGCAGCAGTACCTATCGGAATAATTTCGTCCCAGTAGTGGGCGCAGGACCTCAGGTCAATGGTCAGTCCGGTCGCATCGACTTCCATTG GACCCTGGTGCAACCAGGCGACAACATCACCTTTTCTCACAACGGCGGGCTGATCGCACCCTCGCGTGTGTCTAAGCTAATCGGCCGTGG CCTGGGGATCCAGTCTGATGCACCCATTGACAATAACTGCGAGTCTAAATGTTTCTGGAGAGGCGGATCCATTAACACGCGGCTGCCATTT CAGAACCTGAGTCCAAGAACGGTAGGCCAGTGTCCGAAGTACGTCAATCGGAGGTCATTGATGCTGGCAACCGGCATGAGAAATGTCCCG GAGCTGATACAGGGAAGGGGACTATTTGGAGCTATCGCTGGCTTCCTAGAAAATGGATGGGAGGGTATGGTCGATGGATGGTATGGGTTT CGCCACCAAAACGCACAGGGGACTGGGCAGGCCGCAGATTATAAGAGCACTCAAGCTGCAATCGACCAGATCACTGGCAAACTGAATCGG CTTGTGGAGAAAACCAACACACAGAATTCGAGTCAATTGAGTCCGAGTTTAGCGAAATTGAACACCAGATCGGAAATGTTATTAACTGGACTAA GGATTCCATCACAGATATCTGGACCTACCAGGCAGAGCTATTGGTAGCCATGGAGAACCAACATACAATCGACATGGCGGATTCAGAAATG CTGAACCTGTATGAACGCGTTAGGAAGCAGCTCAGGCAGAACGCCGAGGAGGATGGGAAAGGTTGCTTCGAGATATATCATGCCTGCGAC GACAGCTGTATGGAGTCCATACGAAATAACACGTATGACCACAGCCAGTACCGAGAAGAGGCTCTTCTTAATCGGCTCAATATAAACCCAGT GACACTGTCATCCGGATACAAGGACATCATACTATGGTTCAGCTTTGGTGCCTCTTGTTTCGTGCTACTTGCTGTGGTGATGGGCCTTTTTTT TTTCTGCCTCAAGAACGGGAACATGAGGTGTACGATATGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2972	ATGTACAAGATAGTCGTGATCATTGCCCTCCTTGGTGCAGTAAAGGGATTAGACAAGATTTGCTTGGGACACCACGCGGTTGCTAACGGAA CAATAGTTAAGACACTCACTAATGAGCAAGAGGAAGTCACAAATGCTACCGAAACCGTAGAGTCTACGGGCATCAACAGGCTTTGTATGAAA GGCAGGAAGCACAAGGACCTTGGGAATTGTCACCCTATTGGTATGCTTATTGGCACCCCAGCCTGCGATCTACATCTGACTGGGATGTGGG ACACCCTCATCGAACGAGAGAATGCCATAGCCTATTGCTACCCTGGCGCAACTGTGAATGTGGAAGCTTTGAGGCAGAAGATAATGGAATC CGGCCGAATCAACAAGATATCAACAGGCTTTACTTACGGCTCGAGTATCAATTCAGCCGGCACAACTCGGGCCTGCATGCGGAATGGGGG AAACTCTTTCTACGCAGAACTGAAATGGCTGGTATCCAAGTCTAAGGGCCAGAATTTCCCGCAGACCACCAACACCTATCGCAACACTGACA CAGCAGAACATTTGATAATGTGGGGTATCCACCACCCGTCTAGTACCCAGGAGAAGAACGACTTGTATGGCACCGCAGTCATTATCTATCAGC GTGGGCTCCAGCACGTACCGGAACAACTTTGTCCCCGTGGTTGGCGCACGACCACACAAGTGAACGGACAATCCGGCCGGATCGATTTTCAT TGGACACTCGTTCAGCCCGGCGACAATATCACCTTTTCTCACAATGGGGGCCTGATCGCGCCAAGCCGGGTTTCCAAGCTGATCGGCAGA GGCCTCGGCATACAGAGCGATGCCCCGATCGATAACAATTGTGAGTCGAAATGTTTTTGGAGAGGCGGCTCTATTAACACGCGACTGCCCT TTCAGAATCTGAGCCCGCGGACAGTGGGACAATGCCCAAAATACGTAAACAGGAGGAGTCTGATGCTCGCGACTGGCATGAGGAACGTTC CTGAGTTGATCCAGGGCCGGGGCCTATTTGGCGCCATCGCAGGGTTCCTGGAGAATGGTTGGGAGGGTATGGTAGATGGATGGTACGGGT TCCGCCACCAGAATGCCCAGGGAACAGGCCAGGCTGCGGACTACAAATCCACTCAGGCCGCCATCGATCAAATTACCGGAAAGCTTAACA GACTCGTCGAGAAAACGAATACAGAGTTTGAGTCAATTGAGTCCGAGTTCAGTGAAATCGACACCAAATAGGAAACGTGATCAATTGGACA AAGGACAGTATCACCGATATCTGGACTTACCAGGCTGAACTGCTCGTAGCTATGGAGAATCAGCACACCATAGATATGGCAGACTCCGAGA TGTTGAATTTATACGAGAGAGTCCGGAAACAGCTGCGCCAGAACGCCGAAGAGGATGGGAAGGGCTGCTTCGAGATATACCACGCCTGTG ACGACTCATGCATGGAGTCTATCCGAAACAATACCTACGATCATTCCCAGTATAGGGAAGAGGCCTTGCTGAACCGGTTGAATATTAATCCT GTCACATTGTCTAGCGGCTACAAAGACATCATCTTATGGTTTTCGTTTGGTGCTTCATGTTTCGTGCTTCTGGCTGTGGTGATGGGACTCTTT TTCTTTTGCCTTAAGAATGGCAATATGAGATGCACCATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2973	ATGTATAAGATCGTGGTGATCATTGCCCTACTGGGTGCCGTGAAAGGGCTGGACAAAATTTGCCTCGGCCACCATGCTGTCGCCAACGGCA CCATCGTCAAAACGCTTACGAATGAGAAGGAGGAAGTGACCAATGCTACCGAGACTGTGGAAAGTACAGGCCTCAACAGGCTCTGTATGAA GGGCAGGAAACACAAAGACTTGGGTAACTGCCATCCTATAGGAATGCTCATTGGCAGCCCGGCTTGTGACCTGCACCTTACTGGGACCTGG GATACTCTGATCGAGAGGGAGAATGCCATTGCGTATTGTTATCCAGGAGCCACCGTAAACGGCGAGGCACTAAGGCAAAAGATTATGGAAA GCGGGGGTATTGACAAAATTTCAACAGGGTTCACATATGAGTCTAGCATCAACTCAGCCGGCACAACGAGAGCATGCATGCGGAACGGGG GCAATTCCTTTTACGCTGAGTTGAAGTGGCTGGTGTCCAAGAGCAAAGGGCAGAATTTCCCACAGACTACCAACACCTATAGAAATACGGAT ACAGCAGAGCACCTGATTATGTGGGGTATCCACCACCCAAGCTCCACGCAAGAAAAGAATGATCTGTATGGAACTCAAAGCCTCTCTATTAG TGTGGGGTCTAGCACTTACCGGAACAACTTCGTCCCTGTGGTGGGCGCTCGCCCTCAGGTTAATGGCCAGTCCGGAAGAATTGACTTTCAT TGGACTCTCGTCCAGCCAGGGGATAATATAACATTCTCTCACAATGGAGGACTGATTGCACCTTCTCGGGTGAGCAAGCTGATAGGCCGCG GGCTGGGGATCCAGAGCGATGCTCCAATAGATAATAATTGCGAATCAAAGTGCTTTTGGAGGGGGGATCTATTAATACGCGGCTTCCATT CCAGAACCTCAGTCCTCGGACTGTTGGACAATGCCCCAAATATGTGAACAAGCGCAGCCTTATGCTCGCTACCGGGATGAGGAATGTCCCT GAATTAATGCAGGGACGCGGCCTATTCGGAGCAATTGCCGGATTTCTCGAGAACGGTTGGGAAGGCATGGTTGACGGGTGGTATGGTTTC AGACACCAGAACGCCCAGGGCACGGCGCCGATTATAAATCCACCCAGGCCGCCATCGACCAGATTACCGGTAAATTAAACAGG CTAGTTGAAAAAACCAATACCGAGTTTGAATCCATAGAATCTGAATTCTCCGAAATTGAACACCAGATCGGTAATGTTATCAACTGGACCAAA GACAGCATCACCGACATATGGACTTATCAGGCTGAGCTGCTTGTCGCTATGAGAACCAGCACACCATCGACATGGCCGATTCTGAAATGC TGAACCTGTACGAAAGGGTGCGGAAGCAGCTACGGCAGAACGCTGAGGAGGACGGCAAGGGGTGCTTTGAAATCTACCACGCCTGCGAT GATTCCTGTATGGAGTCCATCCGTAACAACACGTACGACCACTCACAGTATAGAGAGGAAGCCCTCCTAAACCGCCTGAATATCAACCCCGT AACCCTCTCATCTGGTTATAAAGACATCATCCTCTGGTTTAGTTTCGGCGCCTCATGTTTCGTACTGCTCGCAGTGGTGATGGGCCTGGTAT TCTTCTGTCTAAAGAACGGGAATATGAGATGCACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2974	ATGTATAAGATCGTGGTGATCATTGCACTCCTTGGGGCAGTCAAAGGCTTGGACAAAATTTGTTTGGGACACCACGCAGTCGCTAACGGTAC AATAGTCAAAACACTGACAAATGAGCAGGAAGAAGTGACTAACGCCACAGAAACAGTGGAGTCCACAGGCATTAATCGCCTTTGTATGAAG GGTCGCAAGCATAAGGATCTGGGGAACTGTCACCCTATAGGTATGCTGATTTACACCTGACAGGGATGTGGG ACACGCTCATCGAGAGGGAAAACGCCATCGCCTACTGCTATCCTGGGGCTACAGTCAACGTCGAGGCCCTACGACAAAAAATTATGGAGAG CGGCGGGATCAATAAGATTTCCACTGGCTTTACTTATGGCTCATCTATAAACTCCGCAGGCACAACACGCGCCTGTATGCGCAACGGCGGA AACTCATTTTACGCGGAACTGAAGTGGCTGGTTTCTAAAAGCAAGGGCCAGAATTTCCCACAGACTACAAATACCTATCGCAACACTGACAC CGCAGAACACTTAATAATGTGGGGGATTCACCACCCCTCGAGCACCCAAGAGAAGAACGACCTTTATGGAACGCAGTCTCTCAGCATCAGC GTGGGATCATCCACATACCGGAACAACTTTGTGCCTGTGGTGGGAGCTCGACCACAAGTCAACGGCCAGTCTGGTAGAATTGATTTTCACT GGACCCTTGTGCAACCTGGGGATAATATAACTTTCTCGCACAATGGTGGTTTAATAGCCCCATCTCGCGTCAGCAAACTGATCGGTAGAGG CCTCGGAATACAGTCCGATGCACCTATCGATAACAATTGTGAATCCAAGTGCTTCTGGAGGGGGGGATCCATTAATACTCGGCTGCCTTTCC AAAATTTGTCACCCCGCACTGTGGGCCAGTGTCCAAAGTACGTGAACAGAAGGAGCCTGATGTTGGCAACCGGGATGCGCAACGTTCCCG AACTCATCCAGGGGAGAGGTTTGTTTGGAGCTATCGGCGGGCTTTCTCGAAAACGGCTGGGAGGGGATGGTGGATGGTACGGCTTTC GTCACCAGAACGCCCAGGGAACGGGGCAAGCAGCCGATTACAAGAGCACCCAGGCCGCTATCGACCAGATTACGGGGGAAGCTGAACCGC CTAGTAGAGAAGACCAACACAGAATTCGAATCTATTGAATCAGAGTTTAGCGAAATAGAGCATCAGATCGGAAACGTGATCAATTGGACTAA AGATTCTATCACAGATATCTGGACTTACCAGGCTGAACTGCTTGTAGCAATGGAGAATCAACACACAATAGACATGGCCGATTCTGAGATGC TGAACCTGTACGAGCGTGTACGCAAACAGCTGAGACAGAACGCCGAAGAGGATGGTAAAGGATGTTTCGAAATCTACCATGCTTGCGACGA CTCTTGCATGGAAAGTATCCGGAACAATACATACGATCACTCCCAATATCGCGAGGAGGCGCTGCTGAACAGACTGAACATTAACCCCGTG ACTCTATCCTCAGGGTACAAGGATATCATATTATGGTTCTCTTTCGGCGCCTCCTGTTTCGTCCTGCTGGCCGTCGTAATGGGCCTTTTCTTT TTCTGTTTGAAGAATGGAAATATGCGGTGCACCATCTGTATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2975	ATGTACAAAATCGTGGTAATTATTGCTCTTCTTGGGGCTGTTAAAGGGTTGGACAAGATTTGTCTCGGGCATCACGCCGTGGCCAATGGAAC GATTGTGAAGACACTGACCAACGAACAGGAGGAGGTAACTAACGCCACGGAAACTGTCGAGTCCACTGGCATCAATCGGCTCTGTATGAAG GGCCGCAAACACAAGGACTTGGGAACTGCCACCCAATCGGCATGCTTGTCGGCACACCCGCTTGTGACTTACATCTGACTGGGATGTGG GACACGCTTATAGAACGGGAAAACGCCATTGCCTACTGCTACCCAGGTGCAACTGTTAACGTCGAAGCTCTGCGCCAAAAGATCATGGAAA GCGGCGGTATCAACAAAATTAGTACGGGCTTTACCTATGGCTCAAGCATTAACTCAGCTGGCACCACCCGTGCCTGTATGAGGAATGGAGG CAACTCCTTTTACGCTGAGCTCAAGTGGCTCGTGTCCAAGTCCAAGGGACAGAATTTCCCCCAGACTACCAATACCTATAGAAATACTGACA CCGCTGAACACTTGATTATGTGGGGTATCCATCACCCTAGCTCCACTCAGGAAAAAAACGATCTATACGGCACCCAGTCGTTGTCCATCTCA GTCCGCAGTTCCACTTATCGCAACAACTTTGTGCCCGTGGTCGGAGCACGTCCTCAGGTTAATGGCCAGTCTGGCCGTATCGATTTTCACT GGACACTGGTACAGCCTGGCGATAATATTACTTTTAGCCACAACGGGGGCCTGATCGCCCCGAGTCGTGTGTCCAAGCTTATCGGACGAG GTCTTGGGATTCAATCTGATGCCCCAATTGACAATAACTGTGAAAGCAAATGCTTTTGGCGCGCGGGGATCCATTAACACGCGGCTTCCTTTC CAGAATCTATCCCCTCGTACTGTCGGGCAATGCCCTAAGTACGTCAACCGGAGGTCCCTGATGCTGGCCACTGGCATGCGTAACGTCCCAG AGCTCATTCAGGGCAGAGGTTTATTCGGAGCAATTGCAGGGTTCCTGGAGAACGGCTGGGAGGGAATGGTCGATGGCTGGTATGGTTTCC GCCATCAAAACGCTCAAGGCACAGGCCAGGCGGCCGATTACAAATCGACTCAGGCGGCCATTGACCAAATCACAGGCAAACTGAATAGACT GGTGGAAAAAACAAACACCGGAGTTTGAGTCTATTGAATCTGAGTTTAGCGAAATCGAGCACCAAATCGGCAATGTTATTAACTGGACTAAGG ATTCAATTACGGATATTTGGACATACCAGGCGGAGTTATTAGTTGCCATGGAGAATCAGCACACTATTGATATGGCTGATAGTGAGATGTTAA ATTTGTACGAGAGGGTTAGGAAGCAGTTGAGGCAGAACGCGGAGGAAGACGGGAAAGGCTGCTTCGAGATTTACCACGCCTGCGACGATT CCTGCATGGAGACGCATCCGGAATAATACCTACGACCATTCACAGTATCGAGAAGAAGCTCTATTAAACCGTTTGAACATCAACCCAGTGACC TTAAGTAGCGGATACAAAGACATTATTCTATGGTTCTCCTTCGGCGCCTCCTGTTTCGTGTTGCTCGCCGTTGTAATGGGATTGTTTTTCTTC TGTCTGAAGAATGGAAACATGAGATGCACAATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2976	ATGTACAAGATTGTTGTGATCATCGCCCTTCTGGGGGCCGTGAAGGGACTTGACAAAATATGCCTCGGTCATCACGCTGTTGTGAATGGCA CAATAGTTAAAACGCTGACCAACGAGCAAGAAGAGGTGACCAACGCAACCGAGACAGTGGAGAGTACAGGTCTGAACCGACTGTGCATGA AGGGCCGAAACCACAAGGACCTCGGCAATTGTCACCCCATCGGAATGTTAATTGGTACCCCCGCCTGCGATCTGCATCTGACCGGTACTTG GGATACCTTAATTGAAAGGGAAAACGCCATCGCGTACTGTTATCCCGGAGCAACCGTGAACGAGGAAGCCCTCAGACAGAAGATCATGGAG TCGGGAGGCATCAACAAGATCTCCACAGGCTTCACGTACGCTCCTCTATTAATTCTGCCGGAACAACTCGGGCCTGTATGCGCAACGGAG GCAACTCCTTCTACGCAGAACTGAAATGGCTTGTCAGCAAGAGCAAGGGTCAGAATTTCCCCCAAACTACCAATACTTATAGGAATACGGAC ACCGCAGAACACCTGATAATGTGGGCATTCATCATCCCTCTTCAACTCAGGAGAAAAATGATTTGTATGGGACTCAATCCTTATCAATCTCC GTGGGTAGCAGCACCTATCAGAATAACTTTGTTCCAGTCGTAGGGGCCCGGCCTCAGGTGAACGGGCAGTCAGGCAGAATTGATTTCCACT GGACCCTTGTGCAACCCCGGAGACAACATTACCTTTAGTCACAATGGCGGTCTCATCGCCCCTTCCAGAGTGTCTAAACTGATCGGTCGGGG CCTGGGCATCCAGAGCGACGCACCAATCGACAATAATTGCGAGAGTAAGTGCTTCTGGAGAGGTGGTAGTATCAATACTAGGCTCCCATTC CAAAATTTATCGCCTAGGACCGTCGGACAGTGTCCCAAATATGTAAATAAAAGGTCCTTAATGCTTGCGACGGGAATGCGTAACGTTCCTGA ACTGATGCAGGGCAGAGGCCTATTTGGCGCAATAGCCGGTTTTATCGAGAACGGCTGGGAGGGGATGGTGGACGGTTGGTATGGATTTAG GCACCAAAATGCCCAGTGGAACTGTGGCAGGCGCGGATTACAAGAGCACACAAGCTGCTATCGACCAGATCACGGGCAAACTGAATCGATT GATTGAAAAGACCAACACTGAGTTTGAATCAATTGAGAGTGAGTTTTTCAGAGATTGAACACCAGATCGGGAACGTGATAAACTGGACTAAAG ATTCCATCACTGACATCTGGACATATCAGGCGGAGCTCCTGGTGGCCATGGAGAACCAACACACCATCGACATGGCAGACTCTGAAATGTT AAATCTGTACGAGAGAGTCAGGAAACAGCTGCGCCAGAATGCCGAGGAAGATGGCAAGGGTTGCTTCGAGATCTACCACGCATGTGACGA CAGCTGCATGGAGTCAATTCGCAACAACACCTACGACCACTCCCAATACAGGGAGGAGCACTGCTTAACAGGCTGAACATTAATCCGGTC ACCCTCTCTAGCGGCTATAAGGATATTATTCTGTGGTTCAGTTTTTGGCGCTTCTTGTTTTGTCCTGCTGGCAGTGGTGATGGGCCTGGTCTT CTTTTGCCTAAAAAATGGGAATATGAGGTGCACCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2977	ATGTATAAAATTGTGGTCATCATTGCTCTGCTGGGTGCAGTAAAGGGGCTGGACAAAATTTGTCTGGGACACCATGCCGTTGCCAACGGAA CAATCGTGAAGACGCTTACTAACGAACAGGAAGAAGTTACCAACGCTACCGAAACCGTCGAATCCACGGGTATCAACAGGCTGTGTATGAA AGGGAGGAAGCACAAAGATTTGGGGAACTGCCACCCAATCGGCATGTTGATTGGCACTCCCGCCTGTGATCTGCATTTAACTGGTATGTGG GATACCCTGATCGAGCGAGAAAATGCTATTGCATACTGTTATCCAGGCGCGACTGTGAATGTCGAAGCTCTGCGACAGAAAATCATGGAATC CGGCGGTATCAATAAAATTTCGACAGGCTTCACATATGGGAGTTCTATTAACTCTGCCGGGACCACCAGAGCCTGCATGCGCAACGGAGGA AATAGCTTCTACGCTGAGTTAAAGTGGCTAGTCTCTAAATCTAAAGGACAAAACTTCCCACAGACCACTAACACCTACCGGAATACCGATAC CGCGGAACACTTAATTATGTGGGGGATCCCACCCACCCAAGCTCTACGCAGGAAAAGAACGATCTCTACGGGACTCAGTCTTTATCAATTTCCG TGGGCTCCTCTACATACCGCAATAATTTCGTGCCCGTGGTTGGCGCTAGGCCTCAGGTAAACGGGCAGAGTGGAAGGATAGATTTTCACTG GACCCTGGTTCAGCCGGGCGACAACATCACTTTCAGTCACAATGGCGGCCTTATCGCTCCCAGCCGGGTGTCTAAATTGATCGGCAGGGG ACTGGGTATCCCAGTCGGACGCTCCAATTGACAACAATTGTGAGTCAAAGTGCTTTTGGCGAGGGGGAGGCATCAACACTCGCCTCCCTTTC CAAAACCTGTCTCCTCGGACGGTCGGACAATGCCCTAAGTACGTAAACAGGCGGTCGCTGATGCTGGCCACTGGGATGAGAAACGTGCCA GAACTTATTCAGGGCCGTGGCTTGTTCGGCGCAATCGCTGGGTTTCTTGAAAATGGCTGGGAAGGGATGGTGGTTGGTATGGGTTCC GACATCAGAACGCTCAGGGCACTGGGCAGGCCGCTGATTATAAGTCCACCCAGGCAGCTATAGACCAAATAACAGGGAAACTAAATCGCCT GGTCGAAAAGACAAATACAGAGTTCGAATCTATCGAGAGCGGAATTCTCAGAAATCGAGCACCAGATTGGGAATGTGATTAATTGGACCAAGG ATAGTATCACAGATATCTGGACATAGCAGGCAGAACTGTTGGTTGCCATGGAAAACCAGCACACCATTGATATGGCAGATTCAGAGATGCTT AACCTGTATGAGAGAGTGCGAAAGCAGCTGCGCCAGAACGCAGAAGAGGATGGAAAGGGGTGCTTCGAAATTTACCACGCTTGCGATGAT AGCTGTATGGAGTCAATAAGAAACAACACCTATGACCACAGCCAGTACAGGGAGGAGGCACTACTTAATAGGCTGAATATCAATCCAGTTAC TTTGTCCAGCGGCTATAAGGACATTATACTGTGGTTTAGCTTTGGGGCGTCCTGCTTTGTGCTCCTGGCTGTAGTGATGGGGCTATTTTTCT TCTGTTTAAAGAACGGTAATATGCGGTGCACAATCTGTATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2978	ATGTACAAAATAGTGCTGGTGCTCGCCCTCCTCGGTGCTGTGCATGGTCTTGACAAGATATGTCTCGGACATCACGCCGTCCCGAACGGAA CTATTGTGAAAACCCTAACCAACGAGAAGGAAGAGGTGACTAACGGCGACCGAAACTGTGGAAAGCAAGAGTCTGGATAAACTGTGTATGAA GAATAGGAATTACAAGGACCTGGGCAATTGTCATCCTATTGGGATGGTGGTCGGTACCCCCGCTTGTGATCTTCATCTGACCGGAACCTGG GATACCCTGATAGAGCGCGACAATTCAATTGCGTATTGCTACCCCGGTGCCACAGTTAGCGAGGAAGCCTTGCGCCAGAAGATCATGGAGA GTGGCGGCATAGATAAAATCAGCACCGGATTCACGTACGGGAGTAGTATCAATTCAGCCGGCACACAACAAAAGCCTGCATGAGAAATGGCCG AAACTCCTTTTATTCTGAACTGAAATGGCTCGTGTCCAAGAACAAGGGCCAGAACTTTCCTCAGACGACCAATACTTATCGCAACACAGATTC CGTCGAACATTTGATCATTTGGGCATTCACCATCCTAGCTCTACCCAGGAGAAAAACGATCTGTACGGCACCCAAAGCCTGTCCATTAGCG TCGGGTCCAGTACATACCAGAACAACTTCGTGCCAGTCGTCGGGGCGCGGCCGCAGGTCAACGGCCAGTCAGGGAGAATAGACTTTCATT GGACCATGGTGCAGCCCCGGGGACAACATTACTTTTTCCCATAATGGAGGCCTGATCGCACCAAATCGGGTCTCTAAGCTGAAAGGGAGAG GTCTCGGGATCCAGTCCGGAGCATCTGTGGACAACGACTGTGAATCCAAATGCTTCTGGAAGGGTGGGTCTATCAATACCAAGCTCCCCTT TCAGAATCTCTCGCCTAGGACCGTGGGACAGTGCCCAAAATACGTGAACAAAAAAAGTCTCCTCCTGGCTACTGGTATGCGGAATGTCCCA GAGGTTGCACAGGGGCGAGGCCTGTTCGGTGCCATAGCGGGTTTTATTGAGAACGGTTGGGAGGGAATGGTGGATGGCTGGTATGGGTTT CGGCACCAAAATGCACAGGGCACAGGTCAGGCCGCCGATTATAAGAGCACACAGGCAGCCATTGATCAGATTACAGGGAAGCTGAATCGA CTGATAGAAAAAAACAAATACCGAGTTTGAGTCCATTGAAAGCGAATTTAGCGAGATTGAGCACCAGATAGGGAATGTCATCAATTGGACCAA AGATTCAATCACTGATATTTGGACTTACCAGGCTGAGCTGCTGGTTGCAATGGAAAATCAGCACACAATTGACATGGCCGACAGCGAGATGC TGAACCTCTACGAGAGAGTGCGTAAACAGCTGCGCCAGAACGCAGAAGAGGATGTTTCGAAATTTATCACAAGTGTGATGA CAACTGTATGGAGAGCATTCGAAACAACACGTACGACCATACTCAGTATCGGGAGGAAGCCCTGTTGAATCGCCTCAATATTAATCCCGTGA AACTCTCATCCGGTTATAAAGACGTCATACTGTGGTTTTCCTTCGGGGCCAGCTGCTTCGTACTGCTGGCCGTCATTATGGGCCTTGTTTTTT TCTGTCTGAAAAATGGAAACATGAGGTGTACCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2979	ATGTATAAAATCGTGGTGATCATCGCACTGCTGGGTGCGGTTAAGGGGCTCGACAAGATTTGCCTGGGACACCATGCAGTGGCAAATGGCA CTATTGTCAAAACACTTACTAACGAGCAGGAGGAAGTGACAAACGCCACGGAGACCGTTGAGAGCACGGGCATCAATCGGCTGTGCATGAA AGGCAGGAAGCATAACGGACCTCGGCAACTGCCATCCTATTGGTATGCTGATTGGCACGCCCGCTTGCGATCTGCATCTGACCGGAATGTG GGATACGCTTATAGAGAGAGAGCAACGCGATTGCCTACTGCTACCCCGGCGCTACAGTCAATGTCGAAGCTCTGCGCCAAAAAATTATGGAA TCTGGCGGGATTAACAAGATCTCCACTGGCTTCACGTATGGATCTTCAATAAACTCAGCCGGCACCACACGGGCCTGCATGCGCAATGGGG GAAACTCATTCTATGCTGAACTGAAATGGCTTGTCTCAAAATCTAAGGGGCAGAATTTTCCTCAAACTACCAACACCCTACAGGAATACGGATA CCGCTGAGCACCTGATCATGTGGGGTATCCCACCCTTCGTCCCACCCAGGAAAAAAATGACCTATATGGTACCCAGTCACTGAGTATCAG CGTAGGCAGTTCTACATATCGTAACAACTTTGTCCCAGTAGTCGGGGCCCGCCCTCAAGTGAACGGCCAATCTGGACGTATTGATTTCCACT GGACACTGGTGCAACCCGGAGACAACATCACTTTCTCCCACAACGGAGGGCTGATAGCCCCCTCCAGGGTCTCCAAGTTGATCGGACGTG GACTTGGGATACAGTCTGATGCCCCAATTGATAATAACTGTGAGTCTAAATGCTTCTGGAGGGGGGCAGTATCAATACACGCCTGCCTTTC CAGAACCTGTCGCCACGGACAGTTGGACAGTGTCCAAAATATGTGAACCGCAGGTCGCTGATGTTGGCAACCGGAATGAGGAATGTGCCC GAGCTGATTCAGGGTCGGGGATTATTTGGCGCCATCGCAGGGTTCCTGGAAAATGGATGGGAAGGCATGGTGGATGGATGGTACGGCTTT AGACACCAAAACGCCCAGGGAACAGGGCAAGCAGCAGACTACAAATCCACGCAAGCTGCTATAGACCAGATTACTGGTAAGCTCAACCGTC TCGTTGAGAAAACAAATACGGAATTTGAGAGTATCGAGTCAGAGTTTTCTGAAATCGAACATCAAATAGGGAATGTAATTAATTGGACAAAAG ACTCAATCACTGACATATGGACCTATCAGGCTGAACTGCTAGTTGCAATGGAGAATCAACATACCATCGACATGGCTGACAGCGAGATGCTG AATTTGTACGAACGGGTCAGAAAACAACTGCGGCAGAATGCTGAGGAAGATGGGAAAGGGGTGTTTCGAAATATATCACGCTTGTGATGACT CTTGCATGGAATCCATCCGGAATAATACCTACGATCACTCGCAGTATCGAGAGGAGGCCCTGCTGAATCGCTTAAACATTAATCCAGTGACA CTGTCTTCCGGGTATAAAGATATCATTCTGTGGTTTTCCTTTGGCGCATCCTGCTTCGTATTACTAGCCGTTGTCATGGGATTGTTTTTCTTTT GTCTGAAAAACGGGAACATGCGGTGTACCATTTGTATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2980	ATGTACAAGATCGTGGTCATCATCGCTCTGTTGGGCGCCGTGAAAGGGCTTGATAAGATCTGTCTTGGGCACCACGCCGTGGCCAACGGG ACCATTGTGAAAACCCTCACGAACGAGCAGGAGGAAGTGACAAACGCAACTGAGACCGTTGAGTCAACCGGTATTAATCGCTTGTGCATGA AAGGACGAAAGCACAAGGACTTGGGCAACTGCCATCCAATTGGGATGCTGATCGGTACCCCAGCATGTGATCTGCATTTAACAGGCATGTG GGATACCCTTATTGAGCGAGAAAATGCCATCGCGTATTGCTATCCTGGAGCCACTGTGAATGTGGAGGGCACTGCGTCAGAAGATTATGGAA TCTGGCGGGATCAATAAAATAAGCACCGGCTTTACATACGGCAGCTCGATTAATTCCGCTGGCACCACTAGAGCTTGCATGCGCAATGGCG GCAACTCATTCTATGCCGAGCTGAAGTGGTTGGTGAGTAAGAGCAAAGGGCAGAACTTTCCTCAGACCACCAACACCTATCGAAATACGGA CACAGCTGAACACCTTATAATGTGGGGGATCCACCACCCGTCATCTACCCAGGAAAAGAACGACTTATACGGAACACAGTCTCTGTCCATCT CGGTTGGATCCTCTACTTACCGAAATAAATTTTTGTGCCCGTCGTGGGGGCCAGACCCCAGGTAAACGGACAGTCTGGCAGGATCGATTTCCA TTGGACTCTGGTCCAGCCCGGAGATAATATCACCTTTAGTCACAACGGTGGACTGATCGCTCCCAGTAGAGTGTCCAAGCTGATAGGCAGA GGGCTTGGAATCCAAAGCGACGCCCCAATCGATAAATAACTGCGAAAGCAAGTGTTTCTGGCGGGGCGGATCCATCAACACCAGGCTTCCCT TCCAGAACTTGTCCCCAAGGACTGTTGGACAGTGCCCAAAGTATGTTAATCGACGGAGTCTGATGCTCGCTACTGGCATGAGAAACGTACC CGAGCTGATACAAGGGCGCGGGCTGTTCGGCGCAATAGCCGGATTCCTGGAGAACGGATGGGAGGGTATGGTGGACGGCTGGTATGGCT TTCGGCATCAGAATGCCCAGGGTACTGGTCAGGCAGCCGATTATAAGTCAACCCAGGCTGCCATCGATCAGATTACAGGGAAACTGAATCG GCTGGTGGAAAAAACCAATACCGAATTTGAGTCCATTGAATCTGAATTCAGCGAGATCGAGCACCAGATCGGTAATGTCATAAATTGGACTA AGGATTCCATCACAGATATCTGGACATACCAAGCTGAGCTGCTTGTGGCCATGGAAAACCAGCATACAATAGACATGGCCGACAGTGAGAT GCTAAATCTGTATGAGAGAGTGAGAAAACAACTAAGACAGAATGCTGAGGAGGACGGCAAAGGTTGTTTTGAGATCTACCACGCTTGCGAC GACTCGTGTATGGAATCCATACGCAACAATACTTACGACCACTCTCAGTACCGCGAGGAAGCTTTACTTAACCGCCTGAATATTAACCCTGT TACCTTATCCAGTGGGTACAAAGACATAATATTGTGGTTCAGTTTTTGGCGCGTCGTGTTTTTGTTCTCCTGGCCGTTGTGATGGGCCTGTTTTT TTTCTGCCTGAAGAACGGGAATATGCGCTGTACTATCTGCATA

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Seq ID No.	Sequenza di acido nucleico
2981	ATGTACAAGATAATCGTCATTATCGCACTGTTGGGCGCCGTTAAAGGACTGGATAAAATCTGCCTGGGCCATCACGCAGTCGCTAACCGTA CAATCGTGAAAACTCTGACCAATGAGCAGGAGGAAGTCACCAACGCAACCGAAACCGTAGAGTCCACCGGCATCAACCGGCTCTGTATGAA GGGCCGCAAGCATAAAGACCTGGGTAACTGCCACCCCATAGGCATGCTTATTGGCACTCCGGCATGCGACTTGCACCTGACGGGGACCTG GGACACATTGATTGAACGGGAAAATGCTATTGCTTATTCCTGGAGCCACAGTGAATGTGGAGGCTCTCCGCCAAAAGATCATGGAAT CTGGGGGGATAGATAAGATTAGTACTGGGTTTACGTATGGGAGTTCTATCAACAGCGCCGGGACCACAAGAGCCTGTATGAGAAACGGAG GAAACAGCTTTTTACGCAGAGTTGAAATGGCTTGTTAGTAAATCTAAGGGGCAGAATTTCCCTCAGACCACGAACACTTACAGGAATACGGAT ACTGCGGAGCACCTTATTATGTGGGGCATCCATCATCCCTCCTCTACTCAGGAGAAAAACGACCTCTATGGCACTCAATCCTTGTCCATCTC CGTCGGTTCCTCAACCTATAGGAACAACTTTGTGCCAGTTGTAGGCGCAAGGCCACAGGTTAACGGGCAGAGCGGTCGCATCGACTTCCAC TGGACCCTGGTGCAGCCAGGCGATAACATCACCTTTTCACACAACGGCGGGCTGATCGCACCTTCCCGAGTGTCTAAGCTGATAGGGAGG GGCCTCGGCATCCAGTCTGACGCACCAATTGACAATAATTGTGAGTCCAAGTGTTTTTGGCGCGGAGGTTCAATTAACACGCGCCTGCCCT TTCAGAATCTGTCTCCCCGTACTGTGGGCCAGTGTCCAAAGTATGTTAATAGGCGGTCCCTCATGCTGGCTACGGGAATGAGAAACGTGCC TGAGCTGATACAGGGCCGAGGACTATTCGGGGCGATCGGCCGGCTTTTTAGAAAACGGGTGGGAGGGCATGGTCGACGGATGGTATGGCTT CAGACACCAGAATGCGCAGGGGACTGCTGGCCAGGCTGCTGACTATAAGAGTACCCAGGCCGCTATAGACCAGATCACGGGTAAGCTGAATCG TCTGGTTGAAAAGACTAATACTGAATTTGAAGCATCGAAAGCGAGTTTAGCGAAATTGAGCATCAGATCGGGAACGTCATTAATTGGACTA AAGACTCCATTACTGATATCTGGACGTACCAGGCTGAGTTGTTAGTGGCCATGGAAAATCAGCATACCATTGATATGGCAGATAGCGAAATG CTGAATCTGTACGAGAGAGTTCGTAAGCAGCTGCGCCAGAACGCTGAAGAGGGATGCTTTGAGATCTACCACGCCTGCGAC GACAGCTGTATGGAATCGATCCGGAACAACACCTATGACCACTCCCAGTATAGGGAAGAAGCCCTGTTAAACCGCCTGAATATTAATCCCGT CACTCTGTCATCCGGCTATAAGGACATAATTCTTTGGTTTAGCTTCGGCGCTAGTTGCTTTGTGCTACTGGCTGTCGTGATGGGCCTCTTTTT TTTTTGCCTTAAAAATGGCAATATGAGGTGTACAATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2982	ATGTATAAGATCGTCGTAATCATCGCCCTGCTGGGCGCTGTTAAGGGGCTGGATAAGATCTGCCTAGGCCACCATGCCGTAGCCAATGGTA CAATCGTTAAGACATTAACCAATGAGCAGGAGGAGGTTACAAACGCTACCGAAACCGTTGAGAGCACCGGGATTAACCGACTCTGTATGAA GGGTAGGAAACATAAGGACCTCGGCAATTGCCATCCTATTGGCATGCTCATAGGGACCCCAGCGTGTGACTTGCACCTCACTGGAATGTGG GACACTCTGATCGAGAGGGAAAATGCCATAGCTTATTGTTACCCAGGAGCCACAGTGAATGTGGAAGCCCTGAGACAGAAGATCATGGAGT CCGGCGGAATCAACAAGATCAGCACTGGTTTCACCTATGGGAGTAGCATAAACAGCGCTGGTACTACCCGAGCATGCATGCGGAATGGAG GCAATAGCTTTTACGCTGAACTGAAATGGCTGGTCTCAAAATCGAAAGGGCAGAATTTTCCTCAGACGACAAATACCTATCGCAATACGGAC ACCGCAGAACACCTGATTATGTGGGGTATCCACCATCCTAGCTCCACACAGGAGAAAAATGATCTGTACGGAACCCAGTCCCTGTCTATCTC CGTGGGATCCTCCACTTACCGGAACAATTTTGTTCCTGTCGTGGGGCTCGGCCGCAAGTGAACGGTCAGAGCGGACGAATTGATTTCCAC TGGACTCTGGTGCAGCCTGGGGACAATATCACGTTCTCCCATAACGGAGGACTGATCGCCCCCAGCCGCGTGAGCAAGTTGATTGGGCGC GGCCTTGGAATTCAGTCAGATGCGCCAATAGATAATAATTGTGAATCTAAGTGTTTCTGGAGGGGAGGCTCCATCAATACCCGGCTCCCTTT CCAAAATTTGTCCCCGAGAACAGTGGGTCAGTGCCCAAAATATGTGAACCGCCGATCTCTGATGCTGGCCACCGGCATGAGGAACGTGCCT GAGCTGATTCAGGGTAGAGGCCTGTTTGGAGCCATCGCCGGCTTTTTAGAGAACGGCTGGGAAGGAATGGTCGACGGATGGTATGGCTTC AGGCACCAGAACGCCCAAGGGACTGGCCAGGCGGCTGACTACAAGTCCACTCAAGCGGCTATTGACCAAATTACAGGGAAAGCTGAATAGA CTCGTTGAAAAAACTAATACAGAGTTTGAAAGTATAGAATCTGAGTTCTCAGAAATAGAGCATCAGATTGGAAACGTGATCAACTGGACTAAA GACTCTATCACCGATATTTGGACGTATCAGGCGGAGTTGCTCGTCGCCGATGGAGAACCAACACACAATAGATATGGCTGATTCTGAGATGCT GAACTTGTACGAACGGGTGCGTAAAACAACTGCGCCAAAATGCTGAGGAGGACGGGAAGGGGTGTTTTTGAGATCTACCATGCTTGCGACGA TAGCTGCATGGAGTCAATTCGAAATAACACGTATGACCACAGCCAGTACAGGGAAGAGGCCCTGCTGAACAGGCTGAATATAAATCCCGTT ACCCTCTCCTCTGGATACAAAGACATCATCCTCTGGTTTTCATTCGGAGCTAGTTGCTTCGTACTACTAGCTGTTGTAATGGGCCTGTTCTTC TTCTGTCTCAAGAATGGTAACATGCGGTGTACGATCTGCATC

Seq ID No.	Sequenza di acido nucleico
2983	ATGTATAAGATCGTGGTGATCATTGCCCTCTTGGGCGCCGTGAAGGGTCTGGATAAAATATGTCTTGGTCACCACGCTGTGGCTAATGGTAC CATCGTGAAGACGCTTACCAACGAACAAGAGGAAGTGACAAATGCTACCGAGACCGTGGAGTCTACCGGGATCAACCGACTGTGCATGAAA GGACGAAAGCACAAAGACCTCGGCAATTGCCACCCTATTGGGATGTTGATTGGCACTCCAGCTTGCGACCTTCACCTGACCGGAATGTGGG ACACGCTCATCGAGCGCGAGAACGCCATTGCCTACTGCTACCCCGGGGCCACCGTTAACGTGGAAGCACTTAGGCAAAAAATTATGGAATC CGGTGGAATAAACAAGATTAGCACTGGTTTCACTTATGGAGTAGTATTAACTCTGCCGGGACAACCAGGGCTTGTATGAGAAATGGCGGC AATTCATTTTACGCAGAGCTCAAGTGGCTGGTTTCAAAAAGTAAAGGGCAGAATTTCCCGCAAACCACTAATACCTACAGGAACACAGACAC GGCCGAGCACCTGATCATGTGGGGTATTCACCACCCTAGCAGCACGCAAGAGAAAATGACCTTTATGGAACCCAGAGCCTCAGTATTTCA GTGGGAAGCAGCACGTACCGTAATAATTTTGTTCCGGTAGTCGGCGCCCGACCCCAGGGTGAACGGGCAGTCGGGACGAATCGACTTTCAT TGGACGCTTGTGCAGCCTGGCGACAACATCACCTTTAGCCACAATGGCGGCCTGATTGCTCCCAGCCGCGTCAGCAAGCTGATCGGGCGC GGACTGGGCATTCAGTCTGATGCCCCTATTGATAACAACTGCGAGAGCAAGTGTTTTTGGCGGGGAGGCTCCATAAATACTCGCTTACCTTT CCAGAACCTCAGTCCAAGGACCGTAGGGCAGTGTCCTAAGTATGTTAACAGAAGGAGTCTCATGTTAGCCACAGGAATGCGCAATGTACCA GAACTCATTCAGGGCAGGGGACTCTTTGGTGCAATTGCTGGGTTTCTGGAGAACGGTTGGGAAGGTATGGTCGACGGCTGGTACGGCTTT CGACATCAAAATGCACAGGGCACAGGCCAGGCGGCTGATTATAAATCCACTCAGGCCGCCATCGACCAAATCACAGGAAAGCTCAACCGTC TGGTCGAGAAGACCAATACTGAGTTCGAAAGCATCGAGTCAGAGTTTAGCGAGATTGAGCATCAGATTGGCAATGTCATCAACTGGACTAAA GATAGCATAACCGATATTTGGACGTACCAAGCAGAGCTACTTGTTGCTATGGAGAATCAGCATACCATTGATATGGCCGATAGCGAGATGCT GAATCTGTATGAGAGTGAGAAAGCAGTTGAGACAAAACGCGGAGGAGGATGGGAAGGGCTGTTTCGAGATCTACCACGCCTGCGACGA CTCCTGTATGGAGTCTATACGCAACAACACATACGACCACAGCCAGTATAGGGAGGAAGCCTTGCTGAATAGGCTGAATATCAATCCTGTAA CGCTGTCGAGTGGGTACAAAGACATCATTTTATGGTTCAGTTTTTGGAGCCTCTTGTTTCGTTTTGCTGGCCGTCGTCATGGGACTATTTTTTT TTTGTTTAAAGAACGGGAACATGAGATGCACTATTTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2984	ATGTACAAGATTGTGTTGGTCCTAGCCCTCCTCGGCGCTGTGCATGGGCTGGATAAGATCTGCCTTGGGCACCACGCCGTGCCTAATGGCA CTATCGTGAAAACACTCACAAACGAAAAAGAGGAAGTAACAAATGCCACCGAGACTGTGGAAAGCAAGAGCCTTGATAAACTCTGTATGAAA AACAGAAATTATAAAGATTTAGGCAACTGTCATCCCATTGGTATGGTTGTGGGAACGCCCGCTTGTGATCTGCATTTAACGGGTACATGGGA TACCCTCATCGAGCGGAGATAACTCAATCGCCTACTGCTACCCGGGCGCCACTGTGTCAGAGGAAGCCTTGAGACAGAAGATTATGGAATCC GGCGGTATTGACAAGATTTCTACCGGGTTTACGTATGGGTCTTCCATAAACTCCGCAGGCACCACACAAAGGCATGCATGAGAAATGGTGGTA ATTCTTTCTACTCAGAGCTTAAATGGCTGGTGTCTAAGAACAAAGGCCAGAACTTTCCCCAGACGACCAACACATACCGTAACACGGACAGC GTCGAGCACCTGATCATCTGGGGCATTCACCATCCTTCCTCAACTCAGGAGAAAAACGATCTCTATGGTACCCAAAGCCTCTCTATTTCAGT CGGATCAAGCACATACCAGAACAACTTTGTGCCCGTCGTTGGAGCCCAGGCCACAGGTGAACGGCCAGAGTGGTCGAATTGATTTTCACTGG ACAATGGTGCAACCTGGGGATAATATCACATTCAGCCATAATGGTGGTCTGATCGCCCCAAATAGAGTTTCAAAGCTTAAGGGCAGGGGTCT GGGGATTCAAAGCGGTGCTTCCGTCGATAATGACTGTGAGTCAAAATGCTTTTGGAAGGGGGGCAGCATCAATACAAAGCTACCGTTTCAG AACCTCAGTCCCAGGACAGTTGGGCAGTGTCCTAAGTATGTGAATAAAAAATCCTTACTGTTGGCCACTGGAATGAGAAACGTTCCAGAGGT AGCTCAGGGCCGTGGTCTCTTTGGGGCCATCGCCGGCTTTATTGAAAACGGGTGGGAAGGAATGGTTGATGGGTGGTATGGGTTCAGGCA TCAGAACGCCCAGGGCACTGGACAAGCAGCTGACTATAAGAGCACACAGGCTGCTATTGACCAGATTACTGGAAAACTGAATAGGTTGATA GAGAAGACCAACACTGAGTTCGAGTCTATCGAGTCAGAGTTTTCAGAAATCGAGCATCAGATCGGTAACGTAATCAACTGGACCAAGGACTC AATAACCGACATCTGGACATATCAAGCCGAGTTGCTGGTAGCTATGGAGAATCAACATACTATCGACATGGCTGATTCCGAAATGCTCAACT TGTATGAGCGCGTGCGTAAGCAGTTGAGACAGAATGCTGAGGAAGATGGCAAGGGCTGCTTCGAGATTTACCACAAGTGTGACGATAATTG TATGGAGCATTCGAAACAACACTTACGACCACACCCAATACCGCGAGGAAGCCCTGTTGAATCGGCTCAACATCAATCCCGTAAAGTTGT CCAGTGGTTATAAAGACGTCATCTTATGGTTTAGTTTTGGAGCTTCTTGTTTTGTGCTCCTGGCAGTCATTATGGGACTGGTATTCTTCTGCC TGAAAAATGGGAATATGAGATGCACTATCTGTATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2985	ATGTATAAAATTGTCGTGATTATTGCTCTGCTCGGTGCCGTTAAGGGACTCGATAAGATCTGCTTAGGACATCACGCTGTAGTGAACGGCAC AATCGTGAAAACACTCACGAACGAGCAGGAAGAGGTCACAAAACGCCACAGAAACTGTCGAGAGCACCGGTCTAAACCGACTGTGTATGAAA GGAAGGAATCATAAGGACCTAGGCAATTGTCACCCAATCGGAATGCTTATCGGCACCCCTGCATCGATTTGCACCTGACAGGTACATGGG ATACGCTGATCGAGCGCGAGAATGCCATCGCCTATTGTTACCCCCGGTGCAACCGTAAACGAGGAGGCCCTGAGGCAAAAGATAATGGAGT CAGGCGGCATAAATAAGATTAGCACCCGGTTTTACCTATGGGAGCAGTATAAATAGTGCCGGTACTACGCGCGCATGTATGCGCAATGGGGG CAACTCTTTTTACGCCGAACTCAAGTGGCTAGTGTCAAAATCGAAGGGCCAGAACTTTCCACAGACCACTAACACTTATAGGAACACGGACA CAGCCGAACATTTAATAATGTGGGGTATCCATCACCCAAGTTCCACTCAGGAGAAAAACGATTTATACGGAACTCAGTCGCTGTCAATCAGC GTAGGGAGCTCAACATACCAGAACAACTTTGTTCCAGTGGTGGGCGCACGTCCCCAGGTGAACGGTCAAAGCGGCCGGATAGATTTTCACT GGACCCTGGTGCAGCCTGGAGATAATATTACTTTTAGTCACAACGGTGGCCTAATCGCACCCAGTCGTGTATCGAAGCTTATCGGACGGGG CCTCGGGATACAGTCTGATGCTCCCATAGACAACAACTGTGAGTCTAAGTGCTTTTGGCGGGGCGGGTCTATTAACACCAGGCTCCCATTT CAGAACCTCAGTCCTCGGACCGTGGGTCAGTGTCCGAAGTATGTTAATAAGCGTTCTCTCATGCTCGCCACTGGAATGAGGAACGTGCCAG AGCTAATGCAGGGAAGAGGACTGTTCGGGGCCATAGCCGGCTTCATTGAAAATGGCTGGGAGGGTATGGTTGACGGATGGTACGGCTTCC GACACCAGAATGCTCAAGGCACAGGCCAGGCTGCAGATTATAAATCAACACAGGCTGCTATTGACCAAATCACTGGCAAGCTCAATCGATTA ATTGAAAAAACAAATACCGAGTTTGAAAGCATCGAGAGTGAATTTTTCCGAGATCGAAACACCAAATCGGAAACGTGATCAACTGGACCAAGGA CTCTATCACCGATATATGGACCTATCAGGCAGAACTTTTAGTTGCCATGGAGAACCAGCATACCATTGATATGGCCGACAGCGAAATGCTGA ACTTGTATGAGCGGGTCCGGAAACAATTACGCCAGAATGCCGAGGAAGACGGAAAAGGGTGCTTTGAGATCTATCATGCTTGCGACGACTC TTGTATGGAGTCAATCAGAAATAATACTTATGACCATAGTATAGGGAAGAGGCGCTGCTCAACAGACTAAATATCAACCCCGTTACGCC TGAGCTCCCGGTTATAAGGACATCATTCTTTTGGTTTTCCTTTGGCGCAAGCTGCTTTGTTCTGCTAGCTGTAGTGATGGGACTCGTCTTTTTTCT GCCTGAAGAACGGAAACATGCGCTGTACAATCTGTATT

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Seq ID No.	Sequenza di acido nucleico
2986	ATGTATAAGATCGTTGTGATCATCGCCCTGCTGGGCGCCGTGAAAGGGCTGGACAAGATTTGTCTGGGTCACCACGCCGTCGCCAACGGG ACAATTGTTAAAACACTGACTAACGAGAAGGAGGAGGTGACTAACGCAACCGAGACAGTTGAGTCCACAGGATTGAAATCGGCTTTGTATGA AAGGCCGGAAGCACAAAGACCTGGGAAACTGCCACCCTATAGGGATGCTGATCGGAAGTCCTGCTTGTGATCTACACCTGACAGGTACTTG GGACACACTGATCGAGCGGGAGAATGCCATTGCTTACTGCTACCCAGGAGCCACCGTGAATGGTGAAGCTCTGAGACAGAAGATTATGGAA TCCGGAGGCATTGATAAAATCTCTACAGGATTTACATACGAGTCCTCAATCAATTCAGCTGGCACAACTCGAGCATGTATGCGCAATGGCGG GAATAGTTTTTATGCCGAGCTCAAGTGGCTCGTCTCTAAAAGCAAGGGGCAGAACTTTCCCCAGACCACGAACACCTATAGAAATACCGATA CAGCCGAGCATCTTATTATGTGGGGCATACATCATCCCTCCTCTACACAAGAGAAGAATGATCTTTACGGAACGCAGTCCCTCTCGATCAGC GTGGGAAGCTCCACATATAGGAACAATTTTGTTCCCGTGGTTGGCGCTCGTCCTCAGGTGAACGGACAGAGTGGCCGAATCGACTTTCACT GGACCCTTGTTCAGCCCGGCGACAACATAACGTTTTCGCATAATGGCGGCCTCATTGCACCTTCCCGTGTCAGCAAACTGATTGGCCGCGG GCTGGGCATCCAATCTGACGCTCCCATCGATAACAACTGCGAATCAAAATGCTTCTGGAGGGGAGGGTCTATTAATACTCGGCTGCCATTC CAAAACCTTTCCCCCCGGACAGTTGGCCAGTGTCCGAAATATGTGAACAAACGGAGTTTGATGCTCGCTACCGGGATGCGGAACGTGCCTG AATTGATGCAGGGAAGAGGTCTTTTCGGCGCCATTGCCGGCTTCTTGGAAAATGGTTGGGAAGGGATGGTCGACGGATGGTATGGATTTCG GCATCAGAACGCTCAAGGCACTGGGCAGGCAGCTGATTATAAATCAACCCAGGCTGCCATTGACCAGATAACTGGCAAACTCAACAGGCTG GTGGAGAAGACCAACACCGAATTCGAGAGTATTGAGTCTGAATTCAGCGAGATCGAGCACCAGATAGGGAACGTTATTAACTGGACCAAGG ATTCTATTACGGACATTTGGACATACCAAAGCTGAGCTCTTAGTGGCCATGGAGAATCAGCATACCATTGACATGGCCGATTCTGAGATGCTT AATCTCTATGAGAGGGTGAGAAAGCAGCTGCGGCAGAATGCCGAAGAAGATGGCAAGGGGTGCTTTGAGATTTACCACGCTTGCGATGATT CATGTATGGAATCTATTCGCAATAACACCTACGATCATTCTCAGTATCGGGAGGAAGCCCTGCTGAATCGCCTGAACATTAATCCCGTGACA CTTTCAAGTGGTTACAAGGACATAATTCTATGGTTCAGTTTTTGGGGCTAGTTGTTTTGTGCTCCTAGCCGTTGTGATGGGTCTTGTCTTCTTT TGTTTGAAGAACGGAAATATGCGGGTGTACAATCTGTATA

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2987	ATGTACAAGATCGTGGTGATCATTGCGCTCCTGGGCGCCGTCAAGGGACTGGACAAGATCTGCCTGGGCCATCACGCTGTGGCAAATGGG ACAATCGTGAAAACGCTGACTAACGAGCAAGAGGAGGTGACAAATGCGACGGAGACAGTGGAATCGACTGGGATTAACCGACTGTGTATG AAAGGAAGAAAACATAAAGACCTCGGAAATTGCCATCCCATTGGGATGCTGATCGGAACTCCAGCCTGTGACCTGCACCTGACAGGAATGT GGGATACCCTGATTGAGCGGGAGAATGCTATCGCATATTGTTACCCCGGGGCTACCGTAAACGTCGAAGCCCTTAGGCAGAAGATAATGGA AAGCGGTGGCATCAATAAGATTTCGACAGGCTTCACTTATGGAAGTAGTATTAATAGCGCAGGAACCACTCGAGCCTGTATGAGAAACGGC GGTAACAGCTTTTTATGCTGAGCTCAAGTGGCTTGTCTCCAAGTCTAAGGGACAGAATTTCCCACAGACTACAAACACTTACAGGAATACCGA TACAGCTGAGCATCTAATTATGTGGGGAATACATCACCCTTCTTCCACCCAGGAAAAAAACGACCTCTACGGCACTCAATCTCTCAGCATAT CGGTGGGGAGTTCGACTTACCGAAACAACTTTGTCCCGGTTGTCGGTGCCCAGGCCCCAGGTGAACGGACAAAGCGGTCGGATCGATTTTC ATTGGACTTTGGTCCAGCCTGGGGACAATATCACATTCTCACATAACGGCGGATTAATTGCCCCCTCTCGCGTGTCAAAGCTCATAGGCCG GGGCCTGGGGATTCAGTCTGACGCTCCAATTGATAATAATTGCGAGTCAAAATGCTTCTGGCGCGGGGGGTCTATTAATACTCGATTGCCAT TCCAGAATCTCAGTCCCCGGACCGTGGGCAGTGCCCAAAGTATGTGAACCGGCGGAGGCCTGATGCTGGCTACTGGAATGCGGAATGTGC CCGAACTTATTCAGGGCCGAGGTCTGTTCGGCGCCATCGCCGGGTTCCTGGAGAATGGGTCGATGGTCGATGGATGGTATGGAT TTCGTCACCAGAACGCACAGGGCACAGGCTGCCGACTATAAGTCTACACAAGCGGCTATCGACCAGATTACTGGTAAACTCAACCG GCTGGTGGAGAAGACCAACACTGAGTTCGAATCCATTGAATCTGAATTTTCGGAGATCGAACACCAGATTGGAAACGTGATCAACTGGACCA AGGACTCAATCACTGACATCTGGACTTACCAGGCCGAACTGCTTGTGGCTATGGAGAATCAGCATACTATCGATATGGCCGACTCCGAAAT GCTCAACCTTTACGAGCGAGTGCGGAAACAATTGAGACAAAACGCCGAAGAGGATGGGAAGGGCTGTTTTGAAATATACCACGCCTGCGAT GATAGTTGTATGGAGTCAATCAGGAATAACACTTATGATCATAGTCAGTATAGAGAGGAAGCTCTTCTGAATCGACTGAACATCAACCCAGTA ACACTTAGTAGTGGGTACAAAGACATCATCTTGTGGTTCTCATTCGGAGCCTCTTGTTTTTGTGCTGCTTGCCGTCGTAATGGGACTGTTTTTT TTTTGTCTCAAGAACGGCAACATGAGGTGCACTATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2988	ATGTACAAAATCGTGGTGATCATCGCACTGCTAGGGGCAGTGAAAGGCCTGGATAAAATCTGCCTGGGACACCACGCAGTAGCCAACGGTA CCATTGTGAAAACACTGACAAACGAACAGGAGGAGGTCACAAATGCTACAGAGACCGTGGAGTCTACAGGTATTAATCGGCTGTGCATGAA GGGAAGAAAGCACAAGGATCTGGGGAACTGCCACCCCATTGGAATGCTCATCGGGACACCTGCATGCGATCTGCACCTCACTGGCATGTG GGACACATTGATCGAAAGAGAAAATGCCATTGCTATCCTGGAGCAACGGTCAATGTGGAAGCACTGAGGCAAAAGATCATGGAG TCCGGAGGCATCAACAAAATCTCAACCGGTTTCACATACGGAAGCAGTATTAACTCTGCCGGCACAACCCGTGCTTGCATGCGAAATGGAG GGAACTCTTTCTACGCGGAACTCAAATGGTTGGTGTCTAAGTCGAAAGGACAGAACTTTCCGCAAACTACAAATACTTACAGGAATACTGAC ACTGCAGAACATCTGATCATGTGGGGCATCCACACCCCTCTTCAACACAGGAAAAGAATGACCTGTACGGGACCCAGAGTCTGTCAATCT CCGTGGGCTCCTCAACTTATCGTAACAACTTTGTCCCTGTTGTGGGAGCACGACCTCAAGTGAACGGACAGAGCGGGAGAATCGATTTTCA CTGGACCCTCGTGCAGCCTGGAGATAACATCACATTTAGCCATAACGGAGGGTTGATCGCTCCGTCCCGTGTGTCTAAACTTATCGGACGG GGCCTGGGTATCCAGAGTGATGCACCAATCGATAACAACTGTGAGAGCAAGTGTTTCTGGCGTGGTGGTTCTATAAACACACGACTGCCCT TCCAGAACCTGTCGCCTAGAACCGTGGGACAGTGTCCTAAATACGTCAACCGAAGAAGCCTAATGCTGGCCACAGGAATGCGCAACGTGC CCGAGCTAATTCAGGGCAGGGGCCTCTTCGGCGCAATCGCAGGCTTTCTGGAGAATGGGTGGGAGGGGATGGTGGATGGTTGGTACGGG TTCCGACATCAGAACGCCCAGGGGACGGGGCAGGCAGCCGACTACAAATCCACTCAGGCCGCAATAGACCAGATTACCGGGAAACTGAAT AGACTGGTGGAGAAAACAAATACTGAGTTCGAGAGTATTGAATCAGAGTTCTCCGAAATCGAGCATCAGATCGGCAACGTGATTAACTGGAC TAAGGACTCTATCACAGATATATGGACATATCAGGCCGAGCTGCTGGTGGCCATGGAGAACCAGCACACCATCGACATGGCCGACTCAGAA ATGTTAAACCTCTATGAGCGGGTTCGTAAGCAGTTACGCCAAAACGCCGAAGAGGATGGCAAGGGTGCTTCGAAATTTATCACGCTTGTG ATGATTCCTGTATGGAGTCCATTCGGAACAACACCTACGACCACAGCCAGTACCGCGAGGAGGCCCTTCTGAATCGTCTGAACATAAACCC GGTCACCCTCAGTTCAGGATACAAGGACATAATCTTTGGTTCTCCTTTGGCGCCTCATGCTTCGTGCTCCTGGCCGTGGTGATGGGCTC TTTTTCTTCTGCTTGAAGAACGGGAACATGCGGTGTACTATCTGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2989	ATGTACAAAGTGGTGGTGATCATCGCCTTACTCGGGGCAGTGCGAGGGCTGGATAAGATTTGCCTGGGTCACCACGCTGTGGCAAACGGG ACAACAGTGAAAACTCTCACAAATGAACAGGAGGAAGTCACCAACGCAACAGAGACCGTCGAAAGTACCTCACTCAATAAGTTGTGTATGAA AGGTCGCCGGTACAAGGACCTCGGGAACTGCCACCCAATTGGAATGCTGATTGGTACGCCCGTGTGTGACCTGCACCTGACCGGGACGTG GGACACCCTGATCGAGCGCGAGAATGCAACTGCTTACTGCTACCCCGGCGTGACCATTAACGAAGAAGCGCTGCGCCAGAAAATCATGGA ATCAGGGGCGGATTAGCAAAATGAGGACAGGGTTCACATATGGTCCTAGCATCAATAGCGCCGGAACGACACGGAGCTGCATGCGCAACGG AGGCAACTCATTTTATGCCGAACTTAAGTGGCTGGTGTCTGGGACAAAGGGGCAGAACTTCCCACAGACTACTAATACATCGAAATACCG ACACTGCCGAGCACCTTATCATCTGGGGAATCCACCATCCTAGCTCAACTCAGGAAAAGAATGACCTCTACGGTACTCAGTCTCTGTCCATT AGCGTGGGATCCAGCACCTACCAAAACAATTTTGTTCCTGTTATCGGGGCAAGACCCCAAGTGAATGGCCAATCTGGGAGAATCGAATTCC ACTGGACACTGGTCAGACCAGGCGACAACATAACTTTTTCACACAATGGAGGACTTATCGCCCAGACAGGGTGTCAAAGCTGATCGGAAA GGGCATCGGAATTCAGAGTGGTGCGGTGATTGATAAGGATTGTGAAAGCAAGTGCTTTTGGCGCGGGGGGCTCCATTATCACCGAGCTCCCT TTTCAAAACCTTAGCCCCCGGACAGTCGGCCAATGCCCAAAATATGTCAAAAAGCGCTCACTGCTCCTTGCCACGGGGATGCGGGAACGTGC CGGAAGTGGTGCAAGGTCGAGGCCTCTTTGGCGCGATCGCCGGATTCATCGAGAATGGTTGGGAAGGCATGGTGGACGGGTGGTACGGG TTTAGACACCAGAATGCGCAGGGCATTGGGCAGGCTGCTGACTACAAATCAACTCAGACTGCGATTGATCAGATCACGGGAAAACTGAACC GTCTCATCGAAAAAACAAACACTGAGTTCGAATCCATCGAGTCGGAATTTAGTGAAATCGAACACCAGATCGGCAACGTCATTAATTGGACG AAGGACTCTATTACAGATATCTGGACCTATCAGGCTGAGCTCTTGGTAGCAATGGAAAACCAACACACTATCGATATGGCGCGATAGCGGAT GCTGAACCTGTATGAAAGGGTTAGAAAGCAGCTGAGACAGAACGCTGAAGAAGACGGTAAGGGCTGCTTTGAGATCTATCATACATGCGAC AATTCATGTATGGAGTCCATACGGAATAATACATATGACCATTCGCAGTACCGAGAGGAGGCCTTACTGAACAGACTGAACATCAATCCTGT TAAGCTGTCAAGCGGTTACAAGGACATAATTCTCTGGTTCTCCTTTGGTGCCTCCTGTTTCGTACTTCTCGCCGTCATCATGGGGTTGGGCT TCTTTTGCCTGAAAAATGGCAACATGAGATGCACTATATGCATT

Seq ID No.	Sequenza di acido nucleico
2990	ATGTATAAGATAGTGGTAATAATTGCCCTCTTGGGGGCAGTGAAAGGACTCGATAAGATATGCCTGGGACACCATGCCGTGGCTAACGGCA CAATTGTGAAAACGCTAACAAACGAGCAGGAGGAAGTTACCAACGCTACCGAAACCGTTGAGAGTACCGGCATTAATAGACTTTGTATGAAG GGCCGAAAACACAAAGATCTCGGGAACTGTCATCCGATCGGCATGTTGATTGGAACACCTGCATGTGATCTCCATTTAACAGGCATGTGGG ATACATTGATTGAGCGGGGAGAACGCTATAGCCTATTGCTATCCCGGAGCCACAGTGAATGTTGAGGCGCTTCGTCAGAAAATCATGGAGAG CGGAGGCATCAACAAGATCTCCACCGGGTTTACCTATGGCTCGTCTATAAACTCAGCTGGTACAACCAGGGCTTGCATGAGAAATGGGGGA AATTCCTTTTATGCAGAGCTGAAGTGGCTGGTGTCAAAGAGCAAAGGACAGAATTTCCCGCAGACCACAAACACCTATCGTAATACCGACAC CGCCGAGCACCTTATTATGTGGGGCATACACCATCCAAGCTCAACCCAGGAGAAGAACGATCTGTACGGCACGCAGAGTCTGAGGCATCTCA GTCGGCTCTTCCACTTATAGGAACAACTTCGTTCCAGTTGTCGGGGCGCGCCCTCAAGTCAACGGACAATCTGGCAGGATCGACTTCCACT GGACTCTTGTACAACCCGGCGATAACATCACCTTCTCCCATAACGGGGGTCTTATCGCCCCATCCCGGGTGAGCAAGCTCATTGGTCGCGG ACTGGGGATTCAGAGCGATGCGCCTATTGACAATAACTGCGAGAGTAAATGCTTTTGGAGGGGCGGTAGCATCAACACCCGGTTGCCTTTC CAAAACCTTTCCCCTAGAACAGTTGGCCAGTGTCCGAAGTATGTAAACAGGCGAAGTCTCATGCTCGCGACAGGCATGCGGAATGTTCCCG AGCTGATTCAGGGCAGGGGACTGTTTGGAGCTATCGCGGGATTTCTGGAAAACGGTTGGGAAGGGATGGTGGACGGATGGTATGGATTCC GCCACCAGAATGCACAAGGAACGGGCCAGGCCGCCGACTACAAGTCCACTCAGGCCGCTATTGATCAGATTACCGGCAAGCTCAATCGCC TGGTGGAGAAGACTAATACCGAGTTCGAGAGCATCGAGTCCGAATTCTCGGAAATTGAGCATCAGATCGGCAATGTCATAAATTGGACCAAA GACTCAATCACAGATATATGGACTTATCAGGCTGAGTTGCTTGTGGCTATGGAAAACCAGCACACAATCGATATGGCTGATTCCGAGATGCT TAATCTGTATGAACGCGTAAGGAAGCAGTTACGGCAAAATGCAGAAGAAGATGGCAAGGGCTGTTTTGAGATCTATCATGCCTGCGATGAC AGTTGCATGGAGTCAATTAGGAATAATACGTATGATCACTCTCAGTATCGTGAGGAAGCTCTGCTGAACCGTCTGAACATCAATCCTGTGAC CTTATCGTCCGGATATAAGGATATCATTCTATGGTTCAGCTTTGGCGCTAGCTGCTTTGTCTTACTCGCTGTGGTCATGGGCCTGTTTTTTTT CTGCTTAAAGAACGGGAACATGCGTTGTACAATCTGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2991	ATGTATAAAATCGTCGTTATAATCGCGTTATTGGGAGCAGTGAAGGGCTTAGACAAGATTTGTCTGGGACATCATGCAGTGGTGAACGGAAC CATCGTGAAGACACTAACAAATGAACAGGAGGAAGTCACCAACGCAACCGAAACTGTGGAATCTACAGGTCTAAACAGGTTGTGTATGAAA GGCAGGAATCATAAAGACCTCGGCAACTGCCATCCAATTGGTATGCTTATTGGAACGCCCGCATGTGACCTGCATCTCACAGGTACATGGG ACACACTCATTGAGCGCGAAAATGCTATCGCCTACTGCTATCCTGCGCTACCGTCAATGAGGAGGCACTGAGACAGAAGATCATGGAGAG CGGCGGAATAAACAAAATTTCTACAGGCTTCACCTATGGGAGCAGCATCAATTCTGCCGGCACAACAAGGGCCTGTATGCGTAACGGGGGA AACTCCTTTTACGCCGAGCTGAAATGGTTGGTGTCCAAGAGCAAGGGGCAGAACTTTCCCCAGACCACAAATACATATAGGAATACGGATAC TGCCGAGCACCTCATCATGTGGGGCATCCATCACCCAAGCTCCACCCAGGAGAAGAATGACCTCTACGGGACCCAGTCCCTTAGCATTTCT GTGGGCAGTAGCACTTATCAAAATAACTTCGTCCCCGTCGTAGGGGCGAGACCACAGGTTAACGGACAAAGCGGCAGAATTGACTTCCACT GGACACTCGTTCAGCCAGGTGATAATATTACTTTTAGCCATAAATGGGGGACTGATAGCACCCAGCAGAGTGAGTAAGTTGATAGGCAGGGG GCTTGGTATTCAGTCAGATGCGCCCATTGATAACAACTGTGAGAGTAAGTGCTTCTGGAGAGGGGGCTCCATTAATACCCGCTTGCCATTTC AAAACCTGTCCCCCAGGACTGTAGGGCAGTGCCCTAAGTACGTGAACAAACGGTCCTTAATGCTGGCCACTGGTATGCGCAATGTGCCAGA GCTCATGCAGGGCAGAGGGCTCTTTGGAGCCATAGCAGGGTTTATTGAAAATGGGTGGGAGGGCATGGTGGACGGATGGTACGGATTTAG ACACCAAAACGCGCAGGGCACTGGACAGGGCGCCGACTATAAGTCCACCCAGGCCGCGATCGATCAGATCACCGGAAAGTTGAACCGCTT AATAGAGAAGACAAACACCGAGTTCGAAAGCATAGAGTCCGAATTTTCCGAAATCGAACACCAGATCGGCAACGTGATCAACTGGACGAAG GATTCGATTACCGACATTTGGACTTATCAGGCTGAACTACTCGTGGCTATGGAGAACCAACATACTATCGATATGGCAGATTCTGAAATGCTT AACCTCTATGAACGGGTTAGGAAACAGCTGAGGCAGAACGCAGAAGAAGACGGCAAGGGGTGCTTCGAAATTTATCATGCATGTGACGATA GTTGCATGGAAAGCATTAGAAACAACACCTATGACCATTCTCAGTATCGGGAGCGGCACTCCTGAATCGTCTGAATATCAACCCAGTCACA CTGAGTTCAGGGTATAAAGACATAATTCTCTGGTTCTCATTCGGAGCCTCCTGTTTTGTGCTACTCGCAGTTGTGATGGGACTGGTCTTTTTT TGCCTGAAAAATGGCAATATGAGATGTACAATTTGCATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2992	ATGTATAAAATTGTGGTCATAATTGCACTGCTCGGCGCAGTAAAGGGGCTCGATAAGATTTGCCTGGGCCACCACGCCGTCGCTAACGGGA CGATTGTCAAGACCCTGACTAACGAACAAGAGGAGGTGACTAATGCTACCGAAACCGTCGAATCCACCGGCATTAACAGACTCTGTATGAA AGGCAGAAAACATAAGGATCTGGGAAATTGCCACCCAATCGGAATGCTGATCGGGACACCGCCTGCGACCTGCACCTGACTGGGACTTG GGATACACTTATCGAAAGGGAGAATGCCATTGCTTATTGTTACCCCGGCGCAACAGCGAATGTTGAAGCCCTGCGGCAAAAAATTATGGAAT CCGGTGGCATTGACAAGATCAGCACCGGGTTCACCTACGGCTCATCTATTAACAGTGCTGGGACCACCAGAGCTTGCATGCGGAACGGTG GCAACAGTTTCTACGCTGAACTCAAGTGGTTAGTCTCAAAGTCTAAAGGACAGAACTTCCCCCAGACTACTAATACGTATAGGAACACTGAT ACTGCTGAACATCTGATTATATGTGGGGCATTCACCATCCAAGCTCAATTCAGGAGAAAAACGACCTGTATGGCACCCAGTCGCTGTCTATCAG CGTGGGTTCCAGCACCTACCGGAACAATTTTGTACCGGTGGTTGGCGCGCGTCCTCAGGTCAATGGTCAATCTGGGCGGATTGACTTCCAC TGGACTCTGGTTCAACCCGGCGACAACATAACTTTCTCTCACAATGGTGGATTGATCGCTCCTTCCCGCGTTTCAAAACTGATAGGCCGCGG CTTAGGAATTCAGAGCGACGCCCCGATAGACAATAATTGCGAGTCCAAGTGCTTCTGGAGGGGAGGAAGCATTAACACGCGGTTGCCTTTC CAGAACCTGTCCCCAAGGACAGTGGGACAATGCCCAAAATATGTCAATAGAAGAAGTCTCATGCTGGCGACTGGTATGCGCAACGTGCCTG AGCTTATCCAGGGCCGCGGATTGTTCGGGGCAATCGCCGGCTTCCTGGAAAATGGGTGGGAAGGAATGGTGGATGGTTGGTACGGTTTTC GACATCAGAATGCCCAGGGTACTGGCCAGGCTGCAGACTATAAAAGCACTCAGGCTGCCATTGACCAGATCACGGGTAAACTGAATAGGCT GGTGGAGAAGACGAACACAGAGTTCGAGTCTATTGAATCTGAGTTTTCTGAGATAGAGCACCAGATCGGAAACGTCATCAACTGGACCATG GATTCCATAACTGACATCTGGACTTACCAGGCGGAACTGCTGGTTGCAATGGAGAATCAGCACACTATTGACATGGCCGATTCCGAGATGC TCAATCTTTACGAGCGGGTCCGTAAACAGCTAAGGCAGAATGCCGAGGAAGATGGGAAGGGTTGCTTCGAAATATATCATGCATGTGATGA TTCTTGTATGGAGTCGATTCGTAATAACACCTACGATCACAGTCAATACAGAGAAGAAGCTCTTCTTAATCGGCTAAACATTAACCCAGTCAC ATTGAGCTCAGGATACAAGGACATCATCCTGTGGTTCTCATTCGGGGCTTCCTGTTTTGTCCTGCTGGCCGTGGTCATGGGGCTGGTTTTTT TTTGCCTGAAGAACGGCAATATGAGATGCACAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2993	ATGTATAAGGTGGTTGTGATTATTGCGCTGCTCGGGGCCGTTCGAGGCCTGGATAAAATCTGTCTGGGCCATCACGCTGTCGCCAATGGCA CGACTGTGAAAACTTTAACAAATGAGCAGGAAGAGGTGACAAATGCCACTGAAACCGTCGAGAGTACATCACTGAATAAACTGTGCATGAAG GGACGCCGCTATAAGGACCTGGGTAATTGCCATCCAATTGGTATGTTGATCGGGACCCCTGTGTGCGACTTACACCTAACTGGCACTTGGG ACACACTGATCGAGAGGGAGAATGCCACCGCCCTATTGTTACCCTGGTGTGACCATTAACGAAGAGGCTCTCAGACAAAAGATTATGGAGTC TGGAGGAATCTCTAAGATGCGTACTGGGTTTACCTATGGGCCAAGCATCAACTCGGCTGGCACTACTCGCTCCTGTATGAGAAATGGAGGA AACTCCTTTTATGCTGAGTTGAAGTGGCTCGTTTCCGGCACCAAGGGGCAAAACTTTCCACAGACGACCAATACTTATAGGAATACGGACAC CGCTGAACACCTGATTATTTGGGGAATCCATCACCCCAGCTCTACGCAGGAGAAGAACGACCTTTACGGTACCCAGAGTCTTTCGATTAGC GTGGGCAGCAGCACATACCAGAATAATTTCGTGCCCGTAATAGGTGCACGGCCTCAGGTGAATGGACAGTCGGGCCGGATAGAATTCCAC TGGACGCTCGTTAGGCCCGGAGACAACATAACTTTTTTCTCATAATGGCCGACTTATCGCTCCAGATCGGGTCAGCAAGCTTATAGGGAAGG GGATCGGCATCCAGTCCGGTGCTGTCATCGATAAGGACTGTGAATCCAAGTGTTTCTGGCGTGGCGGTTCAATTATCACCGAACTACCTTTT CAAAACTTGTCACCAAGAACCGTGGGACAGTGTCCAAAGTATGTCAAAAAAAGATCCTTGTTACTGGCTACCGGGATGAGGAATGTGCCTGA AGTCGTTCAGGGCCGCGGGCTGTTCGGAGCCATCGCGGGATTTATCGAAAACGGGTGGGAGGGGATGGTGGTACGGATTCA GGCATCAGAATGCTCAGGGGATTGGGCAGGCTGCCGACTACAAGTCTACCCAGATCGGCTATTGACCAGATCACCGGCAAGTTGAATCGCC TGATAGAAAAAACTAATACGGAATTCGAAAGCATCGAATCCGAGTTCTCAGAAATCGAGGCACCAGATAGGTAATGTAATCAATTGGACAAAG GACTCTATCACCGATATCTGGACCTATCAGGCAGAATTGCTGGTGGCAATGGAGAACCAGCACACAATCGATATGGCTGATTCAGAAATGCT GAATTTGTACGAGAGGGTCCGGAAGCAGCTCCGACAGAACGCAGAAGAAGATGGGAAGGGTTGTTTCGAGATATCATCATACCTGCGACAAC TCGTGTATGGAATCAATACGCAATAATACATACGATCACAGTCAGTATCGTGAGGAGGCTCTCCTGAACAGGCTGAATATTAATCCTGTGAA ACTGAGCTCCGGGTACAAGGATATTATTCTGTGGTTCAGTTTTCGGCGCTTCATGTTTCGTGTTGCTGGCAGTTATTATGGGGCTTGGTTTCTT CTGCCTGAAGAATGGGAACATGCGCTGCAACGATTTGCATA

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2994	ATGTATAAGGTGGTCGTAATCATCGCCCTTCTGGGTGCTGTCCGGGGCTTGGACAAAATTTGTCTCGGGCATCACGCAGTGGCTAACGGCA CAATAGTGAAGACCCTCACTAACGAACAGGAGGAAGTGACAAACGCGACAGAAACAGTTGAGAGTAAATCCCTCGGCAAGCTGTGCATGAA AGGGAGGAGTTATAATGACCTCGGCAATTGTCATCCGATAGGTATTCTGATCGGCACTCCTGCGTGCGACCTGCACCTGACCGGGACCTGG GATACCCTCATCGAGAGGGAGAACGCCCGTGGCCTACTGCTACCCAGGCCGCCACAGTAAATGAGGAAGCGCTGCGGCAGAAAATTATGGAA TCTGGAGGAATTAGCAAGATTTCTACTGGCTTCACCTATGGGACAAGCATCAACAGCGCCGGTACCACGAAGGCCTGTATGAGAAACGGTG GGAATTCTTTTTACGCAGAGCTCAAATGGCTGGTGAGCAAAAACAAGGGGCAAAATTTCCCCCAGACCACAAACACATATAGGAATACAGAC ACAGCTGAGCATTTAATTATTTGGGGCATCCATCACCCGTCCAGCACACAAGAAAAGAATGACCTGTACGGTACCCAGTCTCTCTCTATTAG CGTTGGCTCTTCTACATACCAGAATAACTTTGTTCCAGTCGTCGGAGCCACGGCCACAGGTTAACGGGCAGAGTGGACGTATCGATTTCCAC TGGACTCTTCTACAGCCTGGCGACAATATTACTTTTAGTCACAACGGCGGCCTTATAGCCCCGTCCAGAGTCTCCAAGCTGATCGGCAGAG GGCTGGGCATTCAGTCCGAGGCTCCAATTGATAATGGCTGCGAAAGCAAATGCTTTTGGAAAGGCGGGAGTATCAACACAAAACTGCCCTT TCAGAATCTGAGCCCTCGAACTGTGGGTCAGTGCCCAAAATACGTTAATAAGCGGGAGTCTGATGTTAGCTACTGGCATGCGGAACGTTCCA GAAATCATGCACGGCCGCGGACTCTTTGGAGCTATCGCCGGGTTTATAGAAAATGGCTGGGAAGGCATGGTTGACGGCTGGTACGGATTC AGGCACCAAAACGCCCAGGGAACCGGACAGGCCGCCGATTACAAAAGCACGCAAGCAGCTATTGATCAGATCACTGGAAAACTCAATCGA CTGATCGAAAAGACTAACACAGAATTTGAATCCATTGAGTCCGAATTTAGTGAGATCGAGCACCAAATCGGCAACATCATTAACTGGACGAA GGACAGCATAACAGACATATGGACATATCAGGCAGAGCTCCTGGTCGCAATGGAAAACCAGCATACCATAGATATGGCTGATTCTGAGATG CTCAATCTGTATGAACGAGTCAGAAAGCAATTAAGACAAAACGCTGAGAGGATGGTAAGGGATGCTTCGAGATTTACCATGCTTGCGACG ATTCCTGCATGGAAAGCATCCGTAATAACACCTACGACCCACAGCCAATACCGTGAAGAAGCCCTCCTAAATCGATTGAACATTAATCCTGTG AAATTGAGTTCCGGCTACAAGGACATCATCCTGTGGTTCTCATTTGGCGCATCATGCTTGATTCTTTTGGCCGTGGTGATGGGCCTGGTTTT CTTCTGTCTGAAAAATGGCAACATGAGATGTACTATCTGCATT

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2995	ATGTACAAGATCGTGGTTATAATTGCCCTCCTGGGCGCCGTTAAGGGCCTTGATAAGATATGTCTGGGGCACCATGCCGTGGCTAATGGGA CCATAGTGAAAACCCTGACTAATGAGCAGGAGGAGGTCACTAACGCCACCGAGACTGTGGAATCCACCGGCATCAACAGGCTGTGTATGAA GGGGCGCAAACACAAGGACCTAGGGAATTGCCACCCCATCGGTATGCTTATCGGCACGCCAGCCTGTGACCTTCACCTGACTGGGATGTG GGACACTCTGATTGAAAGAGAAAACGCTATAGCGTACTGCTACCCCGGCGCAACTGTGAACGTAGAAGCGTTGCGGCAGAAGATCATGGA GTCTGGGGGAATCAATAAGATCTCAACAGGGTTTACATACGGCTCATCTATCAATTCCGCGGGCACGACCAGGGCGTGCATGAGGAACGG CGGGAACTCTTTTTACGCCGAGCTTAAATGGTTAGTATCTAAGAGCAAGGGCAGAACTTTCGACAAACGACCAACACATACCGCAACACCG ATACCGCAGAACACCTCATCATGTGGGGAATCCACCATCCCAGTTCCACTCAAGAAAAAAACGATCTATACGGCACTCAGTCCCTCTCAATC TCCGTGGGAAGTAGCACATATCGGAACAACTTCGTGCCCGTGGTTGGGGCCCGCCCCAGGTCAATGGCCAGTCAGGAAGAATTGACTTC CATTGGACACTTGTGCAGCCAGGCGACAATATCACATTTTCCCACAACGGCGGATTGATCGCCCCCTCCAGAGTTAGCAAGCTGATCGGGA GAGGCCTGGGTATCCAGAGTGACGGCGCCAATCGATAACAACTGCGAGAGCAAGTGCTTTTGGCGCGGAGGCTCAATTAACACACAGGCTAC CTTTCCAAAACCTCAGTCCGCGTACAGTTGGCCAGTGCCCCAAGTATGTGAACCGGAGATCTTTGATGCTCGCTACCGGCATGCGAAATGT CCCGGAGCTGATTCAAGGCCGCGGGCTCTTTGGAGCGATTGCGGGGTTTCTGGAGAACGGATGGTGGAAGGAATGGTGGTTGGTACG GATTTCGGCATCAAAATGCACAGGGGACTGGCCAAGCCGCAGACTATAAGAGCACCCAGGCTGCGATCGACCAGATCACCGGAAAGCTCA ACCGCCTGGTGGAGAAGACCAATACGGAATTTGAATCAATCGAAAGCGAGTTTAGTGAAATAGAACACCAGATTGGTAATGTGATTAATTGG ACAAAAGACAGCATTACTGATATTTGGACATATCAGGCTGAGTTACTGGTAGCTATGGAGAATCAGCACACCATTGATATGGCCGACTCCGA AATGCTGAATCTGTACGAACGGGTTCGGAAACAGCTCAGGCAGAACGCCGAAGAAGACGGTAAGGGATGCTTCGAAATCTACCACGCCTG CGATGATAGTTGCATGGAGTCTATACGGAACAACACCTATGACCATTCTCAGTATAGAGAAGAGGCCCTACTGAACCGTTTGAACATTAATC CAGTGACCCTGTCCTCCGGTTACAAGGACATAATCCTGTGGTTCTCGTTTGGTGCTAGCTGCTTTGTGCTGGCGGTGGTAATGGGACT GTTTTTCTTTTGCCTGAAAAATGGCAATATGAGATGCACCATTTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2996	ATGTACAAGATTGTGGTGATTATAGCCCCTTCTGGGGGCTGTCAAGGGACTGGACAAAATCTGCCTGGGACATCATGCTGTGGCAAACGGAA CTATTGTGAAGACTTTGACTAACGAACAGGAGGAGGTGACCAACGCCACCGAAACCGTGGAATCCACACAGGCATCAACCGGCTCTGCATGAA AGGAAGAAAGCACAAGGACCTGGGCAATTGTCATCCAATCGGAATGCTTATCGGGACTCCGGCCTGTGATTTGCATCTGACCGGCATGTGG GATACGTTAATCGAACGAGAGAACGCCATTGCCTATTGCTACCCTGGCGGCGACCGTGAATGTCGACGCCTTGAGGCAGAAGATCATGGAGA GCGGCGGAATCAACAAAATAAGCACTGGTTTCACCTACGGTAGTAGCATAAATTCCGCTGGGACCACGCGGGCCTGCATGCGGAACGGCG GCAATTGCTTTTACGCAGAGCTTAAATGGTTAGTGAGCAAAAGCAAGGGACAGAATTTCCCCCAGACCACAAACACATATCGTAACACCGAC ACCGCGGAACATCTGATTATGTGGGGCATACATCACCCCTCTTCCACGCAAGAAAAGAATGACCTGTACGGAACACAATCCTTATCCATTAG CGTAGGAAGCAGCACTTATCGGAACAACTTTGTGCCCGTGGTGGGAGCTCGGCCTCAGGTAAACGGCCAGTCCGGTCGGATAGATTTCCA TTGGACTTTGGTTCAGCCGGGGGATAACATTACATTTTCCCATAACGGCGGCCTCATTGCTCCCTCGCGGGTCTCTAAACTTATTGGGCGG GGCCTGGGGATCCAGTCAGATGCCCCTATCGATAATAATTGCGAATCCAAATGTTTTTGGAGAGGAGGCAGTATTAACACCCGGCTGCCTTT CCAGAATCTCAGCCCCCGTACAGTCGGACAGTGTCCCAAATATGTGAATAGACGCTCGCTAATGCTGGCCACCGGCATGCGGAACGTTCCT GAGCTGATCCAGGGACGGGGGCTCTTTGGTGCAATTGCTGGATTTCTGGAAAATGGCTGGGAAGGCATGGTGGATGGCTGGTACGGCTTT AGGCACCAGAATGCCCAAGGCACGGGGCAGGCAGCCGACTACAAATCCACACACAATCACCGGGAAATTAAATAGG CTTGTGGAGAAAAACCAATACCGAATTCGAAAGCATCGAGAGCGAATTTTCAGAGATCGAGCACCAGATCGGGAATGTGATAAATTGGACCA AAGATTCCATTACCGATATTTGGACTTACCAAGCTGAGCTGCTCGTGGCCATGGAAAACCAGCACACAATCGATATGGCCGACTCTGAAATG TTGAACTTGTATGAAAGAGTGCGAAAACAGTTGCGTCAAAACGCCGAGGAAGACGGGAAAGGTTGTTTCGAAATCTATCACGCGTGCGATG ACAGCTGTATGGAAAGTATTAGGAACAATACATATGACCACTCACAGTATCGCGAGGAGGCACTGTTGAATCGCCTAAACATCAACCCCGTT ACATTGTCTTCTGGTTACAAAGACATTATCTTATGGTTTTCGTTTGGAGCCTCGTGTTTCGTGCTCCTAGCGGTAGTGATGGGGCTCTTCTTC TTCTGTCTGAAGAACGGGAACATGCGCTGCACTATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
2997	ATGTACAAGATCGTAGTCATCATCGCCCTGCTGGGGGCCGTCAAAGGACTGGACAAGATTTGCCTGGGCCATCATGCAGTCGCAAATGGCA CTATCGTGAAGACTCTGACAAACGAACAGGAAGAGGTGACAAATGCCACTGAAACAGTCGAGTCTACTGGGATCAACAGACTTTGCATGAA GGGCCGCAAGCACAAGGACCTGGGTAATTGCCACCCCATTGGAATGCTTATTGGCACACCCGCTTGCGACTTACACCTAACCGGTATGTGG GATACTCTGATCGAAAGGGAAAACGCCATTGCATACTGCTACCCCGGCGCTACAGTGAACGTCGAGGCTCTGCGCCAGAAAATTATGGAGT CTGGTGGAATCAATAAGATCTCAACTGGCTTCACCTATGGGAGTTCCATCAACAGCGCTGGGACTACGCGTGCGTGCATGCGTAACGGCGG AAACAGCTTTTACGGCAGAGCTGAAATGGCTCGTCAGCAAGTCCAAGGGTCAGAATTTCCCACACAGACTACGAATACCTACCGAAATACTGACA CTGCGGAGCATCTCATCATGTGGGGAATCCACCATCCAAGCAGCACCCAGGAAAAGAACGATCTGTACGGCACTCAGTCCCTAAGCATCTC CGTCGGCAGCAGTACTTATCGCAATAACTTTGTCCCCGTGGTAGGAGCCCGTCCTCAGGTGAACGGACAGAGCGGACGTATCGACTTTCAT TGGACACTCGTGCAACCCCGGGGACAATATAACGTTCAGCCATAACGGAGGTTTAATAGCGCCTAGCCGTGTGTCCAAACTCATCGGGCCGTG GCCTGGGGATCCAATCCGATGCACCAATCGACAATAACTGCGAGTCTAAGTGCTTCTGGCGGGGAGGCTCAATTAATACCCGCCTACCCTT CCAGAATCTGTCACCCAGGACCGTGGGCCAGTGTCCTAAGTACGTCAACAGGCGATCTCTCATGTTGGCCACTGGCATGCGAAACGTGCCT GAGCTGATCCAAGGTAGAGGGCTGTTCGGAGCAATCGCCGGATTCCTGGAGAACGGCTGGGAGGGAATGGTGGACGGATGGTATGGTTT CAGGCACCAAAACGCTCAAGGAACTGGCCAGGCAGCTGACTATAAGTCCACTCAGGCTGCAATCGATCAAATCACCGGCAAGCTGAACAG GCTCGTTGAGAAAACGAACACGGAATTTGAGTCCATCGAATCTGAATTTTCCGAGATCGAACATCAGATAGGCAACGTTATCAACTGGACGA AGGACTCTATCACTGACATTTGGACGTATCAGGCGGAGCTCTTAGTGGCCATGGAAAACCAGCACACTATCGACATGGCCGACAGTGAAAT GCTGAACCTCTACGAAAGAGTTCGCAAGCAGCTCCGGCAGAATGCAGAAGAGGATGGAAAAGGCTGTTTTGAAATCTACCACGCATGTGAC GACTCATGCATGGAGTCTATACGAAATAATACTTACGACCATTCGCAATATCGCGAGGAGGCTCTGCTAAATAGGTTGAACATCAATCCCGT CACACTGTCCAGTGGCTACAAGGATATCATTCTGTGGTTCTCATTTGGAGCCTCCTGCTTCGTTCTGGCCGTGGTTATGGGATTATTCT TCTTTTGCCTCAAGAACGGAAATATGCGCTGCACAATCTGCATC

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Seq ID No.	Sequenza di acido nucleico
2998	ATGTACAAGATTGTGGTGATTATCGCATTGCTGGGCGCCGTGAAGGGGCTGGATAAAATATGTCTGGGGCACCATGCCGTAGCAAACGGTA CGATAGTTAAGACTCTTACCAACGAACAGGAAGAGGTGACGAACGCGACAGAGACCGTTGAGAGTACAGGTATTAATCGACTCTGTATGAA GGGCCGCAAGCACAAGGACCTGGGCAATTGCCACCCCATCGGGATGCTGATCGGCACTCCTGCGTGTGATCTGCACTTGACCGGCACTTG GGACACTTTGATTGAGAGAGAAAACGCGATTGCTTATTGCTACCCTGGAGCAACCGCCAATGTTGAAGCCCTGAGGCAGAAGATTATGGAG TCGGGAGGTATTGATAAGATCTCCACTGGATTCACTTACGGCTCATCTATAAATAGCGCCGGGACTACCCGCGCTTGCATGAGGAACGGGG GGAACAGCTTCTATGCCGAGCTCAAATGGCTTGTGTCTAAGTCGAAAGGTCAAAACTTCCCACAGACAACTAACACATACCGCAACACCGAC ACTGCAGAGCACTTGATTATGTGGGCATCCATCATCCGTCTAGCATCCAGGAGAAGAATGATCTCTATGGGACCCAGAGCCTCAGCATTT CAGTCGGAAGTTCCACCTACAGGAATAATTTCGTGCCTGTGGTGGGCGCACGGCCTCAAGTGAACGGCCAGTCCGGAAGAATAGACTTTCA CTGGACTCTGGTGCAGCCGGGGGATAACATTACATTCTCGCACAACGGTGGGCTTATAGCCCCCCAGCAGAGTAAGTAAACTTATCGGTCGG GGTTTGGGCATTCAGTCGGATGCCCCTATCGATAATAATTGTGAATCTAAATGTTTTTGGAGGGGCGCGAGCATCAACACCAGGCTGCCTTT CCAGAATCTGTCCCCCCGAACTGTGGGACAGTGCCCCAAGTATGTTAACAGACGGTCCCTTATGCTGGCCACTGGCATGCGCAACGTCCCC CGAACTCATTCAGGGGCGCGGTCTGTTTGGTGCAATTGCCGGGTTTCTGGAGAACGGCTGGGAAGGGATGGTAGACGGTTGGTATGGCTT CCGGCACCAAAACGCCCAGGGAACTGGCCAAGCTGCCGACTACAAATCTACCCAGGCTGCCATAGATCAGATCACTGGCAAACTCAATCG CCTGGTGGAAAAAACCAACACAGAGTTTGAGAGCATCGAGTCCGAATTCTCCGAAATCGAACACCAGATCGGTAATGTGATTAACTGGACCA TGGATAGTATCACCGACATATGGACATATCAGGCTGAACTCCTGGTGGCCATGGAGAACCAACATACTATTGATATGGCCGACTCAGAAATG TTAAATCTGTATGAGCGTGTGAGAAAACAGCTCAGGCAGAACGCTGAGGAAGAGCGGAAAGGGCTGCTTCGAAATCTACCACGCATGCGATG ACTCTTGCATGGAATCAATCCGGAACAACACATATGACCACAGCCAGTACCGGGAGGAGGGCCCTTTTGAATAGGCTGAATATCAATCCCGT CACGCTTTCTTCCGGTTACAAAGATATAATTCTGTGGTTCTCATTCGGGGCAAGCTGCTTTGTGCTTCTCGCTGTGTGCGTGATGGGCCTCGTTTT CTTTTGCTTGAAGAATGGAAAATATGCGGTGCACGATCTGTATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
2999	ATGTACAAGATCATCGTTATAATCGCACTCCTGGGCGCCGTCAAAGGCCTGGACAAGATTTGCCTAGGGCATCACGCCGTAGCCAATGGAA CCATTGTCAAGACCCTGACCAACGAGCAGGAAGAGGTGACAAACGCCACAGAGACAGTAGAGTCCACCGGAATCAATCGCTTGTGCATGAA AGGACGGAAGCATAAAGACTTAGGAAATTGTCATCCAATCGGCATGCTGATTGGGACACCCGCCTGTGACTTGCATTTGACAGGGACCTGG GACACCCTTATCGAGCGTGAGAATGCCATCGCGTACTGCTACCCCGGGGCTACGGTGAACGTCGAGGCTTTAAGACAGAAGATCATGGAG TCCGGCGGAATCGATAAGATTTCTACCGGTTTCACTTACGGAGTTCTATCAACTCTGCAGGAACCACTCGGGCCTGCATGAGGAATGGAG GCAACTCATTCTACGCAGAATTGAAATGGCTGGTAAGCAAGAGCAAGGGCCAAAATTTCCCCCAGACCACGAATACCTATAGGAATACTGAC ACTGCGGAGCATCTGATTATGTGGGGCATCCACCACCCGAGCTCAACTCAAGAGAAAAATGATCTTTACGGAACCCAGAGCCTGTCAATTTC CGTGGGGACGCAGTACTTATCGCAATAAATTTCGTACCTGTCGTAGGTGCCAGACCGCAGGTCAATGGACAGAGCGGCCGTATCGACTTCCAC TGGACACTGGTGCAGCCAGGGGATAACATCACTTTTTCCCACAACGGCGGCCTGATCGCTCCCAGCAGGGTGTCGAAGCTGATCGGTCGG GGGCTGGGGATACAGTCAGACGCACCCATTGATAACAATTGCGAGAGCAAATGTTTCTGGCGTGGTGGAAGCATAAACACAAGACTTCCGT TTCAGAACCTTAGTCCACGCACTGTCGGCCAGTGCCCAAAATACGTAAACCGACGTTCCCTGATGCTCGCTACGGGGATGCGAAACGTACC AGAGTTAATCCAGGGCCGCGGGCTGTTCGGAGCTATTGCCGGCTTCCTCGAAAACGGGTGGGAAGGCATGGTAGACGGGTGGTACGGGT TTAGGCATCAAAACGCCCAGGGCACAGGCCAGGCGGCCGACTATAAAAGCACCCAGGCTGCAATTGACCAGATTACCGGGAAACTGAACA GACTTGTAGAAAAAACCAATACAGAATTTGAGTCTATCGAATCAGAGTTCTCTGAGATAGAGCATCAGATCGGTAACGTGATCAATTGGACTA AAGATTCAATAACTGACATATGGACTTACCAGGCCGAACTTCTGGTGGCTATGGAAAACCAGCATACAATTGACATGGCCGACTCCGAGATG TTGAACCTTTACGAGCGCGTGCGTAAACAGCTGAGGCAAAATGCTGAAGAAGACGGAAAAGGCTGCTTCGAGATATATCACGCTTGTGACG ATTCATGTATGGAATCCATACGGAATAATACTTACGACCATTGGCAATATAGGGAGGAGGCCTTGTTGAACCGGCTGAATATCAATCCAGTG ACCCTTAGCTCCGGCTATAAAGATATTATTTTGTGGTTCTCTTTTGGAGCTTCCTGCTTTGTCCTATTAGCTGTGGTCATGGGCCTCTTTTTTT TCTGCCTTAAAAATGGGAATATGCGGTGCACTATCTGTATC

Seq ID No.	Sequenza di acido nucleico
3000	ATGTATAAGATCGTGGTGATAATCGCCCTGCTGGGGGCTGTTAAAGGTCTCGACAAAATCTGCTTAGGGCATCACGCCGTGGCCAATGGCA CCATAGTTAAGACCCTGACCAATGAACAGGAAGAGGTTACCAACGCAACGGAGACCGTCGAATCTACCGGCATCAACCGATTATGCATGAA GGGTCGCAAGCACAAAGATCTCGGAAACTGCCACCCCATTGGCATGCTCATCGGGACCCCCTGCTTGCGACCTGCATTTAACAGGTATGTGG GACACGCTGATTGAAAGAGAGAACGCGATCGCCTACTGTTACCCAGCGCCTACAGTGAACGTGGAGGCTCTGCGACAGAAAATTATGGAGT CGGGCGGCATCAATAAAATCAGCACGGGTTTCACTTATGGCAGTTCAATCAACTCCGCCGGTACTACCAGGGCCTGTATGCGGAATGGGG GCAACTCTTTTTATGCCGAGCTGAAGTGGCTGGTCTCCAAGAGTAAGGGCCAGAATTTCCCACAGACCACAAACACTTACAGGAACACGGA CACCGCCGAGCATCTGATTATGTGGGGCATTCACCACCCATCTAGTACCCAGGAGAAGAACGACTTGTACGGCACACAGTCTCTGTCAATT AGTGTTGGGTCTTCCACATATCGTAATAATTTTGTACCGGTCGTGGGCGCGGGGCCCCAAGTGAACGGTCAAAGCGGTAGGATTGATTTTC ATTGGACCCTCGTGCAACCAGGAGATAATATCACTTTTTCGCACAATGGCGGTCTCATAGCCCCGAGCCGGGTCAGCAAGCTAATCGGACG GGGGCTCGGGATCCAGTCCGATGCTCCCATCGATAATAACTGTGAATCTAAGTGTTTTTGGCGGGGCGGATCCATAAACACCAGGCTTCCC TTCCAGAACTTGTCCCCAAGGACGGTAGGCCAATGCCCAAAGTACGTTAACCGCCGCTCACTCATGTTGGCCACTGGGATGAGAAACGTCC CGGAACTGATTCAGGGCCGGGGCCTGTTTGGCGCAATCGCTGGGTTCTTAGAGAACGGCTGGGAGGGCATGGTGGACGGATGGTACGGG TTCCGCCATCAGAACGCTCAAGGCACTGGGCAGGCTGCAGATTACAAGAGTACCCAGGCTGCCATTGATCAGATTACCGGAAAACTGAATA GGCTGGTCGAAAAGACAAACACTGAGTTCGAAAGCATCGAGAGCGGAATTTTCTGAGATCGAGCACCAGATCGGGAATGTGATTAACTGGAC TAAAGATAGCATAACGGATATTTGGACATATCAAGCAGAGTTGTTGGTGGCCATGGAGAATCAGCATACAATCGACATGGCCGATAGTGAAA TGCTGAATCTTTATGAAAGGGTACGGAAGCAGCTGCGCCAAAACGCCGAGGAAGATGGGAAGGGGTGTTTTGAAATCTATCATGCCTGTGA CGATTCCTGCATGGAATCTATTCGTAATAATACTTACGACCATAGCCAATATCGAGAGGAGGCATTGTTGAACAGGCTAAACATCAATCCGG TGACACTCAGTTCCGGATATAAAGATATAATCCTCTGGTTCTCTTTTGGCGCTTCTTGTTTCGTGCTGCTTGTCGTAATGGGACTGTTCT TTTTTTGTCTCAAAAACGGCAACATGAGATGCACCCATTTGCATA

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Seq ID No.	Sequenza di acido nucleico
3001	ATGTATAAAATCGTTGTGATCATTGCCCTGCTGGGCGCCGTAAAGGGCCTGGACAAAATATGCCTGGGGCACCATGCAGTAGTGAATGGCA CAATTGTCAAGACACTCACTAACGAACAGGAAGAAGTCACCAATGCCACGGAGACGGTGGAGAGTACCGGTCTGAACCGTCTGTGCATGAA GGGCCGCAACCATAAAGACTTGGGTAACTGTCATCCTATAGGTATGCTAATCGGTACTCCGGCCTGCGATCTGCACCTCACCGGTACCTGG GACACCCTGATCGAGCGTGAGAACGCGATCGCCTATTGCTATCCAGGCGCTACTGTAAATGAGGAAGCCCTGAGACAGAAGATCATGGAGT CCGGAGGGATCAATAAGATCTCTACTGGATTCACCTATGGCAGCAGTATTAACTCCGCCGGAACTACGCGGGCCTGCATGAGAAATGGCGG GAATAGCTTCTACGCTGAACTGAAATGGCTCGTTTCGAAGTCAAAAGGACAGAACTTCCCTCAGACAACGAACACATACCGCAACACCGACA CCGCGGAGCATCTAATCATGTGGGGTATCCATCACCCCAGCTCTACACAGGAAAAAAATGATCTTTATGGAACCCAGTCTTTGTCCATTTCT GTGGGCAGCTCCACCTACCAGAACAATTTCGTCCCAGTCGTGGGCGCGGCCACAGGTGAACGGACAGTCGGGGCGCATTGACTTTCAC TGGACCCTGGTGCAGCCCGGTGACAATATCACTTTTTCTCACAACGGCGGACTTATTGCTCCCTCCCGGGTGAGCAAACTGATCGGGCGG GGGCTGGGGATCCAGTCCGATGCACCTATCGATAACAATTGCGAGAGTAAATGCTTCTGGCGTGGGGGATCAATAAATACCAGGCTCCCAT TCCAAAATCTTTCACCCCGTACAGTTGGACAGTGCCCCAAATACGTGAACAAGCGCTCTCTTATGCTGGCAACAGGAATGAGAAACGTTCCA GAGCTAATGCAGGGTCGAGGGCTTTTCGGAGCTATTGCTGGATTTATCGAAAATGGCTGGGAGGGAATGGTCGATGGATGGTATGGATTCC GACACCAGAACGCTCAGGGGACCGGCCAGGCCCGCGACTACAAGAGCACACAGGCTGCAATTGATCAGATCACAGGGAAGTTAAATAGGC TCATCGAAAAGACGAACACCGAGTTCGAGTCAATCGAGTCCGAATTCTCTGAGATCGAACACCAAATTGGCAATGTCATCAATTGGACAAAG GATAGTATCACCGATATTTGGACGTACCAAGCAGAGCTTCTGGTTGCCATGGAGAACCAACACACCATCGATATGGCCGACAGCGAGATGC TTAATCTGTACGAGCGCGTGCGAAAGCAACTTAGGCAAAACGCCGAAGAAGATGGTAAGGGCTGCTTTGAGATTTATCACGCTTGCGATGA CTCCTGCATGGAGTCTATTAGAAATAATACCTACGATCATTCTCAGTATAGAGAGGAGGCCCTGCTGAACCGGTTGAACATTAACCCAGTTA CACTGAGCTCCGGATACAAAGATATTATTCTGTGGTTTTCCTTTGGCGCGTCCCTGCTTTGTGCTGTTAGCCGTGGTGATGGGGCTGGTATTC TTCTGTCTCAAGAACGGTAATATGCGTTGTACCATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3002	ATGTATAAGATCGTGTGGTCATAATTGCACTCTTGGCGGCAGTGAAAGGGCTGGATAAAATTTGTCTGGGACACCACGCCGTTGCTAATGGCA CCATCGTGAAAACCCTTACCAACGAGCAGGAAGAGGTTACTAACGCAACCGAGACGGTCGAGTCCACTGGAATCAATCGTCTTTGCATGAA GGGCCGTAAACATAAGGATTTAGGAAATTGTCATCCCATTGGCATGCTGATCGGAACACCTGCCTGCGACCTGCACCTGACAGGGATGTGG GACACGCTGATCGAGAGGGAGAATGCAATTGCGTACTGTTATCCTGGAGCTACCGTGAATGTTGAAGCACTGCGTCAAAAATCATGGAAT CCGGCCGGATCAACAAAATTAGCACTGGGTTCACATATGGAAGCAGCATAAACTCCGCCGGCACTACAAGGGCCTGCATGAGAAACGGCG GCAATAGTTTCTACGCTGAACTTAAGTGGCTTGTGTCAAAATCAAAGGGGCAAAACTTTCCTCAGACTACAAATACATATAGAAACACTGACA CCGCCGAGCACCTGATCATGTGGGGCATTCACCATCCTAGCTCTACCCAGGAGAAAAATGATTTATACGGCACTCAGAGTCTGTCTATTTCT GTGGGGTCGTCCACATATAGAAATAATTTCGTGCCAGTCGTGGGGGCTCGGCCGCAAGTGAATGGGCAGAGTGGTAGAATCGATTTCCACT GGACACTTGTGCAGCCCGGGGATAACATTACTTTCTCTCATAACGGCGGCCTGATCGCACCCTCCAGGGTGAGTAAACTAATAGGCAGGGG TCTGGGCATTCAGTCCGACGCTCCAATCGATAACAACTGCGAGTCCAAGTGCTTCTGGCGCGGCGGTTCCATCAACACCCGGTTACCTTTT CAGAACCTGTCCCCCCGCACCGTTGGCCAGTGCCCTAAATACGTAAATCGAAGATCATTAATGCTGGCGACCGGTATGAGGAACGTACCTG AGCTGATTCAGGGGAGGGGGTTATTTGGTGCCATTGCCGGGTTTCTCGAAAACGGGTGGGAGGGAATGGTTGATGGCTGGTACGGGTTCA GGCACCAGAATGCCCAGGGCACAGGACAGGCTGCCGATTACAAGAGCACTCAGGCCGCTATTGACCAGATCACCGGCAAGCTGAATCGGC TGGTAGAGAAAACCAATACGGAGTTTGAGTCCATTGAGTCCGAGTTCTCAGAGATCGAGCACCAGATTGGCAATGTCATCAATTGGACCAAG GATTCAATTACGGATATATGGACATACCAGGCTGAGCTGCTTGTAGCAATGGAGAACCAACATACCATAGACATGGCTGATTCTGAGATGCT GAACCTCTACGAAAGGGTCAGAAAACAACTCAGACAAAACGCAGAAGAAGACGGGAAAGGGTGTTTCGAAATTTACCATGCTTGTGATGAC TCCTGCATGGAGAGCATCAGAAACAACACTTATGACCACAGCCAGTACCGTGAAGAGGCATTGTTGAACCGACTCAACATCAACCCTGTTAC GCTGTCATCTGGGTATAAAGACATTATTCTATGGTTCTCTTTTGGCGCTTCATGTTTTGTTCTGTTGGCGGTAGTGATGGGTCTGTTCTTTTTC TGTTTAAAAAATGGCAATATGAGGTGCACCATCTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3003	ATGTACAAGATCGTGGTTATTATCGCTCTTCTGGGTGCCGTTAAAGGGCTGGACAAAATTTGTCTGGGGCATCACGCCGTGGCGAATGGTA CTATCGTCAAGACATTGACCAACGAGCAGGAGGAGGTTACAAATGCAACCGAGACCGTTGAGAGTACTGGAATCAACCGGCTGTGCATGAA GGGAAGAAAGCACAAGGATCTGGGGAATTGTCACCCTATCGGAATGTTAATTGGTACACCTGCTTGTGACCTGCACCTGACAGGCATGTGG GACACCCTGATCGAACGGGAGAACGCCATTGCCTATTGTTATCCAGGGGCCACTGTTAATGTCGAGGCACTCAGGCAGAAGATTATGGAAT CCGGTGGAATTAATAAATTAGCACAGGGTTTACTTACGGTTCCTCAATAAATTCAGCCGGCACTACACGGGCGTGTATGAGGAATGGAGGA AACTCCTTCTATGCCGAACTGAAATGGCTCGTCAGCAAATCCAAGGGTCAAAATTTTCCTCAAACAACTAACACCTATAGAAATACCGATACC GCAGAGCACCTCATAATGTGGGGGATACACCATCCGAGCTCCACACAAGAAAAAAAACGACCTGTATGGCACTCAAAGTCTTAGCATTTCCGT CGGAAGTTCTACATACCGGAATAACTTTGTGCCGGTGGTAGGTGCCCGACCCCAAGTCAACGGCCAGAGTGGCCGCATCGATTTCCATTGG ACACTGGTGCAGCCAGGAGATAACATTACCTTTTCTCACAATGGCGGCTTGATCGCTCCTTCGAGGGTGAGCAAGCTGATTGGCCGGGGTC TGGGCATTCAATCCGACGCGCCTATCGACAATAATTGTGAGTCTAAATGCTTTTGGAGAGGAGGGTCAATCAACACAAGACTACCCTTCCAG AATCTTTCCCCCGAACAGTGGGACAGTGCCCCAAATATGTGAATCGGCGCTCTCTTATGCTGGCCACTGGGATGAGAAACGTGCCTGAGT TAATACAGGGCCGGGACTTTTCGGACAATCGCCGGATTCCTAGACAACGGTTGGGAGGGGATGGTCGACGGATGGTACGGGTTCAGAC ACCAAAATGCTCAGGGGACAGGGCAGCAGACTATAAATCAACGCAGGCCGCTATCGACCAGATCACCGGTAAACTGAACCGGCTTG TCGAAAAGACCAACACTGAGTTCGAGAGTATTGAATCCGAGTTTAGCGAGATCGAACACCAGATAGGCAATGTTATCAATTGGACAAAGGAT TCAATCACGGACATATGGACATACCAAGCAGAACTGCTGGTAGCTATGGAAAATCAACATACAATCGATATGGCCGACTCAGAGATGCTCAA CCTCTACGAAAGAGTAAGGAAACAACTCAGACAAAATGCCGAAGAGGACGGCAAGGGTTGCTTTGAAATATATCATGCGTGCGACGACAGC TGCATGGAGAGCATACGGAACAATACGTACGACCATTCCCAGTATCGCGAAGAAGCCTTACTGAACCGCTTGAACATTAACCCCGTGACCC TTTCCTCCGGATATAAAGATATCATTCTCTGGTTCAGTTTTTGGAGCCTCATGCTTTGTCCTTTTGGCTGTGGGTAATGGGATTATTTTTCTTCTG TCTCAAGAATGGTAACATGCGATGTACAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3004	ATGTACAAGATCGTGGTGATCATAGCACTGCTGGGCGCCGTGAAAGGCTTAGACAAAATCTGCTTAGGGCATCATGCCGTCGCTAATGGGA CTATAGTCAAGACATTGACCAACGAGCAAGAAGAGGTGACAAACGCAACTGAAACTGTTGAAAGTACCGGGATAAACCGGTTGTGCATGAA AGGGCGAAAGCACAAGGACCTTGGCAACTGTCATCCCATCGGCATGCTTATAGGAACACCTGCTTGCGATCTCCATCTGACTGGCATGTGG GACACCCTGATAGAACGAGAAAATGCCATTGCCTACTGTTACCCAGGCGCCACCGTTAATGTTGAGGCCCTCAGACAGAAGATAATGGAAT CTGGAGGCATCAACAAAATCTCTACCTACGGGCTTTACCTACGGTTCTAGCATTAACTCTGCCGGGACTACCCGAGCTTGTATGCGCAACGGGGG CAACTCTTTCTACGCCGAACTTAAGTGGCTGGTGAGCAAGAGCAAGGGACAGAATTTCCCTCAAACTACTAACACTTATAGGAACACAGACA CCGCCGAACATCTAATAATGTGGGGAATACACCATCCCTCATCCACACAGGAAAAAAACGACCTTTATGGGACCCAGTCTCTGAGCATTTCA GTCGGCTCATCCACTTATCGTAACAACTTTGTGCCCGTGGTTGGGGCTCGGCCCCAGGTGAATGGCCAGTCTGGGCGTATTGATTTCCACT GGACCCTAGTGCAACCCGGAGACAACATCACCTTTAGTCATAATGGTGGCCTTATAGCCCCTAGCAGGGTGTCAAAACTTATTGGGAGAGG CCTCGGGATTCAGAGTGACGCACCCATCGACAACAACTGCGAGAGTAAGTGTTTTTGGAGAGGGGGTTCGATCAACACCCGCCTCCCCTTC CAGAACCTATCGCCACGCACTGTTGGTCAGTGCCCAAAATACGTCAACAGGAGGTCACTTATGCTGGCTACAGGGATGCGGAACGTGCCG GAGCTGATACAGGGACGCGGTCTGTTCGGAGCCATTGCCGGATTCTTGGAGAATGGCTGGGAGGGGATGGTGGACGGCTGGTACGGCTT CCGACACCAGAATGCCCAGGGTACAGGTCAGGCAGCGGACTATAAGAGTACTCAAGCCGCTATCGATCAAATCACTGGGAAGCTCAACCG ACTGGTCGAGAAGACAAACACAGAATTCGAGTCTATCGAGTCAGAATTCTCTGAAATCGAGCACCAGATTGGTAACGTAATCAATTGGACCA AGGATAGTATTACCGACATCTGGACATACCAAGCAGAACTGCTCGTGGCAATGGAAAATCAGCACACAATAGACATGGCCGATAGTGAGAT GCTCAACCTGTACGAACGCGTTCGAAAACAGCTGAGACAGAACGCTGAAGAAGACGGGAAAGGGTGCTTCGAGATCTATCACGCCTGCGA CGATTCATGCATGGAGAGCATTAGAAACAATACCTACGACCACAGCCAGTATAGGGAGGAGGCTCTGCTAAACAGGCTCAACATTAATCCC GTAACACTCTCAAGCGGATATAAAGACATAATTCTGTGGTTTTCCTTCGGAGCTTCCTGCTTCGTCCTGCTGGCGGTAGTCATGGGGTTATT CTTTTTTTGTCTGAAGAACGGGAATATGCGATGTACAATATGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3005	ATGTACAAGGTTGTGGTTATTATAGCACTCCTCGGGGCTGTGCGCGGACTGGATAAGATCTGCCTGGGACATCATGCCGTGGCAAATGGTA CCACTGTAAAAACTCTCACCAATGAGCAGGAAGAGGTGACCAACGCCACTGAGACAGTGGAATCTACAAGCCTGAACAAGCTGTGTATGAA GGGCAGACGATATAAGGATCTGGGTAATTGCCATCCCATCGGCATGTTGATCGGAACACCAGTTTGCGATCTGCATCTAACTGGAACCTGG GACACGCTTATCGAGCGGGAAAACGCCACCGCGTACTGCTACCCAGGAGTCACCATCAACGAAGAAGCACTGAGACAGAAGATCATGGAG AGTGGGGGGATCTCCAAGATGCGCACCGGGTTCACTTATGGGCCCAGCATTAACAGCGCCTGGGACAACCAGATCCTGCATGAGGAATGGA GGGAACTCTTTTTATGCCGAATTAAAATGGCTGGTTTCAGGAACAAAAGGACAAAATTTCCCGCAGACCACCAATACATATAGAAACACCGAT ACAGCAGAACACTTAATCATCTGGGGGATCCATCACCCTTCATCTACGCAGGAAAAGAATGATCTGTATGGTACCCAGTCTTTGAGTATTAG TGTAGGCTCTTCCACGTACCAGAATAACTTTGTCCCTGTTATAGGTGCTCGACCTCAGGTCAATGGGCAGTCTGGGCGTATCGAGTTCCATT GGACCCTCGTACGACCCGGCGACAACATCACATTTAGCCACAACGGCGGATTGATAGCCCCCGACAGAGTGTCCAAGTTAATCGGCAAAG GAATTGGTATCCAGTCCGGCGCCGTGATCGATAAGGATTGTGAGTCAAAATGCTTCTGGAGAGGCGGCAGCATCATAACAGAGCTTCCGTT TCAAAACCTGAGTCCCCGCACCGTTGGGCAATGTCCTAAGTACGTGAAAAAACGAAGCCTCCTGCTGGCAACCGGCATGCGGAATGTTCCC GAGGTGGTCCAGGGAAGAGGCCTGTTTGGCGCGATTGCTGGTTCATCGAGAATGGCTGGTTGACGGATGGTATGGGTT CAGGCATCAGAACGCGCAGGGCATCGGGCAGGCTGCTGACTACAAGAGCACTCAGACCGCCATCGATCAGATCACAGGGAAGCTAAATCG GCTGATTGAAAAGACTAACACGGAGTTTGAGAGCATTGAAAGCGAATTTAGTGAAATCGAACACCAGATAGGAAACGTTATTAACTGGACAA AGGATAGTATTACCGACATATGGACGTATCAAGCAGAGCTGCTGGTCGCCATGGAGAACCAGCATACTATAGATATGGCAGACAGCGAAAT GCTCAATTTGTACGAGAGGGTAAGAAAACAACTGAGACAAAATGCTGAAGAGGATGGCAAAGGCTGCTTTGAAATATACCACACACCTGTGACA ATTCCTGTATGGAGTCCATTCGGAACAATACGTATGATCATTCCCAGTATCGCGAGGAAGCCCTACTCAACCGCCTCAATATCAACCCCGTT AAGCTATCATCAGGCTACAAGGACATTATCCTGTGGTTCAGCTTCGGAGCCTCCTGTTTCGTGCTACTTGCTGTGATCATGGGTTTGGGGTT CTTTTGCCTGAAAAATGGAAATATGAGATGCACAATTTGTATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3006	ATGTATAAGATAGTCGTGATAATCGCCCTTTTGGGAGCGGTGAAGGGACTGGACAAGATTTGTCTCGGCCATCATGCAGTCGCCAACGGTA CAATTGTTAAAACCCTCACCAACGAACAAGAAAAAAGTGACAAATGCCACAGAAACTGTGGAGAGCACCGGCCTTAACCGGTTGTGCATGAA GGGGCGAAAGCATAAGGACTTGGGTAATTGTCATCCAATTGGGATGCTGATTGGGACTCCCGCCTGCGATCTGCACCTGACCGGCACATG GGATACCATTATCGAGAGGGAGAACGCGATCGCTTACTGCTATCCTGGGGCTACAGTCAATGAGGAGGCCCTAAGGCAGAAAATAATGGAG TCAGGGGGAATCGATAAAATTTCTACAGGCTTCACTTACGGATCTTCTATTAACAGCGCAGGCACCACGCGCGCCTGCATGAGAAATGGCG GGAATAGTTTTTATGCCGAGCTGAAATGGCTGGTGTCCAAGAGCAAGGGACAGAACTTTCCGCAAACCACTAATACATACCGTAATACTGAC ACAGCAGAACATCTGATTATGTGGGGAATCCACCACCCCTCCAGCACTCAAGAGAAAAATGATCTTTACGGAACACAGTCCCTCAGCATAAG CGTGGGTTCGAGTACATATAGGAACAATTTCGTGCCAGTGGTAGGCGCGCGACCCGCAGGTCAATGGACAGTCAGGAAGGATCGACTTCCA TTGGACTCTAGTGCAACCTGGGGATAATATTACCTTTAGCCATAATGGAGGTCTGATAGCCCCATCTCGCGTCTCCAAGCTGATTGGGCGC GGTCTGGGGATTCAGAGTGACGCTCCTATTGATAACAACTGCGAGAGTAAATGTTTCTGGCGCGGGCGGCTCGATTAACACCCGTCTTCCCT TTCAGAACCTGAGTCCCCGGACAGTAGGACAGTGCCCTAAATACGTGAACAAAAGAAGTCTTATGCTCGCCACTGGGATGCGAAACGTTCC GGAACTGATCCAGGGTCGCGGCCTGTTCGGCGCAATTGCTGGTTTCCTCGAAAATGGATGGTGGAAGGTATGGTGGATGGGTT CAGACATCAAAACGCTCAGGGCACGGGCCAGGCTGCCGACTACAAGAGCACACAGGCTGCCATCGACCAGATTACTGGGAAACTCAATAG ACTCGTGGAAAAAACTAATACGGAATTCGAAAGCATCGAATCTGAGTTCAGTGAGATCGAACATCAGATCGGAAACGTGATCAACTGGACAA AGGATTCGATTACTGATATTTGGACGTACCAGGCAGAGTTGTTGGTCGCCATGGAGAATCAACACACAATCGATATGGCCGACTCAGACAT GTTGAATCTTTACGAGAGGGTGCGAAAGCAGCTGAGGCAGAATGCCGAGAGGAAGATGGAAAGGGGTGTTTTTGAGATCTACCACGCCTGCGA CGATTCTTGCATGGAATCCATCCGCAATAATACATACGATCACTCACACAGTATAGGGAGGAGGCCCTACTCAACAGACTGAACATCAATCCCG TGACACTTTCAAGTGGTTACAAGGATATCATACTTTGGTTCAGCTTCGGCGCCAGTTGCTTTGTTCTGCTTGCCGTTGTGATGGGCCTGGTG TTCTTTTGCCTGAAGAATGGTAACATGAGATGTACCATCTGCATT

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Seq ID No.	Sequenza di acido nucleico
3007	ATGTATAAAATTGTCGTTATCATTGCCTTGCTCGGCGCTGTGAAGGGCTGGATAAAATTTGTCTGGGACATCACGCCGTGGCGAACGGGA CTATCGTCAAGACGCTTACTAACGAACAGGAAGAGGTGACTAACGCGACGGAAACCGTGGAGTCAACTGGGATTAATCGCTTGTGCATGAA GGGCAGAAAGCACAAGGACTTAGGCAACTGTCATCCTATCGGCATGCTGATCGGTACCCCAGCCTGCGACCTTCACTTGACTGGCACCTG GGATACCCTGATCGAAAGAGAGAACGCAATACTGTTATCCAGGCGCCACAGCCAACGTAGAGGCCCTGAGACAGAAGATCATGGAA TCTGGAGGTATCGATAAAATTAGCACCGGATTTACATATGGATCAAGTATAAACTCGGCAGGAACGACGCGGGCGTGCATGCGAAATGGCG GAAATTCCTTCTACGCCGAATTGAAATGGCTAGTGTCCAAAAGCAAAGGCCAAAACTTTCCACAGACCTACTAACACCTACAGAAATACTGACA CCGCTGAACATTTGATTATGTGGGGATCCACCACCCAAGTAGCATTCAGGAGAAGAACGATCTGTATGCCACTCAGTCACTAAGTATTTCC GTGGGCAGCTCTACCTACCGCAATAACTTCGTGCCGGTTGTGGCGCCCAGACCTCAGGTGAACGGACAAAGTGGTCGCATTGATTTCCACT GGACACTTGTGCAACCTGGGGACAATATCACTTTCAGCCACAACGGGGGGCTGATCGCCCCATCAAGAGTGAGCAAATTGATAGGGAGAG GCTTGGGAATCCAGTCAGATGCACCTATCGATAATAATTGTGAAAGCAAATGCTTTTGGCGTGGGGGATCCATAAACACTCGACTGCCATTC CAGAATTTGTCCCCCCGCACCGTTGGCCAGTGTCCCAAGTACGTTAATCGCAGAAGTCTGATGCTGGCCACCGGCATGAGAAACGTGCCC GAACTGATACAGGGACGCGGGCTCTTTGGAGCAATTGCCGGCTTTCTGGAGAACGGATGGGAGGGAATGGTGGACGGATGGTACGGCTTT CGGCACCAGAATGCCCAGGGGACAGGACAAGCCGCCGATTATAAGTCAACACAGGCCGCAATCGACCAGATTACCGGCAAGCTCAACAGG CTCGTGGAAAAGACAAACACTGAGTTTGAGTCAATCGAGTCAGAATTTTTCCGAGATCGAGCATCAAATCGGCAACGTGATCAATTGGACTAT GGATTCTATCACCGACATTTGGACTTACCAGGCAGAGCTCCTGGTGGCAATGGAGAACCAACACTATCGACATGGCAGATTCAGAGATG CTCAACCTCTATGAAAGGGTACGAAAACAGCTTCGGCAGAACGCCGAGGAGGACGGTAAGGGGTGTTTTGAAATCTATCATGCGTGCGACG ATAGCTGTATGGAAAGTATCCGGAATAATACATACGATCACTCCCAGTACCGCGAAGAGGCTCTCTTGAACCGGCTTAACATCAACCCGGTA ACTCTCAGTAGCGGGTACAAGGACATCATTCTGTGGTTTTCTTTTGGTGCCTCCTGTTTTGTGCTGCTGGCCGTGGTGATGGGACTCGTGTT TTTTTGCCTCAAGAACGGGAAATATGCGGTGCACAATATGCATT

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Seq ID No.	Sequenza di acido nucleico
3008	ATGTATAAGATTGTGGTGATTATTGCTCTCTTGGGGGCAGTCAAAGGACTTGATAAGATTTGTCTGGGCCACCATGCTGTCGCAAATGGGAC AATCGTCAAGACCCTTACCAACGAGCAAGAAAAGGTAACCAACGCAACCGAGACTGTTGAGAGTACAGGGCTGAATAGACTCTGTATGAAG GGCCGCAAACATAAGGACCTAGGTAACTGTCATCCAATAGGGATGCTGATTGGAACACCGGCATGTGACTTACACCTCACAGGTACATGGG ATACTATTATAGAGAGAGAAAATGCCATTGCCTACTGTTATCCTGGGGCTACCGTTAACGAGGAAGCCTTACGTCAGAAAATTATGGAATCC GGGGGCATTGATAAAATATCCACTGGATTTACTTATGGAAGCTCAATCAACTCCGCGGGCACTACTCGAGCATGTATGCGCAACGGAGGTA ACTCCTTCTACGCCGAACTGAAGTGGCTCGTTTCAAAATCCAAGGACAGAACTTTCCGCAGACCACTAATACCTACCGCAATACAGACACA GCAGAACATCTGATCATGTGGGGCATTCATCACCCCAGCTCTACTCAAGAAAAGAATGACCTGTACGGGACTCAAAGTCTGTCCATTTCTGT TGGGTCTAGTACCTACCGGAATAACTTTGTCCCCGTTGTTGGAGCACGCCCTCAGGTTAACGGTCAGAGTGGAAGGATCGACTTTCACTGG ACCCTCGTCCAGCCTGGCGACAATATCACATTTAGTCACAACGGGGGCCTAATCGCTCCCTCTCGGGTGAGCAAGCTGATAGGTCGGGGC TTGGGTATACAGTCTGACGCCCCAATCGATAACAACTGTGAAAGCAAGTGCTTCTGGCGGGGTGGCTCTATCAACACCCGACTGCCATTTC AAAATCTCAGTCCAAGGACAGTGGGGCAATGCCCAAAATACGTCAACAAAAGGTCACTCATGCTCGCCACAGGAATGCGCAATGTGCCTGA ACTGATTCAAGGACGAGGACTGTTTGGCGCTATTGCCGGGTTTTTAGAGAATGGCTGGGAAGGCATGGTAGACGGGTGGTACGGGTTCCG GCATCAGAATGCCCAAGGGACGGGTCAGGCCGCTGACTATAAGTCCACTCAGGCCGCAATAGATCAGATCACCGGAAAGTTGAACAGACT AGTGGAGAAGACAAACACTGAGTTCGAGTCCATTGAGAGCGAATTCAGCGAGATAGAACACCCAAATCGGCAATGTGATTAACTGGACCAAA GACAGTATTACTGATATCTGGACTTATCAAGCCGAACTGTTGGTGGCAATGGAGAACCAACACACGATCGACATGGCAGACAGTGAGATGC TCAATCTGTACGAGAGGGTGCGTAAACAGCTGAGGCAGAAGCCGAAGAAGACGGAAAGGGGTGTTTCGAGATATACCACGCCTGTGATG ACTCCTGTATGGAAAGCATCAGGAACAACACTTATGACCATAGTCAATATAGGAAGAAGCACTGCTCAACCGCCTGAACATCAATCGCTGTA ACACTTTCATCAGGATATAAGGACATCATCCTCTGGTTTAGTTTCGGAGCTTCATGCTTTGTGCTGCTCGCGGTAGTCATGGGGCTGGTCTT CTTTTGTTTGAAGAACGGTAACATGAGATGCACCATTTGTATC

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Seq ID No.	Sequenza di acido nucleico
3009	ATGTACAAAATCGTCGTCATCATCGCCTTACTGGGAGCCGTCAAAGGACTTGATAAAATTTGTCTTGGTCACCACGCTGTTGCCAATGGAAC AATCGTGAAGACACTTACCAATGAGCAGGAGGAGGTGACTAATGCAACAGAGACAGTGGAGTCCACTGGAATAAATCGGCTGTGCATGAAG GGCAGAAAACACAAGGATTTGGGCAACTGCCACCCTATTGGAATGCTCATAGGCACCCCTGCGTGTGACCTTCATCTGACTGGCACTTGGG ACACTCTCATCGAACGCGAGAACGCCATCGCCTACTGCTATCCTGGAGCCACCGCCAACGTGGAGGCTCTACGGCAGAAGATTATGGAGA GCGGAGGGATTGACAAGATCTCCACGGGTTTCACTTACGGCAGCTCCATCAACAGTGCCGGTACAACTCGGGCGTGCATGAGAAACGGGG GCAACAGCTTTTATGCCGAGCTGAAGTGGCTGGTGAGTAAGTCAAAAGGGCAGAACTTTCCACAGACAACAAATACGTACAGAAATACAGAT ACAGCCGAGCACCTGATCATGTGGGGGATTCATCATCCAAGTTCTATCCAGGAGAAAAACGACTTGTATGGGACTCAGAGTCTCAGTATCA GCGTAGGTTCCTCTACCTACAGGAACAACTTCGTGCCCGTCGTCGGGCCCCGTCCCCAAGTCAACGGCCAGAGTGGACGGATTGATTTTC ACTGGACTCTTGTGCAGCCCGGCGACAACATTACCTTCAGTCACACAACGGAGGGCTGATTGCACCTTCCAGAGTCTCGAAGCTGATCGGACG TGGATTGGGGATTCAGTCGGACGCTCCTATCGACAATAATTGCGAGAGCAAATGTTTCTGGCGCGGGGGTTCTATTAACACCAGGCTCCCC TTTCAAAATTTGAGCCCGCGAACCGTCGGCCAATGTCCCAAGTATGTCAACCGGAGAAGCCTGATGTTGGCTACAGGAATGCGCAATGTGC CGGAGCTCATCCAGGGCCGTGGCTTGTTCGGTGCAATTGCCGGATTCCTAGAAAATGGATGGGAGGGAATGGTTGATGGGTGGTACGGCT TCCGCCACCAAAACGCTCAGGGCACTGGACAGGCCGCGGACTATAAGTCTACTCAGGCGGCTATCGATCAGATCACTGGGAAACTGAATA GGCTTGTGGAAAAAACCAATACGGAGTTCGAAAGTATCGAGTCAGAGTTTAGCGAAATCGAGCATCAGATTGGTAACGTGATCAACTGGAC CATGGATAGCATTACCGACATCTGGACCTACCAGGCCGAATTGCTGGTGGCCATGGAGAATCAGCACACAATTGACATGGCAGACTCTGAA ATGCTTAACCTATATGAGCGCGTACGGAAACAGCTCAGACAGAACGCGGAGGAAGATGGAAAGGGCTGCTTCGAAATTTATCACGCTTGCG ACGACTCCTGTATGGAGTCTATCAGAAACAATACGTATGATCATTCGCAATACCGGGAGGAAGCACTCCTGAATAGACTCAACATCAACCCC GTTACACTGAGCTCAGGGTACAAAGACATTATTCTCTGGTTTTCCTTCGGAGCTTCTTTGCTTCGTACTGTTAGCTGTCGTCATGGGGCTAGTT TTTTTTTGTCTTAAAAACGGCAACATGAGATGCACCATCTGTATA

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3010	ATGTATAAAATCGTGGTAATCATTGCACTGCTGGGAGCAGTCAAAGGGCTCGATAAAATATGCCTTGGCCACCACGCCGTAGCAAATGGTAC AATCGTGAAGACCCTCACGAACGAACAGGAGGAAGTCACCAACGCTACAGAAACTGTCGAAAGTACCGGATCAACCGGCTCTGTATGAAG GGCAGGAAGCATAAAGACTTAGGTAACTGCCATCCTATCGGCATGCTGATTGGCACACCTGCCTGCGACTTGCACTTAACGGGAATGTGGG ACACATTGATTGAGAGAGAGAATGCTATTGCTTACTGTTACCCAGGAGCGACTGTGAACGTGGAGGCACTACGGCAAAAAATAATGGAGTC CGGGGGAATCAATAAGATCTCGACAGGATTTACCTATGGGAGCTCAATCAATTCTGCGGGAACAACCCGGGCCTGCATGCGCAATGGCGG GAATAGCTTCTATGCCGAACTCAAGTGGCTCGTTAGCAAGAGCAAAGGGCAGAATTTCCCGCAAACTACTAACACATACAGGAACACAGACA CAGCAGAGCATTTGATTATGTGGGGGATTCACCACCCCTCTAGTACGCAGGAAAAGAACGATCTTTACGGGACCCAGTCCCTTTCTATCAGC GTAGGAAGCAGCACTTACAGGAATAATTTTGTCCCTGTGGTTGGCGCGGGCCCTCAGGTTAATGGGCAATCTGGCCGCATTGATTTTCATT GGACCCTCGTACAGCCTGGCGACAATATAACATTCTCACATAATGGCGGCCTGATCGCACCTTCCCGGGTATCTAAATTGATAGGTAGAGG CCTGGGGATTCAAAGCGATGCTCCAATAGATAATAACTGTGAATCAAAGTGCTTTTGGCGGGGAGGGTCAATTAATACGCGGCTACCCTTTC AGAATCTTAGCCCACGCACCGTTGGCCAATGTCCAAAGTACGTGAATCGTAGATCACTGATGCTGGCTACAGGGATGCGGAATGTGCCAGA ACTCATTCAGGGCCGTGGGCTATTCGGCGCTATCGCCGGGTTTCTGGAAAACGGCTGGGAGGGGATGGTCGATGGCTGGTACGGCTTCC GGCACCAGAACGCTCAGGGTACAGGGCAGGCGGCTGATTATAAAAGCACACAGGCTGCAATCGACCAAATTACTGGAAAACTAAATAGGCT AGTGGAAAAAACCAACACCGAATTCGAAAGTATTGAAAGTGAGTTCAGTGAAATTGAGCACCAGATTGGAAACGTGATCAACTGGACTAAGG ACAGTATCACCGATATTTGGACATATCAGGCAGAACTTCTCGTGGCCATGGAAAACCAGCATACTATTGACATGGCTGACAGTGAAATGTTA AATCTCTATGAGCGCGTACGCAAACAATTGCGGCAGAATGCCGAGGAAGATGGGAAGGGCTGCTTCGAAATCTATCACGCTTGCGACGATT CCTGCATGGAGTCCATCAGGAACAATACATACGATCACAGCCAGTATCGCGAAGAAGCCCTGCTTAATAGACTAAATATTAATCCCGTCACC CTGTCCTCAGGCTATAAGGACATCATCCTTTGGTTTTCATTTGGCGCAAGTTGCTTCGTCTTGCTCGCAGTCGTCATGGGGCTGTTTTTTTTC TGTCTCAAAAACGGAAACATGAGGTGTACCATTTGCATT

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3011	ATGTACAAAATTGTGGTTATCATCGCTTTGCTTGCGCTGTGAAGGGGCTGGATAAGATCTGTCTCGGGCATCACGCTGTCGCCAATGGCA CAATTGTCAAGACATTGACGAACGAGCAGGAGGAAGTGACAAATGCCACTGAAACAGTGGAATCCACTGGGATCAACCGATTGTGCATGAA AGGTAGGAAGCATAAGGATCTCGGTAACTGTCATCCAATCGGCATGTTGATTGGAACCCCGGCCTGTGATCTTCACCTCACTGGTATGTGG GACACACTGATTGAAAGAGAAAACGCTATTGCCTACTGTTACCCAGGTGCAACGGTTAATGTCGAGGCACTGAGACAGAAAATTATGGAAAG CGGAGGCATCAACAAGATATCAACCGGGTTTACCTATGGCTCATCGATTAATAGCGCAGGCACCACTCGCGCGTGTATGCGAAATGGAGGA AATTCATTTTATGCCGAGTTAAAATGGCTGGTTAGTAAGAGCAAGGGTCAGAACTTCCCTCAGACCACAAATACGGTATCGCAATACGGACAC TGCAGAACACCTTATCATGTGGGGTATTCACCACCCTAGCAGTACTCAAGAAAAAAATGACCTGTATGGTACCCAGAGTCTGAGTATAAGCGG TGGGTTCCAGTACTTACCGGAACAACTTCGTTCCAGTTGTGGGGCCCGCCCACAGGTTAACGGGCAATCGGGGCGCATCGATTTTCACTG GACCTTGGTGCAACCTGGAGACAATATTACTTTCAGTCACAACGGCGGATTGATAGCTCCATCCCGTGTCAGTAAATTGATTGGGCGCGGA CTGGGAATCCAGTCTGACGCACCCATAGATAACAACTGTGAGTCTAAGTGTTTCTGGAGGGGCGGTTCCATTAATACTCGGCTGCCATTTCA GAATCTTAGCCCGCGCACTGTGGGTCAATGTCCCAAGTACGTGAACAGGCGTTCTCTAATGCTTGCCACCGGGATGAGAAACGTTCCTGAA CTGATACAAGGTAGGGGACTGTTCGGTGCAATCGCTGGCTTTTTGGAGAATGGCTGGGAGGGAATGGTGGACGGCTGGTATGGATTCCGC CATCAGAACGCCCAGGGAACCGGACAGGCTGCCGACTATAAGTCCACGCAGGCCGCGATTGACCAAATTACCGGAAAACTCAATCGCCTA GTCGAGAAAACAAACACCGAATTCGAGAGTATCGAGTCCGAATTTTCTGAGATCGGAGCACCAAATCGGCAACGTAATCAATTGGACGAAGG ATTCCATTACTGACATCTGGACCTACCAAGCCGAATTGTTGGTCGCAATGGAGAACCAGCACACCATAGACATGGCTGACAGCGAAATGCT GAACCTGTACGAGCGGGTTCGGAAACAGCTGCGCCAGAACGCAGAGGAGGATGGCAAAGGCTGCTTCGAAATCTATCACGCCTGCGACGA TAGCTGCATGGAATCAATAAGGAATAACACTTATGATCACAGCCAGTATCGGGAAGAGGCGCCTGCTGAATCGGCTCAACATCAATCCCGTGA CTCTCTCTTCCGGCTATAAAGACATTATCTTGTGGTTCTCTTTCGGCGCGTCATGCTTCGTGCTGCTGGCAGTGGTAATGGGACTCTTCTTTT TTTGCCTGAAAAACGGGAACATGCGCTGCACAATCTGCATC

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3012	ATGTATAAGATTGTGGTGATTATTGCCCTGCTCGGCGCCGTGAAGGGGTTGGACAAGATTTGTCTTGGTCACCACGCCGTGGCTAACGGGA CCATAGTCAAGACTCTGACCAATGAACAGGAAGAGGTAACAAACGCAACCGAAACAGTCGAGTCTACAGGAATCAATCGGTTATGTATGAAA GGCCGAAAACATAAAGACCTCGGCAATTGTCACCCCATAGGGATGCTGATCGGGACTCCAGCTTGCGACCTGCATTTAACAGGCATGTGGG ACACTCTCATCGAGAGAGAGAACGCGATCGCATACTGCTACCCAGGAGCTACCGTGAATGTAGAGGCATTGAGACAGAAAATCATGGAAAG TGGCGGAATAAATAAGATTTCTACAGGGTTTACGTACGGCAGCTCCATTAACAGTGCCGGAACAACCCGAGCATGTATGAGAAATGGAGGT AATAGCTTTTACGCCGAACTGAAGTGGCTTGTGTCCAAAAGTAAGGGGCAAAATTTTCCTCAGACAACGAACACCTACCGGAACACCGACAC AGCTGAGCACCTGATTATGTGGGGGATACATCATCCTAGCAGCACGCAGGAGAAGAATGATCTATACGGGACCCAATCTCTCAGCATCTCA GTGGGCTCCTCAACTTACCGCAACAACTTCGTGCCTGTCGTCGGCGCCCGCCCTCAGGTCAACGGTCAGTCTGGCCGAATCGACTTTCACT GGACACTGGTGCCAGCCTGGAGACAACATCACTTTCTCCCATAACGGGGGACTTATCGCACCGAGCAGAGTGAGCAAGCTGATTGGAAGAG GACTCGGAATACAATCCGATGCCCCGATAGATAATAATTGTGAGAGCAAGTGTTTCTGGCGCGGCGGATCCATCAATACACGCTTACCGTTT CAGAACTTGAGCCCACGGACTGTTGGGCAGTGCCCAAAGTACGTGAACCGCCGCAGTTTAATGCTTGCTACCGGTATGAGAAATGTACCTG AACTCATTCAAGGCAGGGGCCTGTTTGGCGCAATCGCTGGCTTTCTCGAAAATGGATGGGAAGGCATGGTAGACGGTTGGTACGGATTCAG ACACCAGAATGCCCAGGGCACGGGTCAAGCAGCCGATTATATAAAAGCACACAAGCAGCAATTGATCAGATTACAGGTAAGCTCAACCGTCTC GTGGAAAAAACTAACACCGAGTTCGAATCCATTGAGAGTGAGTTCAGTGAGATAGAGCACCAGATCGGAAATGTGATTAACTGGACAAAAGA TAGCATTACAGATATCTGGACGTACCAGGCTGAGCTCTTGGTGGCGATGGAAAATCAGCATACCATTGACATGGCCGACTCAGAGATGCTT AACCTGTATGAGAGAGTGCGCAAACAGCTTAGACAGAACGCGGAAGAGGATGGCAAGGGATGTTTCGAGATCTACCACGCTTGTGATGACA GCTGTATGGAGAGTATTAGAAACAACACGTATGACCATTCCCAGTACCGAGAGGAGGCTTTGCTTAATCGTTTGAATATTAACCCCGTCACG CTCAGCAGCGGGTACAAAGATATCATACTCTGGTTCTCTTTCGGAGCATCATGCTTCGTACTTTTGGCTGTGTGGTGATGGGGCTGTTTTTCTT CTGCTTGAAAAACGGCAACATGAGGTGCACTATCTGTATC

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Seq ID No.	Sequenza di acido nucleico
3013	ATGTACAAAATCGTTGTGATCATTGCTCTGTTGGGCGCGGTAAAGGGCCTAGATAAGATTTGTCTGGGCCATCACGCCGTTGCCAACGGCA CTATAGTTAAAACGCTGACAAATGAACAGGAAAAGGTAACTAACGCCACCGAGACTGTGGAGTCCACTGGTCTGAACCGACTCTGCATGAA AGGGCGAAAACATAAAGACCTGGGCAACTGTCACCCAATTGGGATGCTGATCGGGACACCTGCCTGCGATCTCCACCTGACCGGTACATG GGACACAATCATTGAAAGGGAAAACGCCATCGCCTACTGTTATCCAGGCGCTACAGTCAACGAGGAAGCATTGCGGCAGAAAATTATGGAG TCTGGCGGAATCGATAAGATATCCACTGGCTTCACGTACGATCGTCTATTAACTCTGCGGGTACGACACGCGCCTGTATGAGGAACGGCG GAAATAGCTTTTACGCTGAACTAAAGTGGTTAGTTTCTAAGAGCAAGGGCCAGAATTTCCCACAGACCACAAATACATACAGGAATACAGATA CCGCTGAGCATCTAATCATGTGGGGAATACACCACCCCTCGTCAACTCAGGAGAAGAATGATCTGTATATGGCACACAGTCTCTGTCAATTTCC GTGGGCTCAAGCACATATAGGAACAACTTCGTGCCTGTTGTTGGCGCCAGACCCCAAGTCAATGGCCAGTCTGGAAGGATTGACTTCCATT GGACCCTGGTCCAACCCGGGGATAATATCACCTTTTCCCATAATGGAGGGCTGATCGCGCCTAGTCGCGTCAGTAAACTCATCGGGAGAG GGCTGGGAATTCAATCAGATGCCCCCATTGATAACAACTGTGAAAGTAAATGCTTTTGGCGGGGGGGGTTCCATCAATACACGCCTGCCATTT CAGAATCTGAGCCCCAGGACGGTTGGTCAGTGCCCCAAGTACGTGAACAAGAGAAGCCTGATGCTGGCAACTGGGATGCGCAATGTTCCT GAACTGATTCAGGGACGCGGGTTATTTGGAGCTATTGCCGGTTTTCTCGAGAATGGCTGGGAGGGAATGGTCGATGGGTGGTACGGATTTA GACACCAAAACGCTCAGGGAACAGGCCAGGCGGCTGATTACAAAAGCACCCAGGCCGCTATTGATCAGATCACTGGAAAACTGAACCGCC TTGTCGAGAAAACAAACACCGAATTTGAGAGCATAGAGTCCGAATTCTCAGAGATTGAACATCAAATTGGCAACGTGATAAATTGGACTAAA GACTCCATTACCGACATCTGGACCTACCAGGCCGAGCTCTTGGTTGCTATGGAAAATCAGCATACTATCGACATGGCCGACTCTGAAATGCT TAATCTGTACGAACGCGTGAGAAAACAGTTACGCCAGAACGCGGAGGAAGATGGCAAAGGGTGCTTCGAGATCTACCATGCATGCGATGAC AGCTGTATGGAAAGCATCCGTAATAATACCTATGATCACTCTCAGTATAGGGAAGAGGCCCTGTTGAATAGATTAAACATTAACCCAGTGACA CTGAGCAGCGGCTATAAGGACATTATTTTATGGTTTTCCTTTGGAGCAAGTTGTTTTGTGCTGCTGGCGGTGGTGATGGGGCTCGTGTTCTT TTGCCTGAAGAATGGTAACATGCGCTGTACTATCTGTATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3014	ATGTACAAGATAGTCGTGATAATTGCACTCCTCGGCGCAGTTAAGGGCTTGGATAAGATCTGCCTGGGACACCACGCCGTCGCGAACGGCA CTATTGTCAAGACTTTAACGAACGAGCAAGAAGAGGTAACAAATGCAACAGAAACTGTTGAGAGCACGGGCATCAATCGGCTGTGCATGAA GGGTAGGAAGCATAAGGACCTGGGAAACTGTCACCCCATCGGCATGCTGATCGGGACCCCCGCATGTGATTTACACCTTACAGGAATGTG GGATACTCTGATCGAAAGAGAGAATGCCATTGCTTACTGTTACCCTGGGGCCACGGTGAACGTGGAGGCCCTTAGGCAGAAAATCATGGAA AGTGGAGGGATCAACAAGATTTCCACGGTTTCACGTATGGCTCTTCTATTAATTCCGCTGGAACCACTAGGGCCTGTATGCGAAATGGAG GCAACTCCTTCTACGCTGAATTGAAGTGGCTGGTAAGCAAGTCCAAAGGGCAGAATTTCCCACAGACAACAAACACGTACAGAAACACGGA CACCGCTGAGCACCTCATCATGTGGGGCATCCACCACCCTAGCTCTACCCAGGAAAAAAATGATTTATACGGAACCGCAGTCTCTTTCAATCT CCGTCGGCTCAAGCACTTATAGAAATAATTTTGTGCCCGTCGTGGGGGCCCGGCCCAGGTAAACGGCCAATCAGGGAGGATCGACTTTC ATTGGACCCTGGTTCAGCCCGGGGATAACATAACCTTTAGCCATAACGGAGGTCTTATAGCGCCGAGTCGAGTGTCAAAGCTGATCGGGCG CGGTTTGGGCATCCAGTCTGATGCCCCCATCGACAACAACTGCGAGAGCAAATGCTTTTGGAGGGGAGGGTCCATTAATACCCGTCTGCCA TTCCAGAATCTCTCTCCCCGGACCGTCGGCCAGTGCCCCAAATACGTGAATCGTCGTTCTCTCATGCTCGCCACCGGAATGCGCAACGTGC CTGAGTTGATCCAAGGTCGGGGACTGTTCGGGGCCATTGCCGGCTTTCTGGAGAACGGGTGGGAGGGGATGGTGGCTGGTACGGC TTTAGGCACCAGAACGCTCAGGGAACTGGGCAGGCCGACTACAAGTCAACCCAGGCCGCAATAGATCAAATTACAGGCAAGCTGAAC CGACTGGTCGAAAAAACCAACACAGAATTCGAGTCCATAGAATCCGAATTTTCTGAAATAGAACACCAGATTGGGAACGTTATCAATTGGAC TAAAGATTCCATCACCGATATCTGGACATATCAGGCCGAACTGCTTGTGGCCATGGAAAACCAGCATACCATCGATATGGCTGACTCCGAAA TGTTGAATTTGTATGAAAGGGTACGCAAGCAGCTGAGGCAGAACGCTGAGGAGGACGGTAAGGGATGTTTTGAGATCTACCATGCATGCGA TGACAGCTGTATGGAGTCAATACGCAACAACACTTATGACCACTCCCAATATCGGGAGGAAGCACTTCTCAATCGCTTGAATATTAATCCCG TCACTCTGTCTAGTGGTTATAAGGACATTATTTTGTGGTTCAGCTTTGGAGCCTCCTGTTTCGTTCTACTGGCCGTTGTGATGGGACTATTCT TTTTCTGCCTCAAAAACGGCAACATGCCGGTGCACCATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3015	ATGTACAAAATAATTGTTATCATAGCCCTCCTGGGTGCCGTCAAAGGGCTGGATAAAATATGCTTAGGGCACCACGCGGGTTGCTAACGGCAC CATCGTCAAAACCCTCACAAACGAACAGGAGGAAGTCACCAACGCAACAGAAACAGTCGAATCAACGGGCATCAATAGACTGTGTATGAAA GGGCGCAAGCACAAGGACTTGGGAAACTGCCACCCGATTGGTATGCTAATTGGAACCCCAGCCTGTGACCTACACCTGACCGGGACTTGG GATACTCTTATTGAGCGCGAAAACGCTATTGCGTATTGTTACCCTGGGGCTACCGTCAACGTTGAGGCACTGAGACAGAAATAATGGAATC AGGTGGCATAGACAAAATTTCTACCGGCTTCACCTACGGGAGCAGCATAAACTCCGCTGGCACTACACGCGCCTGTATGAGGAATGGCGG CAACTCCTTCTACGCCGAGCTGAAGTGGCTGGTTAGTAAGTCCAAGGGACAGAACTTCCCACAGACCACCAACACTTACCGCAACACCGAT ACAGCCGAGCACCTGATTATGTGGGGAATACACCACACCCAAGCTCTACCCAGGAAAAAAACGACTTGTACGGCACTCAAAGTCTGTCCATCT CCGTTGGGTCGTCCACTTACCGCAATAATTTCGTCCCCGTGGTTGGAGCCCCGCCCTCAGGTGAACGGCCAAAGCGGGGCGCATCGATTTCC ATTGGACCCTCGTTCAGCCTGGCGACAACATTACCTTTAGTCACAATGGCGGGTCTGATTGCCCCTTCACGCGTGTCCAAGTTGATTGGACG GGGATTGGGCATCCAGTCGGACGCACCCATCGATAACAATTGTGAGAGTAAATGTTTCTGGCGGGGTGGCTCCATTAATACCCGACTGCCA TTCCAAAACCTCTCTCCTCGTACGGTGGGTCAGTGTCCCAAGTATGTGAACAGAAGATCTCTGATGTTAGCAACCGGTATGAGAAACGTCCC GGAGCTGATCCAGGGCAGAGGCCTGTTCGGAGCCATTGCGGGGTTTCTTGAAAACGGATGGGAGGGCATGGTGGACGGATGGTATGGGT TTCGACATCAAAATGCCCAGGGGACCGGGCAGGCAGCTGACTACAAATCTACCCAGGCGGCAATAGATCAGATCACTGGAAAGTTAAACAG ACTCGTGGAGAAAACTAACACTGAGTTCGAATCTATCGAGTCAGAGTTTTCAGAATTGAACATCAGATCGGAAACGTTATCAATTGGACGA AAGATAGTATCACAGACATTTGGACCTATCAAGCTGAATTGCTTGTGGCCATGGAAAACCAACATACCATCGACATGGCTGACTCCGAAATG TTGAATTTGTACGAGCGGGTGAGGAAGCAACTGAGGCAAAATGCCGAGGAGGACGGCAAAGGCTGCTTTGAGATCTACCACGCATGCGAT GACTCTTGTATGGAAAGTATTCGGAATAAATACTTATGACCATTCCCAGTATCGTGAGGAAGCACTGCTCAACCGCCTAAATATTAATCCCGTG ACCCTGTCATCAGGGTATAAGGACATTATCCTTTGGTTTCCTTCGGCGCTAGCTGTTTCGTGCTGCTAGCGGTAGTGATGGGCCTTTTCTT CTTTTGTTTGAAGAATGGCAATATGCGATGCACAATCTGCATA

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Seq ID No.	Sequenza di acido nucleico
3016	ATGTATAAGATCGTGGTCATCATAGCCCTGCTCGGAGCCGTTAAGGGTCTTGACAAGATTTGTCTTGGTCATCATGCTGTTGCTAACGGAAC CATCGTGAAAACTCTGACAAACGAGCAGGAGGAAGTGACAAACGCCACGGAGACAGTGGAATCTACTGGAATCAACCGCTTATGCATGAAA GGCAGGAAACACAAAGACCTGGGGAATTGCCACCCAATTGGAATGCTGATCGGCACACCTGCCTGCGACCTGCATCTCACAGGGATGTGG GATACACTGATCGAAAGAGAGAATGCTATCGCATACTGCTACCCAGGGGCTACTGTCAATGTGGAGGCCCTTCGACAGAAGATTATGGAAT CCGGAGGTATCAACAAAATTAGCACTGGCTTCACCTACGGGTCTTCCATCAATTCTGCCGGCACGACCAGAGCATGTATGAGAAATGGGGG CAACAGTTTTTTACGCCGAGTTGAAGTGGCTGGTGAGTAAGAGCAAAGGACAGAACTTCCCGCAGACCACCAACACATACAGGAATACGGAT ACCGCCGAGCACTTAATCATGTGGGGAATTCACCACCCCAGTTCGACACAGGAGAAGAACGATCTCTATGGCACTCAGTCTCTGTCTATTTC TGTGGGATCATCAACATATCGCAATAACTTTGTACCTGTTGTGGGGCTAGGCCTCAGGTGAACGGCCAATCCGGACGAATCGACTTCCAC TGGACTCTGGTTCAACCAGGTGATAATATTACTTTCTCACACAACGGCGGACTGATTGCACCTAGCCGAGTGAGTAAGCTCATTGGTAGAGG ACTGGGGATTCAGTCCGATGCCCCTATAGACAATAACTGCGAAAGCAAATGCTTCTGGCGCGGCGGAAGCATAAATACAAGATTGCCATTT CAGAACCTGAGTCCTCGGACCGTTGGACAGTGTCCTAAATACGTGAACAGAAGAAGCCTGATGCTTGCCACTGGCATGCGGAATGTGCCC GAGCTCATTCAGGGACGGGGCCTATTCGGCGCAATCGCCGGATTTCTGGAGAATGGTTGGGAAGGGATGGTCGATGGCTGGTACGGCTTT AGACACCAGAATGCACAGGGCACAGGGCAGGCGGCCGATTACAAATCCACTCAGGCTGCTATCGACCAGATCACCGGCAAGTTAAATAGG TTGGTCGAGAAGACGAACACCGAATTCGAATCTATCGAGTCAGAGTTTAGCGAGATTGAGCATCAGATAGGTAATGTGATTAACTGGACTAA GGACAGCATCACTGATATCTGGACTTACCAGGCAGAGCTCCTGGTTGCCATGGAGAACCAGCACACAATAGACATGGCCGACAGTGAAATG CTAAACCTGTACGAACGCGTGCGCAAGCAGCTCCGGCAGAACGCAGAAGAAGATGGCAAGGGGTGTTTTTGAGATATATCATGCATGCGAT GACTCCTGTATGGAGAGTATCCGTAACAACACTTACGATCACTCCCAGTACCGTGAGGAGGCTCTGCTGAACAGACTGAACATCAACCCCG TAACTTTAAGTAGTGGATATAAGGATATCATTCTTTGGTTTAGCTTCGGAGCAAGCTGTTTCGTCCTTCTCTCGCAGTGGTTATGGGCCTGTTCT TTTTTTGCCTAAAGAATGGGAATATGCGGTGCACAATATGTATT

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Seq ID No.	Sequenza di acido nucleico
3017	ATGTATAAGATCGTGGTGATTATTGCCCTGCTGGGCGCTGTGAAGGGCTTAGACAAGATTTGCTTAGGTCACCATGCAGTGGCAAATGGAA CAATTGTCAAGACATTGACCAATGAACAGGAGGAGGTAACCAACGCTACAGAAACCGTTGAGTCCACCGGTATTAACCGGCTTTGCATGAA GGGTCGCAAGCACAAGGATCTGGGCAATTGCCACCCCATCGGTATGCTCATTGGAACTCCCGCATGTGATCTGCATCTGACAGGGATGTG GGATACGTTGATAGAGCGTGAGAACGCCATCGCCTACTGTTACCCAGGTGCCACAGTGAACGTGGAAGCCCTGCGTCAAAAGATCATGGAA TCCGGAGGGATCAATAAAATTAGTACACGGCTTCACGTATGGCTCTTCCATCAACTCTGCTGGGACTACTCGTGCGTGCATGCCGGAATGGAG GCAATTCATTTTACGCGGAACTAAAATGGCTTGTGAGCAAAAGCAAAGGACAAAACTTCCCGCAGACGACCAACACGTATCGGAACACCGA CACCGCCGAACATCTAATCATGTGGGGCATCCATCATCCCTCATCCACCCAGGAAAAAAATGACTTATACGGAACACAGTCATTGAGCATTT CCGTAGGATCAAGTACATACCGAAATAATTTCGTGCCTGTGGTGGGTGCGGGCCCCCAAGTTAATGGCCAATCAGGCCGTATTGACTTTCA TTGGACCCTCGTTCAGCCTGGCGACAACATCACCTTCTCCCATAACGGGGGACTCATCGCCCCATCAAGAGTGTCGAAGCTGATCGGCCGA GGACTCGGGATACAGTCTGACGCCCCCATCGACAATAATTGTGAATCCAAGTGCTTTTGGAGAGGAGGGTCAATCAACACCCGCCTACCTT TTCAGAATCTTTCACCCAGGACCGTTGGGCAGTGTCCCAAATACGTGAACCGGAGATCTCTCATGCTTGCAACCGGGATGAGAAACGTGCC AGAGCTCATCCAGGGGCGCGGCCTATTTGGGGCCATAGCCGGTTTTCTGGAGAACGGATGGGAGGGAATGGTTGATGGCTGGTACGGCTT CAGGCACCAGAACGCACAGGGCACCGGGCAAGCCCGCAGACTACAAATCAACTCAGGCGGCTATCGATCAGATCACAGGTAAATTAAACCG ACTCGTCGAAAAGACAAATACCGAGTTTGAGTCTATCGAATCCGAGTTTTCTGAAATTGAGCATCAAATCGGCAACGTGATTAACTGGACTAA GGACTCCATCACCGATATTTGGACTTATCAAGCAGAACTACTGGTCGCCATGGAAAATCAACATACTATCGATATGGCAGATAGCGAAATGC TTAACCTCTACGAAAGAGTGCGAAAGCAGCTACGCCAAAATGCCGAGGAAGACGGGAAGGGCTGCTTCGAGATTTACCATGCGTGTGATGA TTCCTGCATGGAAAGTATTAGGAACAATACTTATGATCACAGCCAGTATCGTGAGGAAGCTCTGCTTAACAGACTTAACATCAATCCAGTGAC ACTCAGCAGTGGGTACAAAGACATCATCCTCTGGTTCAGCTTTGGAGCTTCTTGCTTCGTTTTGCTTGCTGTAGTCATGGGACTGTTTTTTTT TTGTCTGAAGAACGGTAATATGCGATGCACTATTTGTATA

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3018	ATGTATAAGATCGTGGTCATCATCGCTTTGCTGGGGGCTGTTAAGGGGCTCGACAAGATTTGTTTGGGCCACCACGCCGTGGCCAACGGGA CCATTGTGAAGACGCTGACAAATGAACAAGAAGAAGTCACAAATGCCCACAGAGACTGTTGAATCCACTGGCATTAATAGACTCTGCATGAAA GGCAGGAAACACAAAGATCTGGGCAACTGTCACCCTATCGGAATGCTGATTGGCACTCCGGCTTGTGATCTCCATCTTACAGGTATGTGGG ATACCCTTATTGAGCGAGAAAATGCCATCGCCTACTGTTATCCAGGTGCTACTGTGAACGTGGAGGGCCTTGAGGCAGAAGATTATGGAGTC AGGAGGCATCAATAAGATTTCCACACCGGGTTTACATACGGCTCATCCATCAACTCCGCCGGCACGACTCGAGCTTGCATGAAACGGTGGC AACTCCTTTTATGCGGAGCTAAAGTGGCTGGTCAGCAAGTCAAAAGGTCAGAACTTCCCCCAGACTACGAACACCTATCGGAATACAGACAC CGCTGAGCATTTGATCATGTGGGAATCCACCATCCTAGCTCCACCCAGGAGAAGAATGACCTGTATGGAACACAATCTCTTTCTATCTCCG TGGGCTCTTCTACCTACCGTAACAATTTCGTTCCCGTTGTGGGGCTCGGCCTCAGGTGAATGGTCAATCCGGAAGAATCGACTTTCACTG GACATTAGTACAGCCCCGGCGACAACATTACATTTAGTCATAATGGGGGGCTGATCGCGCCTAGTCGGGTCTCAAAGTTGATCGGGAGAGGC CTCGGAATCCAGAGCGATGCACCTATCGATAACAACTGTGAAAGCAAGTGCTTCTGGCGCGGCGGGTTCTATTAATACCAGATTGCCCTTCCA GAACCTGTCTCCCCGAACAGTCGGGCAGTGCCCCAAATACGTGAACAGGAGATCTCTGATGCTGGCCACAGGGATGCGCAACGTGCCAGA GCTGATCCAGGGAAGGGGTCTCTTCGGGGCCATTGCCGGCTTTCTGGAAAATGGCTGGGAAGGGATGGTGGACGGGTGGTATGGCTTCA GGCACCAAAACGCGCAAGGCACTGGCCAGGCGGCGGATTACAAGAGCACGCAAGCTGCTATAGACCAGATCACGGGGAAGCTGAACAGA CTCGTGGAAAAGACTAATACTGAATTTGAATCGATCGAGTCTGAGTTCTCCGAAATCGAGCATCAGATCGGGAATGTCATAAATTGGACCAA GGATTCCATTACAGATATTTGGACCTATCAGGCCGAACTGCTGGTGGCCATGGAGAATCAGCACACTATTGATATGGCCGACAGTGAGATG CTGAACCTGTATGAGCGTGTTAGGAAGCAACTTCGACAGAACGCAGAAGAAGATGGTAAGGGATGTTTCGAGATTTACCATGCCTGTGACG ACAGTTGTATGGAGCATTAGGAATAACACTTATGACCATAGCCAATACCGGGAAGAAGCTTTGTTAAATCGCCTGAATATCAATCCCGTC ACGTTATCGTCGGGGTATAAGGATATTATTCTGTGGTTCAGCTTCGGAGCGTCCTGCTTTGTTCTGTTGGCCGTGGTAATGGGGCTGTTTTT CTTTTGTCTTAAGAACGGGAACATGCGCTGCACAATCTGCATC

Ing. Ines Sangiacomo
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Seq ID No.	Sequenza di acido nucleico
3019	ATGTACAAGATTGTGGTTATCATCGCACTGTTAGGAGCCGTGAAGGGGTTGACACAAGATCTGTCTGGGGCATCATGCCGTTGCTAATGGAA CAATCGTGAAGACGCTCACCAATGAACAAGAAGTCACAAACGCCACCGAAACCGTGGAGAGCACCGGAATTAACAGACTTTGTATGAA GGGACGCAAACACAAGGATCTGGGGAACTGCCACCCAATCGGCATGCTGATAGGAACCCCTGCCTGTGATCTGCACTTAACTGGCATGTG GGACACACTTATAGAGCGCGAGAACGCGATCGCGTACTGCTACCCCGGAGCAACCGTTAACGTCGAAGCTTTGAGGCAGAAAATTATGGAA AGCGGCGGCATAAATAAAATTTCTACTGGCTTTACGTACGGCAGCTCTATAAACAGTGCTGGCACCACTCGTGCCTGTATGCGGAACGGCG GCAATTCCTTTTACGCCGAATTAAAATGGCTTGTTAGCAAGTCAAAGGGCCAGAACTTTCCGCAGACGACTAATACATACCGAAACACCGAC ACCGCTGAACATCTGATTATGTGGGGTATACATCATCCAAGTTCCACCCAAGAAAAAAATGACTTGTATGGGACCCAGAGCCTAAGCATCTC CGTGGGGAGTTCTACTTACCGAAACAACTTCGTACCTGTGGTGGGGCCCGACCACAGGTAAATGGACAGTCGGGCCGGATTGATTTCCA CTGGACCTTGGTGCAGCCGGGAGATAACATAACATTCTCTCATAACGGAGGTCTCATAGCCCCAAGTCGTGTGTCAAAGCTCATCGGTAGA GGCCTGGGCATTCAGTCAGACGCACCCATTGATAATAACTGTGAGTCTAAATGCTTTTGGCGCGGCGGGAGTATCAATACTAGACTGCCTTT TCAGAACCTCAGCCCAAGGACCGTGGGGCAGTGTCCCAAGTATGTAAATCGGCGAAGCTTAATGCTGGCTACTGGTATGCGGAATGTGCCT GAACTCATTCAGGGACGGGGCCTCTTCGGAGCAATAGCTGGTTTCCTGGAGAACGGCTGGGAAGGCATGGTGGATGGTTGGTACGGTTTT AGACACCAAAATGCCCAGGGAACGGGACAGGCTGCCGACTATAAGTCAACTCAAGCCGCGATCGACCAGATCACTGGTAAATTAAACCGAC TCGTCGAAAAGACAAACACGGAGTTCGAGTCTATCGAAAGTGAGTTCTCAGAGATTGAACACCAAATCGGGAATGTGATTAACTGGACAAAG GACTCGATAACCGATATCTGGACCTACCAGGCAGAACTTCTGGTGGCCATGGAAAACCAGCACACTATTGACATGGCCGACTCAGAGATGC TGAATCTGTACGAGAGAGTGAGGAAGCAGCTCCGCCAGAATGCGGAGGAGGATGGTAAAGGCTGCTTCGAAATCTACCACGCTTGCGATG ACTCCTGCATGGAATCAATCCGAAATAATACATATGACCACTCACAGTACAGAGAAGAAGCCCTTCTGAACCGCCTGAACATCAACCCCGTG ACGCTGAGTTCAGGATATAAGGATATCATTCTCTGGTTCTCCTTTGGGGCGAGTTGCTTCGTGCTGCTTGCGGTAGTCATGGGACTCTTTTT TTTTTGTCTTAAGAACGGTAATATGCGGTGCACTATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3020	ATGTACAAGATCGTGGTAATTATCGCCCTGCTCGGAGCTGTGAAAGGATTAGACAAAATTTGCCTCGGCCACCATGCTGTAGCTAATGGTAC AATAGTCAAAACCCTAACTAATGAACAGGAAGAGGTGACTAATGCAACGGAAACTGTCGAGAGTACCGGCATTAACCGCCTGTGTATGAAAG GGAGAAAGCACAAGGACTTAGGCAATTGTCATCCAATCGGGATGCTAATTGGCACTCCAGCCTGTGATCTGCATCTGACCGGAATGTGGGA CACCTTAATTGAGAGGGAAAACGCCATAGCCTATTGCTATCCTGGGGCAACTGTTAATGTGGAAGCTCTCCGGCAAAAAATCATGGAATCTG GAGGCATTAATAAGATCTCCACGGGCTTCACATATGGGTCCTCTATCAATTCCGGCCGGGACCACGCGCGCATGCATGAGAAACGGAGGAA TTCTTTCTACGCGGAACTTAAGTGGCTGGTCAGTAAGTCTAAAGGGCAGAATTTTCCTCAGACCACTAATACCTACAGAAATACGGATACAG CTGAGCACCTCATTATGTGGGGAATACACCACCCTTCAAGCACACAGGAAAAAAACGATCTCTACGGGACCCAGAGCCTGTCCATTAGTGT CGGATCTAGCACATACCGGAACAATTTCGTACCCGTTGTGGGAGCACGCCCACAGGTGAATGGGCAGTCAGGCAGAATCGATTTCCATTGG ACTCTCGTGCAGCCCGGCGATAATATAACCTTCAGTCATAATGGCGGATTGATCGCCCCCTCGCGTGTTTCAAAATTAATCGGGAGAGGGGGC TCGGGATACAAAGCGACGCTCCTATCGACAACAACTGTGAGTCCAAGTGTTTTTGGCGCGGCGGGAGCATTAATACCCGTCTCCCCGTTCCA GAACCTGTCTCCCCGGACAGTAGGACAGTGTCCGAAGTATGTCAATCGTAGAAGTCTTATGCTGGCGACGGGAATGCGGAACGTGCCCGA GCTGATTCAAGGCCGGGGTCTGTTCGGAGCAATAGCTGGTTTCCTGGAGAATGGTTGGGAGGGCATGGTTGACGGCTGGTATGGGTTCAG ACATCAGAACGCACAGGGAACCGGCCAGGCTGCTGACTATAAATCCACTCAGGCAGCCATAGATCACCGGGAAGCTAAACCGGCT GGTTGAGAAAACTAATACGGAGTTCGAGTCTATCGAGTCCGAGTTTAGCGAAATAGAGCATCAGATAGGGAACGTGATAAATTGGACGAAA GACTCTATTACCGACATCTGGACCTACCAGGCGGAACTGCTGGTGGCTATGGAGAATCAGCACACCATCGACATGGCTGATAGCGAAATGT TGAATCTGTACGAGCGGGTCAGAAAACAGTTAAGACAGAACGCAGAGGAAGATGGAAAGGGCTGCTTCGAAATATATCACGCATGTGATGA TTCCTGCATGGAGTCTATTAGAAACAACACTTATGACCATTCGCAGTACCGCGAAGAAGCGCTGCTAAACAGACTCAACATCAATCCTGTGA CCTTGAGTAGCGGATACAAGGACATTATACTGTGGTTCTCCTTGGTGCCTCCTGTTTTGTCTTGCTTGCCGTAGTTATGGGCCTGTTCTTTT TCTGCTTGAAGAACGGGAACATGCGCTGCACAATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3011	ATGTATAAAGTGGTGGTGATTATCGCTTTACTGGGAGCTGTAAAGGGGCTGGATAAGATTTGTCTGGGACATCACGCAGTCGCGAACGGCA CCATTGTGAAAACACTTACTAATGAACAGGAGAGGTGACCAACGCCACCGAAACCGTCGAGTCAACAGGTATAAACAGATTGTGCATGAA GGGCCGAAAGGCACAAGGACCTGGGAAATTGTCATCCAATTGGAATGTTGATCGGGCACTCCAGCCTGCGATCTTCATCTTACCGGAACATGG GACACGCTTATTGAACGGGAAAATGCGATCGCATATTGCTACCCCGGGCCACAGTGAATGTGGAGGCACTGAGACAGAAAATCATGGAAA GTGGCGGGATCGACAAGATTAGTACTGGCTTTACATACGGGAGCAGCATCAACTCCGCCGGGACCACCCGAGCCTGCATGAGGAACGGG GGCAACAGTTTTTATGCTGAGCTGAAGTGGCTCGTGTCAAAAAATAAGGGCCAGAATTTCCCTCAAACAACGAATACATATCGCAACACAGA TACAGCGGAACACTTAATCATGTGGGGCATTCACCACCCTAGCTCCATTCAAGAAAAGAACGATCTCTACGGAACACAATCGTTGAGCATCT CAGTGGGGTCTTCCACCTATAGAAACAACTTTGTACCTGTGGTCGGCGCAAGACCTCAAGTCAATGGACAAAGCGGCAGAATCGACTTCCA CTGGACTCTGGTGCAGCCAGGCGATAATATAACCTTCTCTCACAACGGCGGCTTGATCGCTCCCAGCCGGGTATCTAAGTTAATCGGCCGT GGTCTCGGAATCCAGAGCGATGCACCGATTGACAATAACTGTGAAAGTAAATGTTTCTGGCGTGGCGGCTCTATAAACACTAGACTCCCCTT CCAGAACTTGAGTCCTAGAACAGTGGGGCAGTGCCCGAAATACGTCAACCGGAGATCGTTGATGCTCGCAACTGGCATGAGGAACGTCCC CGAGTTAATACAGGGACGGGGACTATTCGGCGCCATAGCCGGGTTCCTCGAGAACGGATGGGAGGGTATGGTTGATGGTTGATACGGCTT TCGACATCAAAACGCACACAAGGTACAGGGCAGGCTGCCGATTACAAGAGCACTCAGGCCGCCATCGACCAGATCACTGGGAAACTCAACAG GTTAGTGGAGAAAACCAATACCGAATTTGAATCCATCGAGAGCGAATTCTCAGAGATTGAGCATCAGATAGGAAATGTGATAAACTGGACCA TGGATAGTATTACAGACATTTGGACGTACCAAGCAGAGGCTGCTTGTCGCGATGGAGAATCAACACACCATCGACATGGCGGACTCCGAAAT GCTGAATCTGTATGAGAGGGTTCGGAAACAGCTTAGACAAAATGCAGAGGAGGATGGCAAGGGCTGCTTTGAGATCTACCACGCATGTGAT GACTCCTGTATGGAATCCATCCGGAACAACACGTATGACCACTCTCAGTACAGAGAAGAGGCTCTCCTGAATCGCCTTAATATTAACCCTGT GACACTGTCCTCCGGCTATAAGGATATCATCCTGTGGTTTAGCTTTGGAGCAAGCTGCTTCGTGTTGCTGGCCGTAGTTATGGGCCTGGTCT TCTTCTGTCTTAAGAACGGAAACATGCGGTGCACAATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3012	ATGTATAAGGTCGTCGTTATTATAGCGCTGCTTGGAGCTGTCAAAGGTTTGGATAAAATCTGTCTGGGCCATCACGCAGTCGCCAACGGTAC CATTGTGAAAACGCTCACAAACGAACAGGAAGAGGTCACGAACGCCACAGAGACTGTGGAGTCTACAGGGATTAACCGCCTGTGCATGAAA GGCCGGAAACATAAGGACCTTGGCAACTGCCATCCAATCGGCATGCTGATTGGCACTCCGGCCTGTGATCTGCATTTGACCGGCACATGG GATACCCTGATCGAAAGGGAGAATGCCCATCGCTTACTGTTATCCCGGCGCAACTGTGAATGTGGAGGCACTGAGACAGAAGATCATGGAGT CTGGGGGATCGATAAAATTAGTACCGGGTTTACTTACGGCAGTTCGATTAATAGCGCGGGAACAACGAGGGCGTGTATGAGGAATGGAG GAAACTCCTTCTATGCCGAGCTCAAGTGGCTGGTGAGCAAGAACAAGGGGCAAAACTTTCCCCAAACAACTAACACATACCGGAATACAGA TACTGCTGAACATCTGATAATGTGGGGAATCCACCATCCTTCTTCAATTCAGGAGAAAAACGATCTTTACGGAACTCAAAGTTTAAGCATAAG TGTGGGGTCATCTACGTATAGAAACAACTTTGTGCCCGTGGTTGGCGCAAGGCCGCAGGTGAATGGTCAATCTGGGAGGATAGATTTCCAC TGGACATTGGTGCAGCCGGGTGATAATATCACCTTTTCCCATAATGGGGGATTGATTGCCCCCTCCCGGGTGTCGAAACTTATTGGCCGCG GGCTAGGTATTCAGAGTGACGCCCCCCATTGATAATAATTGTGAGTCTAAATGTTTTTGGCGGGGTGGCAGCATTAATACACGTCTGCCATTC CAGAACCTGTCCCCCAGGACTGTCGGGCAATGCCCCAAATACGTGAATAGACGGTCTCTGATGCTGGGCACTGGGATGCGCAATGTACCC GAGCTTATCCAGGGACGGGGCCTTTTTGGGGCCATCGCCGGTTTCCTGGAGAACGGGTGGGAAGGCATGGTTGATGGCTGGTATGGGTTT AGACACCAGAATGCTCAAGGGACTGGGCAGGGGCGCCGATTATAAGAGTACACAGGGCGGCCATCGACCAGATCACAGGCAAGCTCAACCGT CTGGTGGAGAAAACAAATACAGAATTCGAAAGCATAGAGAGTGAATTTTCTGAGATTGAGCACCAGATTGGTAATGTCATCAATTGGACAAT GGATTCCATCACTGACATCTGGACATACCAAGCCGAGCTATTGGTGGCGATGGAGAATCAGCATACAATAGATATGGCCGACTCTGAAATG CTGAACTTATATGAGAGAGTGCGTAAACAGTTGAGGCAGAATGCTGAAGAAGACGGTAAGGGATGTTTTTGAGATATATCATGCCTGTGATGA CAGTTGCATGGAATCCATCAGAAATAACACTTACGACCACAGCCAGTACAGAGAGGAAGCCCTACTGAACAGGCTCAATATCAATCCAGTGA CTCTATCCAGCGGCTACAAGGACATTATCTTATGGTTTTCTTTTGGTGCTTCATGTTTTGTGCTCCTCGCCGTGGTCATGGGGCTCGTCTTCT TCTGTTTAAAGAATGGGAATATGCGGTGCACAATATGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3013	ATGTACAAAATAGTAGTAATCATTGCTTTGCTTGGCGCGGTGAAAGGCTTGGATAAGATTTGCCTGGGACACCATGCTGTCGCGAATGGAAC CATAGTTAAGACTTTGACTAATGAGCAAGAGGAGGTGACCAACGCCACCGAAACGGTGGAGTCCACAGGCATCAACAGGCTCTGTATGAAA GGACGGAAGCATAAGGACCTGGGGAACTGTCATCCAATTGGAATGCTGATCGGGACGCCCGCGTGTGACCTCCATCTGACAGGGATGTGG GATACTCTTATTGAGAGAGAAGCGCTATCGCCTACTGTTATCCTGGTGCTACAGTGAACGTGGAAGCCCTCAGGCAGAAGATTATGGAGA GCGGTGGGATCAACAAGATTAGTACAGGGTTTACCTATGGGTCATCCATAAACAGTGCGGGCACTACCCGAGCGTGCATGCGCAATGGGG GCAATTCGTTCTATGCCGAACTGAAGTGGTTAGTCTCTAAGTCTAAAGGTCAGAATTTTCCTCAGACAACTAACACATACCGGAATACCGATA CCGCTGAACACCTGATCATGTGGGGAATACATCACCCTAGTAGTACACACAAGAGAAAAATGACCTATATGGGACACAGAGCCTGTCAATTAGC GTGGGTAGTTCCACATATAGAAACAACTTTGTTCCTGTCGTGGGTGCCCGGCCTCAGGTAAATGGGCAGACGGGACGGATAGATTTTCATT GGACTTTGGTCCAGCCCCGGGGATAACATTACCTTCTCTCATAACGGGGGGCTGATCGCTCCAAGCCGGGTGTCTAAGCTCATAGGCAGAG GCCTGGGTATCCAATCGGACGCCCCCATCGATAACAACTGTGAAAGTAAATGCTTTTGGAGGGGCGGCAGTATTAATACGCGGCTACCGTT TCAGAATCTGTCTCCACGCACAGTAGGGCAGTGTCCAAAGTACGTCAACCGCAGATCCCCTCATGCTGGCCACGGGGGATGAGGAACGTGCC CGAGCTGATCCAGGGGAGGGGCCTATTTGGGGCTATCGCCGGCTTCCTGGAGAATGGTTGGGAGGGAATGGTCGATGGCTGGTACGGCT TTCGCCATCAGAACGCCCAAGGAACTGGACAAGCTGCCGACTACAAAAGCACGCAAGCCGCCATCGATCAAATTACCGGAAAGCTGAATCG GCTAGTGGAGAAGACCAACACCGAATTTGAGTCTATAGAGTCAGAGTTTAGCGAAATCGAGCATCAGATTGGCAACGTCATTAATTGGACCA AGGACAGCATAACCGACATATGGACATACCAAGCCGAACTCCTGGTAGCTATGGAAAATCAGCATACCATCGATATGGCAGATTCCGAAATG CTGAACCTGTATGAAAGAGTGAGGAAGCAACTGCGTCAGAATGCCGAGGAAGACGGCAAGGGGTGCTTTGAGATCTACCACGCATGTGAT GATTCTTGCATGGAGAGCATCAGGAATAATACATACGACCACACAGCCAGTACCGGGAAGAAGCCCTATTGAACAGGCTTAACATCAATCCCGT CACTCTATCCAGCGGCTATAAAGATATAATCTTATGGTTTTCCTTTGGCGCGTCTTGCTTTGTGCTCCTGGCGGTGGTGATGGGCTTATTCTT CTTTTGTCTCAAGAATGGCAACATGAGGTGCACAATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3014	ATGTACAAGATAGTGGTCATCATCGCACTCCTGGGCGCCGTGAAGGGCCTGGATAAAATTTGCCTGGGGCACCATGCCGTCGTGAACGGC ACGATCGTCAAGACTCTCACTAATGAGCAGGAGGAAGTCACTAATGCTACGGAGACAGTTGAGTCGACCGGATTGAATAGATTGTGCATGA AGGGACGTAACCACAAGGACCTCGGGAACTGCCACCCAATTGGCATGTTGATCGGAACACCCGCCTGCGATCTCCATCTGACCGGTACGT GGGATACACTTATCGAGAGGGAAAACGCAATCGCCTATTGCTATCCCGGTGCAACCGTTAACGAAGAAGCTCTGAGGCAGAAAATCATGGA GTCTGGTGGGATTAACAAGATTAGTACAGGGTTTACATACGGAAGCTCCATCAACAGTGCAGGCACTACCCGTGCCTGCATGAGAAACGGA GGCAACTCTTTTTACGCTGAACTTAAATGGTTAGTAAGCAAGAGTAAAGGCCAGAATTTTCCACAGACGACAAACACATACAGAAACACCGA CACAGCCGAACACCTGATCATGTGGGGCATCCACCACCCATCCAGCACCCAGGAGAAGAACGATCTATATGGAACTCAGAGCCTGTCTATT AGCGTAGGCAGTTCAACCTACCAGAATAACTTCGTGCCAGTGGTGGGAGCTCCGCCTCAGGTTAATGGACAGAGCGGCAGAATCGACTTC CACTGGACTCTCGTGCAACCCGGCGATAACATCACTTTTTCGCATAATGGAGGCTTAATCGCACCCTCCCGAGTCAGCAAGCTCATCGGAA GGGGATTAGGCATACAGAGTGATGCACCCATCGATAACAACTGCGAAAGTAAGTGCTTCTGGCGAGGGGGTTCCATTAATACTAGATTACC ATTTCAAAATCTGAGTCCAAGAACCGTTGGTCAGTGCCCGAAGTATGTCAATAAGCGTTCTCTGATGTTGGCAACTGGGATGAGGAATGTGC CAGAACTGATGCAAGGCGCGAGGCCTCTTTGGTGCAATCGCTGGCTTTATAGAGAACGGGTGGGAAGGGATGGTGGCTGGTATGGGT TCCGCCATCAGAATGCACAAGGCACCGGTCAGGCCGCCGACTACAAGTCAACCCAGGCGGCTATCGATCAAATCACGGGGAAACTGAACA GGTTAATCGAAAAAACAAACACAGAGTTCGAGTCAATCGAGTCTGAGTTTTCTGAAATTGAGCACCAAATCGGGAATGTGATTAACTGGACA AAAGACTCTATCACAGACATCTGGACCTACCAGGCCGAACTCCTGGTGGCCATGGAGAATCAACACACCATTGACATGGCGGACTCCCGAAA TGCTGAATCTGTATGAGAGGGTTAGGAAACAACTTAGGCAGAATGCTGAGGAAGACGGCAAAGGCTGTTTTGAAATTTACCACGCCTGTGA TGATAGTTGTATGGAGAGCATTCGGAACAATACCTACGATCACTCTCAATATCGCGAGGAAGGCTCTGCTTAACAGGCTTAACATTAACCCCG TGACGCTGTCAAGTGGCTACAAAGACATTATTCTCTGGTTCTCCTTCGGTGCATCATGCTTTGTTCTGCTGGCTGTTGTCATGGGCTTAGTGT TCTTCTGCCTCAAGAACGGTAATATGAGATGTACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3015	ATGTATAAGGTGGTGGTGATCATCGCCCTCTTGGGTGCTGTTAGAGGGCTGGATAAAATCTGTCTAGGACATCATGCCGTGGCAAACGGTA CTATCGTAAAAACTCTGACAAATGAGCAGGAGGTGACCAACGCTACTGAGACCGTCGAGTCAAAGAGCCTGGGAAAGTTGTGCATGAA AGGGAGGTCATATAATGACCTGGGGAACTGTCACCCTATAGGTATACTTATTGGCACCCCTGCCTGCGATCTCCATCTCACTGGGACATGG GACACCCTGATTGAACGGGAGAACGCTGTTGCTTATTGCTACCCCGGTGCTACAGTTAATGAGGAGGCGTTGCGTCAGAAGATAATGGAAA GCGGGGGAATCTCGAAGATTAGCACTGGCTTTACCTACGGGACCAGTATTAATAGCGGCGGGAACCACAAAGCCTGCATGAGAAACGGAG GCAACAGCTTTTACGCCGAATTGAAATGGTTAGTGTCAAAGAACAAAGGACAGAACTTCCCTCAGACCACAAACACGTACAGAAACACCGAT ACTGCTGAGCACTTGATTATCTGGGGCATTCATCACCCATCTAGCACACAAGAGAAAAATGATCTGTATGGAACCCAGTCACTGAGCATCTC AGTCGGCAGTTCCACTTACCAAAATAATTTTGTTCCTGTGGTGGGAGCACGCCCACAGGTGAATGGACAGTCTGGAAGGATTGATTTTCACT GGACCCTGTTGCAGCCAGGAGACAATATAACCTTCAGTCATAACGGGGGCCTCATCGCGCCGTCTCGGGTGTCAAAGTTGATTGGAAGAG GACTCGGGATTCAATCCGAAGCCCCCATCGATAATGGCTGTGAATCTAAATGCTTTTGGAAAGGTGGTTCGATCAATACAAGCTGCCCTTC CAAAACCTTTCCCCCGCGGACAGTTGGACAATGCCCCAAGTACGTGAACAAGCGCAGTCTGATGCTCGCCACCGGGATGAGAAACGTGCCG GAGATTATGCATGGCAGGGGCCTGTTCGGAGCTATCGCTGGATTCATTGAAAACGGGTGGGAGGGCATGGTTGACGGCTGGTATGGATTC AGGCATCAGAACGCACAGGGGACAGGCCAGGCAGGCTGACTATAAGAGTACCCAGGCCGCTATCGACCAAATAACAGGTAAGCTTAACCGT CTTATCGAAAAAACTAACACAGAGTTCGAATCAATCGAAAGCGAATTCAGTGAGATTGAACACCAGATTGGTAACATAATTAATTGGACAAAA GACTCTATCACAGATATTTGGACCTACCAGGCAGAACTGCTCGTGGCCATGGAAAACCAGCACACTATCGATATGGCAGATTCCGAAATGTT AAACCTGTATGAGCGAGTGCGAAAACAACTGCGCCAAAATGCAGAGGAAGACGGGAAAGGCTGTTTTGAAATTTACCATGCGTGCGACGAT TCTTGTATGGAATCCATCAGAAACAACACATATGATCACTCTCAGTATAGAGAAGAGGCTCTTCTGAATCGCTTGAATATAAACCCTGTGAAG TTAAGTTCAGGGTATAAAGATATCATCCTTTGGTTCTCTTTCGGGGCTTCTTGTCTGATCTTGCTTGCTGTGGTCATGGGTCTCGTGTTTTTTT GTCTGAAAAACGGCAACATGCGATGTACAATTTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3015	ATGTATAAGGTGGTGGTGATCATCGCCCTCTTGGGTGCTGTTAGAGGGCTGGATAAAATCTGTCTAGGACATCATGCCGTGGCAAACGGTA CTATCGTAAAAACTCTGACAAATGAGCAGGAGGAGGTGACCAACGCTACTGAGACCGTCGAGTCAAAGAGCCTGGGAAAGTTGTGCATGAA AGGGAGGTCATATAATGACCTGGGGAACTGTCACCCTATAGGTATACTTATTGGCACCCCTGCCTGCGATCTCCATCTCACTGGGACATGG GACACCCTGATTGAACGGGAGAACGCTGTTGCTTATTGCTACCCCGGTGCTACAGTTAATGAGGAGGCGGTTGCGTCAGAAGATAATGGAAA GCGGGGGAATCTCGAAGATTAGCACTGGCTTTACCTACGGGACCAGTATTAATAGCGCGGGAACCACACAAAGCCTGCATGAGAAACGGAG GCAACAGCTTTTACGCCGAATTGAAATGGTTAGTGTCAAAGAACAAGGACAGAACTTCCCTCAGACCACAAACACGTACAGAAACACCGAT ACTGCTGAGCACTTGATTATCTGGGGCATTCATCACCCATCTAGCACACAAGAGAAAAATGATCTGTATGGAACCCAGTCACTGAGCATCTC AGTCGGCAGTTCCACTTACCAAAATAATTTTGTTCCTGTGGTGGGAGCACGCCCACAGGTGAATGGACAGTCTGGAAGGATTGATTTTCACT GGACCCTGTTGCAGCCAGGAGACAATATAACCTTCAGTCATAACGGGGGCCTCATCGCGCCGTCTCGGGTGTCAAAGTTGATTGGAAGAG GACTCGGGATTCAATCCGAAGCCCCCATCGATAATGGCTGTGAATCTAAATGCTTTTGGAAAGGTGGTTCGATCAATACAAAGCCTGCCCTTC CAAAACCTTTCCCCGCGGACAGTTGGACAATGCCCCAAGTACGTGAACAAGCGCAGTCTGATGCTCGCCACCGGGATGAGAAACGTGCCG GAGATTATGCATGGCAGGGGCCTGTTCGGAGCTATCGCTGGATTCATTGAAAACGGGTGGGAGGGCATGGTTGACGGCTGGTATGGATTC AGGCATCAGAACGCACAGGGGACAGGGCAGGCTGACTATAAGAGTACCCAGGCCGCTATCGACCAAATAACAGGTAAGCTTAACCGT CTTATCGAAAAAACTAACACAGAGTTCGAATCAATCGAAAGCGAATTCAGTGAGATTGAACACCAGATTGGTAACATAATTAATTGGACAAAA GACTCTATCACAGATATTTGGACCTACCAGGCAGAACTGCTCGTGGCCATGGAAAACCAGCACACTATCGATATGGCAGATTCCGAAATGTT AAACCTGTATGAGCGAGTGCGAAAACAACTGCGCCAAAATGCAGAGGAAGACGGGAAAGGCTGTTTTGAAATTTACCATGCGTGCGACGAT TCTTGTATGGAATCCATCAGAAACAACACATATGATCACTCTCAGTATAGAGAAGAGGCTCTTCTGAATCGCTTGAATATAAACCCTGTGAAG TTAAGTTCAGGGTATAAAGATATCATCCTTTGGTTCTCTTTCGGGGCTTCTTGTCTGATCTTGCTTGTGGTCATGGGTCTCGTGTTTTTTT GTCTGAAAAACGGCAACATGCGATGTACAATTTGTATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3016	ATGTACAAGATTGTAGTCATCATCGCCCTACTGGGTGCAGTCAAGGGACTGGACAAAATATGCCTGGGCCATCATGCAGTGGCCAACGGGA CCATTGTTAAGACACTTACAAATGAGAAAGAAGAGGTTACTAATGCCACCGAAACTGTGGAGTCCACCGGCCTAAACCGACTCTGCATGAAG GGAAGGAAACACAAAGATCTGGGAAACTGCCACCCCATAGGGATGCTCATCGGCTCTCCCGCATGTGACCTGCATCTGACAGGAACCTGG GATACCCTGATCGAGAGAGAAAACGGGATCGCCTATTGTTACCCCGGGCGCGACAGTGAATGGTGAGGCTCTGCGCGCAAAAAATAATGGAAT CAGGAGGAATAGACAAAATTTCAACAGGATTTACATACGAATCCTCCATTAATAGCGCCGGCACAACTAGAGCTTGTATGCGGAATGGGGG CAATTCCTTTTACGCGGAGCTGAAATGGTTGGTATCTAAAAGCAAAGGACAGAACTTCCCTCAGACTACCAACACCTATCGAAATACAGACA CAGCCGAGCACTTAATTATGTGGGGGATACATCACCCCTCTTCTACACAGGAGAAAAATGACTTATACGGAACCCAATCCTTAAGCATTAGT GTGGGCAGCACATATCGAAACAATTTTGTACCAGTGGTAGGAGCTCGCCCTCAGGTGAATGGACAGAGCGGCCGGATTGATTTCCACT GGACACTGGTTCAGCCTGGCGACAATATCACATTCAGCCATAACGGTGGTTTGATTGCTCCTTCCAGAGTCAGTAAATTGATCGGGAGAGG ACTGGGGATTCAGTCAGACGCCCCCATTGATAATAACTGTGAAAGCAAGTGCTTTTGGAGAGGTGGATCCATCAACACACGTCTGCCCTTC CAGAACCTGAGTCCCCGGACAGTCGGTCAGTGTCCGAAGTACGTCAACAAACGGAGTTTAATGCTCGCGACTGGGATGAGGAACGTGCCT GAACTTATGCAAGGCCGGGGGCTTATTCGGGGCCATTGCGGGCTTTCTGGAAAACGGGTGGGAAGGGATGGTTGATGGGTGGTACGGGTTC AGACACCAGAATGCTCAGGGCACCGGACAAGCCGCAGATTATAAGTCAACCCAGGCCGCAATAGATCAGATTACCGGCAAACTGAACAGG CTCGTCGAGAAAACCAATACTGAGTTTGAATCTATTGAAAGCGAGTTTTCAGAGATTGAACATCAAATCGGCAATGTGATTAATTGGACCAAA GATTCGATTACAGATATATGGACCTACCAGGCTGAACTTCTTGTCGCCATGGAAAACCAGCATACGATCGATATGGCCGACAGCGAAATGTT AAACCTATACGAGCGGGTGAGGAAGCAGCTGAGGCAGAACGCAGAAGAGGACGGGAAAGGCTGTTTTGAAATATACCACGCCTGTGATGA TTCTTGCATGGAGTCGATCCGTAACAACACATACGACCATTCTCAATATCGAGAGGAAGCATTATTGAACAGGTTAAACATCAATCCCGTTAC TCTCTCCAGCGGATATAAAGACATTATCCTTTGGTTTTCATTCGGAGCATCCTGTTTTGTCTTACTAGCCGTCGTAATGGGTTTAGTCTTCTTT TGCCTTAAGAACGGGAATATGAGGTGTACCATATGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3017	ATGTATAAAATCGTGGTGATCATCGCTCTTCTTGGCGCTGTGAAGGGGCTCGACAAGATCTGCTTAGGTCATCACGCAGTGGCTAATGGTAC GATCGTGAAGACACTGACGAATGAACAGGAAGAAGTCACAAATGCCACGGAGACCGTTGAGAGCACTGGCATCAATAGACTGTGCATGAAA GGACGCAAGCACAAGGACCTGGGCAATTGCCATCCTATCGGCATGCTGATTGGAACGCCGGCGTGTGACCTGCATTTGACCGGGATGTGG GATACCCTAATCGAGAGGGAGAAGCGCAATTGCCTATTGTTACCCCGGCGCAACCGTGAATGTGGAAGCCCTGCGACAAAGATCATGGAGA GTGGTGGCATTAATAAGATTTCTACCGGGTTCACTTATGGCAGTAGCATCAACTCTGCCGGCACAACCAGGGCTTGTATGAGGAATGGAGG CAACAGCTTTTATGCTGAACTTAAATGGCTCGTCAGCAAGTCTAAAGGTCAGAACTTCCCTCAGACCACAAATACATACAGAAATACTGACAC AGCCGAGCACCTCATCATGTGGGGCATCCATCATCCATCTTCCACCCAAGAGAAAAACGACCTCTACGGGACACAGAGCCTGTCTATAAGC GTGGGCTCTAGCACTTATAGAAATAATTTCGTTCCAGTGGTGGGCGCACGTCCCCAAGTTAACGGCCAGAGCGGAAGGATCGATTTCCATT GGACTCTGGTGCAGCCTGGGGACAACATTACATTTTCCCACAATGGAGGTCTTATTGCACCCTCACGGGTATCCAAGTTAATCGGCCGCGG ACTTGGCATCCAATCAGATGCACCCATCGACAACAATTGTGAGAGTAAGTGCTTCTGGCGTGGTGGGAGCATCAACACGAGATTACCTTTCC AGAATCTGAGCCCGAGAACAGTAGGGCAATGTCCAAAGTATGTGAACAGGCGCAGCCTCATGCTCGCGACCGGAATGAGAAATGTTCCCG AACTGATACAAGGAAGGGGTTTGTTCGGCGCCATCGCAGGATTTCTGGAAAACGGGTGGGAGGGAATGGTGGTACGGCTTCC GTCACCAGAACGCCCAGGGCACGGGTCAGGCCGCAGACTATAAAAGTACCCAGGCGGCCATTGATCAGATAACAGCGCAAGCTCAACCGGC TGGTAGAAAAAACCAATACAGAGTTTGAGAGCATAGAGTCCGAGTTTAGCGAGATAGAACATCAAATAGGAAATGTCATCAACTGGACCAAG GACAGCATCACGGATATTTGGACTTACCAGGCCGAATTACTGGTTGCTATGGAGAACCAGCACACTATTGATATGGCAGATTCTGAAATGTT AAACTTATATGAACGCGTGAGAAAGCAGTTGAGGCAGAATGCTGAGGAGGACGGGAAGGGCTGCTTTGAAATATACCATGCCTGCGACGAT AGCTGTATGGAGAGCATCAGGAACAATACATACGATCACAGTCAATACCGCGAGGAGGCTTTACTCAACCGGCTCAACATAAACCCCGTCA CTCTCTCTTCGGGCTACAAGGATATTATTCTGTGGTTTTCATTCGGCGCTTCCTGCTTCGTTCTCCTAGCCGTAGTAATGGGCCTCTTCTTCT TCTGCCTGAAAAACGGCAACATGCGGTGTACTATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3018	ATGTACAAGATTGTGGTCATCATCGCCCTGCTGGGCGCCGTCAAGGGGCTCGATAAGATTTGCCTAGGTCACCACGCCGTCGCCAATGGC ACGATTGTTAAAACACTGACCAATGAACAGGAGGAAGTGACTAACGCTACGGAAACAGTGGAATCTACAGGGATTAACAGACTTTGCATGAA GGGGCGCAAGCATAAGGACCTTGGAAATTGCCACCCAATCGGAATGCTTATCGGAACACCTGCTTGTGACCTTCATCTGACCGGCATGTGG GACACCCTGATAGAGAGGGAGAACGCCATCGCCTACTGCTATCCTGGAGCCACCGTCAATGTCGAAGCCTTAAGACAGAAAATAATGGAAA GTGGGGGTATAAAACAAAATCAGCACTGGCTTCACTTATGGTTCTTCTATCAATAGCGCAGGGACAACCAGAGCCTGCATGCGCAATGGGGG CAATAGCTTTTATGCCGAACTGAAGTGGCTGGTCTCTAAATCTAAGGGTCAAAATTTTCCTCAGACAACCAACACATACCGCAATACGGACA CCGCGGAGCATCTCATTATGTGGGGGATTCACCACACCCTTCAAGCACCCAGGAGAAGAATGACCTCTATGGGACACAGAGCCTGTCAATCTC AGTGGGATCTAGCACTTATCGTAACAATTTCGTTCCAGTAGTTGGTGCACGCCCCCAGGTTAATGGGCAGAGTGGGCGAATTGATTTCCACT GGACGCTCGTGCAGCCCGGCGATAATATCACATTCAGTCACAATGGGGGGCTAATCGCCCCGTCCAGAGTTTCTAAGCTGATCGGCAGAG GATTAGGAATTCAATCCGACGCACCCATTGACAACAATTGTGAATCAAAATGCTTCTGGCGCGGAGGGTCGATAAACACACGACTTCCTTTT CAAAACTTATCCCCAAGAACCGTGGGACAGTGCCCCAAGTACGTCAATAGAAGATCACTGATGCTGGCCACCGGTATGAGGAATGTGCCCG AACTAATCCAGGGCCCGCGGGTTGTTCGGCGCTATTGCAGGCTTTTTAGAAAACGGCTGGGAAGGGATGGTCGACGGATGGTACGGGTTCA GGCATCAGAATGCGCAGGGCACTGGGCAGGCCGCGGATTATAAGAGTACCCAGGGCGGCCATAGATCAAATAACCGGCAAGCTCAACAGGC TGGTCGAGAAGACAAACACAGAGTTTGAGTCAATAGAGTCCGAATTCTCCGAAATCGAACACCAAATAGGCAATGTGATAAACTGGACCAAG GACTCCATCACCGATATCTGGACTTATCAGGCTGAACTGTTAGTGGCGATGGCGAAAACCAGCACACAATCGATATGGCAGACTCAGAGATGC TTAATCTGTATGAACGAGTTAGAAAGCAGCTCCGGCAGAATGCCGAGGAAGACGGAAAGGGCTGCTTCGAGATCTACCACGCGTGCGATG ATTCCTGTATGGAGTCTATTCGCAATAACACGTATGATCATTCACAGTATAGAGAAGAGGGCCCTCCTAAACAGGCTCAACATCAACCCTGTG ACGCTGTCGAGCGGCTATAAGGATATTATACTGTGGTTTAGTTCGGCGCCAGTTGCTTTGTCCTTCTTGCCGTGGTAATGGGATTATTCTTC TTCTGTCTGAAAAACGGAAACATGAGATGCACAATATGTATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3019	ATGTATAAAATTGTAGTCATTATTGCCTTGTTAGGTGCAGTGAAGGGCTTAGACAAAATATGCCTAGGTCATCACGCCGTCGCTAATGGTACA ATAGTCAAGACCCTCACCAATGAACAGGAGGTCACGAACGCAACAGAGACCGTGGAGTCCACAGGAATAAACCGACTGTGTATGAAG GGCAGAAAACATAAAGACTTGGGCAACTGTCACCCTATAGGCATGTTGATTGGCACACCAGCTTGTGATCTCCACCTAACCGGGATGTGGG ACACCCTCATAGAACGCGAGAACGCTATCGCCTATTGTTATCCCGGGGCCACGGTTAATGTGGAAGCTCTGCGACAGAAGATCATGGAGAG CGGGGGGATTAATAAGATAAGCACTGGTTTCACCTACGGCTCAAGTATCAATTCAGCTGGCACCACCCGAGCATGTATGAGGAATGGCGGA AATAGCTTTTATGCAGAACTGAAGTGGTTAGTCAGTAAAAGTAAAGGTCAGAACTTTCCACAGACCACCAACACATATCGCAATACTGATACA GCTGAGCACTTAATCATGTGGGGAATTCACCATCCCCAGTTCCACACAAGAAAAAAATGATTTTATACGGCACTCAGTCCCTTTCAATCAGCGT GGGGTCCTCTACCTACAGGAATAACTTTGTCCCCCGTGGTTGGCGCCAGACCCCAGGTAAACGGTCAGTCTGGACGGATCGATTTCCACTGG ACACTGGTGCAGCCAGGTGACAATATTACCTTCAGCCACAATGGGGGCCTGATCGCCCCCTCAAGAGTGTCCAAGCTGATCGGAAGAGGG TTGGGGATCCAGTCCGATGCCCCCAATCGACAATAACTGCGAATCCAAAATGTTTCTGGCGCGCGGAGGCTCAATAAATACCAGACTCCCCTTTCCA GAACCTTTCACCAAGAACAGTCGGACAATGCCCTAAGTATGTCAATCGCCGATCGCTAATGCTTGCGACAGGGATGAGAAATGTGCCAGAAG CTGATTCAAGGGCGCGGGCTGTTCGGCGCTATCGCCGGCTTTTTAGAGAATGGTTGGGAAGGGATGGTGGCTGGTATGGATTTAGG CACCAGAACGCTCAGGGGACAGGGCTGCCGACTATAAGAGCACACAGGCAGCCATTGACCAAATCACTGGGAAATTGAACCGTCTT GTGGAAAAAACTAACACCGAGTTCGAGTCCATTGAGTCCGAGTTCTCGGAGATAGAACACCAAATCGGGAACGTCATCAATTGGACAAAAG ATTCCATCACCGATATCTGGACTTACCAGGCTGAGTTGCTGGTCGCTATGGAGAACCAGCACACGATCGACATGGCAGACTCTGAGATGTT GAACCTGTATGAGAGTGCGAAAACAGCTCAGACAGAAGCTGAAGAAGACGGAAAGGGGTGCTTCGAGATCTATCATGCCTGTGACGA TAGCTGTATGGAGCATAAGAAACAATACGTATGATCACTCTCAGTACAGAGAAGAGGCCCTGCTAAATCGGTTAAACATTAATCCAGTGA CCCTGAGCAGCGGCTACAAGGACATCATCCTATGGTTTTCTTTCGGTGCCTCGTGCTTCGTCTTACTCGCTGTCGTCATGGGTCTGTTCTTC TTTTGCCTGAAGAACGGCAATATGCGGTGTACAATCTGTATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3020	ATGTATAAAGTGGTCGTGATTATTGCTCTGTTAGGCGCCGTGCGCGGCTTGGATAAGATCTGCCTAGGCCATCACGCCGTCGCTAACGGCA CTACCGTAAAGACCCTGACCAACGAGCAGGAAGAAGTCACAAATGCTACCGAGACCGTTGAGAGCACTTCGTTGAACAAGTTATGCATGAA GGGCAGACGCTACAAGGATCTGGGTAATTGCCACCCCATAGGGATGCTCATTGGAACGCCCGTCTGTGACTTGCATTTGACCGGCACATG GGATACCCTCATCGAGCGCGGAAAAACGCCACAGCATACTGCTATCCTGGGGTGACTATCAACGAGGAAGCATTGAGGCAAAAGATCATGGAA TCAGGCGGGATCAGTAAGATGAGAACCGGGTTCACCTACGGGCCTTCCATCAACTCCGCCGGCACCACCCGCAGTTGTATGAGAAACGGC GGCAATTCTTTTTATGCTGAGCTGAAGTGGTTGGTCTCTGGGACCAAGGGCCAAAATTTTCCTCAAACAACGAATACCTACCGGAATACTGA CACGGCTGAACATCTGATCATCTGGGGGATTCACCACACCCCTCATCCACCCAAGAGAAGAATGATCTGTATGGAACGCAGAGGCCTGTCTATTT CGGTTGGAAGCAGTACATACCAGAATAACTTCGTGCCCGTTATTGGGGCCCGTCCCCAGGTCAACGGTCAGTCGGGCCGGATTGAGTTCC ATTGGACCCTGGTCCGCCCTGGTGACAACATTACTTTTTCGCATAACGGTGGGCTAATCGCACCTGATCGAGTGTCCAAGCTGATCGGCAA AGGAATTGGTATACAGTCTGGTGCGGTAATCGATAAGGACTGTGAAAGCAAATGCTTCTGGAGAGGCGGCAGTATCATCACCGAACTCCCC TTTCAGAATCTCTCTCCACGTACAGTGGGCCAGTGTCCAAAGTATGTTAAAAAGCGGTCTCTGTTACTAGCCACGGGGATGAGGAATGTTCC CGAGGTGGTACAAGGACGGGGCCTCTTCGGGGCGATCGCCGGCTTCATTGAAAACGGCTGGGAGGGTATGGTTGACGGATGGTACGGAT TCCGCCACCAAAACGCCCAGGGAATCGGCCAGGCTGCCGACTACAAATCCACTCAGACCGCCATCGACCAAATTACGGGTAAACTGAACC GCCTAATCGAGAAGACAAATACTGAATTTGAGAGCATTGAGAGTGAGTTCAGCGAAATCGAGCACCAGATCGGAAATGTGATTAATTGGACA AAGGATAGTATTACCGACATCTGGACCTACCAGGCGGAGCTCCTTGTGGCTATGGAAAACCAACACACCATTGACATGGCCGACAGTGAAA TGCTGAATCTCTACGAGCGCGTGAGAAAGCAGCTCCGGCAGAACGCCGAGGAGGACGGCAAAGGATGCTTCGAAATATATCACACATGTG ACAACTCATGCATGGAAAGTATTAGGAACAACACCTACGACCATTCCCAATACAGAGGAGGCCCTACTTAACCGCCTTAACATCAATCCC GTGAAACTCTCCTCCGGTTATAAAGATATCATTTTATGGTTCAGCTTCGGGGCGAGTTGCTTTGTGCTGCTGGCTGTGATTATGGGCCTGGG ATTCTTTTGCCTAAAAAACGGAAACATGCGATGCACTATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3021	ATGTATAAAATTATTGTGATCATTGCACTGCTGGGGGCCGTTAAGGGTCTGGGACAAAATTTGTCTAGGACACCACGCTGTGGCAAACGGTAC TATCGTGAAAACATTGACCAACGAACAGGAGGAGGTTACCAACGCCACCGAGACAGTCGAAAGTACCGGAATTAATCGCCTCTGCATGAAA GGCCGAAAGCATAAGGACCTGGGGAATTGCCATCCCATCGGAATGCTGATCGGCACCCCCAGCCTGTGACTTGCATCTTACAGGAACCTGG GACACACTAATCGAAAGGGAAAAACGCCATTGCTTACTGTTACCCCGGGCGCTACAGTTAACGTGGAGGGCCCTTAGGCAGAAAATCATGGAGT CCGGCGGGATCGACAAGATCAGTACCGGCTTCACCTATGGGTCAAGCATCAATTCTGCGGGCACTACGAGGGCATGCATGAGGAACGGAG GCAACTCATTCTATGCGGAATTGAAGTGGCTGGTCTCCAAGTCCAAAGGGCAGAACTTCCCTCAAACTACTAACACCTACCGAATACAGAC ACAGCGGAACACCTCATTATGTGGGGCATCCACCACCCTTCTAGTACTCAAGAGAAGAATGATCTCTACGGCACTCAGTCCCTGAGTATTAG TGTCGGCTCAAGCACCTATAGAAACAATTTCGTGCCCGTTGTGGGGGCCCGCCCTCAGGTTAATGGTCAATCAGGGCGAATTGATTTTCAC TGGACCCTGGTCCAGCCCCGGGGACAACATAACATTCAGCCATAATGGGGGTCTGATTGCCCCCAGCCGGGTGAGCAAGTTGATAGGGAGG GGACTTGGCATCCAGAGTGACGCCCCCTATTGACAACAACTGCGAAAGCAAATGCTTTTTGGCGGGGTGGCTCAATAAACACAAGGCTACCCT TCCAAAATTTGAGTCCAAGGACCGTGGGTCAATGCCCTAAATACGTCAATCGCCGCTCCTTGATGCTCGCCACTGGGATGCGCAACGTGCC TGAGCTTATTCAGGGTCGGGGTCTGTTCGGGGCTATCGCCGGGTTCCTTGAAAATGGCTGGGAGGGTATGGTAGACGGCTGGTACGGATT TAGACACCAGAACGCCCAGGGAACGGGCCAGGCGGCAGACTACAAGTCTACCCAAGCTGCAATCGATCACTGGCAAGTTAAACAG ACTGGTGGAAAAGACAAATACCGAATTTGAAAGCATTGAATCGGAATTCTCAGAGATCGAGCACCAGATTGGAAATGTGATTAATTGGACGA AAGACAGTATTACCGACATCTGGACTTATCAGGCAGAACTGCTGGTTGCCATGGAAAACCAGCATACCATAGATATGGCAGATTCTGAAATG CTCAATCTTTACGAGCGCGTACGGAAACAGTTAAGACAGAACGCAGAGGAGGACGGGAAAGGTTGCTTTGAAATATACCACGCATGTGACG ATTCTTGCATGGAAAGTATCCGCAATAATACGTATGATCACAGTCAATACCGAGAAGAGGCTCTCTTGAATCGTTTGAATATCAATCCAGTGA CCCTGTCCTCCGGATATAAGGATATAATTCTGTGGTTCAGTTTTTGGGGCAAGTTGCTTCGTCCTCCTCGCTGTCGTTATGGGACTGTTTTTTT TTTGTCTAAAGAACGGAAACATGCGCTGCACTATATGCATT

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
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Seq ID No.	Sequenza di acido nucleico
3023	ATGTACAAGGTGGTAGTTATAATCGCACTTCTGGAGCAGTGAGAGGTCTCGACAAGATTTGCCTCGGGCACCACGCTGTGGCTAATGGCA CAATTGTGAAGACCTTGACAAATGAGCAGGAAGAAGTGACAAATGCGACTGAGACTGTCGAGTCCAAGTCTCTGGGCAAGTTGTGCATGAA GGGCAGATCCTACAACGACTTAGGGAACTGTCATCCGATAGGGATCTTAATCGGGACCCCAGCCTGCGATCTCCACCTGACTGGCACCTG GGATACCTTAATCGAGAGGGAAAACGCAGTGGCCTACTGCTATCCCGGTGCTACCGTGAATGAGGAGGCTCTGAGGGCAGAAGATCATGGA GTCAGGGGGAATTTCGAAAATAAGCACCGGGTTCACTTACGGTACCAGCATCAATTCTGCTGGAACAACTAAGGCATGTATGCGTAATGGC GGAAACTCATTTTACGCAGAGCTCAAGTGGCTAGTGAGCAAGAATAAAGGGCAGAACTTTCCGCAGACCACTAACACTTACAGAAACACAGA TACCGCTGAACATTTGATTATCTGGGGCATTCACCACCCCGTCGTCAACACAGGAGAAGAATGATCTGTATGGTACACAGTCACTGTCAATTT CTGTCGGATCTTCCACCTACCAGAATAAATTTCGTTCCAGTGGTTGGTGCTAGGCCCCAGGTTAACGGACAATCCGGTCGCATTGACTTCCAT TGGACCCTGCTGCAGCCAGGCGATAACATTACGTTCTCGCATAACGGCGGCCTAATCGCACCTAGCAGAGTGTCAAAGTTGATTGGGAGG GGCCTTGGCATCCAGAGCGAGGCCCCCATCGACAATGGCTGCGAGTCCAAATGCTTCTGGAAAGGGGGGTCAATCAACACCAAGCTGCCC TTTCAGAACCTCAGCCCCCGAACCGTCGGGCAGTGCCCTAAATACGTGAATAAGCGCAGTCTGATGTTAGCTACAGGGATGCGGAATGTAC CCGAAATCATGCACGGGCGAGGTCTGTTCGGGGCAATTGCAGGCTTCATTGAAAATGGGTGGGAAGGCATGGTCGATGGGTGGTATGGGT TTAGACACCAAAACGCACACAAGGAACAGGCCAGCGGACTATAAGAGCACCCAGGCAGCTATTGACCAGATTACCGGCAAGCTGAACA GGCTTATAGAGAAGACTAACACAGAATTCGAGTCCATTGAGTCAGAGTTCAGCGAGATTGAGCACCAGATCGGAAACATCATTAACTGGACT AAGGACTCAATTACAGATATATGGACGTATCAGGCCGAACTGTTGGTGGCAATGGAGAATCAGCATACCATTGATATGGCAGATAGTGAGAT GCTGAATCTTTACGAACGCGTTCGGCAAACAGTTGCGGCAGAATGCCGAAGAAGACGGCAAGGGTTGCTTTGAGATATACCACGCTTGTGAC GATTCCTGCATGGAGTCTATCAGAAACAACACGTACGATCACAGTCAGTATCGCGAGGAGGCATTACTCAATCGACTAAATATCAACCCGGT GAAACTGTCTAGCGGATACAAAGACATCATCCTTTGGTTTTCCTTTGGCGCAAGTTGTTTGATTCTGTTGGCCGTGGTTATGGGTTTAGTCTT TTTTTGTCTCAAAAACGGTAATATGCGCTGTACGATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3024	ATGTACAAGATCGTGGTCATCATCGCCTTGTTGGGGGCAGTGAAAGGATTGGATAAAATTTGCCTGGGACACCACGCCGTCGCCAATGGAA CCATAGTCAAGACGCTGACAAACGAGCAGGAGGAAGTAACCAATGCGACTGAAACCGTGGAATCAACCGGAATCAATCGACTGTGTATGAA AGGCAGGAAGCATAAAGACCTGGGCAACTGTCACCCGATCGGGATGTTAATCGGGACACCCGCTTGTGACTTGCACCTGACGCATGTG GGACACTCTGATTGAGCGAGAGAATGCAATCGCCTATTGTTACCCCGGAGCCACTGTTAACGTTGAGGCCCTCAGACAGAAGATTATGGAG TCTGGCGGGATCAACAAGATCTCCACACAGGGTTTACTTACGGAAGCAGCATCAACTCTGCCGGCACTACTCGCGCTTGCATGCGTAACGGGG GTAACAGCTTCTATGCTGAACTCAAATGGCTGGTGTCTAAAAGTAAGGGCCAGAACTTTCCGCAGACGACTAATACATATAGAAATACCGAT ACAGCCGAGCACCTGATTATGTGGGGGATACACCACCCCAGTTCCACCCAGGAAAAGAACGACCTATATGGAACCCAGTCCCTCTCTATTA GCGTCGGCTCTTCAACTTATCGTAATAATTTTGTGCCGGTCGTCGGAGCAAGACCTCAGGTCAACGGGCAGTCCGGTCGAATAGATTTTCA CTGGACCCTAGTTCAGCCAGGAGATAATATCACATTCAGCCACAACGGAGGGTTGATAGCTCCATCACGAGTGTCCAAGCTGATCGGCAGG GGGCTCGGCATCCAGTCCGACGCCCCCAATTGATAACAACTGTGAATCCAAGTGCTTCTGGAGAGGAGGCTCTATCAATACCCGATTGCCGT TCCAAAATCTATCCCCTAGAACAGTCGGGCAGTGCCCTAAATACGTGAATAGAAGAAGCTTAATGTTGGCAACAGGAATGAGGAACGTGCC GGAACTCATCCAGGGGCGCGGCTTATTCGGCGCTATCGCAGGTTTTCTTGAGAATGGATGGGAGGGCATGGTTGATGGTTGGTACGGATT CAGACACCAAAACGCTCAAGGCACCGGCCAAGCTGCCGATTATAAAAGCACTCAAGCTGCTATCGACCAGATTACCGGAAAACTTAATAGG CTGGTTGAGAAAACGAACACCGAATTCGAGAGCGAGCATCGAGATCGAGCATCAAATAGGCAACGTGATCAATTGGACGA AAGATTCTATCACCGATATTTGGACTTATCAAGCCGAACTTCTAGTGCCAATGGAGAACCAGCACACAATCGACATGGCAGATTCGGAAATG CTGAATTTATACGAGAGGGTGCGTAAACAGTTAAGGCAAAACGCCGAAGAGGACGGTAAAGGTTGCTTTGAAATTTATCACGCGTGCGATG ATTCCTGTATGGAGAGTATTCGGAATAATACATATGATCACTCCCAATATCGCGAAGAGGCATTGTTAAACCGGCTGAATATAAATCCAGTAA CCCTGTCCTCCGGGTACAAAGACATAATCCTGTGGTTCTCCTTCGGGGCTAGTTGTTTTGTTCTGCTGGCTGTGGTTATGGGATTATTCTTTT TTTGTCTGAAAAACGGGAATATGCGCTGTACAATATGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3025	ATGTACAAAATTGTAGTGATTATCGCTCTTCTAGGCGCCGTAAAGGGGCTTGACAAGATCTGTCTAGGACACCACGCCGTGGCCAATGGAA CCATTGTAAAAACACTGACGAACGAGCAGGAGGAGGTGACAAACGCCACTGAAACAGTTGAGAGCACCGGGATTAACCGTCTCTGTATGAA GGGTAGGAAACACAAAGATCTCGGGAATTGTCATCCAATTGGAATGCTGATAGGCACTCCCGCCTGTGACCTTCACTTAACTGGCATGTGG GACACACTGATCGAGAGGGAGAATGCAATTGCGTATTGTTACCCGGGCGCCACTGTTAATGTGGAGGCGCTGAGGCAGAAAATAATGGAG TCCGGCGGAATAAATAAAATCTCTACGGGGTTCACCTACGGATCCTCCATCAACTCTGCAGGCACAACAAGAGCCTGCATGAGAAACGGGG GCAACAGTTTTTACGCCGAGCTGAAATGGTTAGTCAGTAAATCTAAAGGGCAAAATTTCCCTCAGACGACCAACACCTACCGGAACACCGAT ACCGCTGAGCATCTCATCATGTGGGGTATCCATCACCCTTCCAGCACTCAGGAGAAAAACGACCTGTACGGTACTCAATCCCTCTCTATCTC AGTCGGAAGCTCCACATACCGCAATAATTTCGTGCCTGTGGTCGGGGCGCCGCGCAGGTTAACGGACAGTCAGGACGGATTGACTTCCA CTGGACTCTGGTGCAGCCCCGGTGACAACATTACGTTTAGCCATAACGGTGGTCTCATTGCCCCGTCGCGTGTATCCAAGCTGATTGGCCGG GGGTTAGGGATTCAAAGTGACGCACCCATCGACAACAATTGCGAATCGAAGTGTTTTTGGAGAGGCGGGCAGTATTAATACCCGGTTGCCAT TCCAAAACCTCTCCCCAAGAACAGTTGGCCAGTGTCCAAAATATGTCAACCGGCGGTCCCTTATGCTCGCCACCGGCATGCGAAACGTACC CGAACTGATCCAAGGCCCGCGGTCTGTTTGGAGCTATCGCAGGCTTCCTGGAGAACGGGTGGGAGGGCATGGTCGACGGATGGTATGGTTT TAGGCACCAGAATGCACAAGGGACGGGTCAAGCCGCCGATTACAAGAGCACACAGGCGGCCATCGACCAAATCACTGGGAAACTGAATAG ACTGGTGGAGAAGACCAACACTGAGTTCGAAAGCATCGAATCAGAATTTAGCGAAATAGAACACCAGATCGGCAATGTGATTAACTGGACAA AGGATAGCATAACAGACATCTGGACATATCAGGCTGAACTGCTTGTCGCGATGGAGAACCAGCACACCATAGATATGGCAGATAGTGAAAT GCTCAATTTATACGAGCGGGTGAGAAAACAGCTTAGACAGAACGCTGAAGAGGACGGGCAAGGGGTGCTTTGAGATATACCACGCCTGCGA CGACAGCTGCATGGAAAGTATCAGGAACAATACATATGACCACTCACAGTATCGCGAAGAGGCACTTCTCAATAGACTAAACATCAATCCCG TGACACTGAGTAGTGGATATAAAGATATTATATTATGGTTCTCTTTTTGGGGCGTCATGTTTCGTGCTTCTGGCCGTGGTGATGGGTCTCTTCT TCTTCTGTCTTAAAAATGGCAATATGCGGTGCACCATTTGCATA

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3026	ATGTACAAAATCGTACTGGTGCTGGCATTGCTCGGGGCAGTGCACGGCCTGGACAAGATATGCCTGGGACACCACGCTGTGCCTAACGGT ACCATTGTGAAGACTCTGACGAATGAGAAGAAGGTGACGAACGCAACGGAGACGGTCGAGTCCAAGAGCCTCGATAAGCTGTGTATG AAGAACAGGAACTACAAGGACCTCGGGAATTGTCATCCAATTGGTGGTGGGCACTCCCGCCTGCGACCTCCATCTGACTGGTACAT GGGATACCCTAATAGAGCGGGACAATAGTATCGCCTACTGTTATCCCGGCGCCACCGTGTCAGAGGAGGCCCTGCGACAGAAAATAATGG AGTCCGGCGGCATTGATAAGATTTCCACTGGTTTACATACGGTAGCTCCATTAATTCTGCGGGAACTACCAAGGCTTGTATGAGAAATGGC GGTAACTCTTTCTATAGCGAGTTAAAATGGCTGGTGAGCAAGAATAAGGGCCAAAATTTCCCCCAGACTACGAACACCTACAGAAACACCGA CAGTGTTGAGCACCTGATTATATGGGGATACATCATCCCAGTTCTACTCAGGAGAAAAACGATTTATACGGCACTCAAAGTCTGAGTATCT CTGTGGGGTCTAGCACATACCAGAACAACTTCGTCCCAGTGGTTGGGGCAAGGCCGCAGGTGAATGGACAATCAGGGAGAATCGATTTCC ACTGGACAATGGTACAGCCTGGGGATAATATCACCTTTTCTCATAACGGCGGACTTATAGCCCCCAACCGCGTGAGCAAGCTAAAGGGAAG AGGCCTAGGAATTCAAAGCGGTGCTTCGGTGGACAATGACTGCGAGAGCAAGTGCTTCTGGAAAGGTGGCTCCATCAATACTAAGTTGCCT TTTCAGAACTTGAGCCCGAGAACCGTTGGCCAGTGCCCTAAATATGTGAACAAAAAGTCACTCCTGCTCGCCACAGGGATGAGGAATGTCC CCGAAGTGGCTCAGGGTCGCGGGCTCTTCGGAGCCATCGCCCGGATTCATCGAGAACGGCTGGGAAGGGATGGTAGACGGCTGGTATGGC TTTAGGCATCAAAACGCCCAGGGGACAGGGCAAGCCGCTGACTATAAGAGTACCCAGGCAGCCATCGACCAGATCACTGGGAAATTAAATC GGCTGATTGAAAAGACGAACACCGAATTTGAAAGCATCGAGTCAGAGTTCTCCGAGATAGAGCATCAAATTGGGAACGTGATTAACTGGAC GAAGGATAGCATCACCGATATTTGGACATACCAGGCGGAGCTGCTGGTGGCCATGGAGAATCAACATACAATCGACATGGCCGACTCTGAG ATGTTGAATCTCTACGAAAGGGTGAGAAAGCAGTTAAGGCAGAATGCCGAGGAGGATGGGAAAGGATGCTTCGAGATCTATCACACAAATGCG ATGACAATTGTATGGAATCTATTCGTAACAATACTTACGACCACACTCAGTATCGTGAGGAAGCGCTGTTGAATCGGCTCAATATCAATCCAG TGAAGCTGTCATCTGGCTACAAAGATGTGATATTATGGTTTTCTTTTGGGGCATCTTGCTTCGTGCTGGCTGTCATTATGGGACTTGTAT TTTTTTGTTTGAAGAATGGAAACATGCGCTGCACAATCTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3027	ATGTATAAGATAGTGGTCATAATTGCCCTGCTGGGGGCGGTGAAGGGCCTGGACAAGATTTGTCTGGGTCATCATGCTGTGGCAAACGGTA CGATCGTTAAGACCCTGACGAATGAACAAGAGGAGGTGACTAACGCTACCGAAACCGTGGAGTCCACCGGCATAAACCGCCTTTGCATGAA GGGGAGGAAGCACAAGGACCTCGGTAACTGTCACCCAATCGGCATGTTAATTGGCACACCAGCTTGTGATCTGCACCTGACCGGAATGTG GGATACACTCATTGAAAGAGAAAACGCTATCGCGTATTGCTACCCTGGAGCAACTGTTAATGTCGAGGCTTTGCGCCAAAAAATAATGGAAA GTGGCGGTATCAATAAAATCTCAACAGGGTTTACCTACGGGAGCAGTATCAACTCAGCCGGAACAACCCGGGCCTGCATGCGCAATGGCG GCAACTCTTTTTTACGCTGAACTGAAATGGTTGGTGTCAAAATCAAAGGGTCAAAACTTTCCTCAAACTACAAATACATCGGAACACCGATA CAGCTGAGCACTTAATAATGTGGGGGATCCACCACCCTTCTTCAACTCAGGAAAAGAATGATCTGTATGGCACTCAGTCACTCTCCATTAGC GTAGGGTCATCTACCTATAGAAATAATTTCGTACCAGTGGTAGGTGCAAGGCCCCAGGTGAACGGCCAGAGTGGCAGAATAGACTTCCACT GGACTCTTGTTCAGCCAGGGGATAACATTACATTCTCGCACAACGGCGGCCTGATAGCCCCATCTAGGGTGTCTAAGCTAATTGGCAGAGG TCTGGGCATCCAATCCGACGCACCAATTGACAACAATTGCGAAAGTAAGTGTTTCTGGAGAGGAGGGTCAATTAATACAAGATTGCCGTTTC AAAATCTGTCCCCGAGAACAGTGGGACAGTGCCCAAAATATGTAAATAGACGGTCACTGATGTTAGCTACCGGCATGCGAACGTCCCCGA GCTGATTCAGGGTAGAGGCCTGTTCGGAGCTATTGCAGGGTTTTTGGAAAATGGGTGGGAGGGCATGGTGGACGGATGGTACGGGTTCCG ACACCAGAATGCCCCAGGGAACCGGCCAGGCGGCTGACTACAAGTCTACACAGGCAGCAATTGACCAAATCACCGGAAAGTTGAACCGCCT TGTAGAGAAAACAAACACGGAATTTGAATCAATTGAATCAGAGTTTTCCGAGATAGAGGCACCAGATCGGGAATGTCATAAATTGGACAAAGG ATTCTATTACGGATATTTGGACCTACCAAGCAGAACTGCTTGTGGCTATGGAAAATCAGCACACCATAGATATGGCCGCACAGTGAGATGCTG AACCTGTACGAGCGGGTAAGAAAGCAGTTGCGCCAGAACGCAGAGGAAGACGGGAAAGGCTGCTTCGAAATCTATCACGCCTGTGACGAC TCATGCATGGAAAGTATCAGGAATAATACATACGATCATTCCCAATACCGTGAGGAAGCACTACTCAACCGGCTGAATATCAACCCCGTTAC ACTCTCCTCAGGTTATAAAGACATAATCCTGTGGTTCTCCTTCGGCGCTAGCTGCTTTGTCCTGTTGGCCGTAGTAATGGGGCTGTTCTCTT TTGCCTTAAAAACGGGAACATGCGATGTACTATCTGCATT

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Seq ID No.	Sequenza di acido nucleico
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Seq ID No.	Sequenza di acido nucleico
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Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3030	ATGTACAAGATTGTGGTTATAATTGCGCTTCTGGGAGCTGTGAAGGGATTGGACAAGATCTGCCTTGGGCACCATGCCGTTGCAAATGGTA CCATTGTGAAGACGCTGACCAATGAGCAGGAAGAGGTGACCAATGCTACAGAGACAGTGGAGTCCACTGGCATCAACCGACTCTGTATGAA AGGTAGAAAACACAAAGATCTCGGCAATTGCCATCCTATAGGTATGCTGATTGGTACGCCTGCCTGTGACCTCCATCTGACTGGCATGTGG GACACGCTGATCGAAAGGGAGAATGCCATTGCGTACTGTTATCCTGGCGCTACGGTGAACGTGGAAGCCTTACGGCAGAAGATCATGGAAT CCGGCGGGATCAATAAGATTAGCACCGGATTCACTTACGGATCTTCTATCAACAGCGCTGGCACCACTAGGGCATGCATGAGAAACGGCGG GAATAGTTTTTACGCTGAGCTTAAGTGGTTGGTTCTAAGAGTAAGGGACAGAACTTCCCTCAGACCACTAATACCTACAGGAACACCGACA CCGCAGAGCATTTAATCATGTGGGGAATCCACCATCCTCCACTCAGGAAAAGAATGACTTATACGGAACACAGAGCCTTTCCATATCT GTCGGTTCCTCCACATATAGAAATAATTTTGTGCCCGTGGTCGGTGCACGACCTCAGGTGAATGGCCAGTCAGGAAGAATCGATTTTCACTG GACCCTGGTACAGCCTGGCGACAATATCACCTTCAGCCATAACGGCGGTCTGATCGCCCCTAGTCGGGTGAGTAAATTGATAGGTCGGGG ACTGGGAATCCAGAGTGATGCTCCTATTGATAATAATTGCGAGTCAAAATGTTTTTGGCGCGGCGGCTCTATTAACACCAGATTACCTTTCCA GAACCTGAGCCCTCGGACTGTTGGACAGTGTCCTAAATATGTGAATCGCAGGTCTCTGATGCTGGCTACAGGCATGAGGAACGTGCCTGAG CTCATCCAGGGAAGGGGGCTGTTCGGGGCCATCGCTGGATTCCTGGAAAACGGATGGGAGGGAATGGTCGATGGTTGGTACGGTTTTCGG CATCAGAATGCTCAAGGGACGGGCCAGGCGGCTGATTATAAGTCAACGCAGGCGGCCATAGACCAGATCACCGGAAAGCTCAACCGCCTG GTGGAGAAGACAAATACAGAGTTTGAGTCTATAGAGTCCGAGTTTTCCGAAATCGAACACCAGATCGGGAATGTGATAAACTGGACCAAAGA TTCTATCACTGACATTTGGACTTACCAGGCAGAACTATTGGTGGCCATGGAAAATCAGCACACCATCGACATGGCCGACTCTGAAATGCTGA ACTTGTATGAGAGTGCGCAAGCAGCTGCGACAAAATGCCGAAGAAGACGGAAAGGGCTGTTTTGAAATCTATCATGCTTGTGATGACTC TTGCATGGAATCTATTAGGAACAATACCTATGATCATTCTCAGTACCGGGAAGAAGCATTGCTGAACCGCTTGAATATAAACCCAGTGACGC TGTCATCTGGTTATAAAGACATTATCCTGTGGTTTAGCTTTGGTGCCTCATGCTTTGTACTCCTAGCCGTAGTCATGGGCCTGTTTTTCTTCT GCCTGAAGAACGGGAACATGCGATGCACTATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3031	ATGTACAAGATCGTGGTGATCATAGCCTTACTGGGGGCCGTAAAAGGTCTGGATAAGATTTGTCTGGGCCACCACGCTGTCGCCAATGGTA CCATTGTGAAGACACTAACCAACGAGCAGGAGGAGGTCACAAACGCTACCGAGACGGTTGAATCTACTGGTATAAACCGCCTTTGCATGAA GGGACGCAAACATAAGGATCTGGGCAACTGTCACCCCATTGGTATGCTGATCGGAACCCCCTGCATGTGACCTACACCTGACCGGAATGTG GGATACCTTAATAGAGCGAGAGAACGCGATCGCCTACTGTTATCCGGGGGCTACGGTGAACGTTGAGGCTCTGAGGCAGAAGATAATGGA AAGTGGGGGCATCAACAAGATTAGTACCGGATTCACTTATGGTAGTAGCATTAATAGTGCTGGGACTACCAGAGCATGTATGAGAAATGGC GGGAACAGCTTCTATGCCGAGCTGAAGTGGCTAGTGAGCAAGAGCAAGGGCCAAAACTTTCCCCCAAACGACCAACACATACCGCAATACCG ATACAGCAGAGCATCTCATAATGTGGGAATCCACCACCCTAGTTCAACCCAGGAGAAGAACGATCTTTATGGAACTCAGTCCCTGTCTATC AGCGTGGGGAGTTCTACATATCGCAATAACTTTGTGCCAGTCGTGGGGGCCCGACCACAGGTAAACGGTCAGTCTGGTCGAATTGACTTTC ATTGGACCTTGGTCCAGCCGGGCGATAATATCACATTTTCCCATAATGGAGGCCTGATAGCCCCTTCCAGAGTTAGCAAATTGATAGGCCGA GGACTCGGGATCCAGAGCGATGCACCCATCGACAACAACTGCGAGAGCAAATGCTTCTGGCCGGGGCGGAAGCATTAACACTAGATTACCC TTCCAGAACCTTAGTCCTCGCACCGTGGGCCAGTGCCCTAAATATGTGAACCGGCGCTCACTGATGCTGGCCACAGGCATGAGGAATGTCC CCGAGCTGATCCAGGGCAGAGGACTCTTCGGTGCTATCGCAGGATTTCTTGAGAACGGATGGGAAGGAATGGTAGACGGATGGTACGGGT TCCGACATCAGAACGCTCAGGGCACTGGCCAAGCAGCCGACTACAAATCCACACAGGCGGCCATCGATCAGATCAACAGGCAAACTGAATC GGCTAGTAGAGAAGACCAACACCGAATTCGAATCAATCGAGTCTGAATTCAGCGAGATAGAGCACCAAATCGGGAATGTGATTAACTGGAC AAAGGATTCCATAACCGACATTTGGACCTACCAAGCCGAACTGCTGGTCGCGATGGAAAACCAACATACCATCGACATGGCAGACTCCGAA ATGCTGAATCTGTACGAACGTGTGCGGAAACAGCTGAGACAGAATGCTGAAGAAGACGGGAAAGGCTGTTTTGAAATCTACCACGCCTGCG ACGACTCATGCATGGAAAGCATCAGGAATAACACTTATGACCATTCCCAGTACCGGGAAGAAGCACTCCTGAACCGGTTGAACATTAATCCG GTTACCTTGAGCTCTGGATATAAAGACATCATCCTATGGTTCAGCTTCGGCGCATCCTGCTTTGTTCTGCTTGCAGTGGTCATGGGGCTGTT CTTTTTTTGCCTGAAGAATGGCAACATGAGATGTACCATTTGCATC

Seq ID No.	Sequenza di acido nucleico
3032	ATGTATAAGATAGTAGTCATCATAGCTCTCTTGGGCGCCGTGAAAGGGCTGGACAAGATCTGTCTGGGTCATCATGCCGTGGCCAACGGAA CAATCGTGAAAACCTTGACTAATGAGCAGGAGGAGGTGACCAATGCGACCGAGACCGTTGAAAGTACGGGCATTAATAGGCTCTGTATGAA GGGTAGGAAACATAAGGACCTTGGGAACTGTCACCCCATTGGAATGCTGATTGGGACTCCTGCATGTGACTTACACTTAACAGGCATGTGG GACACTCTGATTGAGAGGGAGAACGCCATTGCCTATTGTTATCCCGGCGCCACCGTGAACGTGGAGGCACTGCGGCAGAAGATAATGGAA AGCGGAGGGATTAATAAAATCAGCACCGGATTCACTTATGGTAGTTCTATTAATTCCGCCGGGACAACAAGGGCATGTATGAGGAACGGAG GTAATTCCTTCTACGCGGAGCTGAAGTGGCTGGTCTCTAAGTCCAAGGGGCAGAACTTTCCCCAGACTACAAACACCTACCGAAATACAGAT ACCGCTGAGCACCTGATCATGTGGGGAATTCATCACCCTTCATCAACACAAGAGAAGAACGACCTGTACGGCACACAGTCACTGTCAATCT CAGTAGGGAGCTCGACATATAGAAATAATTTCGTCCCGGTGGTGGGCGCTCGGCCGCAGGTTAATGGCCAGAGTGGTAGAATCGACTTTCA CTGGACGCTGGTCCAGCCAGGCGATAAATATCACGTTCTCACACAATGGAGGCCTGATAGCCCCAAGCCGCGTGTCCAAGCTGATAGGGCG AGGACTTGGTATCCAGAGTGATGCCCCCCATCGATAACAACTGCGAATCCAAGTGTTTCTGGCGTGGCGGCTCAATTAACACCCGGCTTCCA TTCCAGAACCTTAGCCCCCGCACTGTCGGACAATGCCCCAAAGTATGTCAACAGGCGGAGCCTGATGCTGGCCACCGGCATGAGAAATGTG CCTGAGCTCATTCAGGGGCGGGGCCTTTTTGGGGCAATCGCTGGCTTTCTCGAGAATGGTTGGGAGGGAATGGTTGACGGCTGGTATGGC TTTAGACATCAGAATGCCCAGGGAACGGGCCAGGCTGCTGACTACAAGTCCACCCAGGCCGCCATCGACCAAATTACCGGGAAGCTGAAT AGACTCGTCGAAAAGACCAACACTGAATTTGAGAGTATCGAGTCTGAGTTTTCCCGAGATCGAACATCAAATCGGAAACGTTATCAACTGGAC TAAGGACTCAATCACCGACATTTGGACATATCAAGCGGAGCTCCTGGTGGCCATGGAAAATCAGCACACGATCGACATGGCCGACAGTGAG ATGCTGAATCTGTATGAGCGAGTCCGTAAGCAGCTTAGGCAGAACGCTGAGGAGGATGGAAAAGGATGTTTCGAGATATATCACGCCTGTG ATGACTCCTGTATGGAATCCATCAGGAACAACACATACGATCATAGTCAGTACAGGGAAGAAGCCTTGCTAAATAGGTTGAACATCAACCCT GTCACTCTGAGTTCTGGATACAAGGACATCATATTATGGTTTTCCTTTGGCGCCTCCTGCTTCGTCCTGCTAGCAGTGGTGATGGGCCTGTT TTTTTTTTGCCTTAAAAATGGCAATATGCGGTGCACCATTTGCATA

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3033	ATGTATAAGATCGTTGTCATCATTGCTCTCCTCGGAGCCGTGAAAGGGCTCGATAAGATCTGTTTAGGACACCATGCCGTGGCAAACGGTAC TATAGTCAAGACCCTAACAAATGAGAAAGAGGTGACGAATGCCACAGAAACAGTAGAATCTACAGGACTGAACCGGCTGTGCATGAAG GGCCGCAAACACAAGGATTTAGGTAATTGTCACCCAATAGGCATGTTGATTGGAAGTCCGGCATGTGACCTGCACTTGACGGGCACATGGG ATACCCTGATAGAAAGGGAGAACGCTATCGCCTACTGCTATCCGGGAGCCACGGTCAACGGGAAGCGCTGCGGCAGAAGATTATGGAGT CGGGCGGTATAGATAAGATATCCACAGGCTTTACCTATGAATCCTCTATTAACTCAGCTGGTACAACTCGCGCTTGCATGAGGAACGGGGG GAACAGTTTCTACGCCGAACTCAAGTGGCTTGTTTCTAAGTCTAAGGGCCAGAATTTCCCACAGACTACCAATACCTATAGAAACACCGACA CGGCTGAGCACCTTATTATGTGGGTATTCACCACCCCTCAAGCACTCAGGAGAAGAACGACCTCTATGGTACCCAGTCCCTTTCCATCTCC GTTGGTAGTTCTACCTACCGCAACAATTTTGTTCCCGTGGTCGGTGCAAGACCACAGGTTAACGGCCAGAGTGGGCGCATCGATTTCCACT GGACGTTGGTCCAGCCTGGGGATAACATCACCTTTTCCCACAACGGGGGATTAATCGCCACCCTCTCGGGTCTCTAAGCTGATCGGACGAG GACTGGGAATCCAAAGTGACGCACCAATAGATAATAATTGCGAGAGCAAATGCTTCTGGCGCGGTGGGTCAATCAATACACGGCTGCCGTT TCAGAATCTATCACCAAGGACTGTGGGACAGTGCCCCAAATATGTAAATAAGCGGTCCCTGATGCTCGCCACTGGTATGCGGAACGGTGCCT GAGCTAATGCAAGGAAGGGGCCTGTTTGGGGCCATTGCCGGCTTTCTCGAAAACGGGTGGGAGGGCATGGTGGACGGATGGTACGGTTT CCGGCACCAGAATGCTCAAGGCACCGGTCAGGCTGCCGATTATAAAAGCACCCAAGCCGCTATCGATCAGATCACTGGCAAGTTAAACAGG CTGGTAGAAAAAACTAATACTGAATTCGAGTCCGAGTTCTCTGAGATTGAGCATCAGATCGGGAATGTTATTAACTGGACGAA AGACAGTATTACGGATATCTGGACATATCAAGCCGAGGCTCCTGGTCGCTATGGAAAACCAACACACTATCGACATGGCCGACAGCGAAATG TTGAATCTTTATGAAAGAGTGAGGAAGCAGCTGCGTCAGAACGCAGAGGAGGATGGGAAAGGATGTTTTGAGATCTACCACGCCTGTGACG ATTCCTGCATGGAGAGTATTAGAAACAACACATACGACGCACAGTCACCGGGAAGAGGCCCTATTGAACAGGCTTAATATTAATCCAGTA ACCCTGTCGAGTGGGTATAAAGATATTATACTGTGGTTCTCCTTTGGCGCTTCTTGCTTTGTGCTGCTCGCGGTAGTTATGGGTTTGGTGTTT TTTTGCCTCAAGAACGGAAATATGCGTTGCACCATCTGTATC

Seq ID No.	Sequenza di acido nucleico
3034	ATGTATAAGATCGTGGTCATCATCGCCCTGCTTGGAGCTGTAAAAGGTCTCGACAAGATTTGTCTTGGACATCATGCTGTGGCAAATGGCAC CATTGTAAAGACCCTGACTAATGAGCAAGAAGAAGTAACCAACGCAACTGAGACCGTAGAGTCAACCGGCATTAATCGGCTCTGCATGAAG GGAAGGAAGCACAAAGATCTCGGCAATTGTCACCCAATAGGCATGTTGATTGGAACCCCTGCTTGTGACCTGCATCTCACGGGGATGTGGG ATACTTTGATTGAAAGGGAAAACGCAATTGCGTATTGTTACCCGGGAGCCACCGTGAACGTCGAGGCCCTCCGACAAAAGATCATGGAATC AGGAGGGATCAACAAAATAAGCACTGGTTTACCTATGGAAGTTCGATCAACTCAGCCGGGCAACACGCCGCCTTGCATGAGGAATGGCGG AAATTCCTTCTACGCTGAACTCAAATGGCTCGTGTCGAAATCAAAGGGTCAGAACTTCCCACAGACTACTAATACCTACAGAAATACTGACAC AGCGGAGCATTTGATCATGTGGGGCATACACCACCCTTCTTCCACACAGGAGAAGAATGACCTTTACGGCACGCAGAGTCTGTCCATCAGC GTAGGAAGCTCAACCTACAGAAATAATTTCGTTCCCGTGGTGGGGCTCGACCACAGGTTAACGGGCAGTCCGGTCGTATTGATTTTCATT GGACATTGGTGCAGCCCGGCGATAACATTACTTTTAGCCACAACGGAGGCCTAATTGCCCCTAGCAGAGTCTCCAAACTGATCGGGAGGG GACTGGGGATACAGTCAGATGCCCCTATCGACAACAATTGTGAGAGCAAGTGTTTCTGGCGAGGGCGGAAGCATTAACACCCGGTTACCCTT TCAGAACCTATCTCCAAGAACTGTGGGTCAGTGCCCAAAATACGTGAACAGACGGTCTCTGATGTTGGCTACTGGTATGCGCAACGTTCCG GAACTAATTCAAGGCAGAGGACTGTTCGGGCGCCATCGCAGGGTTCCTCGAGAACGGGGTGGGAGCGGGATGGTCGATGGGTGGTACGGCTT TAGGCATCAGAACGCTCAGGGGACTGGTCAGGCCGCCGATTACAAAAGCACGCAAGCTGCTATAGATCAGATCACAGGGAAACTGAATCG CCTCGTTGAGAAAACTAACACCGAATTTGAATCAATAGAATCCGAATTCAGTGAAATCGAGCACCAGATAGGGAACGTAATCAACTGGACCA AAGACAGTATTACAGACATCTGGACATACCAGGCGGAACTTTTAGTCGCTATGGAGAATCAGCACACAATAGACATGGCCGACAGCGAAAT GTTGAACCTGTACGAACGAGTAAGGAAGCAGCTGAGGCAAAACGCAGAAGAGGACGGAAAGGGCTGCTTTGAGATATACCACGCATGTGA TGATAGCTGTATGGAGTCAATTCGGAACAATACATATGATCACTCTCAATACCGTGAGGAAGCTCTGCTCAATCGTCTGAATATTAACCCAGT GACTCTTTCCAGTGGGTACAAAGACATCATTCTTTGGTTTTCCTTCGGAGCTTCCTGCTTTGTGCTGCTGGCAGTCGTTATGGGATTGTTCTT TTTCTGCCTGAAGAACGGGAACATGCGCTGTACTATATGTATC

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Seq ID No.	Sequenza di acido nucleico
3035	ATGTACAAGGTAGTGGTAATAATTGCTCTGCTGGGAGCCGTGAGAGGTCTGGATAAAATCTGTTTGGGTCACCACGCCGTCGCCAACGGGA CGATCGTCAAAACACTAACAAATGAGCAAGAAGTGACCAACGCAACAGAGACAGTGGAGAGTAAGAGCCTGGGAAAGCTTTGCATGAA GGGCCGCTCATATAACGACCTGGGCAACTGTCACCCCATCGGTATTCTGATTGGGACTCCAGCTTGCGACTTGCATCTGACCGGCACCTGG GACACACTCATCGAGAGAGGAAAACGCAGTGGCTTACTGCTACCCTGGCGCTACCGTCAATGAAGAAGCCCTGCGACAGAAGATTATGGAGA GCGGTGGGATCAGCAAAATCTCCACCGGTTTCACCTATGGAACCTCCATTAACAGCGCAGGCACAACAAAAGCTTGCATGAGGAATGGCGG CAACTCGTTCTATGCTGAACTGAAATGGCTGGTGTCCAAAAATAAGGGTCAGAATTTCCCTCAGACTACCAACACACTTACAGGAACACGGATA CAGCAGAGCACCTGATTATATGGGGGATTCACCACCCTTCGTCTACCCAAGAGAAAAATGACCTGTACGGAACTCAGAGCCTTTCAATATCC GTGGGGTCCAGTACATATCAAAATAATTTTGTCCCCGTGGTTGGCGCCCGTCCACAGGTTAACGGTCAGTCAGGGCGGATCGATTTTCATT GGACCTTACTTCAGCCCCGGAGACAATATCACTTTTTCTCACAACGGAGGGACTCATCGCCCCCTCCCGTGTGTCCAAGCTCATAGGACGGGG CCTGGGTATCCCAGAGCGAGGCCCCCATCGATAACGGCTGCGAGAGCAAATGTTTTTGGAAGGGAGGGAGTATAAACACTAAGCTCCCATTC CAAAATTTAAGTCCACGTACTGTGGGCCAGTGTCCCAAGTATGTGAACAAAAGAAGCTTGATGCTGGCAACTGGGATGCGGAACGTGCCTG AGATCATGCACGGTCGGGGCCTGTTTGGCGCTATCGCAGGGTTTATTGAAAATGGCTGGGAGGGCATGGTTGATGGGTGGTACGGGTTTA GGCATCAGAATGCCCAGGGCACTGGTCAGGCGGCCGATTACAAGAGTACTCAGGCTGCCATCGACCAGATCACCGGCAAGCTGAACCGGT TGATCGAAAAGACAAACACTGAATTCGAGAGTATCGAAAGCGAATTTTTCTGAGATCGAGCACCAAATCGGGAATATAATTAATTGGACAAAG GACTCGATCACTGACATATGGACATACCAAGCCGAGCTGCTGGTGGCCATGGAAAACCAGCATACCATAGACATGGCCGATTCAGAAATGC TTAATCTTTACGAGCGTGTTAGGAAGCAACTGAGGCAGAATGCCGAAGAGGACGGTAAGGGGTGCTTTGAGATTTATCACGCATGTGACGA CAGCTGTATGGAGTCCATTAGAAATAATACCTACGATCACAGTCAGTATAGAGAAGAGGCATTGCTTAATAGGCTGAACATAAATCCCGTCA AGCTGTCTTCGGGGTACAAGGACATTATCCTGTGGTTCAGCTTTGGCGCATCGTGTCTGATATTACTGGCCGTCGTGATGGGATTAGTGTTT TTCTGCTTAAAGAACGGTAACATGCGCTGTACTATCTGTATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3036	ATGTACAAGATCGTGGTCATTATCGCTCTGTTAGGGGCAGTAAAAGGCCTGGACAAAATCTGCCTTGGCCATCATGCTGTGGCTAATGGTAC AATTGTCAAAACCCTCACAAATGAACAGGAGGAGGTGACAAACGCCACAGAAACTGTGGAGAGTACAGGGATCAACCGTCTCTGCATGAAG GGAAGAAAGCATAAAGACCTTGGAAACTGTCATCCCATAGGCATGCTGATCGGCACTCCCGCCTGTGACCTGCACCTGACCGGTATGTGGG ACACCCTGATCGAAAGGGAGAAATGCCATTGCCTACTGTTATCCTGGCGCAACAGTGAACGTAGAAGGCCTTAAGACAGAAGATCATGGAATC CGGAGGCATAAACAAAATTAGTACTGGATTCACCTACGGGAGCTCCATTAACTCTGCAGGCACCACTCGGGCATGCATGCGCAACGGCGGT AACAGCTTCTATGCCGAGCTGAAGTGGTTAGTGTCCAAGTCGAAAGGCCAGAACTTTCCCCAGACGACAAACACATATCGGAACACCGATA CTGCAGAACACCTGATCATGTGGGGGATTCACCACCCCAGTTCCACCCAGGAGAAGAACGATCTGTACGGTACTCAGAGCCTGTCCATAAG TGTTGGATCCTCTACATATCGGAATAATTTCGTGCCCGTGGTGGGCGCAAGACCACAGGTGAACGGCCAGTCTGGGAGAATTGACTTTCAT TGGACTCTGGTGCAACCAGGGGACAATATTACCTTCTCACATAATGGCGGCCTGATCGCACCTAGCAGGGTGTCCAAGCTGATAGGACGCG GACTCGGAATTCAGTCGGATGCACCTATCGATAATAACTGCGAGTCTAAGTGTTTTTGGAGAGCGCGGTTCAATCAATACTAGGCTTCCTTTT CAGAACCTGAGCCCCCAGAACAGTGGGGCAATGCCCTAAATATGTGAATAGGCGGTCTCTGATGCTGGCCACTGGGATGAGAAATGTGCCA GAGCTGATTCAGGGTAGAGGCCTGTTCGGCGCAATCGCAGGGTTCCTCGAAAACGGCTGGGAAGGTATGGTGGACGGATGGTACGGGTT CCGACACCAAAACGCCCAGGGGACGGGCCAGGCCGCCGATTACAAATCAACTCAAGCCGCGATAGATCAGATCAACCGGAAAGCTGAACAG ACTCGTCGAGAAGACCAATACCGAGTTTGAGTCCATCGAAAGCGAGTTCTCAGAGATTGAGCATCAGATAGGGAACGTAATTAACTGGACG AAAGATAGCATCACGGACATCTGGACATATCAGGCGGAACTACTGGTGGCAATGGAAAATCAGCATACCATCGACATGGCCGACAGTGAGA TGTTAAATCTCTATGAGCGGGTGCGGAAACAGCTGAGGCAAAACGCTGAAGAAGACGGAAAAGGGTGCTTTGAGATCTACCATGCCTGCGA CGATAGCTGCATGGAGTCAATTCGGAACAATACTTATGACCACTCCCAGTATCGGGAGGAGGCCCTGCTCAATCGACTGAACATAAACCCA GTGACTCTGAGTTCCGGATACAAAGATATTATTCTTTGGTTCAGCTTCGGAGCTTCTTGTTTTGTCCTCCTAGCAGTGGTAATGGGCCTCTTT TTCTTTTGCCTGAAGAACGGAAACATGAGGTGCACAATTTGTATT

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Seq ID No.	Sequenza di acido nucleico
3037	ATGTACAAAATAGTGGTGATAATCGCCCTTCTCGGCGCAGTGAAAGGGCTCGACAAGATATGTCTGGGACATCACGCTGTGGCTAATGGCA CTATCGTGAAGACGCTCACAAATGAACAGGAGGAGGTTACAAATGCCACTGAGACAGTTGAAAGCACAGGAATCAATAGATTGTGTATGAAA GGCAGAAAGCATAAGGACTTGGGGAACTGTCACCCTATTGGCATGCTTATCGGCACACCCCTGCTTGTGATCTACATTTGACAGGCATGTGGG ACACCCTTATTGAGCGCGAAAACGCAATCGCGTACTGTTATCCTGGTGCTACTGTGAACGTAGAAGCTCTGAGGCAGAAGATAATGGAATCT GGCGGGATAAATAAAATCTCAACCGGCTTCACATACGGGAGTAGCATTAATAGCGCCGGTACTACCCGGGCCTGTATGAGGAATGGAGGAA ACTCTTTTTACGCAGAGCTCAAGTGGCTAGTATCTAAGTCCAAGGGACAGAATTTTCCCCAGACTACTAATACTTACCGCAATACGGATACC GCAGAACACTTAATTATGTGGGGCATACATCACCCATCCTCTACCCAAGAAAAGAACGACCTTTACGGCACACAGTCCTTGAGTATATCTGT GGGGAGTAGCACCTATAGGAACAATTTCGTTCCGGTCGTGGGCGCTCGCCCCCCAGGTGAACGGCCAATCAGGACGGATCGACTTCCACTG GACCCTGGTCCAGCCCGGCGATAACATCACATTTTCCCATAACGGAGGACTTATAGCACCCTCCCGGGTGTCTAAACTTATTGGACGGGGG CTGGGAATCCAGTCCGACGCCCCCATCGATAACAACTGTGAGTCTAAATGTTTTTTGGCGCGGCGGATCTATCAACACCAGGCTTCCCTTCC AGAATCTGTCCCCCCGGACAGTGGGCCAGTGCCCAAAGTACGTTAACAGAAGGTCTTTAATGCTCGCCACCCGGCATGCGAAACGTGCCTG AACTGATCCAGGGAAGAGGACTTTTCGGAGCCATCGCCGGCTTTTTTAGAGAACCGGATGGGAAGGGATGGTAGACGGGTGGTATGGATTCA GGCACCAAAACGCTCAGGGGACCGGGCAAGCAGCAGACTACAAAAGTACACACAAGCCGCTATCGACCAAATCACGGGTAAACTGAACCGGC TTGTGGAAAAGACAAACACCGAATTTGAATCGATAGAGAGCGAATTCAGCGAGATCGAGCACCAAATAGGAAATGTGATCAACTGGACAAA GGATTCGATCACAGACATCTGGACGTACCAAGCCGAGCTCCTCGTAGCAATGGAGAACCAGCATACCATCGACATGGCCGATTCCGAGATG CTTAATCTTTATGAACGGGTCCGCAAACAGCTGCGCCAAAATGCCGAAGAAGATGGTAAAGGATGTTTTGAAATCTATCATGCTTGTGATGA TTCCTGTATGGAGTCAATCCGGAATAATACATACGACCACAGCCAGTACCGGGAAGAAGCCCTGCTGAATCGCTTAAATATCAACCCCGTTA CCCTTTCCTCTGGATATAAGGATATTATCCTGTGGTTTTCATTTGGGGCATCCTGTTTCGTCCTTCTGGCAGTGGTCATGGGACTTTTTTTTTT CTGTCTGAAGAACGGAAAACATGCGGTGTACGATCTGTATA

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Seq ID No.	Sequenza di acido nucleico
3038	ATGTATAAAGTCGTGGTTATCATCGCCCTTCTGGGAGCCGTCAGAGGCCTGGACAAGATATGTTTGGGGCATCATGCGGTAGCTAATGGAA CCACTGTCAAAACACTTACTAATGAACAGGAAGAGGTTACGAACCGCCACCGAAACAGTGGAATCTACCAGCCTGAATAAATTATGCATGAAG GGACGACGCTACAAGGATCTGGGGAATTGCCACCCCATCGGAATGCTGATTGGAACACCAGTCTGTGACCTCCACCTTACAGGGACGTGG GATACCTTGATTGAGCGGGGAGAATGCAACAGCTTACTGTTATCCCGGAGTAACTATTAATGAGGAGGCTCTCCGTCAAAAGATAATGGAGTC AGGAGGTATTAGTAAAATGCGCACTGGCTTTACATACGGGCCCTCTATAAACAGCGCAGGAACCACTCGTTCATGTATGCGCAATGGGGGC AACTCGTTCTACGCCGAGCTGAAGTGGCTGGTGAGTGGCACCAAAGGTCAGAATTTTCCCCAGACTACAAACACCTACCGGAACACAGACA CTGCCGAGCATCTGATCATCTGGGGGATACATCACCCTTCCTCTACTCAAGAAAAGAACGATCTGTATGGCACACAAAGCCTGTCTATATCC GTGGGTTCTTCTACCTATCAAAACAACTTTGTTCCAGTTATAGGCGCCCGGCCCCCAGGTGAACGGGCAGTCAGGCCGCATCGAGTTTCACT GGACTCTGGTCCGGCCCGGAGATAATATTACATTCAGTCATAACGGCGGTTTGATCGCCCCAGACCGAGTGAGCAAGCTCATCGGGAAGGG GGATTGGCATACAATCCGGTGCTGTGATTGACAAGGATTGCGAGAGTAAGTGCTTTTGGCGAGGCGGATCTATTATTACCGAGCTGCCATTT CAGAACCTTTCTCCTCGAACCGTTGGGCAGTGCCCCAAATATGTGAAAAAGAGGTCACTGCTCCTCGCCACTGGCATGCGAAATGTTCCTG AGGTGGTGCAGGGCCGTGGGTTGTTCGGTGCCATCGCAGGGTTCATCGAGAATGGATGGGAAGGTATGGTCGACGGATGGTACGGATTC CGCCATCAGAATGCACAGGGTATCGGACAGGCCGCCGATTATAAGAGCACCCAGACGGCTATAGACCAAATCACCGGCAAGCTTAACCGG CTCATAGAAAAGACCAACACAGAATTTGAGTCCATCGAGTCAGAATTCAGCGAAATTGAACATCAGATTGGCAACGTCATCAATTGGACCAA GGACTCCATCACTGATATCTGGACATACCAGGCAGAACTTTTGGTTGCTATGGAGAACCAACACACCATAGATATGGCCGATTCCGAGATGT TGAATCTGTACGAGAGGGTCCGTAAGCAGCTGAGGCAGAACGCTGAGGAGGACGGGAAGGGGTGCTTTGAGATCTACCACACCTGTGACA ATAGCTGCATGGAGTCGATCCGGAATAACACTTATGACCATAGTCAATACAGAGAGGAAGCCCTGCTCAATCGTTTAAATATTAATCCAGTAA AGTTATCTTCAGGGTACAAGGATATTATTCTCTGGTTCTCTTTTGGGGCTAGCTGTTTTGTGCTCCTGGCCGTTATAATGGGACTCGGGTTCT TCTGCCTAAAAAATGGCAACATGCGCTGTACCATTTGCATT

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Seq ID No.	Sequenza di acido nucleico
3039	ATGTACAAGATTATCGTGATCATCGCACTGCTGGGCGCCGTTAAAGGGCTGGACAAAATATGCTTGGGACACCACGCCGTAGCTAATGGAA CAATCGTCAAAACCCTGACTAATGAGCAAGAGGAGGTCACAAATGCAACGGAAACAGTCGAATCCACTGGCATTAATAGGTTGTGTGCATGAA GGGCCGAAAGCACAAAGATCTCGGAAATTGTCATCCCATCGGGATGCTGATTGGCACCCCTGCCTGTGATTTGCACTTAACAGGGACTTGG GACACTCTGATAGAGCGTGAAAACGCAATTGCATATTGCTACCCAGGGGCAACGGTCAACGTGGAGGCTCTCCCGACAGAAAATTATGGAAA GCGGAGGGATCGATAAGATTTCGACAGGCTTCACGTACGGCTCCTCAATCAACTCTGCCGGTACGACGCGCGCGTGTATGCGGAATGGAG GGAACAGCTTTTACGCAGAACTGAAGTGGCTCGTAAGCAAAAGTAAAGGGCAAAATTTCCCTCAGACTACAAATACCTACCGCAACACAGAC ACAGCGGAGCACCTGATTATGTGGGGAATTCACCATCCCTCAAGTACCCAGGAGAAGAACGACTTATATGGCACGCAGAGTCTTTCCATTTC TGTGGGGTCTAGCACCTATAGGAACAATTTCGTCCCAGTTGTCGGCGCTAGGCCTCAGGTGAATGGACAAAGCGGCCGCATAGATTTCCAC TGGACCCTGGTCCAGCCCCGGCGATAATATCACATTTTCTCACAACGGAGGACTGATTGCTCCTAGCAGAGTATCAAAACTGATTGGGAGAG GCCTTGGCATTCAGTCTGACGCCCCCCATTGACAATAATTGTGAGTCTAAGTGTTTTTGGCGGGGAGGAAGCATCAATACCAGACTTCCCCTTT CAAAACCTGAGTCCGCGAACTGTCGGACAGTGCCCCAAATACGTTAATAGGCGCTCCCTAATGCTTGCTACAGGTATGAGGAATGTACCAG AGTTAATTCAGGGGCGCGGCCTTTTTGGCGCCATCGCCGGCTTCCTGGAGAACGGCTGGGAGGGCATGGTGGATGGGTGTGGTTATGGCTTC CGCCATCAGAACGCACAGGGGACGGGCCAGGCTGCAGATTATAAGTCAACCCAGGCTGCAATAGACCAAATTACTGGGAAGCTGAATAGG CTAGTGGAGAAGACCAACACTGAGTTTGAATCAATTGAGAGGCGAATTTAGTGAGATCGAGCACCAGATCGGTAACGTGATTAACTGGACGA AAGATTCAATTACTGACATTTGGACATATCAGGCTGAGTTGCTGGTGGCGATGGAGAACCAGCACACCATAGATATGGCGGGATAGCGAGAT GCTTAATCTGTACGAACGGGTGCGCAAGCAGCTCCGCCAGAACGCTGAAGAAGATGGCAAGGGGTGCTTTGAGATTTACCACGCTTGCGA TGATTCATGCATGGAGTCCATTCGGAATAATACATACGACCACAGTCAGTACAGGGAAGAAGCCCTACTGAACCGGTTGAACATTAACCCTG TGACCCTCAGTTCAGGGTACAAAGACATAATACTTTGGTTCTCCTTCGGGGCCTCATGTTTCGTGCTGCTGGCAGTCGTTATGGGCCTATTC TTCTTCTGCTTGAAGAATGGAAATATGCGTTGCACCATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3040	ATGTACAAAATCGTCGTCATCATTGCACTTCTGGGAGCCGTGAAGGGGCTGGATAAGATCTGCCTCGGCCATCATGCCGTCGTGAACGGTA CCATAGTGAAGACATTGACGAACGAGCAAGAGGAAGTCACGAACGCCACCGAGACGGTGGAATCCACGGGACTGAATCGTTTGTGCATGA AAGGCAGGAACCATAAGGATCTGGGAAATTGCCATCCCATAGGCATGCTTATTGGCACGCCAGCCTGTGACCTACACTTAACCGGCACTTG GGACACTTTGATCGAGCGCGAGAATGCCATCGCCTACTGTTATCCAGGAGCCACCGTAAACGAAGAGGCTCTGAGACAGAAGATCATGGA GAGTGGCGGTATAAACAAAATCAGCACCGGCTTCACCTACGGGACGCTCTATCAACTCAGCCGGTACTACTAGAGCTTGCATGCGCAACGGC GGAAAGTCCTTCTACGCAGAACTTAAGTGGCTCGTCAGCAAGAGCAAGGGCCAGAACTTTCCTCAGACAACCAACACCTACCGGAATACCG ATACTGCCGAGCACTTGATAATGTGGGGCATCCACCACCCTTCCTCTACTCAGGAAAAGAACGATCTGTATGGTACCCAGTCTCTGTCCATA TCAGTGGGTTCTTCAACATACCAGAACAATTTCGTCCCTGTGGTAGGAGCAAGGCCCCAGGTAAATGGCCAGAGCGGCGCATCGACTTTC ATTGGACTCTGGTGCAGCCAGGGGACAATATTACCTTCAGTCACAACGGCGGCCTGATCGCACCATCCAGAGTGTCTAAACTGATAGGCCG AGGATTGGGAATTCAGTCAGACGCACCCATAGATAACAATTGCGAATCGAAGTGTTTCTGGCGCGGCGGCTCAATAAACACCCGACTTCCA TTCCAAAACCTCTCTCCCAGAACTGTGGGGCAGTGCCCCAAATACGTGAATAAGAGGTCGCTCATGTTAGCCACTGGTATGCGAAACGTCC CGGAACTGATGCAGGGACGAGGCCTTTTTGGGGCTATAGCAGGCTTCATCGAGAATGGAATGGGAAGGCATGGTTGATGGGTGGTATGGCT TCCGCCATCAGAATGCTCAGGGGACAAGCGGCGCCGATTACAAATCAACCCAGGCCGCTATAGATCAAATCACTGGCAAGCTGAATC GCCTCATCGAAAAAACAAATACGGAGTTCGAGTCCATTGAAAGCGAGTTTTCCGAGATTGAACACCAAATTGGCAACGTCATAAACTGGACT AAGGACTCTATTACCGACATATGGACTTACCAGGCAGAGCTTCTGGTCGCTATGGAGAACCAGCACACCATCGATATGGCCGATTCCGAAA TGTTAAACCTCTACGAAAGAGTGCGCAAGCAGCTCAGACAGAACGCCGAAGAAGATGGCAAAGGTGCTTTGAAATCTACCATGCCTGCGA CGATAGTTGTATGGAGTCGATCCGCAATAACACTTACGATCACAGTCAATATCGGGAGGAGGCACTGTTAAACAGGCTGAACATTAACCCG GTAACCCTCTCTAGTGGTTACAAAGACATCATACTTTGGTTTTCGTTTGGGGCATCTTGTTTTTGTGCTCTTGGCCGTAGTGATGGGACTTGTT TTCTTTTGTCTCAAGAACGGCAATATGCGGTGTACTATTTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3041	ATGTATAAAATCGTCGTGATCATCGCCCTGTTAGGTGCGGTCAAGGGCTTGGACAAGATTTGTCTGGGACATCACGCAGTCGCCAACGGAA CCATCGTTAAAACGCTGACTAACGAGCAGGAAAAAGTTACTAATGCCACAGAGACCGTTGAGTCAACCGGCCTCAATAGGCTTTGCATGAAA GGACGGAAGCATAAAGACCTGGGCAACTGCCATCCTATTGGGATGTTAATCGGTACCCCCCGCATGCGACCTGCATCTGACTGGAACCTGG GACACCATTATTGAGCGCGAAAATGCCATCGCATATTGTTACCCCGGAGCTACTGTGAATGAAGAGGCCCTGAGGCAGGAAGATCATGGAGT CCGGTGGAATTGACAAGATCTCCACTGGATTTACCTACGGGAGTTCTATCAATAGTGCAGGTACCACAAGAGCCTGTATGAGAAATGGGGG CAACAGCTTTTTACGCCGAATTAAAATGGCTGGTGAGCAAGAGTAAGGGACAAAATTTTCCTCAGACTACAAACACCTACAGAAATACAGATA CGGGCTGAGCACCTTATCATGTGGGGCATCCACGTCCGTCATCCACCCAAGAGAAGAATGATCTTTACGGAACCCAGAGCTTGAGCATCTC CGTGGGTTCATCCACCTACCGGAACAACTTCGTGCCAGTGGTGGGGCTAGGCCACAGGTGAACGGCCCAGTCAGGCCGCATCGACTTCCA CTGGACACTCGTGCAGCCTGGAGATAACATCACTTTCTCCCACAATGGAGGACTGATAGCCCCATCTCGCGTTAGCAAGCTGATTGGCCGG GGTCTCGGAATTCAATCTGACGCCCCCATAGACAATAACTGTGAAAGCAAGTGCTTCTGGCGTGGGGGTCCATTAATACCCGTCTACCTTT TCAGAATCTGTCCCCCCGCACCGTCGGACAATGCCCTAAGTACGTGAATAAAAGGTCCCTTATGCTAGCTACGGGGATGCGGAATGTTCCG GAGCTAATCCAGGGGCGCGGGCTGTTCGGAGCCATCGCAGGTTTTTCTCGAGAATGGCTGGGAGGGAATGGTGGACGGTTGGTACGGATT CCGCCACCAGAATGCCCAAGGCACAGGACAGGCAGCTGACTACAAATCAACGCAAGCTGCCATCGACCAGATAACAGGAAAACTGAACAG ACTCGTCGAGAAGACCAATACAGAGTTCGAATCCATCGAGTCTGAATTTAGCGAAATCGAGCACCAGATCGGAAACGTTATCAACTGGACAA AAGACTCCATCACCGATATCTGGACTTACCAGGCTGAACTTCTTGTTGCCATGGAGAATCAGCATACTATTGATATGGCCGACTCAGAGATG CTCAACCTCTATGAACGGGTCCGGAAACAATTACGACAGAAGCGCGGAGGAGGACGGCAAAGGTTGCTTTGAGATATATCACGCGTGCGAC GATTCGTGCATGGAATCTATCCGCAATAATACTTACGACCACTCTCAGTACCGGCGAGGAAGCACTCCTGAATCGGTTGAACATCAACCCCGT GACACTTTCTTCCGGCTATAAGGATATAATCCTGTGGTTTTCCTTTGGAGCATCCTGTTTTTGTACTCCTCGCCGTAGTGATGGGGCTGGTCTT TTTCTGCCTTAAGAACGGGGAACATGAGGTGTACTATATGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3042	ATGTACAAGGTGGTGGTCATAATCGCCTTGCTAGCGCGCCGTGAGAGGGCTCGACAAAATTTGCTTGGGGCATCATGCAGTCGCTAATGGAA CCATCGTGAAAACACTCACCAACGAGCAAGAAGAGGTTACTAACGCCACCGAGACCGTAGAGAGTAAATCCCTGGGGAAGCTGTGTATGAA GGGCCGGTCTTATAATGATCTGGGCAATTGCCATCCCATCGGAATTCTGATCGGGACCCCTGCATGTGATCTGCATCTAACTGGGACGTGG GATACTCTGATCGAGCGCGAGAACGCAGTTGCTTACTGTTATCCGGGCGCCACCGTGAACGAGGAGGCACTCCGACAGAAAATTATGGAAT CGGGTGGAATTAGCAAGATATCTACTGGGTTCACCTATGGCACTAGCATCAACTCCGCTGGGACAACCAAAGCGTGTATGAGAAACGGGGG GAATTCTTTCTACGCCGAACTGAAATGGCTGGTGTCCAAAAATAAAGGGCAGAATTTTCCTCTCAGACCACCAACACATACCGGAACACCGACA CCGCCGAGCACCTGATCATCTGGGGCATTCATCACCCGAGCTCGACTCAAGAGAAGAACGATCTCTACGGGACTCAGTCGCTGAGTATCAG CGTGGGAAGCAGTACTTACCAGAACAATTTTGTACCCGTGGTGGGAGCCCGGCCTCAAGTCAACGGCCAGTCCGGCAGGATTGACTTCCA CTGGACCTTACTGCAGCCAGGGGACAACATCACCTTTTCACACAATGGTGGACTCATCGCACCCTCCAGAGTTAGCAAACTGATTGGAAGA GGGCTTGGTATTCAGTCGGAAGCCCCTATTGATAATGGTTGTGAGAGTAAGTGCTTCTGGAAAGGAGGCAGCATAAATACCAAACTCCCCTT CCAGAACCTCTCTCCCAGAACCGTCGGCCAGTGCCCTAAGTACGTGAATAAACGCTCGTTGATGCTCGCGACAGGAATGAGGAACGTGCCT GAAATTATGCATGGTCGCGGACTGTTCGGAGCTATCGCCGGGTTCATCGAGAATGGCTGGGAAGGGATGGTGGTGGACGGTTGGTACGGGTTT CGACACCAGAACGCACAGGGCACTGGCCAGGCAGCAGATTATAAGTCCACTCAGGCCGCAATCGACCAGATTACCGGCAAATTAAATAGAT TGATCGAGAAAACGAATACTGAGTTCGAGAGCATCGGAGTTCTCTGAAATCGAGCATCAGATTGGAAACATTATAAATTGGACCAAG GACAGCATTACAGATATTTGGACGTATCAGGCAGAGCTGCTGGTGGCCATGGAAAACCAGCATACGATCGACATGGCCGATTCCGAAATGC TCAACCTGTATGAAAGGGTGAGGAAACAGCTGAGACAAAACGCAGAAGAAGACGGCAAAGGTTGCTTCGAAATTTACCACGCTTGCGACGA TTCATGCATGGAGAGCATTCGGAATAATACCTATGATCATAGCCAGTACAGAGAGGAGGCCCTGCTAAATAGACTGAATATAAATCCCGTAA AACTGAGCTCTGGCTATAAGGACATTATTCTGTGGTTTAGTTTCGGAGCATCCTGCCTCATCCTCCTGGCAGTGGTCATGGGCCTCGTGTTC TTTTGTCTGAAGAACGGAAATATGCGATGTACTATTTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3043	ATGTACAAAATAGTCGTGATCATCGCACTGCTGGGGGCCGTGAAAGGTCTCGATAAGATTTGCCTTGGACACCATGCCGTGGCTAACGGGA CTATTGTGAAGACACTTACCAATGAGCAGGAGGAAGTTACCAACGCTACAGAAACTGTCGAGTCGACTGGTATTAATAGGCTGTGTATGAAG GGACGTAAGCATAAAGACCTCGGGAATTGCCACCCTATAGGCATGCTGATAGGCACCCCAGCATGTGACCTGCACCTCACAGGCATGTGG GACACATTAATCGAAAGGGAGAATGCCATAGCCTATTGCTACCCAGGTGCAACAGTTAATGTTGAAGCATTGCGGCAGAAAATCATGGAGTC CGGCGGCATTAACAAGATCTCTACGGGATTTACGTACGGCTCAAGCATTAATAGTGCCGGGACTACTCGAGCATGCATGGAATGGAGGG AACAGTTTCTACGCCGAGCTGAAGTGGCTCGTGTCTAAAAGTAAAGGGCAGAACTTCCCTCAGACCACTAATACCTACAGAAACACAGACAC CGCAGAACACTTAATAATGTGGGGCATACATCACCCCAGCAGCACTCAGGAGAAAAACGACCTGTACGGTACCCAGTCCCTGTCCATTTCC GTGGGAAGTTCTACGTATCGGAATAACTTCGTCCCGGTGGTGGGAGCCAGGCCGCAGGTTAACGGACAAAGCGGGCGAATTGATTTCCAC TGGACACTGGTGCAGCCTGGCGACAATATAACTTTCTCCCATAATGGCGGACTGATCGCTCCATCCCGGGTCAGCAAGCTAATCGGTAGAG GGCTGGGGATCCAATCAGACGCACCTATTGATAACAACTGCGAGAGTAAGTGCTTCTGGCGAGGCGGTAGCATAAACACACGTTTGCCATT TCAGAATCTTAGTCCTCGTACTGTGGGCCAATGTCCAAAGTATGTCAACAGGCGCAGTTTAATGTTAGCTACTGGAATGCGCAACGTACCTG AGCTCATTCAAGGTCGAGGCCTGTTCGGAGCCATTGCTGGGTTCCTTGAGAATGGGTGGGAGGGGCATGGTCGACGGATGGTACGGATTCC GCCACCAGAACGCCCAGGGCACAGGCCAGCCGATTATAAAAGTACCCAGGCTGCCATCGACCAGATCACTGGGAAACTCAACCGTC TGGTCGAAAAGACTAACACCGAATTTGAGTCTATTGAATCAGAATTCAGCGAAATTGAGCACCAGATCGGCAATGTGATCAATTGGACGAAA GACTCTATTACCGACATTTGGACCTACCAGGCCGAGTTACTGGTGGCCATGGAGAACCAGCACACCATCGACATGGCCGATAGTGAAATGC TTAACCTCTACGAAAGAGTCCGAAAACAACTCCGCCAGAACGCGGAGAGGATGGAAAGGGCTGCTTCGAAATCTATCATGCCTGCGACGA CTCCTGTATGGAAAGCATTCGCAACAACACCTACGACCACAGTCAGTACAGGGAGGAGGCGCTGCTTAATAGGCTGAACATCAATCCGGTA ACACTGTCATCGGGATACAAGGACATCATACTCTGGTTCTCATTCGGCGCGTCCTGTTTCGTACTGCTCGCAGTCGTAATGGGGCTCTTCTT CTTCTGCTTAAAGAACGGCAACATGCGCTGCACTATCTGCATT

Seq ID No.	Sequenza di acido nucleico
3044	ATGTATAAAATTGTGGTCATAATTGCACTGCTCGGCGCAGTCAAGGGTCTGGATAAGATTTGCCTTGGTCACCATGCCGTAGCCAACGGAAC CATTGTGAAGACCCTTACAAATGAACAAGAAGAAGTGACTAATGCAACTGAGACCGTGGAATCTACAGGTATCAATCGCCTGTGTATGAAGG GGCGAAAAACATAAAGATCTCGGCAATTGTCACCCCATTGGGATGCTGATTGGCACCCCCGGCATGTGACCTACATTTGACCGGAATGTGGGA TACACTAATCGAACGGGAGAATGCTATTGCGTACTGTTACCCTGGCGCTACCGTCAATGTGGAGGCCCTGCGCCAAAAAATCATGGAATCT GGGGGAATCAATAAGATCTCCACTGGCTTCACTTATGGATCCAGCATTAACAGCGCTGGCACAACTCGCGCCTGTATGCGCAATGGGCGCA ATTCCTTCTATGCAGAGCTTAAGTGGTTAGTGAGCAAGTCGAAAGGCCAAAACTTCCCTCAAACAACCAATACATAGGAACACCGATACC GCTGAACATCTCATTATGTGGGGAATACATCATCCCAGCTCCACACAAGAGAAGAATGATTTGTACGGGACCCAATCCTTGTCTATTAGCGT AGGCTCCTCCACATACCGGAACAACTTCGTCCCAGTCGTGGGGGCACGGCCTCAGGTTAACGGACAGTCCGGCCGTATTGACTTCCACTG GACTCTGGTGCAACCAGGGGACAACATCACTTTCTCTCATAACGGGGGTCTGATCGCACCTAGTAGGGTGTCCAAACTTATAGGAAGGGGT CTCGGGCATCCAAAGGCGACGCCCCCATCGATAATAATTGCGAAAGCAAGTGTTTTTGGAGGGGAGGGAGCATCAATACTCGGTTACCATTTC AGAATTTAAGTCCAAGAACAGTAGGACAATGCCCTAAGTATGTTAATAGACGTTCCCTCATGTTAGCAACTGGAATGAGGAACGTTCCGGAG CTGATTCAGGGAAGAGGACTCTTCGGGGCAATCGCCGGTTTTTTGGAGAACGGATGGGAGGGCATGGTGGATGGTTGGTACGGATTCCGC CATCAGAACGCCCAGGGCACCGGGCAAGCTGCAGACTATAAATCAACACACAAGCAGCAATTGATCAAATCACCGGCAAGTTGAACAGGCTGG TCGAGAAAACCAACACTGAATTCGAGTCCATCGAGAGCGAGTTCTCTGAAATAGAGCATCAGATTGGAAACGTTATCAACTGGACCAAGGAT AGTATCACGACATTTGGACTTATCAAGCCGAGCTGCTGGTCGCCATGGAGAATCAACATACTATCGACATGGCGGATAGTGAAATGCTCAA CCTGTACGAGCGCGTGCGCAAGCAACTGCGCCAGAACGCTGAAGAGGACGGTAAAGGTTGCTTTGAAATTTATCACGCTTGTGATGACTCC TGCATGGAGTCGATCCGCAAATAATACGTACGATCACACAGCCAGTACCGGGAGGGCTTTGCTGAACCGGGCTGAACATCAACCCTGTAACCT TGTCTTCTGGCTACAAGGATATTATACTCTGGTTCAGCTTCGGGCGCCAGCTGCTTCGTCCTGCTGGCCGTGGTTATGGGACTCTTCTTTTTC TGTCTGAAAAATGGTAATATGCGGTGCACAATTTGTATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3045	ATGTACAAGATTGTGGTAATCATCGCTTTACTTGGGGCAGTGAAGGATTGGACAAGATTTGTTTGGGGCACCATGCAGTGGCCAACGGCA CCATTGTTAAAACACTGACAAATGAGCAGGAAGAGGTTACCAATGCAACGGAAACCGTGGAATCTACTGGAATCAACAGACTGTGCATGAAG GGCCGCAAGCATAAAGACTTGGGGAATTGCCACCCAATTGGAATGCTTATTGGAACACCAGCTTGCGATTTACATCTGACTGGCATGTGGG ACACCCTCATCGAGCGGGAAAATGCTATCGCTTATTGCTACCCGGGGGGCCACAGTGAATGTGGAAGCACTACGGCAAAAAATCATGGAATC AGGCGGAATCAACAAAATCTCAACGGCTTCACCTATGGGTCATCCATCAATAGTGCTGGCACCACACGCGCCTGCATGCGAAATGGTGGA AACTCATTCTATGCGGAACTGAAATGGCTAGTGTCAAAAAGCAAAGGGCAGAATTTTCCACAGACTACGAACACTTATAGAAATACTGACACA GCTGAGCATCTTATTATGTGGGGCATCCATCATCCAAGCAGTACACAGGAAAAGAATGACCTATACGGTACACAGTCCCTGTCTATTTCCGT GGGATCCTCCACATACAGAAACAACTTTGTCCCTGTGGTGGGAGCAAGGCCTCAGGTCAACGGACAGTCTGGCCGCATCGATTTCCATTGG ACCCTGGTTCAACCGGGCGATAACATCACCTTCAGCCACAATGGAGGCCTGATCGCCCCTAGCAGGGTGTCAAAGCTTATAGGCAGGGGT CTTGGGATCCAATCCGACGCCCCCATAGACAATAACTGCGAGTCGAAATGTTTCTGGCGGGGTGGTTCCATTAATACTCGTCTCCCCTTCCA GAATCTTTCTCCCAGAACTGTTGGGCAATGCCCCAAGTACGTAAATCGTAGAAGTCTTATGCTCGCAACCGGTATGCGCAACGTGCCTGAG CTCATTCAGGGCCGGGCCTCTTTGGGGCTATTGCCGGCTTCCTTGAAAACGGCTGGGAGGGTATGGTGGATGGCTGGTACGGATTCCGC CACCAGAATGCCCAAGGCACAGGTCAGGCTGCCGACTATAAGTCAACGCAGGCTGCCATCGATCAGATCACAGGCAAGTTGAACAGGCTA GTGGAGAAGACCAACACAGAGTTTGAGAGTATTGAGAGCGAGTTTTCCGAAATCGAACACCAGATAGGCAACGTTATCAACTGGACAAAGG ACAGTATTACAGACATTTGGACATATCAGGCTGAACTGTTGGTGGCCATGGAGAACCAGCACACTATCGATATGGCAGACTCCGAGATGCT GAATTTGTACGAAAGGGTCCGGAAGCAGCTCCGCCAGAACGCCGAAGAGGATGGGAAAGGCTGCTTTGAAATTTACCACGCTTGCGACGA CTCCTGTATGGAATCCATTCGAAATAATACATATGATCACAGCCAGTACCGGGAAGAAGCTTTACTTAATCGATTGAATATCAATCCAGTTAC CCTTTCCTCCGGCTACAAGGACATCATTCTGTGGTTCTCCTTCGGTGCCTCGTGCTTCGTCCTGCTTGCAGTTGTTATGGGGCTGTTTTTTTT CTGTCTGAAGAACGGGAATATGCGGTGCACTATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3046	ATGTATAAAATCGTGGTTATCATCGCCCTGTTGGGCGCAGTCAAGGCTTAGACAAAATTTGCCTGGGCCACCATGCCGTGGCCAATGGCA CAATTGTAAAAACTTTGACTAATGAGCAGGAGGAAGTCACTAACGCCACGGAAACCGTGGAGTCCACTGGAATCAACCGCCTGTGCATGAA GGGACGGAAGCATAAGGACCTCGGTAATTGTCATCCGATAGGTATGCTCATCGGCACCCCCGCTTGCGACTTACATTTGACAGGAATGTGG GACACTCTGATTGAGAGGGAGAACGCCATTGCCTACTGTTACCCCGGCGCAACAGTCAATGTGGAGGCGCTGCGTCAAAAGATAATGGAG AGTGGAGGCATCAACAAAATTTCAACAGGGTTCACATACGGGAGCTCAATTAACTCTGCGGGCACGACCAGGCTTGCATGAGAAACGGCG GTAATTCCTTTTATGCGGAGTTGAAATGGCTGGTCTCCAAGTCCAAGGGTCAGAATTTCCCACAAACCACAAATACTTACCGAAATACGGAC ACTGCCGAGCATCTGATAATGTGGGGAATACACCATCCTAGTTCTACGCAAGAGAAAAATGACCTCTATGGGACGCAATCCTTGAGTATCAG CGTTGGCTCCTCAACCTACCGGAACAACTTCGTCCCAGTTGTAGGAGCTCGACCTCAGGTGAATGGACAGTCAGGTCGTATCGATTTTCATT GGACCCTCGTGCAACCTGGGGACAACATAACCTTCTCCCACAACGGCGGGCTGATAGCACCCAGTCGTGTCTCCAAATTGATCGGGAGGG GGCTGGGCATCCAATCAGATGCACCAATTGATAATAATTGTGAGAGCAAGTGCTTCTGGCGTGGGGTAGCATCAACACTCGCCTCCCCTT TCAGAACTTGTCACCCCGGACCGTCGGTCAGTGTCCCAAGTATGTTAATCGGCGTTCATTAATGCTGGCAACCGGTATGCGCAACGTCCCC GAGCTAATCCAAGGAAGAGGGCTTTTTGGGGCTATAGCAGGATTTTTTAGAGAACGGTTGGGAGGGCATGGTGGACGGATGGTACGGCTTT CGGCACCAGAATGCGCAGGGGACAGGGCAAGCTGCCGATTATAAGTCCACTCAAGCTGCTATTGATCAGATTACAGGCAAGCTTAATCGCC TGGTCGAGAAGACTAACACAGAGTTCGAGAGCATTGAGTCAGAATTCTCTGAAATTGAGCACCAAATCGGGAATGTAATAAATTGGACAAAG GACAGTATTACCGACATCTGGACTTATCAAGCCGAGCTCCTGGTTGCTATGGAGAATCAGCACACAATCGACATGGCCGATAGCGAGATGC TAAACCTGTACGAAAGGGTGCGCAAGGCTGAGGCAAAACGCTGAGGAAGATGGCAAGGGCTGTTTCGAGATTTATCACGCGTGTGATG ATTCATGCATGGAATCAATTAGGAACAACACTTACGATCATTCTCAGTACCGGGAGGAGGGCACTCCTGAACAGGCTCAACATAAACCCTGTC ACCCTGTCTTCAGGCTATAAGGACATTATACTATGGTTTTCTTTTGGCGCCTCCTGTTTTGTGCTCCTCGCCGTTGTAATGGGCCTTTTTTTTT TTTGCCTGAAGAACGGTAATATGCGGTGTACTATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3047	ATGTACAAGATTGTAGTGATTATCGCACTGCTAGGCGCGGTGAAGGGTCTCGACAAGATTTGCCTGGGCCATCACGCGGTGGCCAACGGG ACTATCGTGAAGACTCTGACCAATGAACAAGAGGAAGTTACTAACGCCACCGAAACTGTGGAGTCCACAGGCATCAATCGCTTGTGTATGAA GGGAAGGAAGCATAAAGACCTGGGTAATTGTCACCCCATAGGGATGCTTATCGGTACACCAGCTTGTGATCTGCATTTAACGGGGATGTGG GACACACTTATAGAACGTGAGAATGCCATTGCCTATTGTTACCCCGGAGCTACCGTAAACGTGGAGGCCCTGCGCCAGAAGATCATGGAGT CAGGGGCATCAATAAGATCAGTACCGGCTTTACCTATGGTAGCTCTATCAACTCCGCCGGCACTACCAGGGCCTGTATGAGGAATGGGG GAAACAGCTTCTATGCTGAGCTGAAGTGGCTAGTTAGCAAGAGGCAAGGGCCAGAACTTCCCTCAAACTACAAATACGTATCGGAACACCGA CACAGCGGAGCACCTGATAATGTGGGGAATCCCACCACCCATCGTCCCACCCAAGAAAAGAACGATCTGTACGGTACTCAGTCCCTGAGTATT TCCGTGGGCTCCAGTACGTACCGAAATAATTTCGTCCCAGTGGTCGGGGCAAGGCCCGCAAGTGAATGGCCAGTCAGGACGGATAGACTTT CATTGGACACTGGTGCAACCCGGCGATAACATCACCTTCAGCCATAACGGGGGGCTGATCGCCCCGAGCCGAGTTAGCAAACTTATCGGC CGGGGCCTGGGCATCCAGAGTGATGCACCCATCGACAATAATTGCGAGAGGCAAATGTTTTTGGAGGGGTGGATCGATAAACACACGCCTC CCGTTCCAAAATCTCAGTCCTAGAACAGTGGGGCAGTGTCCTAAGTATGTGAATCGCCGGAGCCTTATGTTGGCCACTGGGATGCGAAATG TGCCCGAACTAATTCAAGGGCGAGGACTGTTCGGCCGCCATTGCCCGCTTCCTGGAGAATGGCTGGGAAGGCATGGTTGATGGTTGGTATG GCTTTCGCCATCAGAATGCACACAGGGGACAGGCCGCGGATTACAAATCGACCCAAGCTGCAATTGATCAGATCACAGGGAAACTGA ATCGACTTGTGGAGAAAACTAATACCGAATTTGAATCTATCGAGTCCGAATTTAGCGAAATCGAGCACCAGATCGGTAACGTGATCAATTGG ACTAAGGACTCCATTACAGACATATGGACATATCAGGCCGAGTTGTTGGTGGCAATGGAGAACCAGCATACTATCGACATGGCCGATTCTGA GATGCTAAATCTGTATGAACGCGTCCGGAAACAGCTCAGACAGAATGCTGAGGAAGATGGGAAGGGATGCTTCGAAATATACCACGCCTGC GACGACAGCTGTATGGAGTCAATTCGCAACAACACTTACGATCACTCCCAATACCGGGAGGAGGCCCCTTCTTAACAGACTCAACATTAATCC TGTGACTCTGTCATCCGGATACAAAGACATAATACTCTGGTTTAGCTTTGGCGCAAGTTGTTTTGTGCTCGCAGTGGTGATGGGGTTGT TTTTTTTCTGCCTGAAAAATGGTAATATGCGATGCACTATCTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3048	ATGTACAAAATTGTGGTGATAATTGCATTGCTCGGAGCAGTCAAAGGGCTGGACAAAATATGTTTGGGGCACCACGCCGTGGTTAATGGTA CCATCGTTAAGACTCTGACCAACGAACAGGAAGAGGTGACCAATGCTACCGAGACCGTGGAAAGCACTGGGTTGAACAGGCTGTGCATGA AAGGAAGGAATCACAAGGACCTGGGAAACTGTCATCCAATCGGAATGCTCATTGGGACTCCCGCATGTGATCTGCATCTGACGGGCACCTG GGATACCTTGATAGAGAGGGAGAACGCCATAGCATACTGTTATCCCGGAGCCACCGTGAACGAGGAGGCACTGAGGCAGAAAATTATGGA ATCTGGAGGGATCAATAAAATTAGCACAGGGTTTACCTATGGCTCAAGTATCAATAGCGCCGGGACTACACGGGCCTGCATGCGAAATGGA GGGAACTCCTTCTACGCTGAACTAAAGTGGCTGGTCAGTAAGTCCAAAGGGCAGAATTTCCCGCAGACAACCAACACTTACCGCAATACCG ATACGGCTGAACACTTAATCATGTGGGGCATCCATCATCCCTCTAGCACACAAGAGAAAAACGACCTGTATGGAACACAAAGCCTCAGCATC TCCGTGGGTTCATCTACATATCAGAACAACTTCGTGCCCGTCGTTGGCGCCCGACCTCAGGTGAATGGTCAATCGGGCCGGATTGACTTTC ACTGGACCCTCGTCCAGCCAGGTGATAACATCACCTTCAGCCACAACGGCGGACTCATCGCCCCATCTCGTGTGTCCAAGCTCATTGGCAG AGGGCTTGGCATCCAGTCTGATGCACCCCATCGATAACAATTGCGAGAGCAAGTGTTTCTGGCGCGGTGGATCAATAAATACGCGGCTCCCC TTTCAGAATCTTTCTCCCAGAACCGTAGGCCAGTGTCCAAAGTATGTAAACAAAAGATCATTGATGCTGGCCACAGGAATGAGGAATGTGCC TGAGCTGATGCAGGGCAGAGGCCTGTTCGGTGCGATCGGCCGGCTTCATCGAAAATGGCTGGGAGGGGATGGTGGACGGATGGTATGGCT TCCGCCACCAGAACGCTCAGGGGACCGGACAAGCTGCGGATTATAAGAGCACTCAGGCGGCAATCGACCAGATCACCGGAAAACTCAACC GTCTCATCGAGAAGACAAACACCGAATTTGAGTCTATAGAATCTGAGTTCAGTGAAATCGAACACCAAATCGGCAACGTCATAAATTGGACT AAGGACTCCATCACCGATATCTGGACCTATCAAGCCGAGCTGCTGGTTGCCATGGAGAATCAGCACAGATCGACATGGCTGATTCTGAAA TGCTGAACCTCTATGAAAGAGTTCGGAAACAGCTCAGACAAAACGCCGAAGAGGACAAGGATGTTTTGAGATCTATCATGCCTGCGA TGATAGTTGTATGGAGAGCATCAGGAATAATACATACGACCACTCCCAGTATCGCGAGGAAGCACTGCTCAATCGGTTAAATATAAATCCAG TGACGCTTAGTAGTGGGTATAAGGACATAATCCTCTGGTTCTCTTTCGGCGCCAGCTGTTTCGTTCTGCTGGCCGTGGTCATGGGACTTGTG TTCTTTTGTCTTAAAAATGGGAACATGAGATGCACACAATATGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3049	ATGTATAAAATAGTGGTGATAATCGCGCTACTGCGCGCAGTGAAGGGGCTCGATAAGATTTGCTTGGGTCATCATGCTGTTGCAAACGGCA CCATCGTTAAAACACTGACCAACGAGCAGGAGGAGGTAACGAACGCCACGGAGACGGTGGAGTCTACCGGGATCAACCGTCTGTGTATGA AGGGTCGCAAGCATAAGGATTTAGGAAATTGTCATCCTATCGGAATGCTTATAGGTACCCCGGCCTGCGATCTCCATCTGACAGGCATGTG GGATACTCTCATCGAAAGAGAGAATGCCATCGCGTATTGTTACCCTGGGGCCACAGTAAATGTCGAAGCATTGAGACAGAAATCATGGAG TCCGGAGGCATTAATAAGATTTCCACCGGCTTCACCTACGGATCTTCCATCAATTCCGCAGGCACAACCAGAGCCTGCATGCGGAATGGAG GGAATTCCTTTTACGCCGAATTGAAATGGCTTGTGTCAAAGTCAAAGGGACAGAACTTTCCCCAAACTACGAACACATATAGAAATACAGATA CCGCAGAACACTTAATTATGTGGGCATCCACCACCCGTCAAGTACTCAGGAGAAGAATGACCTTTACGGCACCCAGTCTCTTTCAATCTCA GTCGGGAGCTCCACATATAGAAACAACTTTGTACCTGTGGTCGGTGCAGGACCGCAGGTGAATGGCCAATCAGGAAGGATCGATTTTCACT GGACACTGGTCCAGCCTGGTGACAACATCACGTTCTCACACAATGGGGGCCTAATAGCCCCCTCCCGCGTGAGCAAGCTAATTGGCCGCG GATTGGGTATCCAGAGCGACGCCCCCTATAGACAATAACTGTGAGAGCAAGTGCTTCTGGCGCGGAGGGTCAATTAACACCCGGCTCCCCTT CCAGAACCTGTCCCCCCGGACGGTGGCCAGTGCCCAAAATACGTCAATCGGCGCTCCCTGATGTTGGCCACAGGCATGCGGAATGTTCC TGAACTGATACAGGGTCGGGGGTTGTTCGGAGCAATTGCCGGGTTTCTTGAAAACGGCTGGGAAGGTATGGTGGATGGTTGGTACGGGTT CAGGCACCAGAACGCTCAGGGTACCGGCCAGGCGGCTGACTACAAATCAACCCAGGCAGCAATCGACCAGATTACAGGAAAGCTGAATCG CCTTGTGGAGAAAACCAATACCGAATTTGAGTCCATCGAGTCTGAGTTCAGCGAGATAGAGCATCAGATTGGCAACGTCATCAACTGGACG AAGGACTCCATTACTGATATATGGACTTATCAGGCTGAACTGCTGGTAGCCATGGAGAACCAGCACACAATTGACATGGCTGACTCCGAGAT GCTGAATCTATACGAGCGCGTGAGGAAGCAGCTCAGACAGAACGCTGAGGAGGACGGTAAGGGTTGCTTCGAGATTTACCACGCCTGTGA TGACTCCTGTATGGAGTCAATCAGGAACAATACCTATGACCACTCTCAATATCGGGAGGAAGCGCTTCTCAACCGTCTTAACATTAATCCCG TGACACTGTCTTCAGGTTACAAGGATATCATCCTGTGGTTCAGCTTTGGCGCCAGCTGTTTCGTGCTACTAGCAGTGGTGATGGGCCTGTTT TTTTTCTGCCTGAAAAATGGGAACATGAGGTGCACGATTTGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3050	ATGTATAAAATCGTTGTAATTATTGCACTGCTTGGCGCCGTGAAGGGACTCGACAAGATCTGCCTGGGCCACCACGCTGTAGCCAACGGCA CCATTGTGAAGACCCTGACAAATGAGCAGGAGGAGGTTACCAATGCCACTGAGACCGTGGAATCCACAGGCATTAACCGCCTGTGTATGAA GGGAAGGAAGCACAAGGACCTTGGCAATTGTCACCCAATCGGCATGCTCATCGGCACACCAGCATGCGACTTGCACCTGACCGGAATGTG GGACACGCTCATAGAAAGAGAGAATGCCATTGCCTATTGCTACCCAGGAGCCACCGTTAACGTGGAGGCACTGAGGCAGAAGATCATGGA GAGCGGAGGCATCAATAAAATTAGTACGGGGTTTACATATGGCTCCTCTATAAATTCCGCCGGCACCACCCGGGCCTGCATGCGGAATGGC GGAAATAGTTTCTACGCTGAGTTGAAATGGCTGGTGAGCAAGAGTAAGGGGCAGAACTTTCCGCAAACTACCAATACGTATAGGAACACTG ACACCGCCGAGGCACCTAATCATGTGGGGCATACATCATCCCAGCTCCACGCAGGAGAAGAACGACCTGTATGGAACTCAAAGCCTATCTAT CTCCGTGGGATCCAGTACATACCGGAATAACTTTGTGCCAGTAGTGGGCGCCAGACCGCAGGTGAACGGGCAATCCGGCAGGATCGACTT CCACTGGACACTGGTGCAACCAGGGCGACAACATTACTTTCAGCCACAATGGTGGTTTAATAGCCCCCTCAAGGGTTTCCAAATTGATTGGGC GGGGGCTTGGTATTCAATCTGACGCTCCAATAGATAACAATTGTGAAAGTAAGTTTCTGGCGCGGCGGCTCTATTAATACTCGCCTTCCA TTCCAAAATCTCTCACCACGTACCGTTGGCCAATGTCCCAAATATGTGAACCGTAGGTCCTTGATGCTCGCAACGGGAATGAGGAACGTTCC GGAGCTGATCCAGGGCCGAGGACTCTTTGGTGCTATTGCCGGATTTCTGGAGAACGGGTGGGAGGGCATGGTGGATGGATGGTACGGCTT CCGACATCAGAATGCACAAGGCACCGGGCAGGCCGCCGATTACAAGTCCACGCAAGCTGCCATTGACCAGATTACGGGGAAGTTGAACCG GCTCGTCGAGAAGACCAATACTGAATTCGAATCCATTGAGAGCGAATTTTCTGAAATTGAACATCAGATTGGTAACGTCATCAATTGGACTAA GGACTCAATAACAGACATCTGGACTTATCAGGCTGAACTCCTCGTCGCGATGGAAAATCAGCACACCATCGATATGGCCGACTCTGAGATG CTGAACTTGTACGAGCGGGTGAGAAAACAGCTTCGACAGAATGCCCGAGGAAGATGGCAAGGGCTGCTTCGAGATCTATCACGCTTGCGAT GACTCATGCATGGAGTCTATCCGGAACAACACTTATGACCACTCCCAATACCGCGAGGAGGCCCTGCTGAATAGGCTGAACATCAACCCAG TGACCTTGAGCTCAGGCTATAAGGACATAATCCTGTGGTTTAGCTTTGGGGCCTCGTGCTTTGTCCTGCTGGCCGTAGTTATGGGGCTTTTTC TTCTTTTGTCTTAAGAATGGGAATATGAGGTGTACAATCTGTATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
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Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3053	ATGTACAAGATTGTAGTTATTATCGCTTTACTGGGAGCGGTCAAAGGTCTGGACAAGATATGCCTTGGACACCACGCAGTGGCTAACGGCA CAATCGTCAAAACTCTGACAAACGAGCAGGAGGAGGTCACTAATGCGACCGAAACGGTGGAGAGCACCGGAATTAATCGACTATGTATGAA GGGCAGGAAGCACAAGGATCTCGGGAACTGCCATCCCATCGGCATGCTGATAGGCACGCCAGCCTGCGATCTTCATCTGACCGGAATGTG GGATACCCTGATCGAGAGAGAAAACGCCATTGCATACTGTTACCCGGGAGCAACCGTCAATGTGGAGGCGCTGAGACAGAAAATTATGGAA AGCGGAGGGATCAATAAAATCAGTACCGGGTTTACTTATGGCTCATCAATCAATTCAGCAGGCACTACTAGAGCTTGCATGAGGAATGGAG GGAATAGTTTCTACGCGGAGTTGAAATGGCTCGTGAGTAAATCTAAGGGGCAGAATTTTCCCCAGACTACAAATACGTATAGAAACACCGAT ACTGCCGAGCACTTAATCATGTGGGGCATCCATCATCCAAGCAGTACCCAGGAGAAAAACGACCTCTATGGGACTCAGTCCTTGAGCATTA GCGTCGGATCTTCCACATACAGAAACAATTTCGTTCCAGTCGTCGGAGCTCGACCTCAGGTTAACGGGCAATCCGGGCGAATAGACTTTCA TTGGACTCTGGTGCAGCCCGGGGACAACATAACCTTCAGTCACAATGGAGGGCTGATAGCCCCCAGTCGCGTGAGTAAATTGATTGGCAG GGGCCTAGGAATCCAATCTGACGCACCCATCGACAACAACTGCGAGAGCAAATGCTTTTGGCGCGGTGGGTCAATAAACACTCGCCTCCCT TTTCAGAATTTGTCACCTCGGACAGTGGGACAGTGCCCTAAGTATGTGAATCGCCGATCCCTGATGCTAGCCACCGGCATGCGCAATGTGC CCGAGCTGATTCAGGGAAGGGGCCTGTTCGGCGCCATCGCCGGCTTCTTGGAAAATGGCTGGGAGGGGATGGTTGACGGCTGGTATGGC TTCCGGCATCAGAACGCACAGGGCACCGGCCAGGCGCCGACTATAAGTCCACACAAGCAGCCATCGATCAAATCACGGGAAAGCTCAAT AGGCTGGTCGAGAAAACAAACACAGAATTCGAAAGTATCGAATCAGAGTTCTCCGAGATAGAGCACCAGATCGGAAATGTGATCAATTGGA CAAAGGACAGCATCACTGACATATGGACGTACCAGGCAGAGCTGCTTGTCGCCATGGAGAACCAGCATACGATTGATATGGCAGACTCTGA AATGCTGAACCTCTACGAGAGAGTACGGAAGCAACTACGTCAGAATGCAGAGGAGGATGGGAAAGGATGCTTTGAAATCTATCATGCATGT GACGATTCTTGCATGGAGTCAATACGCAACAATACGTACGACCACAGCCAGTATCGGGAGGAAGCGCTGCTTAACAGACTGAATATAAATC CGGTGACACTGTCATCTGGCTACAAGGACATCATCTTATGGTTTTCGTTTGGTGCGAGTTGTTTTGTCTTACTAGCCGTCGTTATGGGTTTAT TCTTTTTTTTGTTTGAAGAATGGGAACATGAGGTGTACAATTTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3054	ATGTACAAGATCGTGGTCATAATCGCCCTTCTCGGTGCTGTTAAGGGACTAGATAAGATATGCCTGGGCCACCATGCCGTAGCTAACGGTA CAATAGTGAAGACATTAACTAATGAGCAAGAAGAGGTGACGAACGCTACTGAGACTGTTGAGAGCACAGGCATTAACCGGCTGTGTATGAA GGGCCGCAAGCACAAGGATCTGGGAAATTGCCACCCAATTGGCATGCTGATCGGAACACCAGCGTGCGATTTGCACCTAACCGGTATGTG GGATACTCTGATTGAGCGTGAAAATGCTATTGCCTACTGTTATCCCGGCGCTACAGTCAACGTGGAAGCGCTGCGCCAGAAGATCATGGAA TCTGGAGGAATTAATAAGATCTCAACTGGTTCACCTACGGTAGCTCGATTAACAGCGCAGGAACAACTCGTGCCTGCATGAGAAATGGAG GCAATAGCTTTTATGCTGAACTGAAATGGCTCGTGTCTAAGTCAAAGGGCCAGAATTTCCCTCAAACAACTAACACCTACAGGAATACTGAC ACTGCGGAACATCTGATCATGTGGGGCATTCACCACCCCTCTTCAACACAGGAGAAAAACGATCTCTACGGCACTCAGTCGCTGTCCATCT CTGTGGGGAGCTCTACCTATCGTAACAATTTCGTCCCGGTTGTTGGCGCCCGGCCACAAGTGAACGGGCAGAGCGGCCGGATCGACTTCC ACTGGACCCTCGTACAGCCTGGGGACAACATCACCTTCTCACACAACGGAGGGCTAATCGCCCCCTCAAGGGTCAGCAAGTTGATAGGCA GGGGCTTGGGAATTCAGTCGGATGCCCCCAATTGATAACAACTGCGAGAGCAAATGCTTTTGGCGCGGAGGATCCATCAATACAAGGCTCCC CTTCCAAAACCTCAGCCCCAGAACCGTTGGGCAGTGTCCTAAATATGTGAACAGGAGATCTCTGATGCTGGCCACTGGAATGAGAAATGTG CCTGAGCTGATCCAGGGCCGAGGACTGTTTGGAGCGATCGCCGGATTTCTTGAAAACGGCTGGGAAGGCATGGTGGATGGCTGGTACGGA TTTAGACATCAGAATGCCCAAGGGACCGGCCAAGCTGCAGACTACAAAAGTACCCAGGCCGCGATAGATCAGATTACGGGAAAGCTGAACC GTCTGGTGGAAAAAACTAATACGGAGTTTGAGTCCATAGAGAGTGAGTTTTCTGAAATTGAACACCAGATTGGGAACGTGATCAACTGGACC AAGGACTCAATCACTGATATATGGACCTACCAGGCCGAGCTCCTAGTGGCAATGGAAAACCAGCACACAATAGACATGGCCGACAGCGAAA TGTTGAATCTCTACGAAAGAGTGAGGAAGCAGCTTCGGCAGAATGCTGAGGAGGACGGAAAGGGATGTTTCGAGATCTACCACGCCTGTG ACGATAGTTGCATGGAAAGCATCCGTAACAATACCTACGATCACAGTCAATATAGGGAAGAAGCATTGCTGAATAGGTTGAATATATAAATCCC GTTACTCTTTCCTCGGGGTATAAGGATATTATCCTTTGGTTTTCATTTGGTGCCTCGTGTTTCGTCCTGCTGGCAGTGGTGATGGGCCTCTTT TTCTTCTGTTTGAAGAACGGGAATATGCGCTGTACCATCTGCATA

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3055	ATGTACAAAGTAGTCGTAATCATCGCCCTTTTGGGAGCCGTCAAGGGCCTGGACAAGATATGCCTGGGACATCACGCTGTCGCCAACGGGA CGATTGTCAAAACACTGACAAACGAGCAGCGAAGAGGTTACCAACGCGACTGAGACTGTTGAGTCAACAGGTATAAACCGACTGTGTATGAA AGGACGGAAACACAAAGATCTGGGGAATTGCCACCCCATCGGGATGCTGATCGGTACCCCTGCATGCGACCTGCACCTCACTGGTACTTG GGATACTCTCATAGAACGGCGAGAACGCAATCGCATACTGCTATCCTGGAGCGACCGTTAATGTTGAGGCCTTGAGACAAAAAATTATGGAGA GTGGGGGAATCGACAAAATCTCCACCGGCTTTACCTATGGCAGCTCCATCAATTCAGCCGGTACCACGCGTGCCTGTATGCGCAACGGAG GTAATTCATTCTACGGCCGAGCTAAAATGGCTGGTGTCCAAAAATAAAGGGCAAAACTTCCCGCAAACAACAAACACTTACAGAAACACAGAC ACTGCAGAACATCTGATAATGTGGGGAATCCACCATCCGTCATCTATACAGGAGAAAAACGATCTGTATGGCACTCAGTCACTCAGTATCTC CGTCGGCTCATCAACGTACAGGAATAATTTTGTGCCCGTCGTCGGCGCACGTCCACAAGTCAAACGGTCAGTCCGGGAGAATCGACTTTCAT TGGACGCTTGTTCAACCGGGCGATAACATTACATTTTCACATAACGGAGGGCTCATCGCTCCAAGTAGAGTCTCTAAACTGATCGGACGTGG CCTGGGAATTCAGTCAGATGCGCCCATCGACAACAATTGCGAGTCGAAGTGCTTCTGGCGGGGGGGGTCCATAAATACCCGCCTCCCCTTT CAAAACCTCTCACCCCGTACCGTGGCCAGTGCCCTAAATATGTGAATCGGCGATCCCTGATGCTGGCAACTGGAATGCGCAACGTACCAG AGCTGATTCAGGCAGAGGACTCTTCGGGGCCATTGCAGGGTTCCTGGAAAATGGTTGGGAAGGAATGGTTGACGGATGGTATGGCTTCC GCCACCAGAATGCACAAGGGACAGGTCAGGCTGCAGATTATAAGTCCACGCAGGCCGCTATTGATCAGATTACGGGAAAACTCAACAGACT GGTGGAAAAAAACCAACACTGAGTTTGAGAGCATTGAGTCCGAGTTTTCCGAGATTGAACATCAAATCGGTAATGTTATCAATTGGACTATGG ATAGTATTACGGATATTTGGACTTACCAGGCCGAATTGTTAGTGGCTATGGAAAACCAACACACTATTGACATGGCAGACTCAGAGATGCTC AATCTTTATGAGCGCGTGAGGAAGCAGCTCAGACAGAACGCGGAAGAAGACGGCAAGGGGTGCTTTGAGATTTACCACGCCTGCGACGAC TCCTGCATGGAAAGCATCCCGCAACAACACCTACGACCACAGCCAATATCGCGAGGAGGCCCTCCTTAATCGGTTGAACATCAATCCCGTAA CACTGTCCTCCGGGTACAAAGACATCATCCTGTGGTTCAGTTTTTGGCGCGAGCTGTTTCGTCTTGTTGGCTGTGGTGATGGGCCTCGTATTT TTTTGCCTTAAAAACGGGAACATGCGGTGTACAATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
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Seq ID No.	Sequenza di acido nucleico
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Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
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Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3059	ATGTACAAGATCGTGGTGATCATTGCTCTGCTTGGAGCCGTCAAGGGCCTGGATAAGATTTGCCTGGGACATCACGCTGTCGCAAATGGCA CCATCGTCAAGACTTTAACAAACGAGCAGGAAGAGGTGACTAATGCCACTGAGACAGTAGAGAGCACTGGGATAAATAGGTTGTGCATGAA GGGGAGAAAGCACAAGGACCTCGGAAACTGCCACCCAATTGGTATGCTAATCGGCACTCCAGCTTGCGACTTGCATCTGACTGGCATGTG GGATACGCTGATAGAACGTGAGAATGCCATCGCCTACTGTTATCCTGGGGCTACTGTGAACGTCGAGGCTTTAAGACAAAAGATCATGGAA AGTGGCGGCATCAACAAGATAAGTACCGGGTTTACCTATGGGAGTAGTATTAATTCAGCAGGCACAACTCGGGCCTGCATGCGGAATGGGG GGAACAGCTTCTACGCCGAGCTAAAGTGGCTTGTGAGCAAGTCCAAAGGGCAGAATTTCCCGCAGACCACCAATACTTACCGCAACACCGA TACTGCAGAACACTTAATAATGTGGGGCATCCACCATCCTAGTAGCACGCAAGAGAAGAATGACTTGTACGGTACCCAGTCGCTAAGTATCA GCGTGGGCAGTTCGACATATAGAAATAACTTTGTCCCTGTTGTGGGCGCGCGCCCTCAGGTAAATGGACAGTCTGGTCGGATCGACTTTCA TTGGACCCTGGTGCAGCCAGGGGACAACATTACCTTTTCACATAATGGCGGTCTCATCGCACCCAGTCGGGTCTCAAAGCTGATCGGGCG GGGGCTGGGCATTCAGTCAGACGCTCCCATAGATAATAATTGCGAGTCCAAGTGTTTCTGGAGAGGGGGGCTCCATCAATACTAGGCTGCCT TTTCAGAACCTCTCGCCCCGGACTGTGGGGCAGTGCCCCAAATACGTAAACCGAAGATCCCTAATGCTGGCTACTGGGATGCGGAACGTAC CTGAACTGATCCAGGGACGTGGGCTATTCGGAGCCATAGCTGGATTTCTGGAAAATGGCTGGGAGGGAATGGTTGATGGGTGGTACGGGT TTCGGCACCAGAATGCCCCAGGGCACTGGGCAGGCTGCCGACTACAAATCAACTCAGGCCGCTATTGATCAAATTACAGGTAAGCTCAACCG TCTAGTTGAGAAAACAAATACTGAGTTCGAAAGCATTGAGTCTGAGTTTTCCGAGATTGAGCATCAGATCGGCAACGTTATTAATTGGACAAA GGACAGCATCACTGACATTTGGACATACCAGGCTGAACTTCTGGTTGCAATGGAAAATCAGCACACTATCGACATGGCTGATTCCGAGATGC TAAATCTCTACGAACGGGTCAGAAAGCAACTGCGGGCAGAATGCCCGAGGAAGATGGAAAAGGCTGTTTCGAAATTTACCATGCTTGCGACGA CTCCTGTATGGAGTCGATCAGGAACAACACCTACGATCACAGTCAGTATCGTGAGGAGGCACTTTTGAACCGTCTGAACATCAACCCCGTG ACCCTTTCCTCCGGGTATAAAGATATCATCCTCTGGTTCTCCTTCGGAGCATCTTGCTTCGTTCTCCTGGCCGTAGTGATGGGCCTGTTTTTT TTCTGCCTGAAGAATGGGAACATGAGATGCACCATCTGCATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3060	ATGTATAAAATCGTTGTTATTATCGCCTTATTGGGCGCTGTGAAAGGGCTGGATAAAATCTGCTTAGGGCATCATGCCGTTGCTAATGGAAC GATTGTCAAAACCCTGACAAATGAGCAGGAAGAGGTTACAAACGCTACTGAGACAGTGGAAAGCACCGGGATAAACCGGTTATGTATGAAA GGTCGGAAGCACAAAGACCTAGGAAACTGCCACCCCAATCGGCATGCTGATTGGTACCCCAGCATGTGATCTGCACCTAACAGGAACCTGG GACACACTCATCGAGCGGGAAAACGCCATTGCCTATTGTTATCCTGGCGCCACGGCAAAACGTGGAGGCGCTGCGCCAGAAGATTATGGAG TCCGGAGGTATCGACAAAATCTCTACCGGCTTTACGTACGGGAGTTCAATTAATTCAGCCGGAACAACCAGGGCCTGTATGCGCAATGGGG GGAATTCATTTTATGCCGAATTGAAGTGGCTCGTCTCCAAGAGCAAAGGACAGAACTTTCCTCAGACAACGAATACTTACAGAAACACCGAT ACCGCTGAGCACTTAATTATGTGGGGAATCCACCATCCTAGTTCAATCCAGGAAAAAAACGATCTGTACGGGACACAGAGTCTCTCTATATC TGTTGGATCTTCCACCTATAGGAACAATTTTGTTCCCGTGGTGGGCGCCAGGCCACAGGTGAATGGCCAGTCCGGGAGAATAGATTTTCAC TGGACCCTTGTCCAGCCTGGGATAACATTACTTTCAGCCACAACGGAGGCCTCATCGCGCCAAGTAGGTTTCCAAATTGATAGGGAGAG GCCTGGGATTCAGTCCGACGCCCCCATAGATAATAATTGCGAATCAAAGTGTTTTTGGAGGGGGGGGTCCATCAACACAAGACTCCCCTT TCAGAATCTGTCACCCGAACCGTTGGCCAGTGTCCGAAATATGTGAACCGGAGGTCCTTAATGCTGGCCACTGGAATGCGGAATGTGCCA GAGCTATCCAAGGAAGGGGACTGTTTGGAGCAATCGCCGGCTTCCTAGAAAATGGCTGGGAGGGTATGGTGGACGGCTGGTATGGGTTT AGACATCAGAATGCCCAAGGAACCGGTCAGGCTGCGGACTATAAGTCCACCCAGGCCGCTATCGACCAGATCACAGGTAAGCTCAACAGG CTGGTCGAGAAAACAAATACAGAGTTCGAGTCCATAGAGTCCGAGTTCAGCGAAATAGAACACCAGATTGGAAATGTGATTAACTGGACGAT GGATTCCATCACAGACATCTGGACCTACCAGGCAGAGTTACTGGTAGCTATGGAAAATCAGCATACAATCGACATGGCCGACTCTGAAATG CTAAATCTTTACGAGAGAGTTCGTAAACAGCTTCGCCAGAACGCCGAGGAAGATGGGAAAGGGTGCTTTGAAATATATCACGCCTGTGATG ATAGCTGTATGGAATCAATTAGAAATAACACATATGACCATTCTCAGTACAGAGAAGAGGCTCTGCTCAATAGGCTCAATATCAATCCAGTGA CCCTATCCTCAGGATACAAGGACATCATACTCTGGTTCAGTTTTGGCGCCTCTTGTTTCGTTCTGTTGGCCGTCGTCATGGGCCTCGTGTTT TTTTGTTTAAAGAACGGCAATATGCGATGCACTATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3061	ATGTATAAGATTGTAGTGATCATTGCTCTGCTCGGGGCCGTGAAGGGCCTGGATAAGATCTGCCTGGGTCACCATGCCGTCGCAAACGGCA CGATTGTGAAAACACTGACGAATGAGCAGGAGGAGGTTACTAACGCTACAGAGACGGTCGAGTCAACTGGAATTAACCGGCTTTGCATGAA AGGACGAAAACACAAAGATCTTGGGAACTGCCACACCAATTGGGATGCTGATTGGAACCCCAGCCTGTGATCTGCACTTGACAGGCATGTGG GACACTCTGATCGAGAGGGAGAACGCAATAGCCTATTGCTACCCTGGCGCAACCGTGAACGTGGAGGCCTTGCGCCAGAAGATAATGGAG TCTGGGGGTATCAACAAGATCAGTACAGGTTTCACTTACGGCAGTTCTATTAACTCTGCCGGAACCACAAGAGCATGCATGCGTAACGGAG GCAATTCCTTCTATGCCGAACTTAAATGGCTTGTCTCCAAGTCTAAGGGGCAGAACTTCCCCCAGACAACGAACACTTACCGCAATACGGAC ACAGCAGAACACTTAATCATGTGGGGGATCCATCATCCCAGCAGTACACAGGAGAAAAATGACTTATACGGAACTCAGAGCTTAAGTATCTC CGTGGGCAGTAGTACTTACAGAAACAATTTCGTCCCTGTCGTAGGCGCTAGGCCTCAGGTGAATGGCCAGTCTGGACGCATCGACTTCCAC TGGACTCTGGTTCAACCAGGGGACAACATCACTTTCTCGCACACAACGGAGAGGTTGATCGCACCCAGTCGGGTGAGTAAACTTATCGGGAGAG GCCTCGGAATACAATCCGATGCTCCCATCGATAATAATTGCGAGAGCAAATGTTTTTGGCGCGGAGGGAGCATTAATACACGCCTGCCTTTT CAGAACTTGTCACCACGAACCGTGGGCCAATGCCCCAAGTACGTCAACAGAAGATCATTGATGCTGGCTACTGGCATGAGGAATGTGCCTG AATTAATTCAAGGAAGAGGACTGTTCGGCGCCATCGCAGGTTTTCTTGAGAATGGGTGGGAGGGGATGGTGGTTGGTATGGCTTTCG CCACCAGAATGCGCAGGGCACAGGGCAGGCTGCTGATTACAAGTCAACCCAGGCAGCCATCGACCAGATTACTGGCAAGCTGAATAGGCT CGTTGAAAAAACCAACACAGAGTTCGAGTCAATTGAGAGCGAGTTTTCTGAAATAGAGCATCAGATAGGCAACGTGATAAATTGGACCAAAG ACAGTATCACAGACATTTGGACTTATCAAGCAGAGTTGTTGGTAGCCATGGAGAATCAACACACGATCGACATGGCCGATAGCGAAATGCTA AACCTGTATGAGCGGCGTTCGGAAGCAGCTGCGCCAGAACGCAGAGGAGGACGGGAAGGGCTGTTTCGAAATTTATCACGCTTGTGACGAC AGTTGCATGGAATCCATCCGCAACAATACGTATGATCACTCCCAGTATAGAGAAGAGGCCCTCTTGAATAGACTGAACATCAACCCAGTGAC TCTGAGCTCAGGTTACAAGGACATTATTCTCTGGTTTTCTTTCGGAGCTTCCTGCTTTGTCCTCCTCGCTGTCGTCGTAATGGGACTCTTTTTTCTTT TGCCTGAAGAACGGGAATATGAGATGCCACCATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3062	ATGTATAAGATTGTCGTTATCATTGCACTGCTTGGTGCAGTTAAAGGGCTGGATAAGATTTGTCTAGGGCACCATGCCGTGGCCAACGGGAC CATAGTGAAAACACTGACCAATGAACAGGAGGAAGTCACCAATGCTACTGAAACTGTTGAATCCACCGGCATTAACCGGCTGTGTATGAAG GGCCGCAAACACAAGGACCTGGGCAATTGTCACCCCATCGGCATGTTGATTGGCACCCCTGCATGTGACTTGCACCTCACTGGCATGTGG GACACACTGATCGAACGAGAGAATGCAATTGCCTACTGCTACCCTGGTGCCACAGTGAACGTGGAGGCTCTTCGACAAAAGATCATGGAAA GCGGGGGCATCAATAAGATTTCTACAGGGTTCACATACGGTTCATCTATTAACAGTGCAGGAACGACCCGGCCTGCATGCGGAACGGCG GCAATTCATTCTACGCCGAATTGAAGTGGTTGGTGTCGAAGAGTAAGGGCCAGAATTTCCCGCAGACAAACACATATCGCAATACGGAT ACGGCCGAACACTTAATCATGTGGGGAATCCATCACCCTTCTTCTACCCAAGAAAAGAACGATCTATACGGCACCCAGTCCCTGTCAATTTC AGTGGGTTCTTCGACATACAGGAACAATTTCGTCCCTGTTGTCGGCGCACGGCCCCAGGTAAATGGGCAGAGTGGGAGAATCGACTTCCCAC TGGACTCTGGTGCAGCCTGGGGATAACATTACGTTCAGTCACAATGGCGGCCTCATAGCCCCATCACGGGTGAGCAAACTAATAGGACGAG GCCTGGGAATACAGTCCGACGCCCCAATCGATAACAACTGCGAGTCAAAATGTTTCTGGCGAGGAGCAGCATCAATACAAGACTCCCTTT TCAGAATCTTAGTCCAAGGACAGTCGGACAGTGCCCAAAATACGTGAATAGACGCAGCTTGATGTTGGCAACGGGATGCGCAATGTTCCT GAGCTCATACAGGGTAGAGGCCTATTTGGGGCCATCGCAGGCTTCCTGGAAAACGGATGGGAGGGCATGGTGGACGGATGGTACGGATTT CGTCACCAGAATGCTCAAGGCACAGGTCAGGCTGCCGACTACAAATCTACCCAGGCCGCCATCGACCAGATTACCGGAAAACTGAACAGG TTGGTGGAAAAAACGAATACAGAATTCGAGAGTATTGAGAGTGAGTTCTCCGAGATCGAGCACCAAATCGGCAATGTGATTAATTGGACAAA AGACTCCATTACCGACATCTGGACTTACCAGGCTGAGTTGCTCGTGGCGATGGAAAACCAGCATACCATTGATATGGCCGATAGTGAAATG CTGAATCTGTACGAACGCGTCAGAAAACAGCTACGACAGAACGCGGAGGAGGATGGGAAGGGCTGCTTCGAAATCTACCACGCTTGCGAT GATTCCTGCATGGAGTCCATTCGGAATAACACGTACGACCATAGCCAATACAGGGAGGACGCGCTCCTAAATAGGTTGAACATAAATCCAG TTACCCTTTCTTCCGGTTACAAGGATATTATCCTGTGGTTCTCCTTTGGCGCCTCTTGTTTCGTCCTTCTCGCCGTGGTGATGGGATTATTTT TCTTCTGCCTCAAGAATGGAAATATGCGGGTGTACGATCTGTATT

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3063	ATGTACAAAGTGGTGGTGATAATTGCTCTCCTCGGCGCCGTGAAAGGCCTCGACAAGATATGTCTGGGCCATCATGCAGTCGCCAACGGGA CCATCGTCAAGACCCTCACCAATGAACAGGAGGAGGTTACCAACGCCACTGAAACAGTTGAGTCTACTGGAATCAATCGACTGTGTATGAA GGGGAGAAAACACAAGGACCTCGGTAACTGTCATCCTATTGGGATGCTTATTGGAACACCAGCCTGTGATTTACATCTGACGGGCACCTGG GACACCCTGATCGAAAGAGAGAAGCGCAATTGCATATTGCTACCCTGGCGCTACAGTTAATGTTGAAGCTCTGAGGCAAAAAATCATGGAGTC CGGGGGAATCGACAAGATTTCAACCGGCTTCACGTACGGCAGTTCTATCAACAGCGCAGGTACCACACAAGGGCCTGTATGAGGAACGGCGG AAATAGCTTTTTACGCCGAACTGAAATGGCTGGTGTCAAAGAACAAAGGACAGAACTTCCCTCAGACCACAAACACATACCGGAATACAGACA CCGCAGAGCACCTTATAATGTGGGGCATCCATCATCCCTCCTCTATTCAGGAGAAGAATGATCTGTACGGTACACAGTCACTCTCCATCTCT GTAGGCAGCTCCACATATCGTAATAACTTTGTCCCAGTTGTGGGAGCCCGACCACAGGTGAACGGCCAATCAGGACGAATTGATTTTCACT GGACCCTCGTGCAGCCTGGCGACAACATAACATTCAGCCATAATGGAGGACTCATCGCCCCGTCCCGCGTGTCTAAATTAATCGGTCGGG GGCTGGGGATCCAGTCCGATGCCGCCCATAGTAACAACTGCGAGTCTAAATGCTTCTGGCGGGCGGGTCCATTAACACTCGACTGCCCT TCCAAAATCTCAGCCCACGCACAGTAGGCCAGTGTCCAAAATATGTCAATAGACGTTCTCTAATGCTCGCCACCCGGAATGAGAATGTGCCT GAGCTGATTCAGGGAAGGGGATTGTTTGGAGCTATAGCCGGATTCTTGGAGAATGGTTGGGAAGGCATGGTCGACGGATGGTATGGATTC AGACACCAGAACGCTCAAGGCACGGGCCAAGCAGCCGACTACAAATCCACCCCAAGCAGCCATTGATCAGATTACAGGGAAGCTGAACAGG CTGGTGGAGAAGACAAACACAGAATTCGAAAGTATTGAGAGCGAATTTTCCGAGATCGAGCACCAGATCGGTAATGTGATCAATTGGACCAT GGACAGCATAACGGACATCTGGACCTATCAGGCCGAACTCCTGGTCGCAATGCAAAATCAGCATACTATCGACATGGCCGATAGTGAGATG TTGAACCTGTATGAGAGGGTTCGTAAGCAGCTCCGTCAGAACGCAGAGGAGGATGGTAAAGGATGTTTTGAGATCTATCACGCATGCGATG ACAGTTGCATGGAATCTATTCGTAACAATACGTACGATCATAGCCAATACCGCGAAGAAGCATTGCTGAACCGGCTGAATATTAACCCCGTG ACATTATCCTCCGGGTACAAGGACATAATTCTGTGGTTCTCCTTCGGGGCCAGCTGCTTCGTGCTGCTCGCTGTGGTCATGGGCCTGGTCT TCTTCTGCCTGAAAAATGGCAACATGCGATGCACAATATGCATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3064	ATGTACAAAATCGTCGTGATCATAGCACTGCTGGGAGCCGTAAAGGGTCTCGATAAGATCTGCCTAGGGCACCACGCAGTAGCCAATGGAA CCATAGTAAAAACACTCACGAATGAGCAGGAGGAAGTTACCAACGCCACTGAAACCGTCGAATCTACCGGGATCAACAGATTGTGCATGAA AGGGCGCAAACACAAGGATCTGGGGAACTGTCACCCAATCGGAATGCTAATTGGAACACCAGCCTGTGATCTCCATTTGACAGGAATGTGG GATACACTGATAGAGCGTGAAAACGCCATAGCGTACTGTTACCCCGGCGCCACAGTGAACGTGGAAGCGTTACGACAAAAGATAATGGAAT CAGGAGGCATTAATAAGATAAGTACTGGCTTTACCTACGGGTCTTCAATCAACTCTGCCGGGACAACTAGAGCCTGTATGAGAAACGGTGGT AATTCGTTCTACGCTGAGCTGAAGTGGCTGGTGTCCAAGAGCAAAGGGCAGAATTCCCACAGACTACAAACACCTACAGAAACACCGATA CAGCCGAACACCTCATCATGTGGGGAATTCATCACCCAAGCAGCACGCAGGAGAAGAACGATTTATATGGGACACAAAGCTTGTCAATTTC CGTGGGCAGTAGCACATACAGAAATAACTTCGTGCCAGTGGTAGGGGCGGGTCCCCAGGTGAATGGACAGTCCGGCCGCATTGATTTCCA TTGGACCCTCGTGCAGCCGGGAGACAACATCACATTCAGCCACAATGGTGGACTAATCGCCCCATCCCGCGTCTCCAAACTGATCGGGAG AGGACTGGGTATTCAGTCTGACGCGCCCATTGATAATAACTGCGAGTCAAAATGTTTCTGGCGAGGGGGGAGCATCAATACACGATTGCCT TTTCAGAACTTGTCCCCTCGGACTGTCGGCCAGTGCCCTAAGTATGTGAATAGGAGATCCCTGATGCTTGCCACCGGAATGAGAAACGTTC CTGAGCTGATTCAGGGTCGCGGTCTATTTGGCGCAATCGGCCGGCTTTCTCGAAAACGGCTGGGAGGGCATGGTAGATGGTTGGTACGGTT TCCGGCATCAGAACGCCCAGGGAACTGGACAAGCCGCTGATTACAAGTCAACACACAGGCAGCAATCGACCAAATTACTGGCAAACTGAACCG GCTTGTCGAGAAAACCAATACTGAATTTGAGTCAATTGAATCCGAATTTAGTGAAATTGAACACCAGATCGGCAATGTGATTAATTGGACTAA GGACTCTATTACCGATATTTGGACTTATCAGGCTGAGCTACTTGTGGCCATGGAGAACCAGCACACAATCGACATGGCTGATAGTGAGATGC TGAACCTTTACGAGCGAGTCAGGAAACAGCTGAGACAGAAACGCCGAGGAGGATGGAAAAGGCTGTTTCGAAATCTATCATGCTTGCGACGA TTCATGCATGGAGTCAATCAGAAATAACACCTACGACCACACAGTCAGTATCGCGAGGAAGCTTTACTCAACAGACTCAATATCAATCCTGTAAC ATTGTCTTCCGGCTACAAAGACATCATCCTGTGGTTCTCATTTGGAGCCAGCTGCTTTGTCTTGTTGGCTGTGGTGATGGGACTGTTCTTTTT TTGCCTCAAAAATGGCAATATGAGATGTACCATTTGTATC

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3065	ATGTATAAGATCGTGGTGATCATTGCTCTCCTGGGCGCAGTAAAGGGTCTTGACAAGATATGTCTTGGACACCATGCAGTGGCAAACGGCA CAATTGTTAAAACACTCACCAACGAGCAGGAGGAAGTGACCAATGCCACTGAAACAGTAGAGTCCACGGGGATCAATAGGCTCTGCATGAA AGGGAGGAAGCACAAAGATCTGGGTAATTGCCATCCAATCGGAATGCTCATAGGAACACCAGCCTGCGACCTTCATCTGACCGGTATGTGG GATACATTGATCGAACGCGAGAACGCGATAGCTTACTGCTATCCCGGCGCCACAGTGAATGTGGAGGCCCTCCGACACGAAGATTATGGAGT CGGGCGGTATTAACAAAATATCCACTGGTTTTACTTACGGATCTTCGATCAATTCCGCAGGAACAACACGAGCCTGTATGAGGAATGGCGG GAACTCTTTCTATGCTGAGCTTAAGTGGCTCGTTTCTAAGTCTAAGGGCCAGAATTTCCCTCAGACGACTAATACCTACAGGAACACGGATA CAGCAGAGCACCTGATTATGTGGGGTATCCATCATCCATCTAGCACCCAAGAGAAAAATGATCTGTATGGGACCCAGTCACTTTCCATTAGC GTGGGCTCTAGTACATACAGGAATAACTTTGTACCTGTGGTGGGGGCTAGACCGCAAGTGAATGGCCAGAGCGGCCGGATTGACTTCCACT GGACTTTAGTCCAGCCTGGAGATAACATTACATTTTCACACAACGGCGGGCTGATTGCGCCTAGTAGGGTGAGCAAACTTATTGGACGAGG ATTAGGAATCCAGAGCGATGCCCCCATCGACAACAACTGCGAAAGCAAATGCTTTTGGAGGGGCGGTTCAATCAACACCCGTCTCCCTTTC CAGAATCTGTCCCCCCGTACCGTGGGGCAGTGTCCAAAGTATGTTAATAGAAGGTCACTGATGCTAGCCACTGGCATGCGGAATGTGCCCG AGCTGATCCAGGGCCGTGGGCTGTTCGGTGCTATTGCAGGATTTCTGGAAAATGGCTGGGAAGGCATGGTAGATGGTTGGTACGGTTTTC GGCACCAGAACGCCCAGGGGACCGGACAGGCGGCCGACTACAAATCCACTCAAGCCGCTATCGATCAGATTACGGGAAAGCTAAATAGAC TGGTCGAAAAAACCAACACAGAGTTCGAATCCATAGAGTCCGAGTTCTCTGAGATCGAGCACCAGATCGGGAATGTGATCAACTGGACTAA GGATAGCATTACTGATATTTGGACCTACCAGGCAGAGCTGCTGGTCGCCATGGAAAACCAACACACAATCGATATGGCGGATAGTGAGATG CTGAACCTGTATGAAAGAGTGAGGAAACAGCTGAGACAGAAGCGCAGAGGAGGACGGAAAAGGGTGCTTCGAGATTTACCACGCGCTTGCGAT GACAGTTGCATGGAAAGCATACGCAATAACACTTACGACCATAGTCAATACCGGGAGGAGGCTCTCCTGAATAGGCTCAACATCAATCCTGT GACCCTGAGTTCAGGTTACAAAGATATCATCTTGTGGTTTTCATTTGGGCGAGCTGCTTTGTGCTGGCCGTCGTGATGGGCCTGTTCT TTTTTTGCCTGAAGAATGGCAATATGCGATGTACCATATGCATC

Seq ID No.	Sequenza di acido nucleico
3066	ATGTATAAAATAGTGGTGATCATAGCACTCTTGGGAGCCGTAAAGGGACTGGATAAGATCTGCCTGGGGCATCATGCCGTTGCCAACGGCA CAATCGTGAAGACCCTTACTAATGAACAAGAAGAAGTGACCAACGCTACTGAGACCGTTGAATCCACCGGCATTAACCGCCTCTGCATGAA GGGGCGGAAGCACAAAGATCTCGGCAACTGCCACCCAATCGGGATGCTGATTGGGACCCCCGCGTGCGATTTACATCTGACAGGTATGTG GGATACATTAATTGAAAGGGAGAAGCGCGATTGCGTACTGCTACCCTGGGGCTACCGTGAATGTCGAAGCACTCCGACAGAAGATCATGGAA TCTGGGGGGATCAACAAGATCTCGACCGGTTTTACCTATGGGAGTTCTATTAACTCTGCTGGCACAACACGGGCATGTATGCGCAATGGGG GGAATAGTTTCTATGCTGAGCTCAAATGGCTTGTATCCAAATCCAAAGGGCAGAATTTCCCCCAGACTACAAATACCTACAGAAACACGGAT ACCGCTGAGCACCTAATAATGTGGGGAATTCACCATCCTTCCTCAACCCAAGAGAAGAATGATCTTTACGGGACCCAGAGTCTCAGCATTAG CGTCGGATCGTCGACTTACCGCAACAATTTCGTCCCAGTGGTCGGAGCCAGGCCACAGGTCAACGGCCAGTCTGGCAGGATAGACTTCCA CTGGACCCTGGTTCAGCCTGGAGATAACATTACATTTAGTCATAACGGCGGCCTGATTGCTCCCAGTCGCGTGTCTAAACTAATCGGACGT GGTCTGGGCATCCAATCCGATGCCGCCGATCGACAATAACTGCGAAAGCAAGTGCTTTTGGAGGGAGGATCCATCAATACACGACTTCCCT TCCAGAACCTATCACCAAGAACCGTAGGCCAGTGCCCGAAATACGTGAATCGACGGAGTCTGATGCTGGCCACCGGCATGAGAAATGTGC CTGAGCTGATTCAGGGACGAGGACTGTTTGGCGCAATCGCTGGCTTCCTGGAAAACGGGTGGGAAGGAATGGTCGATGGCTGGTACGGAT TTCGGCATCAGAACGCCCAAGGCACTGGCCAAGCCGCCGACTACAAGAGTACACACAGGCCGCAATCGACCAGATCACAGGTAAGTTGAATC GATTGGTGGAGAAGACCAACACTGAGTTCGAATCTATTGAGAGGCGAATTCAGTGAAATCGAGCATCAGATCGGAAATGTGATAAATTGGACC AAGGACTCAATTACCGACATCTGGACATACCAAGCAGAGCTTCTGGTTGCGATGGAAAACCAACACACAATTGATATGGCAGATTCCGAGAT GCTGAACCTCTATGAGCGCGTCAGGAAGCAATTGAGGCAGAATGCAGAGGAAGATGGAAAAGGGTGTTTCGAAATCTATCACGCCTGCGAC GACAGTTGCATGGAATCGATCCGCAACAATACTTATGACCACTCACAGTATAGAGAGGAGGCTTTGCTGAACCGGTTAAATATCAATCCTGT CACGTTGAGTAGCGGCTACAAGGATATCATCCTATGGTTTTCCTTCGGGGCGTCTTGTTTTGTGCTGTTAGCAGTGGTGATGGGACTTTTCT TCTTCTGTCTTAAAAACGGAAACATGAGATGTACCATCTGCATA

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3067	ATGTATAAGATCGTGGTTATCATTGCCCTCCTGGGCGCAGTCAAAGGCTTGGACAAAATCTGTCTCGGACATCACGCCGTTGCTAACGGCA CCATTGTTAAGACCCTTACCAACGAGCAGGAAGAAGTGACAAATGCAACAGAAACGGTCGAGTCCACAGGCATCAACCGGCTCTGTATGAA AGGTCGGAAGCACAAGGATCTTGGGAATTGTCACCCAATAGGTATGCTGATTGGCACTCCTGCCTGCGATCTTCATCTAACTGGGATGTGG GACACCCTTATCGAACGAGAAAATGCCATTGCATACTGTTACCCTGGTGCTACTGTCAACGTGGAAGCCCTCAGGCAGAAAATAATGGAGTC GGGTGGGATAAATAAGATAAGCACCGGGTTCACTTACGGCAGCTCCATTAATTCCGGCCGGAACTACGCGCGGCCTGTATGAGAAATGGCGGT AACTCCTTCTACGCGGAGCTGAAGTGGCTGGTCTCGAAGTCTAAGGGCCAGAACTTCCCCCAAACAACAAACACCTACAGGAACACTGACA CCGCTGAACACCTCATCATGTGGGGCATTCACCACCCCTCCAGCACCCAGGAAAAAAAACGACTTATACGGCACACAGAGGCTTAGTATAAG CGTGGGAAGCTCAACTTATCGCAACAATTTTGTTCCAGTGGTGGCGCAAGACCGCAGGTGAACGGGCAAAGTGGTCGAATTGACTTTCAC TGGACACTCGTGCAACCAGGCGACAATATCACCTTTTCACATAACGGAGGACTCATTGCCCCGTCCCGCGTCAGTAAGTTAATTGGGCGGG GCCTCGGCATTCAGTCAGACGCCCCTATCGATAACAACTGTGAATCTAAGTGCTTTTGGAGAGGAGGGTCTATAAACACGAGACTCCCCTTC CAGAACTTATCGCCTCGCACTGTGGGTCAGTGTCCTAAGTACGTTAACAGACGTTCCCTGATGCTGGCAACGGGAATGAGAAACGTTCCAG AACTGATCCAGGGGCGCGGGTTATTTGGGGCTATCGCTGGTTTCCTGGAGAATGGCTGGGAGGGAATGGTTGACGGGTGGTATGGGTTTC GTCACCAAAACGCCCAGGGGACGGGCAGGCCGCAGATTACAAGTCTACTCAGGCGGCCATAGACCAGATTACAGGCAAGCTGAATAGAC TGGTCGAGAAGACGAACACGGAGTTTGAGTCTATTGAGTCCGAGTTCAGCGAGATTGAACATCAGATAGGTAATGTTATCAATTGGACAAAG GATAGCATAACCGATATTTGGACATACCAGGCAGAGTTACTGGTTGCAATGGAAAATCAACACACTATTGACATGGCTGACTCAGAGATGCT CAACTTATACGAACGAGTGAGGAAGCAACTACGACAGAAGCGCCGAAGAGGACGGAAAGGGTTGCTTTGAGATCTACCACGCCTGCGACGA TAGCTGCATGGAGAGCATCAGGAATAATACTTACGATCACTCACAGTACAGGGAGGAAGCCCTCTTGAACCGTCTGAACATAAATCCTGTCA CACTTAGCTCCGGCTACAAAGATATCATCTTGTGGTTTTCATTTGGCGCGTCATGTTTTGTGCTCCTAGCTGTGGTCATGGGCTTATTCTTTT TCTGCCTGAAAAATGGCAATATGAGGTGCACAATTTGTATC

Ing. Ines Sanglacomo
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Seq ID No.	Sequenza di acido nucleico
3068	ATGTACAAGATAGTGGTAATTATCGCGCGCTGTTGGGCGCAGTGAAAGGACTGGACAAGATCTGCCTGGGTCACCACGCCGTGGCCAATGGA ACGATTGTGAAAACCTTGACAAACGGAACAGGAGGAAGTGACCAACGCAACGGAGACTGTGGAATCAACTGGTATCAATCGGCTATGCATGA AAGGCAGAAAACACAAAGATTTGGGCAATTGCCATCCCATCGGTATGCTCATTGGAACACCCGCTTGCGACCTCCACCTGACTGGGACGGTG GGATACTTTGATCGAGAGGGAGAATGCTATTGCCTACTGTTACCCTGGCGCAACAGCTAATGTGGAGGCCCTCCGGCAGAAGATCATGGAG AGCGGTGGAATCGATAAGATTTCAACTGGCTTCCACATACGGCTCCTCGATCAATTCTGCCGGCACTACTCGGGCTTGCATGAGAAACGGAG GAAATAGTTTCTATGCTGAGCTGAAGTGGCTTGTGAGTAAATCTAAAGGCCAGAACTTTCCCCAGACAACCAACACATACCGGAATACCGAC ACCGCAGAACATCTGATTATGTGGGGGATACATCACCCATCTAGCATTCAGGAGAAAAACGACCTGTATGGCACTCAGTCCCTGAGCATTTC CGTAGGCTCTAGTACCTACCGGAACAATTTCGTACCCGTCGTAGGCGCCGGCCCCCAAGTGAACGGCCAGTCCGGTCGAATTGACTTCCA CTGGACACTAGTGCAGCCTGGGGACAATATCACATTTAGTCATAACGGGCGGACTGATCGCCCCATCGAGAGTGTCTAAACTGATCGGACGC GGGCTGGGTATTCAATCAGATGCCCCCATCGACAACAACTGCGAAAGCAAATGCTTCTGGCGCGGCGGGAGTATAAACACCCCGGCTTCCAT TTCAGAACCTCTCTCCTCGGACCGTCGGACAGTGCCCGAAATATGTGAACCGCAGGTCACTGATGTTGGCAACTGGAATGAGGAATGTCCC CGAATTAATACAGGGCCGGGGCTTATTCGGAGCCATCGCCAGGCTTCCTGGAGAACGGTTGGGAAGGCATGGTGGATGGATGGTATGGATT TAGACATCAAAATGCACAGGGAACAGGCCAGGCTGCCGACTACAAATCTACCCAGGCCGCGCGATAGATCAAATTACAGGAAAGTTGAACAGG CTGGTGGAAAAGACTAATACCGAATTTGAATCAATCGAGTCCGAATTCTCCGAAATCGAACACCAGATCGGGAATGTCATTAACTGGACTAT GGATTCTATAACCGATATCTGGACATACCAGGCAGAACTGCTAGTAGCCATGGAAAATCAACACACGATCGACATGGCTGACTCAGAGATG CTGAACCTCTACGAGCGGGTCAGAAAACAGCTCCGACAGAATGCAGAGGAAGACGGAAAAGGCTGTTTTGAGATTTACCACGCTTGCGACG ACTCTTGTATGGAGTCCATACGGAATAATACGTACGATCACTCACACAGTATAGGGAGGACGCCCTACTGAATAGACTGAACATCAACCCCGTC ACGCTGTCTAGTGGCTATAAAGACATCATTTTGTGGTTTTCTTTCGGAGCAAGTTGCTTCGTGCTCCTCGCCGTGGTGATGGGACTCGTGTT CTTCTGCTTGAAAAATGGGAATATGCGATGTACCATTTGCATC

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Seq ID No.	Sequenza di acido nucleico
3069	ATGTATAAAATTGTCGTGATAATCGCTCTGCTTGGCGCTGTGAAGGGCTTAGATAAGATATGCCTCGGACACCATGCAGTTGCCAATGGCAC GATAGTGAAAACATTGACCAACGAGAAAGAAGAGGTGACCAACGCTACCGAGACTGTGGAATCCACCGGTCTGAATAGACTCTGTGCATGAAG GGGCGGAAGCATAAGGACTTGGGCAATTGTCACCCAATTGGGATGCTCATCGGATCGCCCGCATGTGACCTGCATCTCACTGGGACCTGG GACACATTGATTGAACGAGAGAAGCGCTATTGCGTACTGCTACCCGGGAGCCACTGTTAATGGTGAAGCACTTCGCCAGAAGATCATGGAGT CCGGAGGCATCGACAAGATCAGCACTGGATTCACCTATGAAAGTTCCATAAACTCCGCAGGCACTACAAGAGCTTGCATGAGGAACGGCGG GAATTCATTCTACGCTGAGCTCAAGTGGCTGGTGAGCAAATCTAAGGGACAGAATTTTCCACAGACAACCAACACGTATCGAAACACCGATA CTGCAGAGCACCTTATTATGTGGGGCATTCACCATCCATCCAGCACGCAGGAGAAAAACGATCTGTACGGTACCCAGTCTCTGTCTATCTCC GTGGGATCTTCCACCTATAGAAACAATTTCGTACCCGTAGTGGGGGCCAGGCCCGCAAGTCAATGGCCAATCTGGCCGCATCGACTTCCCACT GGACCTTGGTACAGCCTGGCGACAATATCACATTCTCACACAACGGCGGCTTGATTGCTCCGAGCCCGGGTGTCTAAGTTGATCGGAAGAGG GCTCCGGCATCCAGTCTGATGCCCCTATCGATAACAACTGTGAAAGTAAGTGCTTCTGGCGGGGCGGAAGTATTAATACCAGGCTGCCATTC CAGAATCTTTCCCCCCCGCACCGTCGGTCAATGTCCCAAATACGTGAACAAGCGAAGCCTGATGTTGGCCACTGGGATGCGAAATGTTCCTG AGCTGATGCAGGGACGAGGACTGTTCGGAGCCATTGCTGGGTTCCTCGAGAACGGCTGGGAGGGCATGGTTGACGGTTGGTACGGATTCA GACACCAAAACGCGCAGGGCACGGGTCAAGCCGCCGATTACAAATCTACACAGGCGGCGCGATTGACCAGATTACAGGTAAGCTGAATAGAC TCGTGGAGAAAACAAACACCGAATTCGAGTCAATAGAGTCCGAGTTCTCTGAGATAGAACACCAGATCGGCAATGTAATCAACTGGACGAAA GACTCTATTACAGACATTTGGACCTACCAGGCGGAACTCCTGGTGGCTATGGAGAACCAGCATACTATTGATATGGCTGACTCTGAGATGCT GAATCTGTACGAGCGCGTCCGGAAGCAACTGCGTCAGAATGCAGAGGAAGACGGAAAGGGGTGCTTTGAGATTTATCACGCCTGCGATGA TAGCTGTATGGAGTCAATCCGAAACAACACTTATGATCATAGCCAGTACCGTGAGGAGGCACTACTGAACAGGCTGAACATTAATCCCGTCA CCCTGAGCAGTGGCTACAAAGACATCATCTTGTGGTTCTCTTTCGGCGCCTCATGCTTTGTCTTGCTTGCCGTAGTCATGGGTTTAGTGTTTT TTTGTCTCAAAAACGGTAATATGCGGTGTACAATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3070	ATGTACAAAATCGTGGTAATAATCGCGCTTCTGGGCGCAGTGAAGGGCCTGGACAAAATCTGCCTGGGACATCACGCTGTGGCAAATGGGA CCATCGTGAAAACCCTCACCAATGAGAAAGAGGAAGTGACCAACGCCACGGAAACAGTAGAAAGCACAGGATTAAACCGGCTTTGCATGAA AGGCCGCAAGCACAAAGACCTGGGCAATTGCCATCCCATCGGGATGCTGATCGGATCACCCGCCTGTGATCTCCATCTAACCGGCACCTG GGACACTCTGATCGAAAGGGAGAACGCGATCGCTTACTGCTACCCAGGCGCTACCGTTAATGGCGAGGCTTTGCGCCAGAAGATCATGGA GTCAGGAGGGATCGACAAGATTAGTACAGGCTTCACCTATGAGAGCTCGATCAATTCCGCAGGAACAACCCGGGCCTGCATGAGAAACGG CGGCAATTCCTTTTACGCCGAACTTAAGTGGCTGGTGAGTAAAAGCAAGGGACAAAACTTCCCACAGACCACCAACACCTACCGTAATACC GATACCGCTGAGCATTTGATCATGTGGGGAATTCATCATCCCAGCTCCACACAGGAGAAGAATGATCTTTACGGGACACAGTCACTCAGCAT TTCCGTCGGTTCGAGCACTTACCGGAATAATTTTTGTCCCTGTGGTCGGCGCCGCCCTCAGGTCAACCGGGCAGAGCGGCAGGATCGACTT CCATTGGACACTAGTTCAGCCTGGCGACAATATTACCTTTAGCCACAACGGCGGTCTGATCGCTCCTTCGCGTGTCTCAAAACTGATCGGTC GGGGGTTAGGCATTCAAAGCGATGCCCCCCATTGACAACAATTGTGAATCAAAATGTTTCTGGCGCGGTGGCTCCATTAACACCAGACTGCC TTTCCAGAATCTTAGCCCAAGAACAGTCGGCCAGTGCCCCAAGTATGTGAATAAAAGGTCTCTGATGCTGGCTACCGGCATGCGTAATGTC CCAGAGCTTATGCAAGGCAGAGGACTGTTCGGCGCAATCGCGGGTTTTCTTGAGAACGGATGGGAGGGTATGGTTGACGGATGGTACGGT TTCCGGCACCAGAACGCCCAGGGAACTGGCCAGGCCGCAGACTACAAGTCCACACAGGCGGCAATTGACCAGATCACTGGCAAACTTAAC CGTCTAGTGGAAAAAACCAACACTGAATTCGAGAGTATCGAGAGTGAGTTCTCCGAGATTGAGCATCAGATAGGGAACGTGATCAATTGGA CAAAGGACTCTATTACAGACATTTGGACTTATCAGGCCGAGCTGCTGGTGGCCATGGAGAATCAGCACACAATCGACATGGCCGACTCTGA GATGCTCAATCTTTATGAACGGGTGCGCAAACAGCTGCGACAGAATGCAGAGGAGGATGGGAAGGGGTGCTTCGAAATCTATCACGCATG CGACGATTCATGTATGGAGTCCATCCGGAATAATACATACGATCATAGTCAGTATCGCGAGGGAAGCCTTATTGAACAGGCTGAACATTAATC CAGTCACTCTCAGCTCAGGGTACAAGGACATCATTTTGTGGTTCTCATTTGGAGCATCGTGCTTCGTGCTCCTTGCGGTTGTCATGGGTCTG GTCTTTTTTTGCCTGAAGAATGGAAACATGAGATGCACCATATGTATC

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3071	ATGTACAAGATCGTGGTTATTATCGCCCTCCTGGTGCTGTGAAAGGACTGGATAAGATCTGTCTGGGACACCATGCTGTGGCAAACGGCA CTATTGTTAAAACTCTGACTAACGAGCAAGAAGAAGTTACTAATGCTACTGAGACGGTCGAAAGTACTGGAATCAATCGGCTTTGCATGAAG GGCCCGAAGCACAAAGACCTTGGGAATTGCCATCCTATTGGGATGCTGATCGGTACCCCCGCATGTGACCTCCATCTGACTGGGATGTGG GACACGCTCATCGAGAGGGAGAATGCCATCGCTTACTGTTATCCCGAGCCACAGTTAATGTCGAAGCCTTACGACAAAAAATCATGGAGT CAGGTGGTATCAACAAGATCAGCACCGGTTTCACATACGGCTCCTCCATCAACTCAGCAGGTACTACACGCGCATGCATGCGGAACGGCG GAAACAGTTTCTACGCCGAGCTGAAGTGGCTTGTTAGCAAATCAAAAGGTCAGAATTTCCCTCAGACTACAAACACATACCGTAACACCGAT ACCGCAGAACATCTCATCATGTGGGGTATTCATCACCCAAGTTCCACACAAGAAAAGAACGATCTCTACGGGACTCAATCACTCTCCATCTC CGTCGGATCCTCTACATACCGTAACAACTTTGTTCCTGTGGTGGGCGCAAGACCTCAGGTTAATGGGCAGTCAGGTAGAATTGACTTCCATT GGACACTGGTGCAACCTGGGGACAACATCACCTTCTCCCACAACGGCGGTCTGATCGCGCCCTCAAGGGTCTCCAAGCTGATAGGTCGGG GCCTCGGCATCCAGAGCGACGCCCCGATCGATAACAATTGTGAAAGCAAATGCTTCTGGAGGGGGGGCTCTATCAACACACGACTGCCTTT CCAGAATCTCTCTCCCCGAACCGTGGGACAGTGTCCTAAATACGTCAACAGGAGGAGCCTGATGCTCGCCACAGGTATGCGTAATGTCCCA GAGCTGATTCAAGGCCGCGGGTTATTTGGCGCGATAGCCGGTTTTCTGGAGAACGGCTGGGAGGGAATGGTGGATGGCTGGTATGGATTC CGGCACCAAAATGCTCAGGGAACTGGTCAAGCAGCCGACTATAAATCCACGCAGGCCGCCATCGACCAGATTACTGGCAAATTAAATCGCC TCGTGGAGAAGACTAACACTGAGTTCGAATCCATAGAGTCAGAGTTTTCCGAGATCGAGCACCAGATCGGTAATGTGATTAATTGGACCAAA GATTCCATCACTGATATTTGGACATACCAAGCCGAGCTCTTGGTGGCTATGGAGAACCAACATACTATCGATATGGCCGATAGCGAAATGCT CAACCTGTACGAGAGGGTCAGGAAACAGCTTCGCCAGAACGCAGAGGAAGACGGCAAAGGATGTTTCGAGATTTACCATGCGTGCGACGA TTCTTGCATGGAGAGCATTCGGAACAACACGTATGATCACAGCCAGTACAGGGAAGAGGCACTTCTGAACCGCCTGAACATAAATCCAGTC ACATTGAGCAGCGGCTACAAAGACATTATACTCTGGTTTTCATTTGGGGCCTCTTGCTTCGTCCTGCTGGCAGTGGTGATGGGATTGTTCTT CTTTTGCCTCAAAAACGGTAATATGCGCTGCAACCATTTGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3072	ATGTATAAAATAGTGGTCATTATTGCTCTTCTCGGTGCAGTTAAGGGTCTGGATAAGATCTGCTTGGGCCATCACGCTGTTGCCAATGGGAC CATAGTGAAGACCTTGACAAACGAACAGGAAGAAGTGACAAACGCCACCGAAACCGTCGAATCCACTGGCATTAACCGGCTGTGCATGAAG GGGCGAAAACACAAAGACCTCGGTAATTGTCATCCCATAGGGATGCTGATTGGTACACCTGCCTGTGACCTGCACCTGACCGGAATGTGGG ATACGCTCATTGAACGAGAGAATGCCATCGCCTATTGTTATCCGGGTGCAACTGTGAACGTGGAGGCCCTGCGTCAAAAGATCATGGAAAG CGGGGGGATAAACAAAATCTCGACCGGTTTCACGTATGGTTCAAGCATTAACAGTGCCGGCACAACAAGGGCATGCATGCGCAATGGAGGT AACTCATTCTACGCCGAGCTCAAGTGGCTCGTGAGCAAGTCCAAAGGACAGAACTTCCCTCAGACTACCAATACCTACCGTAATACTGACAC AGCGGAACATCTGATAATGTGGGGCATTCACCATCCTTCCTCGACCCAGGAAAAAAACGACCTGTACGGAACCCAGTCTCTCAGCATCTCC GTCGGGAGTAGCACTTACCGCAATAACTTTGTGCCCGTCGTGGGAGCCCCGCCCCCAAGTGAATGGACAGAGCGGGAGGATTGATTTCCAC TGGACCCTCGTGCAACCCGGGGGACAATATTACTTTCAGTCATAATGGAGGACTGATCGCCCCCAGTCGCGTGTCCAAACTGATCGGAAGGG GGCTCGGTATCCAATCCGATGCACCGATAGATAACAATTGCGAGTCTAAGTGTTTCTGGCGTGGAGGCAGTATTAACACTCGGTTACCTTTT CAAAATCTTTCGCCGCGGACCGTTGGCCAGTGCCCTAAGTACGTCAATCGTAGGTCCCTCATGCTAGCCACTGGAATGCCGCAACGTCCCGG AGCTCATCCAGGGGCGTGGATTGTTTGGAGCTATTGCTGGCTTCCTGGAGAATGGCTGGGAGGGAATGGTCGATGGCTGGTACGGGTTTC GGCATCAGAACGCACAGGGCACAGGCCAGGCCGGCCGACTACAAGTCTACACAGGCCGCCATTGATCAGATCACCGGGAAGCTGAACCGG CTGGTTGAGAAGACCAATACCGAATTTGAGAGCATCGAATCGGAATTCTCGGAAATCGAGCACCAGATTGGTAACGTAATAAACTGGACAAA GGATTCCATTACGGACATTTGGACGTATCAAGCAGAACTGCTCGTGGCCATGGAGAACCAACACACGATTGATATGGCAGATTCAGAAATG CTAAACTTGTACGAACGGGTCAGAAAGCAGCTGCGTCAGAATGCTGAGGAGGACGGCAAGGGATGTTTTTGAGATCTACCATGCTTGCGATG ATTCTTGTATGGAGTCCATTCGGAATAACACGTACGACCATTCACAATATCGGGAGGAAGCACTTTTAAACCGGCTGAATATCAATCCAGTCA CACTGAGTTCAGGCTACAAGGATATCATATTATGGTTCTCATTCGGTGCCTCATGCTTCGTCCTTTTTGGCAGTGGTGATGGGTTTGTTCTTTT TTTGTCTGAAGAATGGCAACATGAGATGTACAATATGCATC

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3073	ATGTACAAGATTGTGGTGATCATCGCACTCCTTGGAGCTGTGAAAGGACTGGACAAAATTTGTCTGGGACATCACGCTGTGGCTAACGGGA CCATCGTGAAAACCCTAACGAATGAGCAGGAAGAAGTCACAAATGCGACAGAGACAGTGGAATCCACTGGTATCAATCGACTGTGTATGAA GGGCAGAAAACACAAGGACCTGGGCAATTGTCATCCGATAGGCATGTTAATCGGGACACCAGCCTGTGACCTGCATCTGACCGGCATGTG GGATACTCTTATTGAGCGGGAGAACGCAATAGCTTACTGCTACCCAGGCGCTACTGTGAATGTGGAAGCTCTGCGTCAGAAAATTATGGAG AGCGGAGGGATTAACAAAATCTCTACTGGTTTCACATACGGCAGCAGTATTAACTCAGCCGGCACCACCAGGGCGTGTATGCGGAATGGTG GAAACTCATTTTATGCTGAGCTTAAATGGCTTGTCTCAAAGTCGAAAGGCCAGAACTTCCCCCAGACTACAAACACCTACAGGAATACGGAT ACAGCCGAGCATCTCATTATGTGGGGAATACATCATCCCAGCAGTACCCAGGAGAAAAACGATCTGTACGGAACCCAGAGTCTCTCAATCT CAGTGGGATCAAGCACGTACAGAAATAATTTCGTCCCTGTGGTGGGAGCCAGACCCCAGGTAAATGGACAGTCAGGGCGCATTGACTTTCA CTGGACTCTCGTCCAGCCAGGAGACAATATCACATTTAGTCACAATGGCGGCCTGATAGCTCCTTCTCGAGTGAGCAAACTGATCGGACGG GGTCTCGGTATCCAGTCCGACGCCCCCATCGATAACAACTGCGAGTCGAAGTGCTTCTGGCGTGGCGGGTCAATTAACACAAGACTACCAT TTCAGAACCTTTCACCTAGAACCGTGGGACAGTGCCCAAAGTACGTCAATAGACGGAGCCTGATGCTGGCCACAGGGATGAGGAACGTTCC TGAACTGATACAAGGTCGGGGGCTTTTCGGTGCCATCGCAGGTTTTCTCGAGAACGGCTGGGAGGGCATGGTGGATGGGTGGTATGGGTT TAGGCACCAAAATGCACAAGGGACCGGCCAGGCCGCCGATTATAAGTCTACGCAAGCCGCCATTGACCAGATCACTGGGAAGCTTAATAG GTTAGTAGAGAAGACAAATACCGAATTCGAGAGTATTGAGTCAGAATTCTCCGAGATCGAGCACCAGATAGGCAACGTCATTAATTGGACAA AGGACTCTATTACCGACATTTGGACGTATCAAGCCGAACTTCTGGTGGCAATGGAAAATCAGCACACAATCGACATGGCCGACTCGGAGAT GTTGAACTTATATGAAAGGGTGCGCAAACAGCTGCGCCAGAACGCTGAAGAAGACGGTAAGGGATGCTTTGAGATCTATCATGCCTGCGAT GATTCCTGTATGGAGTCGATAAGAAACAATACCTATGACCATAGCCAGTACCGGGAAGAAGCCCTCCTGAACAGACTGAATATTAACCCCGT TACCTTGTCCTCAGGATACAAGGACATTATCCTGTGGTTTTCTTTCGGTGCTAGCTGTTTCGTGCTGCTCGCCGTCGTAATGGGGTTGTTTTT CTTCTGCCTCAAAAACGGTAACATGCGATGCACCATTTGCATT

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Consulente in P.I. n° USBM-041R

Seq ID No.	Sequenza di acido nucleico
3074	ATGTATAAGATCGTCGTCATTATCGCTCTCCTCGGAGCCGTGAAGGTCTTGACAAAATTTGTCTGGGCCATCACGCAGTGGCCAATGGGA CCATCGTGAAGACGCTGACGAACGAGAAAGAAGAGGTGACAAACGCTACTGAGACGGTCGAGAGCACCGGACTCAATAGGTTGTGCATGA AAGGACGAAAGCATAAAGATCTGGCAACTGTCACCCCATCGGGATGCTGATTGGCTCCCCAGCCTGCGACTTACACCTGACTGGCACCCTG GGATACACTGATCGAGCGCGAGAACGCCATTGCCTACTGTTACCCCCGGCGCTACAGTGAATGGTGAGGCCCTTCGCCAAAAGATTATGGA GTCAGGCGGAATAGATAAGATCTCTACTTATGAGAGTTCGATTAACTCGGCCGGGACAACTAGGGCGTGTATGCGGAATGGC GGGAATTCCTTCTATGCTGAGCTTAAGTGGTTGGTTTCCAAGAGCAAGGGGCAGAATTTTCCTCAGACCACCAACACCTATCGAAACACAGA CACCGCTGAACACCTCATCATGTGGGGCATTCACCACCCATCTTCAACCCAGGAGAAGAACGACCTCTACGGTACTCAAAGCCTTAGTATCA GCGTGGGGTCATCTACCTACCGGAACAATTTTGTGCCCGTGGTGGGAGGCGCCCTCAAGTGAACGGACAAAGTGGCAGGATCGATTTCC ATTGGACTTTGGTCCAGCCTGGTGACAACATCACATTCAGTCACAACGGTGGCCTGATCGCACCGTCCAGAGTTTCCAAACTGATCGGCCG GGGTCTAGGGATTCAGAGCGACGCCCCTATTGATAACAACTGCGAGTCAAAATGCTTCTGGAGGGGGGCTCCATTAACACTCGACTGCCC TTTCAGAATCTGTCACCCCGAACCGTGGGTCAGTGTCCTAAGTACGTGAACAAGAGATCACTCATGCTTGCCACTGGGATGCGCAATGTGC CCGAGCTCATGCAGGGAAGAGGACTGTTCGGAGCGATTGCTGGGTTTCTGGAAAATGGGTGGGAAGGGATGGTAGATGGATGGTACGGAT TTCGTCATCAAAACGCACAGGGCACTGGACAAGCGGCGGACTATAAGTCAACTCAGGCTGCCATAGACCAAATAACCGGGAAACTAAACCG GCTCGTCGAGAAGACCAACACCGAATTTGAATCTATCGAGTCGGAATTTAGCGAGATTGAGCACCAGATAGGAAATGTTATCAATTGGACCA AGGACTCCATTACGGATATTTGGACTTACCAGGCGGAGCTGCTGGTTGCCATGGAGAATCAGCACACTATTGACATGGCCGATAGTGAGAT GTTGAATTTGTACGAAAGAGTGCGCAAGCAGCTGAGGCAGAACGCTGAAGAGGACGGTAAGGGATGCTTCGAAATTTATCACGCATGCGAT GATTCCTGCATGGAATCGATCAGAAACAATACATATGATCATTCTCAATACCGGGAGGAGGCTTTGCTCAACCGCCTGAATATAAATCCTGT GACTCTCAGTTCGGGCTATAAAGACATCATCCTGTGGTTCTCTTTTGGCGCCTCCTGCTTTGTCCTGCTGGCGGTGGTGATGGGACTCGTCT TCTTCTGCCTAAAGAATGGCAACATGCGGTGTACAATCTGTATT

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Nella Figura 22 è mostrato un allineamento delle sequenze amminoacidiche delle proteine emoagglutinina dai ceppi dell'influenza A H7N9 rispetto a una sequenza consenso. Nella Figura 23 è mostrato un allineamento delle sequenze amminoacidiche delle proteine emoagglutinina dai ceppi dell'influenza A H10N8 rispetto a una sequenza consenso.

Aspetti della presente descrizione forniscono polinucleotidi di RNA che codificano una proteina emoagglutinina influenzale o un suo frammento. I termini "emoagglutinina", "proteina emoagglutinina" e "HA" possono essere usati in modo intercambiabile e si riferiscono a una proteina emoagglutinina che può essere presente sulla superficie di un virus dell'influenza. Sulla superficie virale, la proteina emoagglutinina è presente in omotrimeri, ciascun monomero dei quali è costituito da due subunità, HA1 e HA2, legate da un legame disolfuro. Strutturalmente, le proteine emoagglutinina sono costituite da diversi domini: un dominio di testa globulare, un dominio di stelo (indicato anche come dominio a stelo), un dominio transmembrana e un dominio citoplasmatico. Si ritiene generalmente che durante l'infezione di una cellula ospite (*ad esempio,* una cellula eucariotica come una cellula umana) con un virus dell'influenza, la proteina emoagglutinina riconosca e si leghi all'acido sialico di un recettore sulla superficie di una cellula ospite facilitando l'attaccamento del virus alla cellula ospite (Gamblin et al., 2004; Ha et al., 2000). In seguito all'endocitosi del virus e all'acidificazione dell'endosoma, la proteina emoagglutinina subisce un cambiamento conformazionale pH-dipendente che consente alla proteina emoagglutinina di facilitare la fusione del pericapside virale con la membrana endosomiale della cellula ospite e l'ingresso dell'acido nucleico virale nel cellula ospite.

In generale, i virus dell'influenza sono classificati in base alla sequenza amminoacidica della proteina emoagglutinina virale e/o alla sequenza amminoacidica della neuraminidasi virale (NA). In alcune forme direalizzazione, l'emoagglutininaèdelsottotipo H1, H2, H3, H4, H5, H6, H7, H8, H9, H10, H11, H12, H13, H14, H15, H16, H17 o H18. Le differenze nelle sequenze amminoacidiche tra le proteine emoagglutinina di diversi sottotipi si trovano in gran parte

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all'interno della sequenza del dominio di testa della proteina. La sequenza amminoacidica del dominio di stelo è considerata più conservata tra i sottotipi di emoagglutinina rispetto alla sequenza del dominio di testa. I domini della proteina emoagglutinina possono essere previsti usando metodi convenzionali noti nella tecnica.

Si ritiene che molti anticorpi naturali e derivati sperimentalmente che legano e neutralizzano la proteina emoagglutinina leghino gli epitopi all'interno del dominio di testa dell'emoagglutinina e prevengano o riducano l'interazione dell'emoagglutinina con l'acido sialico sui recettori delle cellule ospite, prevenendo o riducendo l'infezione della cellula. In alternativa o in aggiunta, gli anticorpi neutralizzanti possono prevenire o ridurre la fusione della membrana del virus con la membrana dell'endosoma. Tali anticorpi possono legare epitopi all'interno del dominio di stelo, inibendo così il cambiamento di conformazione della proteina.

In alcune forme di realizzazione, i polinucleotidi di RNA qui descritti codificano un frammento di una proteina emoagglutinina, come una proteina emoagglutinina troncata. In alcune forme di realizzazione, il frammento è un'emoagglutinina priva di testa, il che significa che il frammento non comprende il dominio di testa. In alcune forme di realizzazione, il frammento comprende una porzione del dominio di testa. In alcune forme di realizzazione, il frammento è un frammento di stelo (si veda, *ad esempio,* Mallajosyula et al. PNAS (2014) E2514-E2523). In alcune forme di realizzazione, il frammento non comprende il dominio citoplasmatico. In alcune forme di realizzazione, il frammento non comprende il dominio transmembrana. In tali forme di realizzazione, il frammento può essere indicato come una proteina o un frammento di emoagglutinina solubile o secreta.

In alcune forme di realizzazione, il polipeptide di RNA codifica per una proteina emoagglutinina o un suo frammento che sia per almeno il 90% (*ad esempio,* 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98% o 99%) identica a una proteina emoagglutinina fornita da una sequenza amminoacidica nella Tabella 14-16. I termini “identico” e “identità” percentuale nel

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contesto di due o più sequenze polipeptidiche si riferiscono a due o più sequenze che sono le medesime. L'identità percentuale tra le sequenze polipeptidiche può essere eseguita utilizzando algoritmi noti nella tecnica, come BLAST e CLUSTAL.

La sequenza della proteina emoagglutinina o suo frammento può essere ottenuta da qualsiasi fonte. In alcune forme di realizzazione, la sequenza della proteina emoagglutinina o suo frammento proviene da un ceppo di influenza aviaria. In alcune forme di realizzazione, la sequenza della proteina emoagglutinina o suo frammento proviene da un ceppo di influenza aviaria che è in grado o a rischio di infettare soggetti umani. In alcune forme di realizzazione, la sequenza della proteina emoagglutinina o suo frammento proviene da un ceppo di influenza suina. In alcune forme di realizzazione, la sequenza della proteina emoagglutinina o del suo frammento proviene da un ceppo di influenza suina che è in grado o a rischio di infettare soggetti umani.

In una qualsiasi delle forme di realizzazione qui descritte, la sequenza dell'emoagglutinina o del suo frammento può essere modificata o ottimizzata (come codone-ottimizzata) per l'espressione in una particolare cellula o organismo ospite.

Antigeni

Gli antigeni codificati dai NAV della presente invenzione includono polipeptidi, peptidi e/o polipeptidi di interesse e sono codificati dai polinucleotidi dell'invenzione. I polinucleotidi che codificano per tali antigeni sono descritti più dettagliatamente di seguito in "Progettazione, sintesi e quantificazione dei polinucleotidi di NAV". I riferimenti nel presente contesto a "NAV dell'invenzione" si riferiscono a quelli esposti nelle rivendicazioni allegate. I riferimenti a polinucleotidi, polipeptidi o antigeni "dell'invenzione" si riferiscono a quelli nel contesto dei NAV dell'invenzione.

III. Progettazione, sintesi e quantificazione dei polinucleotidi di NAV

Secondo la presente descrizione, i polinucleotidi codificano almeno un polipeptide di

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interesse, ad esempio un antigene. Gli antigeni della presente descrizione possono essere di tipo selvatico (ossia derivati dall'agente infettivo) o modificati (ad esempio ingegnerizzati, progettati o artificiali). Possono avere qualsiasi combinazione delle caratteristiche qui descritte.

I NAV della presente invenzione comprendono molecole di acido nucleico, in particolare polinucleotidi di mRNA che codificano uno o più peptidi o polipeptidi di interesse. Tali peptidi o polipeptidi, secondo l'invenzione, fungono da antigene o molecola antigenica.

In una forma di realizzazione, polinucleotidi lineari codificanti per uno o più antigeni dei NAV della presente invenzione che sono realizzati utilizzando solo i metodi di sintesi enzimatica della trascrizione *in vitro* (IVT) sono indicati come "polinucleotidi IVT".

In un'altra forma di realizzazione, i polinucleotidi della presente invenzione che hanno porzioni o regioni che differiscono per dimensioni e/o modello di modificazione chimica, posizione della modificazione chimica, percentuale di modificazione chimica o popolazione di modificazione chimica e combinazioni di quanto sopra sono noti come "polinucleotidi chimerici". Una "chimera" secondo la presente invenzione è un'entità avente due o più parti o regioni incongrue o eterogenee. Come qui utilizzato, una "parte" o "regione" di un polinucleotide è definita come qualsiasi porzione del polinucleotide che è inferiore all'intera lunghezza del polinucleotide.

In ancora un'altra forma di realizzazione, i polinucleotidi della presente invenzione che sono circolari sono noti come "polinucleotidi circolari" o "circP". Come usato qui, "polinucleotidi circolari" o "circP" indica un polinucleotide circolare a singolo filamento che agisce sostanzialmente come, e ha le proprietà di, un RNA. Il termine "circolare" intende anche comprendere qualsiasi configurazione secondaria o terziaria del circP.

In alcune forme di realizzazione, il polinucleotide include da circa 30 a circa 100.000 nucleotidi (ad esempio, da 30 a 50, da 30 a 100, da 30 a 250, da 30 a 500, da 30 a 1.000, da 30 a 1.500, da 30 a 3.000, da 30 a 5.000, da 30 a 7.000, da 30 a 10.000, da 30 a 25.000, da 30 a

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50.000, da 30 a 70.000, da 100 a 250, da 100 a 500, da 100 a 1.000, da 100 a 1.500, da 100 a 3.000, da 100 a 5.000, da 100 a 7.000, da 100 a 10.000, da 100 a 25.000, da 100 a 50.000, da 100 a 70.000, da 100 a 100.000, da 500 a 1.000, da 500 a 1.500, da 500 a 2.000, da 500 a 3.000, da 500 a 5.000, da 500 a 7.000, da 500 a 10.000, da 500 a 25.000, da 500 a 50.000, da 500 a 70.000, da 500 a 100.000, da 1.000 a 1.500, da 1.000 a 2.000, da 1.000 a 3.000, da 1.000 a 5.000, da 1.000 a 7.000, da 1.000 a 10.000, da 1.000 a 25.000, da 1.000 a 50.000, da 1.000 a 70.000, da 1.000 a 100.000, da 1.500 a 3.000, da 1.500 a 5.000, da 1.500 a 7.000, da 1.500 a 10.000, da 1.500 a 25.000, da 1.500 a 50.000, da 1.500 a 70.000, da 1.500 a 100.000, da 2.000 a 3.000, da 2.000 a 5.000, da 2.000 a 7.000, da 2.000 a 10.000, da 2.000 a 25.000, da 2.000 a 50.000, da 2.000 a 70.000, e da 2.000 a 100.000).

In una forma di realizzazione, la lunghezza di una regione codificante per almeno un polipeptide peptidico di interesse dei polinucleotidi della presente invenzione è maggiore di circa 30 nucleotidi di lunghezza (ad esempio, almeno o maggiore di circa 35, 40, 45, 50, 55, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1.000, 1.100, 1.200, 1.300, 1.400, 1.500, 1.600, 1.700, 1.800, 1.900, 2.000, 2.500 e 3.000, 4.000, 5.000, 6.000, 7.000, 8.000, 9.000, 10.000, 20.000, 30.000, 40.000, 50.000, 60.000, 70.000, 80.000, 90.000 o fino a e incluso 100.000 nucleotidi). Come usato qui, una tale regione può essere indicata come "regione codificante" o "regione di codifica".

I polinucleotidi della presente invenzione sono o funzionano come un RNA messaggero (mRNA). Come utilizzato nel presente contesto, il termine “RNA messaggero” (mRNA) si riferisce a qualsiasi polinucleotide che codifica almeno un peptide o polipeptide di interesse e che è in grado di essere tradotto per produrre il polipeptide peptidico codificato di interesse *in vitro, in vivo, in situ* o *ex vivo.*

I polinucleotidi della presente invenzione sono chimicamente modificati. Come utilizzato nel presente contesto, una modificazione “strutturale” è del tipo in cui due o più

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nucleosidi legati vengono inseriti, eliminati, duplicati, invertiti o randomizzati in un polinucleotide senza significative modificazioni chimiche ai nucleotidi stessi. Poiché i legami chimici saranno necessariamente infranti e riformati per effettuare una modificazione strutturale, le modificazioni strutturali sono di natura chimica e quindi costituiscono modificazioni chimiche. Tuttavia, le modificazioni strutturali si tradurranno in una diversa sequenza di nucleotidi. Ad esempio, il polinucleotide "ATCG" può essere modificato chimicamente in "AT-5meC-G". Lo stesso polinucleotide può essere strutturalmente modificato da "ATCG" ad "ATCCCG". Qui è stato inserito il dinucleotide "CC", con conseguente modificazione strutturale del polinucleotide.

In una forma di realizzazione, i polinucleotidi della presente invenzione, come i polinucleotidi IVT o polinculeotidi circolari, possono avere una modificazione chimica uniforme di tutto o parte dello stesso tipo di nucleoside o una popolazione di modifiche prodotte dalla semplice titolazione verso il basso della stessa modifica iniziale in tutto o parte dello stesso tipo di nucleoside , o una percentuale misurata di una modificazione chimica di tutti uno qualsiasi dello stesso tipo di nucleoside ma con incorporazione casuale, ad esempio dove tutte le uridine sono sostituite da un analogo dell'uridina, ad esempio, pseudouridina. In un'altra forma di realizzazione, i polinucleotidi possono avere una modificazione chimica uniforme di due, tre o quattro dello stesso tipo nucleosidico in tutto l'intero polinucleotide (come tutte le uridine e tutte le citosine, ecc. sono modificate allo stesso modo).

Quando i polinucleotidi della presente invenzione sono modificati chimicamente e/o strutturalmente, i polinucleotidi possono essere indicati come "polinucleotidi modificati".

In una forma di realizzazione, i polinucleotidi della presente invenzione possono includere una sequenza codificante per un peptide ad auto-scissione. Il peptide ad auto-scissione può essere, ma non è limitato a, un peptide 2A. A titolo di esempio non limitativo, il peptide 2A può avere la sequenza proteica: GSGATNFSLLKQAGDVEENPGP (SEQ ID NO: 2005), suoi

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frammenti o varianti. In una forma di realizzazione, il peptide 2A si scinde tra l'ultima glicina e l'ultima prolina. Come altro esempio non limitativo, i polinucleotidi della presente invenzione possono includere una sequenza polinucleotidica che codifica il peptide 2A avente la sequenza proteica GSGATNFSLLKQAGDVEENPGP (SEQ ID NO: 2005) suoi frammenti o varianti.

Una di queste sequenze polinucleotidiche che codifica per il peptide 2A è GGAAGCGGAGCTACTAACTTCAGCCTGCTGAAGCAGGCTGGAGACGTGGAGGAGA ACCCTGGACCT (SEQ ID NO: 2006). La sequenza polinucleotidica del peptide 2A può essere modificata o codone-ottimizzata con i metodi qui descritti e/o sono noti nella tecnica.

In una forma di realizzazione, questa sequenza può essere usata per separare la regione codificante di due o più polipeptidi di interesse. A titolo di esempio non limitativo, la sequenza che codifica il peptide 2A può essere tra una prima regione di codifica A e una seconda regione di codifica B (A-2Apep-B). La presenza del peptide 2A provoca la scissione di una proteina lunga in proteina A, proteina B e il peptide 2A. La proteina A e la proteina B possono essere gli stessi o diversi peptidi o polipeptidi di interesse. In un'altra forma di realizzazione, il peptide 2A può essere utilizzato nei polinucleotidi della presente invenzione per produrre due, tre, quattro, cinque, sei, sette, otto, nove, dieci o più proteine.

Architettura polinucleotidica

Tradizionalmente, i componenti di base di una molecola di mRNA includono almeno una regione codificante, una 5'UTR, una 3'UTR, un 5' cap e una coda poli-A. I polinucleotidi IVT della presente invenzione possono fungere da mRNA ma si distinguono dall'mRNA di tipo selvatico nelle loro caratteristiche di progettazione funzionale e/o strutturale che servono a superare i problemi esistenti di un'efficace produzione di polipeptidi utilizzando terapie a base di acido nucleico. Resta inteso che gli antigeni dei NAV della presente invenzione possono essere codificati mediante polinucleotidi IVT, come descritto nel presente contesto.

La Figura 1 mostra un costrutto primario +1**00** di un polinucleotide IVT della presente

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invenzione. Tali polinucleotidi sono utili nelle composizioni di NAV, nelle composizioni di RNAV o nei vaccini a mRNA. Come qui utilizzato, il "costrutto primario" si riferisce a un polinucleotide della presente invenzione polinucleotidico che codifica uno o più polipeptidi di interesse e che conserva caratteristiche strutturali e/o chimiche sufficienti per consentire la traduzione del polipeptide di interesse ivi codificato.

Secondo la Figura **1A** e **1B**, il polinucleotide **100** qui contiene una prima regione di nucleotidi legati **102** che è fiancheggiata da una prima regione fiancheggiante **104** e una seconda regione fiancheggiante **106**. Il polipeptide di interesse può comprendere al suo terminale 5' una o più sequenze di segnale codificate da una regione di sequenza di segnale **103**. La regione fiancheggiante **104** può comprendere una regione di nucleotidi legati comprendente una o più sequenze 5' UTR complete o incompletee possono essere completamente codone-ottimizzate o parzialmente codone-ottimizzate. La regione fiancheggiante **104** può includere almeno una sequenza di acido nucleico includente, ma non limitata a, sequenze miR, sequenze TERZAK™ e sequenze di controllo della traduzione. La regione fiancheggiante **104** può anche comprendere un cap terminale 5' **108.** La regione di capping terminale 5' **108** può includere un cap naturale, un cap sintetico o un cap ottimizzato. Esempi non limitativi di cap ottimizzati includono i cap insegnati da Rhoads nel brevetto U.S. n. US7074596 e nella pubblicazione di brevetto internazionale n. WO2008157668, WO2009149253 e WO2013103659. La seconda regione fiancheggiante **106** può comprendere una regione di nucleotidi legati comprendente una o più 3' UTR complete o incomplete. La seconda regione fiancheggiante **106** può essere completamente codone-ottimizzata o parzialmente codone-ottimizzata. La regione fiancheggiante **106** può includere almeno una sequenza di acido nucleico includente, ma non limitata a, sequenze miR e sequenze di controllo della traduzione. La regione fiancheggiante **106** può anche comprendere una sequenza di coda 3' **110**. La sequenza di coda 3' **110** può includere una regione di coda sintetica **112** e/o un nucleoside terminale di catena **114**. Esempi non limitativi di una regione di

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coda sintetica includono una sequenza poliA, una sequenza poliC e/o un quartetto poliA-G. Esempi non limitativi di nucleosidi terminali di catena includono 2'-O metile, F e acidi nucleici bloccati (LNA).

A ponte tra il terminale 5' della prima regione **102** e la prima regione fiancheggiante **104** vi è una prima regione operativa **105.** Tradizionalmente questa regione operativa comprende un codone di inizio. La regione operativa può in alternativa comprendere qualsiasi sequenza o segnale di inizio della traduzione includente un codone di inizio.

A ponte tra il terminale 3' della prima regione **102** e la seconda regione fiancheggiante **106** vi è una seconda regione operativa **107**. Tradizionalmente questa regione operativa comprende un codone di arresto. La regione operativa può in alternativa comprendere qualsiasi sequenza o segnale di inizio della traduzione includente un codone di arresto. Possono essere utilizzati anche più codoni di arresto seriali nel polinucleotide IVT. In una forma di realizzazione, la regione operativa della presente invenzione può comprendere due codoni di arresto. Il primo codone di arresto può essere "TGA" o "UGA" e il secondo codone di arresto può essere scelto dal gruppo costituito da "TAA", "TGA", "TAG", "UAA", "UGA" o "UAG".

La lunghezza più breve della prima regione del costrutto primario del polinucleotide IVT della presente invenzione può essere la lunghezza di una sequenza di acido nucleico sufficiente per codificare per un dipeptide, un tripeptide, un tetrapeptide, un pentapeptide, un esapeptide, un eptapeptide, un ottapeptide, un nonapeptide o un decapeptide. In un'altra forma di realizzazione, la lunghezza può essere sufficiente per codificare un peptide di 2-30 amminoacidi, ad esempio 5-30, 10-30, 2-25, 5-25, 10-25 o 10-20 amminoacidi. La lunghezza può essere sufficiente per codificare un peptide di almeno 11, 12, 13, 14, 15, 17, 20, 25 o 30 amminoacidi, o un peptide che non supera i 40 aminoacidi, ad esempio non più di 35, 30, 25, 20, 17, 15, 14, 13, 12, 11 o 10 amminoacidi. Esempi di dipeptidi che le sequenze polinucleotidiche possono codificare o includere, ma non sono limitati a, carnosina e anserina.

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Resta inteso che i vaccini NAV, RNAV o a mRNA dell'invenzione possono essere traducibili e includere tale prima regione di un costrutto primario.

La lunghezza della prima regione del costrutto primario del polipeptide IVT che codifica il polipeptide di interesse della presente invenzione è maggiore di circa 30 nucleotidi di lunghezza (ad esempio, almeno o maggiore di circa 35, 40, 45, 50, 55, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1.000, 1.100, 1.200, 1.300, 1.400, 1.500, 1.600, 1.700, 1.800, 1.900, 2.000, 2.500 e 3.000, 4.000, 5.000, 6.000, 7.000, 8.000, 9.000, 10.000, 20.000, 30.000, 40.000, 50.000, 60.000, 70.000, 80.000, 90.000 o fino a 100.000 nucleotidi inclusi).

In alcune forme di realizzazione, il polinucleotide IVT include da circa 30 a circa 100.000 nucleotidi (ad esempio, da 30 a 50, da 30 a 100, da 30 a 250, da 30 a 500, da 30 a 1.000, da 30 a 1.500, da 30 a 3.000, da 30 a 5.000, da 30 a 7.000, da 30 a 10.000, da 30 a 25.000, da 30 a 50.000, da 30 a 70.000, da 100 a 250, da 100 a 500, da 100 a 1.000, da 100 a 1.500, da 100 a 3.000, da 100 a 5.000, da 100 a 7.000, da 100 a 10.000, da 100 a 25.000, da 100 a 50.000, da 100 a 70.000, da 100 a 100.000, da 500 a 1.000, da 500 a 1.500, da 500 a 2.000, da 500 a 3.000, da 500 a 5.000, da 500 a 7.000, da 500 a 10.000, da 500 a 25.000, da 500 a 50.000, da 500 a 70.000, da 500 a 100.000, da 1.000 a 1.500, da 1.000 a 2.000, da 1.000 a 3.000, da 1.000 a 5.000, da 1.000 a 7.000, da 1.000 a 10.000, da 1.000 a 25.000, da 1.000 a 50.000, da 1.000 a 70.000, da 1.000 a 100.000, da 1.500 a 3.000, da 1.500 a 5.000, da 1.500 a 7.000, da 1.500 a 10.000, da 1.500 a 25.000, da 1.500 a 50.000, da 1.500 a 70.000, da 1.500 a 100.000, da 2.000 a 3.000, da 2.000 a 5.000, da 2.000 a 7.000, da 2.000 a 10.000, da 2.000 a 25.000, da 2.000 a 50.000, da 2.000 a 70.000, e da 2.000 a 100.000).

Secondo la presente invenzione, la prima e la seconda regione fiancheggiante del polinucleotide IVT possono variare indipendentemente da 15-1.000 nucleotidi di lunghezza (ad esempio, maggiore di 30, 40, 45, 50, 55, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 250, 300,

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350, 400, 450, 500, 600, 700, 800 e 900 nucleotidi o almeno 30, 40, 45, 50, 55, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900 e 1.000 nucleotidi).

Secondo la presente invenzione, la sequenza di coda del polinucleotide IVT può variare da assente a 500 nucleotidi di lunghezza (ad esempio, almeno 60, 70, 80, 90, 120, 140, 160, 180, 200, 250, 300, 350, 400, 450 o 500 nucleotidi). Laddove la regione di coda sia una coda di poliA, la lunghezza può essere determinata in unità o in funzione del legame con la proteina legante poliA. In questa forma di realizzazione, la coda di poliA è sufficientemente lunga da legare almeno 4 monomeri della proteina legante PoliA. I monomeri della proteina legante PoliA si legano a tratti di approssimativamente 38 nucleotidi. Pertanto, è stato osservato che le code di poliA di circa 80 nucleotidi (SEQ ID NO: 2276) e 160 nucleotidi (SEQ ID NO: 2277) sono funzionali.

Secondo la presente invenzione, la regione di capping del polinucleotide IVT può comprendere un singolo cap o una serie di nucleotidi formanti il cap. In questa forma di realizzazione, la regione di capping può avere una lunghezza da 1 a 10, ad esempio 2-9, 3-8, 4-7, 1-5, 5-10, o almeno 2, o 10 o meno nucleotidi. In alcune forme di realizzazione, cap è assente.

Secondo la presente descrizione, la prima e la seconda regione operativa del polinucleotide IVT possono variare da 3 a 40, ad esempio 5-30, 10-20, 15, o almeno 4, o 30 o meno nucleotidi di lunghezza e possono comprendere, oltre ad un codone di inizio e/o arresto, una o più sequenze di segnale e/o restrizione.

I polinucleotidi IVT della presente invenzione sono chimicamente modificati. Quando i polinucleotidi IVT della presente invenzione sono modificati chimicamente e/o strutturalmente, i polinucleotidi possono essere indicati come "polinucleotidi IVT modificati".

In una forma di realizzazione, i polinucleotidi IVT della presente invenzione possono

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avere una modificazione chimica uniforme di tutto o parte dello stesso tipo di nucleoside o una popolazione di modifiche prodotte dalla semplice titolazione verso il basso della stessa modifica iniziale in tutto o parte dello stesso tipo di nucleoside , o una percentuale misurata di una modificazione chimica di tutti uno qualsiasi dello stesso tipo di nucleoside ma con incorporazione casuale, ad esempio dove tutte le uridine sono sostituite da un analogo dell'uridina, ad esempio, pseudouridina. In un'altra forma di realizzazione, i polinucleotidi IVT possono avere una modificazione chimica uniforme di due, tre o quattro dello stesso tipo nucleosidico in tutto l'intero polinucleotide (come tutte le uridine e tutte le citosine, ecc. sono modificate allo stesso modo).

In una forma di realizzazione, i polinucleotidi IVT della presente invenzione possono includere una sequenza codificante un peptide ad auto-scissione, qui descritto, come ma non limitato al peptide 2A. La sequenza polinucleotidica del peptide 2A nel polinucleotide IVT può essere modificata o codone-ottimizzata con i metodi qui descritti e/o sono noti nella tecnica.

In una forma di realizzazione, questa sequenza può essere usata per separare la regione codificante di due o più polipeptidi di interesse nel polinucleotide IVT.

I polinucleotidi IVT della presente invenzione sono chimicamente modificati. Quando modificato chimicamente e/o strutturalmente modificato, il polinucleotide IVT può essere indicato come un "polinucleotide IVT modificato".

Il polinucleotide IVT codifica per almeno un peptide o polipeptide di interesse. In un'altra forma di realizzazione, il polinucleotide IVT può codificare due o più peptidi o polipeptidi di interesse. Esempi non limitativi di peptidi o polipeptidi di intestino includono catene pesanti e leggere di anticorpi, un enzima e il suo substrato, una marcatura e la sua molecola di legame, un secondo messaggero e il suo enzima o i componenti di proteine o complessi multimerici.

Architettura polinucleotidica chimerica

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I polinucleotidi chimerici o costrutti di RNA della presente invenzione mantengono un'organizzazione modulare simile ai polinucleotidi IVT, ma i polinucleotidi chimerici comprendono una o più modifiche o alterazioni strutturali e/o chimiche che conferiscono proprietà utili al polinucleotide. In quanto tali, i polinucleotidi chimerici che sono molecole di mRNA modificato della presente invenzione sono chiamati "mRNA chimerico modificato" o "mRNA chimerico".

Resta inteso che gli antigeni dei NAV della presente invenzione possono essere codificati mediante mRNA modificato chimerico o mRNA chimerico.

I polinucleotidi chimerici hanno porzioni o regioni che differiscono per dimensioni e/o modello di modificazione chimica, posizione di modificazione chimica, percentuale di modificazione chimica o popolazione di modificazione chimica e combinazioni di quanto sopra.

Esempi di parti o regioni in cui il polinucleotide chimerico funziona come un mRNA e codifica per un polipeptide di interesse includono, ma non sono limitati a, regioni non tradotte (UTR, come 5' UTR o 3' UTR), regioni codificanti, regioni cap , regioni di coda poliA, regioni di inizio, regioni di arresto, regioni di sequenza di segnali e loro combinazioni. La Figura 2 illustra alcune forme di realizzazione dei polinucleotidi chimerici dell'invenzione che possono essere usati come mRNA. La Figura 3 illustra uno schema di una serie di polinucleotidi chimerici che identificano vari modelli di modificazioni posizionali e mostrano regioni analoghe a quelle regioni di un polinucleotide di mRNA. Anche le regioni o le parti che si uniscono o si trovano tra altre regioni possono essere progettate per avere sottoregioni. Queste sono mostrate nella figura.

In alcuni casi, i polinucleotidi chimerici della descrizione hanno una struttura comprendente la Formula I.

$$5' [A_n]_X\text{-}L1\text{-}[B_o]_y\text{-}L2\text{-}[C_P]_z\text{-}L3\ 3' \qquad \textbf{Formula I}$$

in cui:

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ciascuno di A e B comprende indipendentemente una regione di nucleosidi collegati;

C è una regione facoltativa di nucleosidi collegati;

almeno una delle regioni A, B o C è posizionalmente modificata, in cui detta regione posizionalmente modificata comprende almeno due nucleosidi chimicamente modificati di uno o più dello stesso tipo di nucleoside di adenosina, timidina, guanosina, citidina o uridina, e in cui almeno due delle modificazioni chimiche di nucleosidi dello stesso tipo sono diverse modificazioni chimiche;

n, o e p sono indipendentemente un intero compreso tra 15 e 1000;

x e y sono indipendentemente 1-20;

z è 0-5;

L1 e L2 sono porzioni di collegamento opzionali indipendentemente, dette porzioni di collegamento essendo a base di acido nucleico o non a base di acido nucleico; e

L3 è un coniugato facoltativo o una parte legante facoltativa, detta parte legante essendo a base di acido nucleico o non a base di acido nucleico.

In alcuni casi, il polinucleotide chimerico di Formula I codifica uno o più peptidi o polipeptidi di interesse. Tali molecole codificate possono essere codificate in due o più regioni.

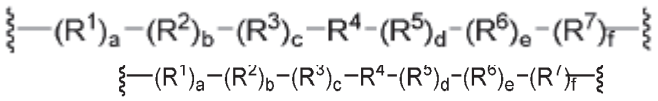
In un altro aspetto, la descrizione presenta un polinucleotide chimerico che codifica per un polipeptide, in cui il polinucleotide ha una sequenza che include la Formula II:

$$[A_n]\text{-}L^1\text{-}[B_o] \qquad \textbf{Formula II}$$

in cui ciascun A e B è indipendentemente qualsiasi nucleoside;

n e o sono, indipendentemente tra 15 e 1000; e

L^1 ha la struttura di Formula III:



Formula III

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in cui a, b, c, d, e e f sono ciascuno, indipendentemente, 0 o 1;

ciascuno tra R^1, R^3, R^5, e R^7, è, indipendentemente, scelto da alchilene C_1-C_6 facoltativamente sostituito, eteroalchilene C_1-C_6 facoltativamente sostituito, O, S e NR^8;

R^2 e R^6 sono ciascuno, indipendentemente, scelti tra carbonile, tiocarbonile, solfonile o fosforile;

R^4 è alchilene C_1-C_{10} facoltativamente sostituito, alchenilene C_2-C_{10} facoltativamente sostituito, alchinilene C_2-C_{10} facoltativamente sostituito, eterociclilene C_2-C_9 facoltativamente sostituito, arilene C_6-C_{12} facoltativamente sostituito, polietilenglicolene C_2-C_{100} facoltativamente sostituito, o eteroalchilene C_1-C_{10} facoltativamente sostituito, o un legame che lega $(R^1)_a$-$(R^2)_b$-$(R^3)_c$ a $(R^5)_d$-$(R^6)_e$-$(R^7)_f$, in cui se c, d, e, f, g e h sono 0, R^4 non è un legame; e

R^8 è idrogeno, alchile C_1-C_4 facoltativamente sostituito, alchenile C_2-C_4 facoltativamente sostituito, alchinile C_2-C_4 facoltativamente sostituito, eterociclile C_2-C_6 facoltativamente sostituito, arile C_6-C_{12} facoltativamente sostituito, o eteroalchile C_1-C_7 facoltativamente sostituito;

in cui L^1 è attaccato a $[A_n]$ e $[B_o]$ in corrispondenza dello zucchero di uno dei nucleosidi (ad esempio, nella posizione 3' di un anello di zucchero a cinque membri o nella posizione 4' di un anello di zucchero a sei membri di un nucleoside di $[A_n]$ e la posizione 5' di un anello di zucchero a cinque membri o la posizione 6' di un anello di zucchero a sei membri di un nucleoside di $[B_o]$ o nella posizione 5' di un anello di zucchero a cinque membri o nella posizione 6' di un anello di zucchero a sei membri di un nucleoside di $[A_n]$ e la posizione 3' di un anello di zucchero a cinque membri o la posizione 4' di un anello di zucchero a sei membri di un nucleoside di $[B_o]$).

In alcuni casi, almeno uno tra $[A_n]$ e $[B_o]$ include la struttura della Formula IV:

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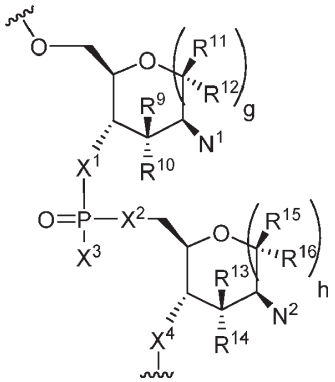

Formula IV

in cui ciascuno tra N^1 e N^2 è indipendentemente una base azotata;

ciascuno tra R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, e R^{16} è, indipendentemente, H, alogeno, idrossi, tiolo, alchile C_1-C_6 facoltativamente sostituito, eteroalchile C_1-C_6 facoltativamente sostituito, eteroalchenile C_2-C_6 facoltativamente sostituito, eteroalchinile C_2-C_6 facoltativamente sostituito, ammino facoltativamente sostituito, azido o arile C_6-C_{10} facoltativamente sostituito;

ciascuno tra g e h è, indipendentemente, 0 o 1;

ciascun X^1 e X^4 è, indipendentemente, O, NH o S;

ciascun X^2 è indipendentemente O o S; e

ciascun X^3 è OH o SH, o un loro sale.

In un altro aspetto, la descrizione presenta un polinucleotide chimerico che codifica per un polipeptide, in cui il polinucleotide ha una sequenza che include la Formula II: $[A_n]$-L^1-$[B_o]$

Formula II

in cui ciascun A e B è indipendentemente qualsiasi nucleoside;

n e o sono, indipendentemente tra 15 e 1000; e

L^1 è un legame o ha la struttura della Formula III:

$$\S\text{—}(R^1)_a\text{-}(R^2)_b\text{-}(R^3)_c\text{-}R^4\text{-}(R^5)_d\text{-}(R^6)_e\text{-}(R^7)_f\text{—}\S$$

Formula III

in cui a, b, c, d, e e f sono ciascuno, indipendentemente, 0 o 1;

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ciascuno tra R^1, R^3, R^5, e R^7, è, indipendentemente, scelto da alchilene C_1-C_6 facoltativamente sostituito, eteroalchilene C_1-C_6 facoltativamente sostituito, O, S e NR^8;

R^2 e R^6 sono ciascuno, indipendentemente, scelti tra carbonile, tiocarbonile, solfonile o fosforile;

R^4 è alchilene C_1-C_{10} facoltativamente sostituito, alchenilene C_2-C_{10} facoltativamente sostituito, alchinilene C_2-C_{10} facoltativamente sostituito, eterociclilene C_2-C_9 facoltativamente sostituito, arilene C_6-C_{12} facoltativamente sostituito, polietilenglicolene C_2-C_{100} facoltativamente sostituito, o eteroalchilene C_1-C_{10} facoltativamente sostituito, o un legame che lega $(R^1)_a$-$(R^2)_b$-$(R^3)_c$ a $(R^5)_d$-$(R^6)_e$-$(R^7)_f$; e

R^8 è idrogeno, alchile C_1-C_4 facoltativamente sostituito, alchenile C_2-C_4 facoltativamente sostituito, alchinile C_2-C_4 facoltativamente sostituito, eterociclile C_2-C_6 facoltativamente sostituito, arile C_6-C_{12} facoltativamente sostituito, o eteroalchile C_1-C_7 facoltativamente sostituito;

in cui L^1 è attaccato a $[A_n]$ e $[B_o]$ in corrispondenza dello zucchero di uno dei nucleosidi (ad esempio, nella posizione 3' di un anello di zucchero a cinque membri o nella posizione 4' di un anello di zucchero a sei membri di un nucleoside di $[A_n]$ e la posizione 5' di un anello di zucchero a cinque membri o la posizione 6' di un anello di zucchero a sei membri di un nucleoside di $[B_o]$ o nella posizione 5' di un anello di zucchero a cinque membri o nella posizione 6' di un anello di zucchero a sei membri di un nucleoside di $[A_n]$ e la posizione 3' di un anello di zucchero a cinque membri o la posizione 4' di un anello di zucchero a sei membri di un nucleoside di $[B_o]$).

in cui almeno uno tra $[A_n]$ o $[B_o]$ include la struttura della Formula IV:

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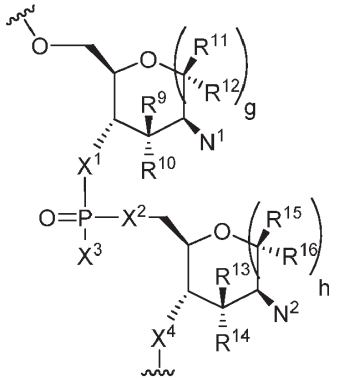
Consulente in P.I. n° USBM-041R



Formula IV

in cui ciascuno tra N^1 e N^2 è indipendentemente una base azotata;

ciascuno tra R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, e R^{16} è, indipendentemente, H, alogeno, idrossi, tiolo, alchile C_1-C_6 facoltativamente sostituito, eteroalchile C_1-C_6 facoltativamente sostituito, eteroalchenile C_2-C_6 facoltativamente sostituito, eteroalchinile C_2-C_6 facoltativamente sostituito, ammino facoltativamente sostituito, azido o arile C_6-C_{10} facoltativamente sostituito;

ciascuno tra g e h è, indipendentemente, 0 o 1;

ciascun X^1 e X^4 è, indipendentemente, O, NH o S; e

ciascun X^2 è indipendentemente O o S; e

ciascun X^3 è OH o SH, o un loro sale;

in cui almeno uno tra X^1, X^2 o X^4 è NH o S.

In alcuni casi, X^1 è NH. In altri casi, X^4 è NH. In determinati casi, X^2 è S.

In alcuni casi, il polinucleotide include: (a) una regione codificante; (b) una 5' UTR includente almeno una sequenza di Kozak; (c) una 3' UTR; e (d) almeno una struttura 5' cap. In altri casi, il polinucleotide include inoltre (e) una coda poli-A.

In alcuni casi, una delle regioni di codifica, la 5' UTR includente almeno una sequenza di Kozak, la 3' UTR, la struttura 5' cap o la coda poli-A include $[A_n]$-L^1-$[B_o]$.

In altri casi, una delle regioni codificante, la 5' UTR includente almeno una sequenza di Kozak, la 3' UTR, la struttura 5' cap, o la coda poli-A include $[A_n]$ e un'altra della regione

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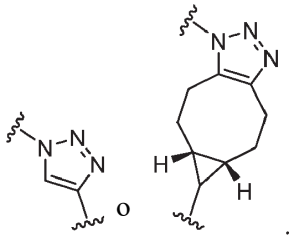
codificante, la 5’ UTR includente almeno una sequenza di Kozak, la 3’ UTR, la struttura 5' cap, o la coda poli-A include [B_o].

In determinati casi, il polinucleotide include almeno un nucleoside modificato (ad esempio, un nucleoside della Tabella 2).

In alcuni casi, R^4 è eterociclilene C_{2-9} facoltativamente sostituito, ad esempio, l'eterociclo può avere la struttura:



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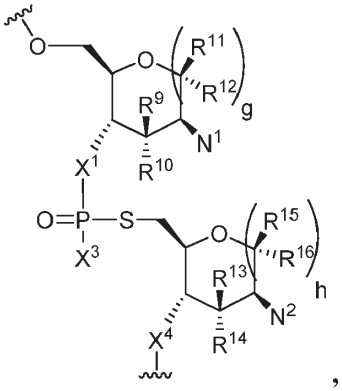
In determinati casi, L^1 è attaccato a [A_n] nella posizione 3' di un anello di zucchero a cinque membri o nella posizione 4' di un anello di zucchero a sei membri di uno dei nucleosidi e a [B_o] nella posizione 5' di un anello di zucchero a cinque membri o nella posizione 6' di un anello di zucchero a sei membri di uno dei nucleosidi.

In alcuni casi, il polinucleotide è circolare.

In un altro aspetto, la descrizione presenta un metodo per produrre una composizione che include un polinucleotide chimerico codificante un polipeptide, in cui il polinucleotide include la struttura di Formula V:



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Formula V

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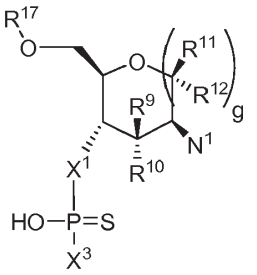
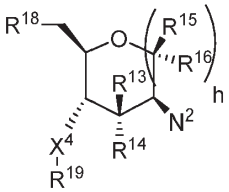
Questo metodo include far reagire un composto avente la struttura della Formula VI:



Formula VI

con un composto avente la struttura di Formula VII:



Formula VII

in cui ciascuno tra N^1 e N^2 è, indipendentemente, una base azotata;

ciascuno tra R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, e R^{16} è, indipendentemente, H, alogeno, idrossi, tiolo, alchile C_1-C_6 facoltativamente sostituito, eteroalchile C_1-C_6 facoltativamente sostituito, eteroalchenile C_2-C_6 facoltativamente sostituito, eteroalchinile C_2-C_6 facoltativamente sostituito, ammino facoltativamente sostituito, azido o arile C_6-C_{10} facoltativamente sostituito;

ciascuno tra g e h è, indipendentemente, 0 o 1;

ciascun X^1 e X^4 è, indipendentemente, O, NH o S; e

ciascun X^3 è indipendentemente OH o SH, o un loro sale;

ciascuno tra R^{17} e R^{19} è, indipendentemente, una regione di nucleosidi legati; e

R^{18} è un alogeno.

In un altro aspetto, la descrizione presenta un metodo per produrre una composizione che include un polinucleotide chimerico codificante un polipeptide, in cui il polinucleotide include la struttura di Formula VIII:

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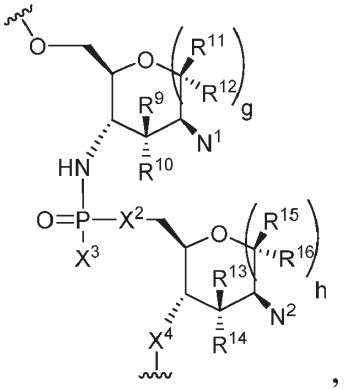
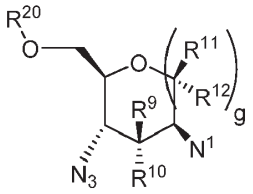


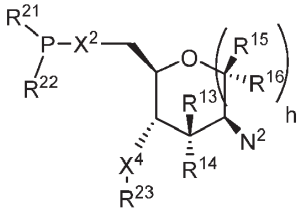
Formula VIII

Questo metodo include far reagire un composto avente la struttura della Formula IX:



Formula IX

con un composto avente la struttura di Formula X:



Formula X

in cui ciascuno tra N^1 e N^2 è, indipendentemente, una base azotata;

ciascuno tra R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, e R^{16} è, indipendentemente, H, alogeno, idrossi, tiolo, alchile C_1-C_6 facoltativamente sostituito, eteroalchile C_1-C_6 facoltativamente sostituito, eteroalchenile C_2-C_6 facoltativamente sostituito, eteroalchinile C_2-C_6 facoltativamente sostituito, ammino facoltativamente sostituito, azido o arile C_6-C_{10} facoltativamente sostituito;

ciascuno tra g e h è, indipendentemente, 0 o 1;

ciascun X^4 è, indipendentemente, O, NH o S; e

ciascun X^2 è indipendentemente O o S;

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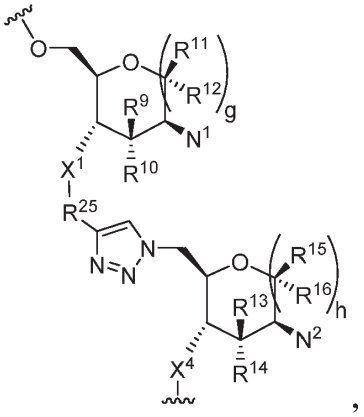
ciascun X^3 è indipendentemente OH, SH, o un loro sale;

ciascun R^{20} e R^{23} è, indipendentemente, una regione di nucleosidi legati; e

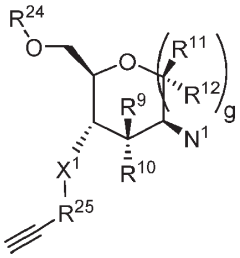
ciascuno tra R^{21} e R^{22} è, indipendentemente, alcossi C_1-C_6 facoltativamente sostituito.

In un altro aspetto, la descrizione presenta un metodo per produrre una composizione che include un polinucleotide chimerico codificante un polipeptide, in cui il polinucleotide include la struttura della Formula XI:



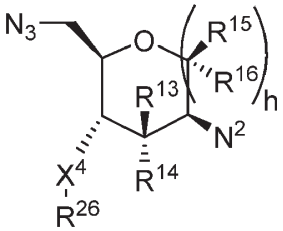
Formula XI

Questo metodo include far reagire un composto avente la struttura della Formula XII:



Formula XII

con un composto avente la struttura di Formula XIII:



Formula XIII

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in cui ciascuno tra N^1 e N^2 è, indipendentemente, una base azotata;

ciascuno tra R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, e R^{16} è, indipendentemente, H, alogeno, idrossi, tiolo, alchile C_1-C_6 facoltativamente sostituito, eteroalchile C_1-C_6 facoltativamente sostituito, eteroalchenile C_2-C_6 facoltativamente sostituito, eteroalchinile C_2-C_6 facoltativamente sostituito, ammino facoltativamente sostituito, azido o arile C_6-C_{10} facoltativamente sostituito;

ciascuno tra g e h è, indipendentemente, 0 o 1;

ciascun X^4 è, indipendentemente, O, NH o S; e

ciascun X^2 è indipendentemente O o S;

ciascun X^3 è indipendentemente OH, SH, o un loro sale;

ciascun R^{24} e R^{26} è, indipendentemente, una regione di nucleosidi legati; e

R^{25} è alchilene C_1-C_6 facoltativamente sostituito o eteroalchilene C_1-C_6 facoltativamente sostituito o R^{25} e il gruppo alchinile insieme formano cicloalchinile facoltativamente sostituito.

In un altro aspetto, la descrizione presenta un metodo per produrre una composizione che include un polinucleotide chimerico codificante un polipeptide, in cui il polinucleotide ha una sequenza che include la Formula II:

$$[A_n]\text{-}L^1\text{-}[B_o], \qquad \textbf{Formula II}$$

Questo metodo include far reagire un composto avente la struttura di Formula XIV

$$[A_n]\text{-}(R^1)_a\text{-}(R^2)_b\text{-}(R^3)_c\text{-}N_3 \qquad \textbf{Formula XIV}$$

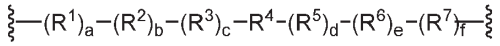
con un composto avente la struttura della Formula XV:

$$R^{27}\text{-}(R^5)_d\text{-}(R^6)_e\text{-}(R^7)_f\text{-}[B_o] \qquad \textbf{Formula XV}$$

in cui ciascun A e B è indipendentemente qualsiasi nucleoside;

n e o sono, indipendentemente tra 15 e 1000; e

L^1 ha la struttura di Formula III:



Formula III

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in cui a, b, c, d, e e f sono ciascuno, indipendentemente, 0 o 1;

in cui ciascun A e B è indipendentemente qualsiasi nucleoside;

n e o sono, indipendentemente da 15 a 1000;

R^1, R^3, R^5, e R^7 ciascuno, indipendentemente, è scelto da alchilene C_1-C_6 facoltativamente sostituito, eteroalchilene C_1-C_6 facoltativamente sostituito, O, S e NR^8;

R^2 e R^6 sono ciascuno, indipendentemente, scelti tra carbonile, tiocarbonile, solfonile o fosforile;

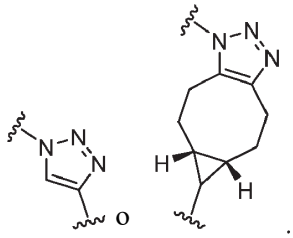
R^4 è un triazolene facoltativamente sostituito; e

R^8 è idrogeno, alchile C_1-C_4 facoltativamente sostituito, alchenile C_3-C_4 facoltativamente sostituito, alchinile C_2-C_4 facoltativamente sostituito, eterociclile C_2-C_6 facoltativamente sostituito, arile C_6-C_{12} facoltativamente sostituito, o eteroalchile C_1-C_7 facoltativamente sostituito; e

R^{27} è un alchinile C_2-C_3 facoltativamente sostituito o un cicloalchinile C_8-C_{12} facoltativamente sostituito,

in cui L^1 è attaccato a $[A_n]$ e $[B_o]$ in corrispondenza dello zucchero di uno dei nucleosidi.

In alcuni casi, il triazolene facoltativamente sostituito ha la struttura:



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In un caso, almeno una delle regioni di nucleosidi legati di A può comprendere una sequenza di nucleosidi legati che possono funzionare come una regione non tradotta (UTR) 5'. La sequenza di nucleosidi legati può essere una 5' UTR naturale o sintetica. A titolo di esempio non limitativo, il polinucleotide chimerico può codificare un polipeptide di interesse e la

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sequenza di nucleosidi legati di A può codificare la 5’ UTR nativa di un polipeptide codificato dal polinucleotide chimerico oppure la sequenza di nucleosidi legati può essere una 5' UTR non eterologa come, ma non limitato a, una UTR sintetica.

In un altro caso, almeno una delle regioni di nucleosidi legati di A può essere una regione cap. La regione cap può essere situata in 5' rispetto a una regione di nucleosidi legati di A fungendo da 5'UTR. La regione cap può comprendere almeno un cap come, ma non limitato a, Cap0, Cap1, ARCA, inosina, N1-metil-guanosina, 2'fluoro-guanosina, 7-deaza-guanosina, 8-osso-guanosina, 2 -ammino-guanosina, LNA-guanosina, 2-azido-guanosina, Cap2 e Cap4.

In un caso, almeno una delle regioni di nucleosidi legati di B può comprendere almeno una cornice di lettura aperta di una sequenza di acido nucleico. La sequenza di acido nucleico può essere codone-ottimizzata e/o comprendere almeno una modificazione.

In un caso, almeno una delle regioni di nucleosidi legati di C può comprendere una sequenza di nucleosidi legati che possono fungere da UTR 3'. La sequenza di nucleosidi legati può essere una 3' UTR naturale o sintetica. A titolo di esempio non limitativo, il polinucleotide chimerico può codificare un polipeptide di interesse e la sequenza di nucleosidi legati di C può codificare la 3’ UTR nativa di un polipeptide codificato dal polinucleotide chimerico oppure la sequenza di nucleosidi legati può essere una 3' UTR non eterologa come, ma non limitato a, una UTR sintetica.

In un caso, almeno una delle regioni di nucleosidi legati di A comprende una sequenza di nucleosidi legati che funge da UTR 5' e almeno una delle regioni di nucleosidi legati di C comprende una sequenza di nucleosidi legati che funge da 3' UTR. In un caso, la 5' UTR e la 3' UTR possono provenire dalla stessa specie o da specie diverse. In un altro caso, la 5' UTR e la 3' UTR possono codificare le regioni native non tradotte da diverse proteine della stessa specie o di specie diverse.

Le Figure 4 e 5 forniscono schemi di una serie di polinucleotidi chimerici che illustrano

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vari modelli di modificazioni posizionali basate sulla Formula I nonché quelli aventi un terminale 3' bloccato o strutturato.

I polinucleotidi chimerici, comprese le loro parti o regioni, della presente invenzione possono essere classificati come emimeri, gapmer, wingmer o blockmer.

Come usato qui, un "emimero" è un polinucleotide chimerico comprendente una regione o parte che comprende metà di un modello, percentuale, posizione o popolazione di una o più modificazioni chimiche e metà di un secondo modello, percentuale, posizione o popolazione di una o più modificazioni chimiche. I polinucleotidi chimerici della presente invenzione possono anche comprendere sottoregioni di emimeri. In una forma di realizzazione, una parte o regione è il 50% di una e il 50% di un'altra.

In una forma di realizzazione l'intero polinucleotide chimerico può essere il 50% dell'uno e il 50% dell'altro. Qualsiasi regione o parte di qualsiasi polinucleotide chimerico dell'invenzione può essere un emimero. I tipi di emimeri includono emimeri di modelli, emimeri di popolazioni o emimeri di posizioni. Per definizione, gli emimeri sono per il 50:50 percento emimeri.

Come usato qui, un "gapmer" è un polinucleotide chimerico avente almeno tre parti o regioni con uno spazio (gap) tra le parti o le regioni. Il "gap" può comprendere una regione di nucleosidi legati o un singolo nucleoside che differisce dalla natura chimerica delle due parti o regioni che lo fiancheggiano. Le due parti o regioni di un gapmer possono essere uguali o diverse l'una dall'altra.

Come usato qui, un "wingmer" è un polinucleotide chimerico avente almeno tre parti o regioni con uno spazio tra le parti o le regioni. A differenza di un gapmer, le due parti o regioni fiancheggianti che circondano il gap in un wingmer sono dello stesso grado o tipo. Tale somiglianza può essere nella lunghezza del numero di unità di diverse modificazioni o nel numero di modificazioni. Le wing di un wingmer possono essere più lunghe o più corte del gap.

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Le parti o regioni di wing possono essere del 20, 30, 40, 50, 60, 70, 80, 90 o 95% maggiori o più corte della regione che comprende il gap.

Come usato qui, un "blockmer" è un polinucleotide modellato in cui parti o regioni sono equivalenti per dimensioni o numero e tipo di modificazioni. Le regioni o sottoregioni in un blocmer possono avere lunghezza di 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490 o 500 nucleosidi.

I polinucleotidi chimerici, incluse le loro parti o regioni, della presente invenzione aventi un modello di modificazione chimica sono indicati come "chimere di modello". Le chimere di modello possono anche essere definite blockmer. Le chimere di modello sono quei polinucleotidi che hanno un modello di modificazioni all'interno di, attraverso o tra regioni o parti.

I modelli di modificazioni all'interno di una parte o di una regione sono quelli che

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iniziano e finiscono all'interno di una regione definita. I modelli di modificazione attraverso una parte o una regione sono quei modelli che iniziano in una parte o regione e terminano in un'altra parte o regione adiacente. I modelli di modificazione tra parti o regioni sono quelli che iniziano e terminano in una parte o regione e si ripetono in una parte o regione diversa, che non è necessariamente adiacente alla prima regione o parte.

Le regioni o sottoregioni di chimere di modello o blockmer possono avere semplici pattern alternati come ABAB[AB]n dove ciascun "A" e ciascun "B" rappresentano diverse modificazioni chimiche (almeno uno tra base, zucchero o linker della catena principale), diversi tipi di modificazioni chimiche (ad esempio naturali e non naturali), diverse percentuali di modificazioni o diverse popolazioni di modificazioni. Il modello può ripetersi n numero di volte dove n=3-300. Inoltre, ciascun A o B può rappresentare da 1 a 2500 unità (ad esempio nucleosidi) nel modello. I modelli possono anche essere multipli alternati come il modello AABBAABB[AABB]n (un doppio multiplo alternato) o AAABBBAAABBB[AAABBB]n (un triplo multiplo alternato). Il modello può ripetersi n numero di volte dove n=3-300.

Diversi modelli possono anche essere mescolati insieme per formare un modello di secondo ordine. Ad esempio, un singolo modello alternato può essere combinato con un triplo modello alternato per formare un modello alternato del secondo ordine A'B'. Un esempio potrebbe essere [ABABAB][AAABBBAAABBB] [ABABAB][AAABBBAAABBB] [ABABAB][AAABBBAAABBB], dove [ABABAB] è A’ e [AAABBBAAABBB] è B'. Allo stesso modo, questi modelli possono essere ripetuti n numero di volte, dove n=3-300.

I modelli possono includere tre o più diverse modificazioni per formare un modello ABCABC[ABC]n. Questi modelli a tre componenti possono anche essere multipli, come AABBCCAABBCC[AABBCC]n e possono essere progettati come combinazioni con altri modelli come ABCABCAABBCCABCABCAABBCC, e possono essere modelli di ordine superiore.

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Le regioni o sottoregioni di modificazioni di posizione, percentuale e popolazione non devono necessariamente riflettere un contributo uguale da ciascun tipo di modificazione. Possono formare serie come "1-2-3-4", "1-2-4-8", dove ogni intero rappresenta il numero di unità di un particolare tipo di modificazione. In alternativa, possono essere solo dispari, come ‘1-3-3-1-3-1-5" o solo pari "2-4-2-4-6-4-8" o un misto di numero dispari e pari di unità come "1-3-4-2-5-7-3-3-4".

Le chimere di modello possono variare nella loro modificazione chimica in base al grado (come quelli descritti sopra) o al tipo (ad esempio, diverse modificazioni).

I polinucleotidi chimerici, incluse le loro parti o regioni, della presente descrizione aventi almeno una regione con due o più diverse modificazioni chimiche di due o più membri nucleosidici dello stesso tipo nucleosidico (A, C, G, T o U) sono denominate chimere "posizionalmente modificate". Chimere posizionalmente modificate sono altresì qui denominate chimere di "posizionamento selettivo" o "polinucleotidi di posizionamento selettivo". Come suggerisce il nome, il posizionamento selettivo si riferisce alla progettazione di polinucleotidi che, a differenza dei polinucleotidi nella tecnica in cui la modificazione a qualsiasi A, C, G, T o U è la stessa in virtù del metodo di sintesi, possono avere diverse modificazioni delle singole A, C, G, T o U in un polinucleotide o sua regione. Ad esempio, in un polinucleotide chimerico posizionalmente modificato, possono esservi due o più diverse modificazioni chimiche a qualsiasi tipo di nucleoside di A, C, G, T o U. Possono esservi anche combinazioni da due o più a qualsiasi due o più dello stesso tipo di nucleoside. Ad esempio, un polinucleotide chimerico posizionalmente modificato o a posizionamento selettivo può comprendere 3 diverse modificazioni alla popolazione di adenine nella molecola e avere anche 3 diverse modificazioni alla popolazione di citosine nel costrutto, tutte le quali possono avere un unico posizionamento non casuale.

I polinucleotidi chimerici, incluse le loro parti o regioni, della presente invenzione

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aventi una percentuale di modificazione chimica sono indicati come "chimere percentuali". Le chimere percentuali possono avere regioni o parti che comprendono almeno l'1%, almeno il 2%, almeno il 5%, almeno l'8%, almeno il 10%, almeno il 20%, almeno il 30%, almeno il 40%, almeno il 50%, almeno il 60%, almeno il 70%, almeno l'80%, almeno il 90%, almeno il 95% o almeno il 99% di modificazioni posizionali, di modello o popolazione. In alternativa, la chimera percentuale può essere completamente modificata per quanto riguarda la posizione, il modello o la popolazione di modificazione. La percentuale di modificazione di una chimera percentuale può essere suddivisa tra modificazioni naturali e non naturali.

I polinucleotidi chimerici, incluse le loro parti o regioni, della presente invenzione aventi una popolazione di modificazioni chimiche sono indicati come "chimere di popolazione". Una chimera di popolazione può comprendere una regione o parte in cui i nucleosidi (il loro legame di base, zucchero o catena principale o una loro combinazione) hanno una popolazione selezionata di modificazioni. Tali modificazioni possono essere selezionate da popolazioni funzionali come modificazioni che inducono, alterano o modulano un esito fenotipico. Ad esempio, una popolazione funzionale può essere una popolazione o una selezione di modificazioni chimiche che aumentano il livello di una citochina. Altre popolazioni funzionali possono funzionare individualmente o collettivamente per diminuire il livello di una o più citochine. L'uso di una selezione di queste modificazioni con funzione simile in un polinucleotide chimerico costituirebbe quindi una "chimera di popolazione funzionale". Come qui utilizzato, una "chimera di popolazione funzionale" può essere quella la cui caratteristica funzionale unica è definita dalla popolazione di modificazioni come descritto sopra oppure il termine può applicarsi alla funzione complessiva del polinucleotide chimerico stesso. Ad esempio, nel complesso il polinucleotide chimerico può funzionare in modo diverso o superiore rispetto a un polinucleotide non modificato o non chimerico.

Va notato che i polinucleotidi che hanno una modificazione chimica uniforme di tutti di

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qualsiasi dello stesso tipo di nucleoside o una popolazione di modificazioni prodotte dalla semplice titolazione verso il basso della stessa modificazione iniziale in tutti di qualsiasi dello stesso tipo di nucleoside, o una percentuale misurata di una modificazione chimica di tutti di qualsiasi dello stesso tipo di nucleoside ma con incorporazione casuale, come quando tutte le uridine sono sostituite da un analogo dell'uridina, ad esempio, la pseudouridina, non sono considerate chimeriche. Allo stesso modo, i polinucleotidi aventi una modificazione chimica uniforme di due, tre o quattro dello stesso tipo nucleosidico in tutto l'intero polinucleotide (come tutte le uridine e tutte le citosine, eccetera, sono modificate allo stesso modo) non sono considerati polinucleotidi chimerici. Un esempio di un polinucleotide che non è chimerico è il polinucleotide canonico modificato con pseudouridina/5-metil citosina della tecnica precedente. Questi polinucleotidi uniformi vengono raggiunti interamente tramite sintesi enzimatica di trascrizione *in vitro* (IVT); e a causa delle limitazioni degli enzimi sintetizzanti, contengono un solo tipo di modificazione al verificarsi di ciascuno dello stesso tipo di nucleoside, vale a dire adenosina (A), timidina (T), guanosina (G), citidina (C) o uradina (U), trovato nel polinucleotide. Tali polinucleotidi possono essere caratterizzati come polinucleotidi IVT.

I polinucleotidi chimerici della presente invenzione sono chimicamente modificati. Quando i polinucleotidi chimerici della presente invenzione sono chimicamente e/o strutturalmente modificati, i polinucleotidi possono essere indicati come "polinucleotidi chimerici modificati".

In alcune forme di realizzazione dell'invenzione, i polinucleotidi chimerici possono codificare due o più peptidi o polipeptidi di interesse. Tali peptidi o polipeptidi di interesse includono le catene pesanti e leggere di anticorpi, un enzima e il suo substrato, una marcatura e la sua molecola legante, un secondo messaggero e il suo enzima o i componenti di proteine o complessi multimerici.

Le regioni o parti dei polinucleotidi chimerici della presente invenzione possono essere

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separate da una porzione linker o spaziatore. Tali linker o spazi possono essere a base di acido nucleico o non nucleosidici.

In una forma di realizzazione, i polinucleotidi chimerici della presente invenzione possono includere una sequenza codificante un peptide ad auto-scissione qui descritto, come, ma non limitato al peptide 2A. La sequenza polinucleotidica del peptide 2A nel polinucleotide chimerico può essere modificata o codone-ottimizzata con i metodi qui descritti e/o sono noti nella tecnica.

Nonostante quanto sopra, i polinucleotidi chimerici della presente invenzione possono comprendere una regione o parte che non è posizionalmente modificata o non chimerica come qui definito.

Ad esempio, una regione o parte di un polinucleotide chimerico può essere uniformemente modificata in corrispondenza di una o più A, T, C, G o U ma secondo la descrizione, i polinucleotidi non saranno modificati in modo uniforme nell'intera regione o parte.

Regioni o parti di polinucleotidi chimerici possono avere una lunghezza compresa tra 15-1000 nucleosidi e un polinucleotide può avere da 2-100 regioni o modelli di regioni differenti come qui descritto.

In un'altra forma di realizzazione, i polinucleotidi chimerici hanno regioni e parti sia codificanti sia non codificanti.

La Figura 2 illustra il progetto di alcuni polinucleotidi chimerici della presente invenzione quando si basa sullo scaffold del polinucleotide della Figura 1. Nella figura sono mostrate le regioni o parti dei polinucleotidi chimerici in cui le regioni modellate rappresentano quelle regioni che sono posizionalmente modificate e le regioni aperte illustrano regioni che possono o non possono essere modificate ma che, quando modificate, sono uniformemente modificate. I polinucleotidi chimerici della presente invenzione possono essere completamente

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posizionalmente modificati o parzialmente posizionalmente modificati. Possono anche avere sottoregioni che possono essere di qualsiasi modello o progetto. Nella Figura 2 sono mostrate una sottoregione chimerica e una sottoregioneemimerica.

In una forma di realizzazione, la lunghezza più breve di una regione del polinucleotide chimerico della presente invenzione che codifica per un peptide può essere la lunghezza sufficiente per codificare per un dipeptide, un tripeptide, un tetrapeptide, un pentapeptide, un esapeptide, un eptapeptide, un ottapeptide, un nonapeptide o un decapeptide. In un'altra forma di realizzazione, la lunghezza può essere sufficiente per codificare un peptide di 2-30 amminoacidi, ad esempio 5-30, 10-30, 2-25, 5-25, 10-25 o 10-20 amminoacidi. La lunghezza può essere sufficiente per codificare un peptide di almeno 11, 12, 13, 14, 15, 17, 20, 25 o 30 amminoacidi, o un peptide che non supera i 40 aminoacidi, ad esempio non più di 35, 30, 25, 20, 17, 15, 14, 13, 12, 11 o 10 amminoacidi. Esempi di dipeptidi che le sequenze polinucleotidiche possono codificare o includere, ma non sono limitati a, carnosina e anserina.

In una forma di realizzazione, la lunghezza di una regione del polinucleotide chimerico della presente invenzione codificante il peptide o polipeptide di interesse può essere maggiore di circa 30 nucleotidi di lunghezza (ad esempio, almeno o maggiore di circa 35, 40, 45, 50, 55, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1.000, 1.100, 1.200, 1.300, 1.400, 1.500, 1.600, 1.700, 1.800, 1.900, 2.000, 2.500 e 3.000, 4.000, 5.000, 6.000, 7.000, 8.000, 9.000, 10.000, 20.000, 30.000, 40.000, 50.000, 60.000, 70.000, 80.000, 90.000, o fino a e incluso 100.000 nucleotidi). Come usato qui, una tale regione può essere indicata come "regione codificante" o "regione di codifica".

In alcune forme di realizzazione, il polinucleotide chimerico include da circa 30 a circa 100.000 nucleotidi (ad esempio, da 30 a 50, da 30 a 100, da 30 a 250, da 30 a 500, da 30 a 1.000, da 30 a 1.500, da 30 a 3.000, da 30 a 5.000, da 30 a 7.000, da 30 a 10.000, da 30 a 25.000, da 30 a 50.000, da 30 a 70.000, da 100 a 250, da 100 a 500, da 100 a 1.000, da 100 a

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1.500, da 100 a 3.000, da 100 a 5.000, da 100 a 7.000, da 100 a 10.000, da 100 a 25.000, da 100 a 50.000, da 100 a 70.000, da 100 a 100.000, da 500 a 1.000, da 500 a 1.500, da 500 a 2.000, da 500 a 3.000, da 500 a 5.000, da 500 a 7.000, da 500 a 10.000, da 500 a 25.000, da 500 a 50.000, da 500 a 70.000, da 500 a 100.000, da 1.000 a 1.500, da 1.000 a 2.000, da 1.000 a 3.000, da 1.000 a 5.000, da 1.000 a 7.000, da 1.000 a 10.000, da 1.000 a 25.000, da 1.000 a 50.000, da 1.000 a 70.000, da 1.000 a 100.000, da 1.500 a 3.000, da 1.500 a 5.000, da 1.500 a 7.000, da 1.500 a 10.000, da 1.500 a 25.000, da 1.500 a 50.000, da 1.500 a 70.000, da 1.500 a 100.000, da 2.000 a 3.000, da 2.000 a 5.000, da 2.000 a 7.000, da 2.000 a 10.000, da 2.000 a 25.000, da 2.000 a 50.000, da 2.000 a 70.000, e da 2.000 a 100.000).

Secondo la presente invenzione, regioni o sottoregioni dei polinucleotidi chimerici possono anche variare indipendentemente da 15-1.000 nucleotidi di lunghezza (ad esempio, maggiore di 30, 40, 45, 50, 55, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 550, 600, 650, 700, 750, 800, 850, 900 e 950 nucleotidi o almeno 30, 40, 45, 50, 55, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950 e 1.000 nucleotidi).

Secondo la presente invenzione, le regioni o sottoregioni di polinucleotidi chimerici possono variare da assente a 500 nucleotidi di lunghezza (ad esempio, almeno 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 250, 300, 350, 400, 450 o 500 nucleotidi). Laddove la regione sia una coda di poliA, la lunghezza può essere determinata in unità o in funzione del legame con la proteina legante poliA. In questa forma di realizzazione, la coda di poliA è sufficientemente lunga da legare almeno 4 monomeri della proteina legante PoliA. I monomeri della proteina legante PoliA si legano a tratti di approssimativamente 38 nucleotidi. Pertanto, è stato osservato che le code di poliA da circa 80 nucleotidi a circa 160 nucleotidi (SEQ ID NO: 2278) sono funzionali. I polinucleotidi chimerici della presente

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invenzione che funzionano come mRNA non devono necessariamente comprendere una coda di poliA.

Secondo la presente invenzione, i polinucleotidi chimerici che funzionano come un mRNA possono avere una regione di capping. La regione di capping può comprendere un singolo cap o una serie di nucleotidi che formano il cap. In questa forma di realizzazione, la regione di capping può avere una lunghezza da 1 a 10, ad esempio 2-9, 3-8, 4-7, 1-5, 5-10, o almeno 2, o 10 o meno nucleotidi. In alcune forme di realizzazione, cap è assente.

La presente invenzione contempla polinucleotidi chimerici che sono circolari o ciclici. Come suggerisce il nome, i polinucleotidi circolari sono di natura circolare, il che significa che i termini sono uniti in qualche modo, sia per ligazione, legame covalente, associazione comune con la stessa proteina o altra molecola o complesso o per ibridazione. Uno qualsiasi dei polinucleotidi circolari come insegnato ad esempio nella domanda di brevetto provvisoria U.S. numero 61/873,010 depositata il 3 settembre 2013, può essere reso chimerico secondo la presente invenzione.

Polinucleotidi chimerici, formulazioni e composizioni comprendenti polinucleotidi chimerici, e metodi di realizzazione, uso e somministrazione di polinucleotidi chimerici sono descritti anche nella domanda di brevetto provvisoria U.S. co-pendente n. 61/873,034, depositata il 3 settembre 2013, dal titolo ChimericPolynucleotides, e nella domanda di brevetto provvisoria U.S. n. 61/877,582, depositata il 13 settembre 2013, dal titolo ChimericPolynucleotides

Architettura di polinucleotidi circolari

La presente invenzione contempla polinucleotidi che sono circolari o ciclici. Come suggerisce il nome, i polinucleotidi circolari sono di natura circolare, il che significa che i termini sono uniti in qualche modo, sia per ligazione, legame covalente, associazione comune con la stessa proteina o altra molecola o complesso o per ibridazione. Uno qualsiasi dei

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polinucleotidi circolari come insegnato ad esempio nella domanda di brevetto provvisoria U.S. n. 61/873,010 depositata il 3 settembre 2013.

I polinucleotidi circolari della presente invenzione possono essere progettati secondo gli scaffold di costrutti di RNA circolare mostrati nelle Figure 6-12. Tali polinucleotidi sono polinucleotidi circolari o costrutti circolari.

I polinucleotidi circolari o circP della presente invenzione che codificano almeno un peptide o polipeptide di interesse sono noti come RNA circolari o circRNA. Gli antigeni dei NAV della presente invenzione possono essere codificati da uno o più RNA circolari o circRNA.

Come usato qui, "RNA circolare" o "circRNA" indica un polinucleotide circolare che può codificare almeno un peptide o polipeptide di interesse.

Come qui utilizzato, "sequenza sensore" indica un recettore o pseudo-recettore per molecole leganti l'acido nucleico endogene. Esempi non limitativi di sequenze sensore includono siti leganti microRNA, sequenze di semina di microRNA, siti leganti microRNA senza la sequenza di semina, siti leganti fattori di trascrizione e siti leganti artificiali ingegnerizzati per agire come pseudo-recettori e loro porzioni e frammenti.

I circP della presente invenzione che comprendono almeno una sequenza sensore e codificano almeno un peptide o polipeptide di interesse sono noti come spugne di RNA circolari o circRNA-SP. Come usato qui, "spugne di RNA circolari" o "circRNA-SP" indica un polinucleotide circolare che comprende almeno una sequenza sensore e almeno una regione codificante almeno un peptide o polipeptide di interesse.

La Figura **6A** mostra un costrutto circolare **200** rappresentativo dei polinucleotidi circolari della presente invenzione. Come qui utilizzato, il termine "costrutto circolare" si riferisce a un trascritto polinucleotidico circolare che può agire sostanzialmente in modo simile a e avere proprietà di una molecola di RNA. In una forma di realizzazione il costrutto circolare

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agisce come un mRNA. Se il costrutto circolare codifica uno o più peptidi o polipeptidi di interesse (ad esempio, un circRNA o circRNA-SP), il trascritto del polinucleotide conserva caratteristiche strutturali e/o chimiche sufficienti per consentire la traduzione del polipeptide di interesse codificato al suo interno. I costrutti circolari possono essere polinucleotidi dell'invenzione. Quando strutturalmente o chimicamente modificato, il costrutto può essere indicato come circP modificato, circSP modificato, circRNA modificato o circRNA-SP modificato.

Ritornando alla Figura **6A,** il costrutto circolare **200** qui contiene una prima regione di nucleotidi legati **202** che è fiancheggiata da una prima regione fiancheggiante **204** e una seconda regione fiancheggiante **206**. Come usato qui, la "prima regione" può essere indicata come una "regione codificante" o "regione non codificante" o “regione di codifica” o semplicemente la "prima regione". In una forma di realizzazione, questa prima regione può comprendere nucleotidi come, ma non in via limitativa, codificanti almeno un peptide o polipeptide di interesse e/o nucleotidi codificanti una regione sensore. Il peptide o polipeptide di interesse può comprendere al suo terminale 5' una o più sequenze peptidiche segnale codificate da una regione di sequenza peptidica segnale **203**. La prima regione fiancheggiante **204** può comprendere una regione di nucleosidi legati o una loro porzione che può agire in modo simile a una regione non tradotta (UTR) in una sequenza di mRNA e/o DNA. La prima regione fiancheggiante può anche comprendere una regione di polarità **208**. La regione di polarità **208** può includere una sequenza IRES o porzione di essa. A titolo di esempio non limitativo, quando linearizzata questa regione può essere suddivisa in modo che una prima porzione si trovi sul terminale 5' della prima regione **202** e la seconda porzione si trovi sul terminale 3' della prima regione **202**. La seconda regione fiancheggiante **206** può comprendere una regione di sequenza di coda **210** e può comprendere una regione di nucleotidi legati o porzione di essi **212** che può agire in modo simile a una UTR in un mRNA e/o DNA.

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A ponte tra il terminale 5' della prima regione **202** e la prima regione fiancheggiante **104** vi è una prima regione operativa **205**. In una forma di realizzazione, questa regione operativa può comprendere un codone di inizio. La regione operativa può in alternativa comprendere qualsiasi sequenza o segnale di inizio della traduzione includente un codone di inizio.

A ponte tra il terminale 3' della prima regione **202** e la seconda regione fiancheggiante **106** vi è una seconda regione operativa **207**. Tradizionalmente questa regione operativa comprende un codone di arresto. La regione operativa può in alternativa comprendere qualsiasi sequenza o segnale di inizio della traduzione includente un codone di arresto. Secondo la presente invenzione, possono essere utilizzati anche più codoni di arresto seriali. In una forma di realizzazione, la regione operativa della presente invenzione può comprendere due codoni di arresto. Il primo codone di arresto può essere "TGA" o "UGA" e il secondo codone di arresto può essere scelto dal gruppo costituito da "TAA", "TGA", "TAG", "UAA", "UGA" o "UAG".

Passando alla Figura **6B**, almeno una frazione non di acido nucleico **201** può essere utilizzata per preparare un costrutto circolare **200** dove la frazione non di acido nucleico **201** è usata per portare la prima regione fiancheggiante **204** vicino alla seconda regione fiancheggiante **206.** Vengono qui descritti esempi non limitativi di porzioni non di acido nucleico che possono essere utilizzate nella presente invenzione. Il costrutto circolare **200** può comprendere più di una frazione non di acido nucleico in cui le frazioni aggiuntive non di acido nucleico possono essere eterologhe o omologhe alla prima porzione non di acido nucleico.

Passando alla Figura **7A,** la prima regione dei nucleosidi legati **202** può comprendere una regione spaziatore **214.** Questa regione spaziatore **214** può essere utilizzata per separare la prima regione di nucleosidi legati **202** in modo che il costrutto circolare possa includere più di una cornice di lettura aperta, una regione non codificante o una cornice di lettura aperta e una regione non codificante.

Passando alla Figura **7B**, la seconda regione fiancheggiante **206** può comprendere una o

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più regioni sensore **216** nella 3'UTR **212**. Queste sequenze sensore come discusso nel presente contesto operano come pseudo-recettori (o siti leganti) per ligandi del microambiente locale del costrutto circolare. Ad esempio, siti leganti di microRNA o semi di miRNA possono essere utilizzati come sensori in modo tale da funzionare come pseudorecettori per qualsiasi microRNA presente nell'ambiente del polinucleotide circolare. Come mostrato in Figura **9**, l'una o più regioni sensore **216** possono essere separate da una regione spaziatore **214.**

Come mostrato in Figura **8A,** un costrutto circolare **200,** che include una o più regioni sensore **216,** può anche includere una regione spaziatore **214** nella prima regione dei nucleosidi legati **202.** Come discusso sopra per la Figura **7,** questa regione spaziatore **214** può essere utilizzata per separare la prima regione di nucleosidi legati **202** in modo che il costrutto circolare possa includere più di una cornice di lettura aperta e/o più di una regione non codificante.

Passando alla Figura **8B**, un costrutto circolare **200** può essere un costrutto non codificante noto come circSP comprendente almeno una regione non codificante come, ma non limitata a, una regione sensore **216**. Ciascuna delle regioni sensore **216** può includere, a titolo esemplificativo, una sequenza miR, un seme miR, un sito di legame miR e/o una sequenza miR senza il seme.

Passando alla Figura **9**, almeno una frazione non di acido nucleico **201** può essere utilizzata per preparare un costrutto circolare **200** che è un costrutto non codificante. Il costrutto circolare **200** che è un costrutto non codificante può comprendere più di una frazione non di acido nucleico in cui le frazioni aggiuntive non di acido nucleico possono essere eterologhe o omologhe alla prima porzione non di acido nucleico.

Polinucleotidi circolari, formulazioni e composizioni comprendenti polinucleotidi chimerici, e metodi di realizzazione, uso e somministrazione di polinucleotidi circolari sono descritti anche nella domanda di brevetto provvisoria U.S. co-pendente n. 61/873,010,

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depositata il 3 settembre 2013, dal titolo CircularPolynucleotides, e nella domanda di brevetto provvisoria U.S. n. 61/877,527, depositata il 13 settembre 2013, dal titolo CircularPolynucleotides.

Multimeri di polinucleotidi

Secondo la presente invenzione, più polinucleotidi chimerici distinti e/o polinucleotidi IVT possono essere legati tra loro attraverso l'estremità 3' utilizzando nucleotidi che sono modificati all'estremità 3'. La coniugazione chimica può essere utilizzata per controllare la stechiometria del rilascio nelle cellule. Ad esempio, gli enzimi del ciclo del gliossilato, isocitratoliasi e malato sintasi, possono essere forniti nelle cellule in un rapporto di 1:1 per alterare il metabolismo cellulare degli acidi grassi. Questo rapporto può essere controllato legando chimicamente polinucleotidi chimerici e/o polinucleotidi IVT usando un nucleotide terminato con 3'-azido su una specie di polinucleotidi e un nucleotide contenente C5-etinile o alchinile sulla specie di polinucleotidi opposta. Il nucleotide modificato viene aggiunto post-trascrizionalmente utilizzando la transferasi terminale (New EnglandBiolabs, Ipswich, MA) secondo il protocollo del produttore. Dopo l'aggiunta del nucleotide modificato in 3', le due specie di polinucleotidi possono essere combinate in una soluzione acquosa, in presenza o assenza di rame, per formare un nuovo legame covalente tramite un meccanismo di click chemistry come descritto nella letteratura.

In un altro esempio, più di due polinucleotidi chimerici e/o polinucleotidi IVT possono essere legati tra loro utilizzando una molecola linker funzionalizzata. Ad esempio, una molecola di saccaride funzionalizzata può essere modificata chimicamente per contenere più gruppi reattivi chimici (SH-, NH_2 -, N_3, eccetera...) per reagire con la frazione affine su una molecola di mRNA 3'-funzionalizzata (vale a dire, un 3'-maleimmide estere, 3'-NHS-estere, alchinile). Il numero di gruppi reattivi sul saccaride modificato può essere controllato in modo stechiometrico per controllare direttamente il rapporto stechiometrico dei polinucleotidi

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chimerici e/o polinucleotidi IVT coniugati.

In una forma di realizzazione, i polinucleotidi chimerici e/o i polinucleotidi IVT possono essere legati insieme in un modello. Il modello può essere un semplice modello alternato come $CD[CD]_X$ dove ciascuna "C" e ciascuna "D" rappresentano un polinucleotide chimerico, un polinucleotide IVT, diversi polinucleotidi chimerici o diversi polinucleotidi IVT. Il modello può essere ripetuto x numero di volte, dove x= 1-300. Resta inteso che gli antigeni dei NAV della presente invenzione possono essere codificati da tali polinucleotidi legati, come qui descritto. I modelli possono anche essere multipli alternati come un modello $CCDD[CCDD]_X$ (un doppio multiplo alternato) o $CCCDDD[CCCDDD]_X$ (un triplo multiplo alternato). Il doppio multiplo alternato o il triplo multiplo alternato possono ripetersi x numero di volte, dove x= 1-300.

Coniugati e combinazioni di polinucleotidi

Al fine di migliorare ulteriormente la produzione di proteine, i polinucleotidi della presente invenzione possono essere progettati per essere coniugati ad altri polinucleotidi, coloranti, agenti intercalanti (*ad esempio* acridine), reticolanti (*ad esempio*psoralene, mitomicina C), porfirine (TPPC4, texafirina, Saffirina), idrocarburi policiclici aromatici (ad esempio fenazina, diidrofenazina), endonucleasi artificiali (ad esempio EDTA), agenti alchilanti, fosfato, ammino, mercapto, PEG (ad esempio PEG-40K), MPEG, $[MPEG]_2$, poliammino, alchile, alchile sostituito, marcatori radiomarcati, enzimi, apteni (ad esempio biotina), facilitatori di trasporto/assorbimento (ad esempio aspirina, vitamina E, acido folico), ribonucleasi sintetiche, proteine, ad esempio glicoproteine o peptidi, ad esempio molecole aventi un'affinità specifica per un co-ligando, o anticorpi, ad esempio un anticorpo, che si lega a un tipo di cellula specificato come una cellula cancerosa, una cellula endoteliale o una cellula ossea, ormoni e recettori ormonali, specie non peptidiche, come lipidi, lectine, carboidrati, vitamine, cofattori, o un farmaco.

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In una forma di realizzazione preferita, i polinucleotidi della presente invenzione che codificano per un antigene sono coniugati con uno o più marcatori delle cellule dendritiche.

La coniugazione può comportare una maggiore stabilità e/o emivita e può essere particolarmente utile per indirizzare i polinucleotidi nella cellula, tessuto o organismo.

Secondo la presente invenzione, i polinucleotidi possono essere somministrati con, coniugati a o codificare ulteriormente, uno o più agenti RNAi, siRNA, shRNA, miRNA, siti leganti miRNA, RNA antisenso, ribozimi, DNA catalitico, tRNA, RNA che inducono la formazione della tripla elica, aptameri o vettori e simili.

Polinucleotidi bifunzionali

In una forma di realizzazione dell'invenzione, i NAV possono comprendere polinucleotidi bifunzionali (ad esempio, polinucleotidi IVT bifunzionali, polinucleotidi chimerici bifunzionali o polinucleotidi circolari bifunzionali). Come suggerisce il nome, i polinucleotidi bifunzionali sono quelli che hanno o sono capaci di almeno due funzioni. Queste molecole possono anche essere denominate per convenzione multifunzionali. Resta inteso che i polinucleotidi di NAV della presente invenzione possono essere coniugati ad altre molecole o agenti, come descritto sopra.

Le molteplici funzionalità dei polinucleotidi bifunzionali possono essere codificate dal NAV (la funzione può non manifestarsi finché il prodotto codificato non viene tradotto) o possono essere una proprietà del polinucleotide stesso. Può essere strutturale o chimica. I polinucleotidi modificati bifunzionali possono comprendere una funzione che è associata covalentemente o elettrostaticamente ai polinucleotidi. Inoltre, le due funzioni possono essere fornite nel contesto di un complesso di un polinucleotide chimerico e un'altra molecola.

Polinucleotidi non codificanti

Come descritto nel presente contesto, vengono forniti polinucleotidi aventi sequenze parzialmente o sostanzialmente non traducibili, ad esempio aventi una regione non codificante.

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Come esempio non limitativo, la regione non codificante può essere la prima regione del polinucleotide IVT o del polinucleotide circolare. In alternativa, la regione non codificante può essere una regione diversa dalla prima regione. Come altro esempio non limitativo, la regione non codificante può essere la regione A, B e/o C del polinucleotide chimerico.

Tali molecole generalmente non sono tradotte, ma possono esercitare un effetto sulla risposta immunitaria o sulla produzione proteica mediante uno o più legami e sequestri di uno o più componenti del meccanismo della traduzione come una proteina ribosomiale o un RNA transfer (tRNA), riducendo così efficacemente l'espressione proteica nella cellula o modulando uno o più percorsi o cascate in una cellula che a sua volta altera i livelli di proteine. Il polinucleotide può contenere o codificare uno o più lunghi RNA non codificanti (lncRNA o lincRNA) o porzioni di essi, un piccolo RNA nucleolare (sno-RNA), micro RNA (miRNA), piccolo RNA interferente (siRNA) o RNA Piwi-interagente (piRNA). Esempi di tali molecole IncRNA e costrutti di RNAi progettati per prendere di mira tale IncRNA ognuno dei quali può essere codificato nei polinucleotidi sono insegnati nella Pubblicazione internazionale, WO2012/018881 A2,

Secondo la presente invenzione, il polinucleotide codifica per uno o più polipeptidi di interesse o frammenti di essi. Tale polipeptide di interesse può includere, ma non è limitato a, polipeptidi interi, una pluralità di polipeptidi o frammenti di polipeptidi, che possono essere codificati indipendentemente da una o più regioni o parti o l'interezza di un polinucleotide. Come usato qui, il termine "polipeptidi di interesse" si riferisce a qualsiasi polipeptide selezionato per essere codificato all'interno di, o la cui funzione è influenzata da, i polinucleotidi della presente invenzione. I peptidi o polipetidi dell'invenzione sono antigenici.

Come usato qui, "polipeptide" indica un polimero di residui amminoacidici (naturali o non naturali) legati insieme il più delle volte mediante legami peptidici. Il termine, come utilizzato nel presente contesto, si riferisce a proteine, polipeptidi e peptidi di qualsiasi

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dimensione, struttura o funzione. I polipeptidi di interesse sono antigeni codificati mediante i polinucleotidi come qui descritto.

In alcuni casi il polipeptide codificato è più piccolo di circa 50 amminoacidi e il polipeptide viene quindi chiamato peptide. Se il polipeptide è un peptide, sarà lungo almeno circa 2, 3, 4 o almeno 5 residui amminoacidici. Pertanto, i polipeptidi includono prodotti genici, polipeptidi naturali, polipeptidi sintetici, omologhi, ortologhi, paraloghi, frammenti e altri equivalenti, varianti e analoghi dei precedenti. Un polipeptide può essere una singola molecola o può essere un complesso multi-molecolare come un dimero, trimero o tetramero. Possono anche comprendere polipeptidi a catena singola o multicatena come anticorpi o insulina e possono essere associati o legati. I legami disolfuro più comunemente si trovano nei polipeptidi multicatena. Il termine polipeptide può anche essere applicato a polimeri di amminoacidi in cui uno o più residui amminoacidici sono un analogo chimico artificiale di un corrispondente amminoacido presente in natura.

Il termine "variante polipeptidica" si riferisce a molecole che differiscono nella loro sequenza amminoacidica da una sequenza nativa o di riferimento. Le varianti della sequenza amminoacidica possono possedere sostituzioni, delezioni e/o inserzioni in determinate posizioni all'interno della sequenza amminoacidica, rispetto a una sequenza nativa o di riferimento. Normalmente, le varianti possederanno almeno circa il 50% di identità (omologia) con una sequenza nativa o di riferimento e, preferibilmente, saranno per almeno circa l'80%, più preferibilmente almeno circa il 90% identiche (omologhe) a una sequenza nativa o di riferimento.

In alcune forme di realizzazione sono fornite "mimetici di variante". Come qui utilizzato, il termine "mimetico di variante" è quello che contiene uno o più amminoacidi che imiterebbero una sequenza attivata. Ad esempio, il glutammato può fungere da mimetico della fosforo-treonina e/o della fosforo-serina. In alternativa, i mimetici di variante possono

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comportare la disattivazione o un prodotto inattivato contenente il mimetico, ad esempio la fenilalanina può agire come sostituzione inattivante della tirosina; oppure l'alanina può agire come una sostituzione inattivante della serina.

L'"omologia" applicata alle sequenze amminoacidiche è definita come la percentuale di residui nella sequenza amminoacidica candidata che sono identici ai residui nella sequenza amminoacidica di una seconda sequenza dopo aver allineato le sequenze e introdotto gap, se necessario, per ottenere la massima omologia percentuale. Metodi e programmi informatici per l'allineamento sono ben noti nella tecnica. Resta inteso che l'omologia dipende da un calcolo di identità percentuale ma può differire di valore a causa di gap e penalità introdotti nel calcolo.

Per "omologhi" come si applica alle sequenze polipeptidiche si intende la sequenza corrispondente di altre specie avente identità sostanziale con una seconda sequenza di una seconda specie.

"Analoghi" è inteso a includere varianti polipeptidiche che differiscono per una o più alterazioni amminoacidiche, ad esempio, sostituzioni, addizioni o delezioni di residui amminoacidici che mantengono ancora una o più proprietà del polipeptide progenitore o di partenza.

La presente invenzione contempla diversi tipi di composizioni a base di polipeptidi, incluse varianti e derivati. Questi includono varianti e derivati sostitutivi, inserzionali, di delezione e covalenti. Il termine "derivato" è usato come sinonimo del termine "variante" ma generalmente si riferisce a una molecola che è stata modificata e/o cambiata in qualche modo rispetto a una molecola di riferimento o di partenza.

Pertanto, nella ambito della presente invenzione sono inclusi polinucleotidi codificanti peptidi o polipeptidi contenenti sostituzioni, inserzioni e/o addizioni, delezioni e modificazioni covalenti rispetto alle sequenze di riferimento, in particolare le sequenze polipeptidiche qui descritte. Ad esempio, tag di sequenza o amminoacidi, come una o più lisine, possono essere

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aggiunti alle sequenze peptidiche dell'invenzione (ad esempio, alle estremità N-terminale o C-terminale). I tag di sequenza possono essere utilizzati per la purificazione o la localizzazione di peptidi. Le lisine possono essere utilizzate per aumentare la solubilità dei peptidi o per consentire la biotinilazione. In alternativa, i residui amminoacidici situati in corrispondenza delle regioni carbossi- e amminoterminali della sequenza amminoacidica di un peptide o di una proteina possono facoltativamente essere eliminati fornendo sequenze troncate. Alcuni amminoacidi (ad esempio residui C-terminali o N-terminali) possono in alternativa essere eliminati a seconda dell'uso della sequenza, come ad esempio l'espressione della sequenza come parte di una sequenza più grande che è solubile o legata a un supporto solido.

"Varianti sostitutive" quando si fa riferimento ai polipeptidi sono quelle che hanno rimosso almeno un residuo amminoacidico in una sequenza nativa o di partenza e un amminoacido diverso inserito al suo posto nella stessa posizione. Le sostituzioni possono essere singole, dove è stato sostituito un solo amminoacido nella molecola, oppure possono essere multiple, dove sono stati sostituiti due o più amminoacidi nella stessa molecola.

Come usato nel presente contesto, il termine "sostituzione amminoacidica conservativa" si riferisce alla sostituzione di un amminoacido che è normalmente presente nella sequenza con un amminoacido diverso di dimensioni, carica o polarità simili. Esempi di sostituzioni conservative includono la sostituzione di un residuo non polare (idrofobo) come isoleucina, valina e leucina con un altro residuo non polare. Allo stesso modo, esempi di sostituzioni conservative includono la sostituzione di un residuo polare (idrofilo) con un altro come tra arginina e lisina, tra glutammina e asparagina e tra glicina e serina. Inoltre, la sostituzione di un residuo basico come lisina, arginina o istidina con un altro, o la sostituzione di un residuo acido come acido aspartico o acido glutammico con un altro residuo acido sono ulteriori esempi di sostituzioni conservative. Esempi di sostituzioni non conservative includono la sostituzione di un residuo amminoacidico non polare (idrofobo) come isoleucina, valina, leucina, alanina,

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metionina con un residuo polare (idrofilo) come cisteina, glutammina, acido glutammico o lisina e/o un residuo polare con un residuo non polare.

Le "varianti inserzionali" quando si fa riferimento ai polipeptidi sono quelle con uno o più amminoacidi inseriti immediatamente adiacenti a un amminoacido in una particolare posizione in una sequenza nativa o di partenza. "Immediatamente adiacente" a un amminoacido significa collegato al gruppo alfa-carbossi- o alfa-ammino-funzionale dell'amminoacido.

Le "varianti di delezione" quando si fa riferimento ai polipeptidi sono quelle con uno o più amminoacidi nella sequenza amminoacidica nativa o di partenza rimossa. Normalmente, le varianti di delezione avranno uno o più amminoacidi eliminati in una particolare regione della molecola.

"Derivati covalenti" quando si fa riferimento a polipeptidi includono modificazioni di una proteina nativa o di partenza con un agente derivatizzante organico proteico o non proteico, e/o modificazioni post-traduzionali. Le modificazioni covalenti vengono tradizionalmente introdotte facendo reagire residui amminoacidici mirati della proteina con un agente derivatizzante organico in grado di reagire con catene laterali o residui terminali selezionati, o sfruttando meccanismi di modificazioni post-traduzionali che funzionano in cellule ospite ricombinanti selezionate. I derivati covalenti risultanti sono utili in programmi diretti all'identificazione di residui importanti per l'attività biologica, per saggi immunologici o per la preparazione di anticorpi anti-proteina per la purificazione di immunoaffinità della glicoproteina ricombinante. Tali modificazioni rientrano nell'ambito dell'ordinaria competenza nel settore e vengono eseguite senza eccessiva sperimentazione.

Alcune modificazioni post-traduzionali sono il risultato dell'azione delle cellule ospite ricombinanti sul polipeptide espresso. I residui di glutamminile e asparaginile sono frequentemente deammidati post-traduzionalmente ai corrispondenti residui di glutammile e aspartile. In alternativa, questi residui vengono deammidati in condizioni leggermente acide.

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Entrambe le forme di questi residui possono essere presenti nei polipeptidi prodotti secondo la presente invenzione.

Altre modificazioni post-traduzionali includono l'idrossilazione della prolina e della lisina, la fosforilazione dei gruppi idrossile dei residui serilici o treonilici, la metilazione dei gruppi alfa-amminici delle catene laterali di lisina, arginina e istidina (T. E. Creighton, Proteins: Structure and MolecularProperties, W.H. Freeman & Co., San Francisco, pp. 79-86 (1983)).

Le "caratteristiche" quando si fa riferimento ai polipeptidi sono definite come componenti distinti basati sulla sequenza amminoacidica di una molecola. Le caratteristiche dei polipeptidi codificati dai polinucleotidi della presente invenzione includono manifestazioni di superficie, forma conformazionale locale, pieghe, anse, semi-anse, domini, semidomini, siti, terminali o qualsiasi loro combinazione.

Come usato nel presente contesto quando si fa riferimento ai polipeptidi, il termine "manifestazione superficiale" si riferisce a un componente a base di polipeptidi di una proteina che appare su una superficie più esterna.

Come usato nel presente contesto quando si fa riferimento ai polipeptidi, il termine "forma conformazionale locale" indica una manifestazione strutturale basata su polipeptidi di una proteina che si trova all'interno di uno spazio definibile della proteina.

Come usato nel presente contesto quando si fa riferimento a polipeptidi, il termine "piega" si riferisce alla conformazione risultante di una sequenza amminoacidica al seguito della minimizzazione dell'energia. Una piega può verificarsi a livello secondario o terziario del processo di ripiegamento. Esempi di pieghe di livello secondario includono foglietti beta e alfa eliche. Esempi di pieghe terziarie includono domini e regioni formati a causa dell'aggregazione o della separazione di forze energetiche. Le regioni formate in questo modo includono tasche idrofobe e idrofile e simili.

Come usato nel presente contesto, il termine "curva" in relazione alla conformazione

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proteica indica una flessione che altera la direzione della catena principale di un peptide o polipeptide e può coinvolgere uno, due, tre o più residui amminoacidici.

Come usato nel presente contesto quando si fa riferimento a polipeptidi, il termine "ansa" si riferisce a una caratteristica strutturale di un polipeptide che può servire a invertire la direzione della catena principale di un peptide o polipeptide. Laddove l'ansa si trovi in un polipeptide e alteri soltanto la direzione della catena principale, può comprendere quattro o più residui amminoacidici. Oliva et al. hanno identificato almeno 5 classi di anse proteiche (J. MolBiol 266 (4): 814-830; 1997). Le anse possono essere aperte o chiuse. Anse chiuse o anse "cicliche" possono comprendere 2, 3, 4, 5, 6, 7, 8, 9, 10 o più amminoacidi tra le frazioni a ponte. Tali frazioni a ponte possono comprendere un ponte cisteina-cisteina (Cys-Cys) tipico in polipeptidi aventi ponti disolfuro o in alternativa frazioni a ponte possono essere non a base di proteine come gli agenti dibromozililici qui usati.

Come usato nel presente contesto quando si fa riferimento ai polipeptidi, il termine "semi-ansa" si riferisce a una porzione di un ansa identificata avente almeno la metà del numero residui amminoacidici rispetto all'ansa da cui è derivato. Resta inteso che le anse possono non contenere sempre un numero pari di residui amminoacidici. Pertanto, nei casi in cui un'ansa contiene o è identificata per comprendere un numero dispari di amminoacidi, una semi-ansa dell'ansa di numero dispari comprenderà la porzione di numero intero o la successiva porzione di numero intero dell'ansa (numero di amminoacidi dell'ansa/2+/-0,5 amminoacidi). Ad esempio, un'ansa identificata come un'ansa di 7 amminoacidi potrebbe produrre semi-anse di 3 amminoacidi o 4 amminoacidi (7/2=3,5+/-0,5 essendo 3 o 4).

Come usato nel presente contesto quando si fa riferimento a polipeptidi, il termine "dominio" si riferisce a un motivo di un polipeptide avente una o più caratteristiche o proprietà strutturali o funzionali identificabili (ad esempio, capacità di legame, fungere da sito per le interazioni proteina-proteina).

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Come usato nel presente contesto quando si fa riferimento ai polipeptidi, il termine "semi-dominio" si riferisce a una porzione di un dominio identificato avente almeno la metà del numero di residui amminoacidi rispetto al dominio da cui è derivato. Resta inteso che i domini possono non contenere sempre un numero pari di residui amminoacidici. Pertanto, nei casi in cui un dominio contiene o è identificato per comprendere un numero dispari di amminoacidi, un semi-dominio del dominio dispari comprenderà la porzione a numero intero o la successiva porzione a numero intero del dominio (numero di amminoacidi del dominio/2+/- 0,5 amminoacidi). Ad esempio, un dominio identificato come un dominio di 7 amminoacidi potrebbe produrre semi-domini di 3 amminoacidi o 4 amminoacidi (7/2=3,5+/-0,5 essendo 3 o 4). Resta anche inteso che i sottodomini possono essere identificati all'interno di domini o semidomini, questi sottodomini che possiedono meno di tutte le proprietà strutturali o funzionali identificate nei domini o semidomini da cui sono stati derivati. Resta anche inteso che gli amminoacidi che comprendono uno qualsiasi dei tipi di dominio qui presenti non devono necessariamente essere contigui lungo la catena principale del polipeptide (vale a dire, gli amminoacidi non adiacenti possono ripiegarsi strutturalmente per produrre un dominio, semidominio o sottodominio).

Come usato nel presente contesto quando si fa riferimento ai polipeptidi, i termini "sito" per quanto riguarda le forme di realizzazione basate su amminoacidi sono usati come sinonimi di "residuo amminoacidico" e "catena laterale amminoacidica". Un sito rappresenta una posizione all'interno di un peptide o polipeptide che può essere modificata, manipolata, alterata, derivatizzata o variata all'interno delle molecole a base di polipeptidi della presente invenzione.

Come usato nel presente contesto, i termini "terminali" o "terminale" quando si fa riferimento a polipeptidi si riferiscono a un'estremità di un peptide o polipeptide. Tale estremità non è limitata soltanto al primo sito o al sito finale del peptide o polipeptide ma può includere amminoacidi aggiuntivi nelle regioni terminali. Le molecole a base di polipeptidi della presente

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invenzione possono essere caratterizzate dall'avere sia un terminale N [terminato da un amminoacido con un gruppo ammino libero (NH2)] sia un terminale C [terminato da un amminoacido con un gruppo carbossilico libero (COOH)]. Le proteine dell'invenzione sono in alcuni casi costituite da più catene polipeptidiche riunite da legami disolfuro o da forze non covalenti (multimeri, oligomeri). Questi tipi di proteine avranno più terminali N e C. In alternativa, i terminali dei polipeptidi possono essere modificati in modo tale che essi inizino o terminino, a seconda dei casi, con una frazione non a base di polipeptidi come un coniugato organico.

Una volta che una qualsiasi delle caratteristiche è stata identificata o definita come un componente desiderato di un polipeptide da codificare mediante il polinucleotide dell'invenzione, qualsiasi delle numerose manipolazioni e/o modificazioni di queste caratteristiche può essere eseguita mediante spostamento, scambio, inversione, delezione, randomizzazione o duplicazione. Inoltre, resta inteso che la manipolazione delle caratteristiche può comportare lo stesso risultato di una modificazione alle molecole dell'invenzione. Ad esempio, una manipolazione che implicasse l'eliminazione di un dominio comporterebbe l'alterazione della lunghezza di una molecola proprio come la modificazione di un acido nucleico per codificare meno di una molecola a lunghezza intera.

Le modificazioni e manipolazioni possono essere realizzate con metodi noti nella tecnica come, ma non solo, la mutagenesi sito-diretta o l'incorporazione *a priori* durante la sintesi chimica. Le molecole modificate risultanti possono quindi essere testate per l'attività utilizzando saggi *in vitro* o *in vivo* come quelli descritti qui o qualsiasi altro saggio di screening adatto noto nella tecnica.

Secondo la presente invenzione, i polipeptidi possono comprendere una sequenza consenso che viene scoperta attraverso cicli di sperimentazione. Come qui utilizzata, una sequenza di "consenso" è una singola sequenza che rappresenta una popolazione collettiva di

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sequenze che consente la variabilità in uno o più siti.

Come riconosciuto dagli esperti della tecnica, anche i frammenti proteici, i domini proteici funzionali e le proteine omologhe sono considerati rientranti nell'ambito dei polipeptidi di interesse della presente invenzione. Ad esempio, qui fornito è qualsiasi frammento proteico (che indica una sequenza polipeptidica di almeno un residuo amminoacidico più corta di una sequenza polipeptidica di riferimento ma per il resto identica) di una proteina di riferimento 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 o più di 100 amminoacidi di lunghezza. In un altro esempio, qualsiasi proteina che includa un tratto di circa 20, circa 30, circa 40, circa 50 o circa 100 amminoacidi che sono per circa il 40%, circa il 50%, circa il 60%, circa il 70%, circa l'80%, circa il 90%, circa il 95% o circa il 100% identici a una qualsiasi delle sequenze qui descritte può essere utilizzata secondo l'invenzione. In determinate forme di realizzazione, un polipeptide da utilizzare secondo l’invenzione include 2, 3, 4, 5, 6, 7, 8, 9, 10 o più mutazioni come mostrato in una qualsiasi delle sequenze fornite o a cui si fa qui riferimento nel presente contesto.

Le molecole di riferimento (polipeptidi o polinucleotidi) possono condividere una certa identità con le molecole progettate (polipeptidi o polinucleotidi). Il termine "identità" come noto nella tecnica, si riferisce a una relazione tra le sequenze di due o più peptidi, polipeptidi o polinucleotidi, come determinato confrontando le sequenze. Nella tecnica, l’identità indica anche il grado di correlazione di sequenza tra di loro, come determinato dal numero di corrispondenze tra stringhe di due o più residui amminoacidici. L'identità misura la percentuale di corrispondenze identiche tra la più piccola di due o più sequenze con allineamenti di gap (se presenti) risolti da un particolare modello matematico o programma per computer (vale a dire "algoritmi"). L'identità dei peptidi correlati può essere facilmente calcolata mediante metodi noti. Tali metodi includono, ma non sono limitati a, quelli descritti inComputationalMolecularBiology, Lesk, A.M., a cura di, Oxford University Press, New York,

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1988; Biocomputing: Informatics and Genome Projects, Smith, D. W., a cura di, Academic Press, New York, 1993; Computer Analysis of Sequence Data, Part 1, Griffin, A. M., e Griffin, H. G., a cura di, Humana Press, New Jersey, 1994; Sequence Analysis in MolecularBiology, von Heinje, G., Academic Press, 1987; Sequence Analysis Primer, Gribskov, M. e Devereux, J., a cura di, M. Stockton Press, New York, 1991; e Carillo et al., SIAM J. Applied Math. 48, 1073 (1988).

In alcune forme di realizzazione, la variante polipeptidica codificata può avere attività identica o simile al polipeptide di riferimento. In alternativa, la variante può avere un'attività alterata (ad esempio, aumentata o diminuita) rispetto a un polipeptide di riferimento. Generalmente, le varianti di uno specifico polinucleotide o polipeptide dell'invenzione avranno almeno circa il 40%, 45%, 50%, 55%, 60%, 65%, 70%, 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99% ma meno del 100% di identità di sequenza con quello specifico polinucleotide o polipeptide di riferimento come determinato dai programmi di allineamento di sequenze e dai parametri qui descritti e noti agli esperti della tecnica. Tali strumenti per l'allineamento includono quelli della suite BLAST (Stephen F. Altschul, Thomas L. Madden, Alejandro A. Schäffer, Jinghui Zhang, Zheng Zhang, Webb Miller, e David J. Lipman (1997), "Gapped BLAST and PSI-BLAST: a new generation of protein database searchprograms", Nucleic Acids Res. 25:3389-3402). Altri strumenti sono descritti qui, in particolare nella definizione di "Identità".

I parametri predefiniti nell'algoritmo BLAST includono, ad esempio, una soglia prevista di 10, la dimensione di Parola di 28, i punteggi di corrispondenza/mancata corrispondenza 1, -2, i Costi di gap Lineari. È possibile applicare qualsiasi filtro, nonché una selezione per ripetizioni specifiche per specie, ad esempio Homo sapiens.

Polipeptidi penetranti le cellule

I polinucleotidi qui descritti (ad esempio, i polinucleotidi codificanti l'antigene presenti

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nei NAV dell'invenzione), possono anche codificare uno o più polipeptidi penetranti le cellule. Come usato qui, "polipeptide penetrante le cellule" o CPP si riferisce a un polipeptide che può facilitare l'assorbimento cellulare di molecole. Un polipeptide penetrante le cellule della presente invenzione può contenere una o più marcature rilevabili. I polipeptidi possono essere parzialmente marcati o completamente marcati. I polinucleotidi possono codificare la marcatura rilevabile completamente, parzialmente o per niente. Il peptide penetrante le cellule può anche includere una sequenza di segnale. Come usato qui, una "sequenza di segnale" si riferisce a una sequenza di residui amminoacidici legati al terminale amminico di una proteina nascente durante la traduzione proteica. La sequenza di segnale può essere utilizzata per segnalare la secrezione del polipeptide penetrante le cellule.

In una forma di realizzazione, i polinucleotidi possono anche codificare una proteina di fusione. La proteina di fusione può essere creata legando operativamente una proteina carica a una proteina terapeutica. Come qui utilizzato, "operativamente legate" si riferisce alla proteina terapeutica e alla proteina carica che sono collegate in modo tale da consentire l'espressione del complesso quando introdotte nella cellula. Come qui utilizzato, "proteina carica" si riferisce a una proteina che reca una carica elettrica positiva, negativa o complessivamente neutra. Preferibilmente, la proteina terapeutica può essere legata in modo covalente alla proteina carica nella formazione della proteina di fusione. Il rapporto tra carica superficiale e amminoacidi totali o superficiali può essere approssimativamente di 0,1, 0,2, 0,3, 0,4, 0,5, 0,6, 0,7, 0,8 o 0,9.

Il polipeptide penetrante le cellule codificato dai polinucleotidi può formare un complesso dopo essere stato tradotto. Il complesso può comprendere una proteina carica legata, ad esempio legata in modo covalente, al polipeptide penetrante le cellule. "Proteina terapeutica" si riferisce a una proteina che, quando somministrata a un cellula, ha un effetto terapeutico, diagnostico e/o profilattico e/o stimola un effetto biologico e/o farmacologico desiderato.

In una forma di realizzazione, il polipeptide penetrante le cellule può comprendere un

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primo dominio e un secondo dominio. Il primo dominio può comprendere un polipeptide supercaricato. Il secondo dominio può comprendere un partner di legame proteico. Come usato qui, "partner di legame proteico" include, ma non è limitato a, anticorpi e loro frammenti funzionali, proteine di scaffold o peptidi. Il polipeptide penetrante le cellule può inoltre comprendere un partner di legame intracellulare per il partner di legame proteico. Il polipeptide penetrante le cellule può essere in grado di essere secreto da una cellula in cui possono essere introdotti i polinucleotidi. Il polipeptide penetrante le cellule può anche essere in grado di penetrare nella prima cellula.

In un'ulteriore forma di realizzazione, il polipeptide penetrante le cellule è in grado di penetrare in una seconda cellula. La seconda cellula può provenire dalla stessa area della prima cella o può provenire da un'area diversa. L'area può includere, ma non è limitata a, tessuti e organi. La seconda cellula può anche essere prossimale o distale alla prima cellula.

In una forma di realizzazione, i polinucleotidi possono codificare un polipeptide penetrante le cellule che può comprendere un partner di legame proteico. Il partner di legame proteico può includere, ma non è limitato a, un anticorpo, un anticorpo supercaricato o un frammento funzionale. I polinucleotidi possono essere introdotti nella cellula dove viene introdotto un polipeptide penetrante le cellule comprendente il partner di legame proteico.

Polipeptidi antimicrobici e antivirali

I polinucleotidi della presente invenzione (vale a dire i polinucleotidi antigene-codificanti presenti nei NAV dell'invenzione) possono essere progettati per essere co-somministrati con un polinucleotide codificante uno o più peptidi antimicrobici (AMP) o peptidi antivirali (AVP). Gli AMP e gli AVP sono stati isolati e descritti da un'ampia gamma di animali come, ma non solo, microrganismi, invertebrati, piante, anfibi, uccelli, pesci e mammiferi (Wang et al., Nucleic Acids Res. 2009; 37 (Database issue):D933-7). Ad esempio, ipolipeptidiantimicrobicisonodescrittinell'Antimicrobial Peptide Database

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(http://aps.unmc.edu/AP/main.php; Wang et al., Nucleic Acids Res. 2009; 37 (Database issue):D933-7), CAMP: Collection of Anti-Microbial Peptides (http://www.bicnirrh.res.in/antimicrobial/); Thomas et al., Nucleic Acids Res. 2010; 38 (Database issue):D774-80), US 5221732, US 5447914, US 5519115, US 5607914, US 5714577, US 5734015, US 5798336, US 5821224, US 5849490, US 5856127, US 5905187, US 5994308, US 5998374, US 6107460, US 6191254, US 6211148, US 6300489, US 6329504, US 6399370, US 6476189, US 6478825, US 6492328, US 6514701, US 6573361, US 6573361, US 6576755, US 6605698, US 6624140, US 6638531, US 6642203, US 6653280, US 6696238, US 6727066, US 6730659, US 6743598, US 6743769, US 6747007, US 6790833, US 6794490, US 6818407, US 6835536, US 6835713, US 6838435, US 6872705, US 6875907, US 6884776, US 6887847, US 6906035, US 6911524, US 6936432, US 7001924, US 7071293, US 7078380, US 7091185, US 7094759, US 7166769, US 7244710, US 7314858, e US 7582301.

I polipeptidi antimicrobici qui descritti possono bloccare la fusione cellulare e/o l'ingresso virale da parte di uno o più virus con pericapside (ad esempio, HIV, HCV). Ad esempio, il polipeptide antimicrobico può comprendere o consistere in un peptide sintetico corrispondente a una regione, *ad esempio,* una sequenza consecutiva di almeno circa 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55 o 60 amminoacidi della subunità transmembrana di una proteina del pericapside virale, *ad esempio,* HIV-1 gp120 o gp41. Le sequenze di amminoacidi e nucleotidi di HIV-1 gp120 o gp41 sono descritte in, *ad esempio,* Kuiken et al., (2008). "HIV SequenceCompendium", Los Alamos National Laboratory.

In alcune forme di realizzazione, il polipeptide antimicrobico può avere almeno circa il 75%, 80%, 85%, 90%, 95%, 100% di omologia di sequenza con la corrispondente sequenza proteica virale. In alcune forme di realizzazione, il polipeptide antimicrobico può avere almeno circa il 75%, 80%, 85%, 90%, 95% o 100% di omologia di sequenza con la corrispondente sequenza proteica virale.

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In altre forme di realizzazione, il polipeptide antimicrobico può comprendere o consistere in un peptide sintetico corrispondente a una regione, *ad esempio,* una sequenza consecutiva di almeno circa 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55 o 60 amminoacidi del dominio legante di una proteina legante il capside. In alcune forme di realizzazione, il polipeptide antimicrobico può avere almeno circa il 75%, 80%, 85%, 90%, 95% o 100% di omologia di sequenza con la sequenza corrispondente della proteina legante il capside.

I polipeptidi antimicrobici qui descritti possono bloccare la dimerizzazione della proteasi e inibire la scissione delle proproteine virali (*ad esempio*, elaborazione HIV Gag-pol) in proteine funzionali prevenendo così il rilascio di uno o più virus con pericapside (*ad esempio,* HIV, HCV). In alcune forme di realizzazione, il polipeptide antimicrobico può avere almeno circa il 75%, 80%, 85%, 90%, 95%, 100% di omologia di sequenza con la corrispondente sequenza proteica virale.

In altre forme di realizzazione, il polipeptide antimicrobico può comprendere o consistere in un peptide sintetico corrispondente a una regione, *ad esempio,* una sequenza consecutiva di almeno circa 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55 o 60 amminoacidi del dominio legante di una proteina legante la proteasi. In alcune forme di realizzazione, il polipeptide antimicrobico può avere almeno circa il 75%, 80%, 85%, 90%, 95%, 100% di omologia di sequenza con la sequenza corrispondente della proteina legante la proteasi.

I polipeptidi antimicrobici qui descritti possono includere un polipeptide evoluto *in vitro* diretto contro un patogeno virale.

Polipeptidi antimicrobici

I polipeptidi antimicrobici (AMP) sono piccoli peptidi di lunghezza, sequenza e struttura variabili con attività ad ampio spettro contro un'ampia gamma di microrganismi inclusi, ma non limitati a, batteri, virus, funghi, protozoi, parassiti, prioni e cellule tumorali/cancerose. (Si veda, *ad esempio,* Zaiou, J MolMed, 2007; 85:317; È stato dimostrato

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che gli AMP hanno un ampio spettro di rapido esordio delle attività di uccisione, con livelli potenzialmente bassi di resistenza indotta e concomitanti ampi effetti antinfiammatori.

In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide antibatterico) può essere inferiore a 10 kDa, *ad esempio,* inferiore a 8 kDa, 6 kDa, 4 kDa, 2 kDa o 1 kDa. In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide antibatterico) è costituito da circa 6 a circa 100 amminoacidi, *ad esempio*, da circa 6 a circa 75 amminoacidi, da circa 6 a circa 50 amminoacidi, da circa 6 a circa 25 amminoacidi, da circa 25 a circa 100 amminoacidi, da circa 50 a circa 100 amminoacidi, o da circa 75 a circa 100 amminoacidi. In determinate forme di realizzazione, il polipeptide antimicrobico (*ad esempio,* un polipeptide antibatterico) può essere costituito da circa 15 a circa 45 amminoacidi. In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide antibatterico) è sostanzialmente cationico.

In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide antibatterico) può essere sostanzialmente anfipatico. In determinate forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide antibatterico) può essere sostanzialmente cationico e anfipatico. In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide antibatterico) può essere citostatico per un batterio Gram-positivo. In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide antibatterico) può essere citotossico per un batterio Gram-positivo. In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide antibatterico) può essere citostatico e citotossico per un batterio Gram-positivo. In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide antibatterico) può essere citostatico per un batterio Gram-negativo. In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio,* un polipeptide antibatterico) può essere citotossico per un batterio Gram-negativo. In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio*, un polipeptide

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antibatterico) può essere citostatico e citotossico per un batterio Gram-positivo. In alcune forme di realizzazione, il polipeptide antimicrobico può essere citostatico per un virus, un fungo, un protozoo, un parassita, un prione o una loro combinazione. In alcune forme di realizzazione, il polipeptide antimicrobico può essere citotossico per un virus, un fungo, un protozoo, un parassita, un prione o una loro combinazione. In determinate forme di realizzazione, il polipeptide antimicrobico può essere citostatico e citotossico un virus, un fungo, un protozoo, un parassita, un prione o una loro combinazione. In alcune forme di realizzazione, il polipeptide antimicrobico può essere citotossico per una cellula tumorale o cancerosa (*ad esempio,* una cellula tumorale e/o cancerosa umana). In alcune forme di realizzazione, il polipeptide antimicrobico può essere citostatico per una cellula tumorale o cancerosa (*ad esempio,* una cellula tumorale e/o cancerosa umana). In determinate forme di realizzazione, il polipeptide antimicrobico può essere citotossico e citostatico per una cellula tumorale o cancerosa (*ad esempio,* una cellula tumorale o cancerosa umana). In alcune forme di realizzazione, il polipeptide antimicrobico (*ad esempio,* un polipeptide antibatterico) può essere un polipeptide secreto.

In alcune forme di realizzazione, il polipeptide antimicrobico comprende o consiste in una defensina. Le defensine esemplificative includono, ma non sono limitate a, α-defensine (ad esempio, defensina 1 dei neutrofili, defensina alfa 1, defensina 3 dei neutrofili, defensina 4 dei neutrofili, defensina 5, defensina 6), β-defensine (*ad esempio*, beta-defensina 1, beta-defensina 2, beta-defensina 103, beta-defensina 107, beta-defensina 110, beta-defensina 136) e θ-defensine. In altre forme di realizzazione, il polipeptide antimicrobico comprende o consiste in una catelicidina (*ad esempio*, hCAP18).

Polipeptidi antivirali

I polipeptidi antivirali (AVP) sono piccoli peptidi di lunghezza, sequenza e struttura variabili con attività ad ampio spettro contro un'ampia gamma di virus. Si veda, *ad*

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esempio, Zaiou, J MolMed, 2007; 85: 317. È stato dimostrato che gli AVP hanno un ampio spettro di rapido esordio delle attività di uccisione, con livelli potenzialmente bassi di resistenza indotta e concomitanti ampi effetti antinfiammatori. In alcune forme di realizzazione, il polipeptide antivirale è inferiore a 10 kDa, *ad esempio,* inferiore a 8 kDa, 6 kDa, 4 kDa, 2 kDa o 1 kDa. In alcune forme di realizzazione, il polipeptide antivirale comprende o è costituito da circa 6 a circa 100 amminoacidi, ad esempio da circa 6 a circa 75 amminoacidi, da circa 6 a circa 50 amminoacidi, da circa 6 a circa 25 amminoacidi, circa da 25 a circa 100 amminoacidi, da circa 50 a circa 100 amminoacidi o da circa 75 a circa 100 amminoacidi. In determinate forme di realizzazione, il polipeptide antivirale comprende o è costituito da circa 15 a circa 45 amminoacidi. In alcune forme di realizzazione, il polipeptide antivirale è sostanzialmente cationico. In alcune forme di realizzazione, il polipeptide antivirale è sostanzialmente anfipatico. In determinate forme di realizzazione, il polipeptide antivirale è sostanzialmente cationico e anfipatico. In alcune forme di realizzazione, il polipeptide antivirale è citostatico per un virus. In alcune forme di realizzazione, il polipeptide antivirale è citotossico per un virus. In alcune forme di realizzazione, il polipeptide antivirale è citostatico e citotossico per un virus. In alcune forme di realizzazione, il polipeptide antivirale è citostatico nei confronti di un batterio, un fungo, un protozoo, un parassita, un prione o una loro combinazione. In alcune forme di realizzazione, il polipeptide antivirale è citotossico per un batterio, un fungo, un protozoo, un parassita, un prione o una loro combinazione. In determinate forme di realizzazione, il polipeptide antivirale è citostatico e citotossico per un batterio, un fungo, un protozoo, un parassita, un prione o una loro combinazione. In alcune forme di realizzazione, il polipeptide antivirale è citotossico per una cellula tumorale o cancerosa (*ad esempio,* una cellula cancerosa umana). In alcune forme di realizzazione, il polipeptide antivirale è citostatico per una cellula tumorale o cancerosa (*ad esempio,* una cellula cancerosa umana). In determinate forme di realizzazione, il polipeptide antivirale è citotossico e citostatico per una cellula tumorale o

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cancerosa (*ad esempio,* una cellula cancerosa umana). In alcune forme di realizzazione, il polipeptide antivirale è un polipeptide secreto.

Nucleosidi citotossici

In una forma di realizzazione, i polinucleotidi della presente invenzione (*vale a dire,* i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono incorporare uno o più nucleosidi citotossici. Ad esempio, i nucleosidi citotossici possono essere incorporati in polinucleotidi come RNA o mRNA modificati bifunzionali. Gli agenti anticancro nucleosidici citotossici includono, ma non sono limitati a, adenosina arabinoside, citarabina, citosina arabinoside, 5-fluorouracile, fludarabina, floxuridina, FTORAFUR® (una combinazione di tegafur e uracile), tegafur ((RS)-5-fluoro-1-(tetraidrofuran-2-il)pirimidin-2,4(1H,3H)-dione) e 6-mercaptopurina.

Un certo numero di analoghi nucleosidici citotossici sono in uso clinico o sono stati oggetto di studi clinici come agenti anticancro. Esempi di tali analoghi includono, ma non sono limitati a, citarabina, gemcitabina, troxacitabina, decitabina, tezacitabina, 2'-desossi-2'-metilidenecitidina (DMDC), cladribina, clofarabina, 5-azacitidina, 4'-tio-aracitidina, ciclopentenilcitosina e 1-(2-C-ciano-2-desossi-beta-D-arabino-pentofuranosil)-citosina. Un altro esempio di un tale composto è fludarabina fosfato. Questi composti possono essere somministrati per via sistemica e possono avere effetti collaterali che sono tipici di agenti citotossici come, ma non solo, scarsa o nessuna specificità per le cellule tumorali rispetto alle cellule normali in proliferazione.

Nella tecnica sono riportati anche numerosi profarmaci di analoghi nucleosidici citotossici. Esempi includono, ma non sono limitati a, N4-behenoil-1-beta-D-arabinofuranosilcitosina, N4-ottadecil-1-beta-D-arabinofuranosilcitosina, N4-palmitoil-1-(2-C-ciano-2-desossi-beta-D-arabino-pentofuranosil)citosina e P-4055 (estere dell'acido citarabina 5'-elaidico). In generale, questi profarmaci possono essere convertiti in farmaci attivi

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principalmente nel fegato e nella circolazione sistemica e mostrare scarso o nessun rilascio selettivo di farmaco attivo nel tessuto tumorale. Ad esempio, la capecitabina, un profarmaco della 5'-desossi-5-fluorocitidina (ed eventualmente del 5-fluorouracile), viene metabolizzata sia nel fegato sia nel tessuto tumorale. Una serie di analoghi della capecitabina contenenti "un radicale facilmente idrolizzabile in condizioni fisiologiche" è stata rivendicata da Fujiu et al. (brevetto U.S. n. 4,966,891). La serie descritta da Fujiu include N4 alchil e aralchil carbammati di 5'-desossi-5-fluorocitidina e l'implicazione che questi composti verranno attivati mediante idrolisi in normali condizioni fisiologiche per fornire 5'-desossi-5-fluorocitidina.

Una serie di citarabina N4-carbammati è stata segnalata da Fadl et al (Pharmazie. 1995, 50, 382-7) in cui i composti sono stati progettati per convertirsi in citarabina nel fegato e nel plasma. WO 2004/041203 descrive profarmaci della gemcitabina, dove alcuni dei profarmaci sono N4-carbammati. Questi composti erano progettati per superare la tossicità gastrointestinale della gemcitabina e avevano lo scopo di fornire gemcitabina mediante rilascio idrolitico nel fegato e nel plasma dopo l'assorbimento del profarmaco intatto dall'apparato gastrointestinale. Nomura et al (BioorgMed. Chem. 2003, 11, 2453-61) hanno descritto derivati acetalici della citosina 1-(3-C-etinil-β-D-ribo-pentofaranosile) che, a seguito di bioriduzione, producevano un intermedio che ha richiesto ulteriore idrolisi in condizioni acide per produrre un composto nucleosidico citotossico.

I nucleotidi citotossici che possono essere chemioterapici includono anche, ma non sono limitati a, pirazolo [3,4-D]-pirimidine, allopurinolo, azatioprina, capecitabina, citosina arabinoside, fluorouracile, mercaptopurina, 6-tioguanina, aciclovir, ara-adenosina, ribavirina, 7-deaza-adenosina, 7-deaza-guanosina, 6-aza-uracile, 6-aza-citidina, timidina ribonucleotide, 5-bromodesossiuridina, 2-cloro-purina e inosina, o loro combinazioni.

***Polinucleotidi aventi regioni non tradotte* (*UTR*)**

I polinucleotidi della presente invenzione (*vale a dire,* i polinucleotidi codificanti

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l'antigene presenti nei NAV dell'invenzione) possono comprendere una o più regioni o parti che agiscono o funzionano come una regione non tradotta. Quando i polinucleotidi sono progettati per codificare almeno un polipeptide di interesse, i polinucleotidi possono comprendere una o più di queste regioni non tradotte.

Per definizione, le regioni non tradotte (UTR) di un gene vengono trascritte ma non tradotte. Nel mRNA, la 5'UTR inizia nel sito di inizio della trascrizione e continua fino al codone di inizio ma non include il codone di inizio, mentre, la 3'UTR inizia immediatamente dopo il codone di arresto e continua fino al segnale di terminazione trascrizionale. Vi è un numero crescente di prove sui ruoli regolatori svolti dalle UTR in termini di stabilità della molecola di acido nucleico e traduzione. Le caratteristiche regolatorie di una UTR possono essere incorporate nei polinucleotidi della presente invenzione, tra le altre cose, per migliorare la stabilità della molecola. Le caratteristiche specifiche possono anche essere incorporate per garantire una sotto-regolazione controllata del trascritto nel caso in cui vengano indirizzate erroneamente a siti di organi indesiderati.

Le Tabelle 19 e 20 forniscono un elenco di UTR esemplificative che possono essere utilizzate nei polinucleotidi della presente invenzione. Nella Tabella 19 è mostrato un elenco di una regione non tradotta 5' dell'invenzione. Possono essere utilizzate varianti di 5' UTR in cui uno o più nucleotidi vengono aggiunti o rimossi in corrispondenza dei terminali, inclusi A, T, C o G.

Tabella 19. Regioni 5’ non tradotte

Identificatore 5'UTR	**Nome/ Descrizione**	**Sequenza**	**SEQ ID NO.**
5UTR-001	UTR a monte	GGGAAATAAGAGAGAAAAGAAGAGTAAGAAG AAATATAAGAGCCACC	2007

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Identificatore 5'UTR	Nome/ Descrizione	Sequenza	SEQ ID NO.
5UTR-002	UTR a monte	GGGAGATCAGAGAGAAAAGAAGAGTAAGAAG AAATATAAGAGCCACC	2008
5UTR-003	UTR a monte	GGAATAAAAGTCTCAACACAACATATACAAAA CAAACGAATCTCAAGCAATCAAGCATTCTACT TCTATTGCAGCAATTTAAATCATTTCTTTTAAA GCAAAAGCAATTTTCTGAAAATTTTCACCATTT ACGAACGATAGCAAC	2009
5UTR-004	UTR a monte	GGGAGACAAGCUUGGCAUUCCGGUACUGUUG GUAAAGCCACC	2010
5UTR-005	UTR a monte	GGGAGATCAGAGAGAAAAGAAGAGTAAGAAG AAATATAAGAGCCACC	2011
5UTR-006	UTR a monte	GGAATAAAAGTCTCAACACAACATATACAAA CAAACGAATCTCAAGCAATCAAGCATTCTAC TCTATTGCAGCAATTTAAATCATTTCTTTTAA GCAAAAGCAATTTTCTGAAAATTTTCACCATT ACGAACGATAGCAAC	2012
5UTR-007	UTR a monte	GGGAGACAAGCUUGGCAUUCCGGUACUGUUG GUAAAGCCACC	2013
5UTR-008	UTR a monte	GGGAATTAACAGAGAAAAGAAGAGTAAGAAG AAATATAAGAGCCACC	2014
5UTR-009	UTR a monte	GGGAAATTAGACAGAAAAGAAGAGTAAGAAG AAATATAAGAGCCACC	2015
5UTR-010	UTR a monte	GGGAAATAAGAGAGTAAAGAACAGTAAGAAG AAATATAAGAGCCACC	2016
5UTR-011	UTR a monte	GGGAAAAAAGAGAGAAAAGAAGACTAAGAAG AAATATAAGAGCCACC	2017
5UTR-012	UTR a monte	GGGAAATAAGAGAGAAAAGAAGAGTAAGAAG ATATATAAGAGCCACC	2018
5UTR-013	UTR a monte	GGGAAATAAGAGACAAAACAAGAGTAAGAAG AAATATAAGAGCCACC	2019
5UTR-014	UTR a monte	GGGAAATTAGAGAGTAAAGAACAGTAAGTAG AATTAAAAGAGCCACC	2020
5UTR-015	UTR a monte	GGGAAATAAGAGAGAATAGAAGAGTAAGAAG AAATATAAGAGCCACC	2021
5UTR-016	UTR a monte	GGGAAATAAGAGAGAAAAGAAGAGTAAGAAG AAAATTAAGAGCCACC	2022
5UTR-017	UTR a monte	GGGAAATAAGAGAGAAAAGAAGAGTAAGAAG AAATTTAAGAGCCACC	2023

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Nella Tabella 20 è mostrato un elenco di regioni non tradotte 3' dell'invenzione. Possono essere utilizzate varianti di 3' UTR in cui uno o più nucleotidi vengono aggiunti o rimossi in corrispondenza dei terminali, inclusi A, T, C o G.

Tabella 20. Regioni 3' non tradotte

Identificatore 3'UTR	Nome/ Descrizione	Sequenza	SEQ ID NO.
3UTR-001	Creatina chinasi	GCGCCTGCCCACCTGCCACCGACTGCTGGAACCCAGCCAGTGGGAGGGCCTG GCCCACCAGAGTCCTGCTCCCTCACTCCTCGCCCCGCCCCCTGTCCCAGAGTC CCACCTGGGGGCTCTCTCCACCCTTCTCAGAGTTCCAGTTTCAACCAGAGTTCC AACCAATGGGCTCCATCCTCTGGATTCTGGCCAATGAAATATCTCCCTGGCAGG GTCCTCTTCTTTTCCCAGAGCTCCACCCCAACCAGGAGCTCTAGTTAATGGAGA GCTCCCAGCACACTCGGAGCTTGTGCTTTGTCTCCACGCAAAGCGATAAATAAA AGCATTGGTGGCCTTTGGTCTTTGAATAAAGCCTGAGTAGGAAGTCTAGA	2024
3UTR-002	Mioglobina	GCCCCTGCCGCTCCCACCCCCACCCATCTGGGCCCCGGGTTCAAGAGAGAGC GGGGTCTGATCTCGTGTAGCCATATAGAGTTTGCTTCTGAGTGTCTGCTTTGTT TAGTAGAGGTGGGCAGGAGGAGCTGAGGGGCTGGGGCTGGGGTGTTGAAGTT GGCTTTGCATGCCCAGCGATGCGCCTCCCTGTGGGATGTCATCACCCTGGGAA CCGGGAGTGGCCCTTGGCTCACTGTGTTCTGCATGGTTTGGATCTGAATTAATT GTCCTTTCTTCTAAATCCCAACCGAACTTCTTCCAACCTCCAAACTGGCTGTAAC CCCAAATCCAAGCCATTAACTACACCTGACAGTAGCAATTGTCTGATTAATCACT GGCCCCTTGAAGACAGCAGAATGTCCCTTTGCAATGAGGAGGAGATCTGGGCT GGGCGGGCCAGCTGGGGAAGCATTTGACTATCTGGAACTTGTGTGTGCCTCCT CAGGTATGGCAGTGACTCACCTGGTTTTAATAAAACAACCTGCAACATCTCATG GTCTTTGAATAAAGCCTGAGTAGGAAGTCTAGA	2025
3UTR-003	α-actina	ACACACTCCACCTCCAGCACGCGACTTCTCAGGACGACGAATCTTCTCAATGG GGGGGCGGCTGAGCTCCAGCCACCCCGCAGTCACTTTCTTTGTAACAACTTCC GTTGCTGCCATCGTAAACTGACACAGTGTTTATAACGTGTACATACATTAACTTA TTACCTCATTTTGTTATTTTTCGAAACAAAGCCCTGTGGAAGAAAATGGAAAACT TGAAGAAGCATTAAAGTCATTCTGTTAAGCTGCGTAAATGGTCTTTGAATAAAGC CTGAGTAGGAAGTCTAGA	2026
3UTR-004	Albumina	CATCACATTTAAAAGCATCTCAGCCTACCATGAGAATAAGAGAAAGAAAATGAA GATCAAAAGCTTATTCATCTGTTTTTCTTTTTCGTTGGTGTAAAGCCAACACCCT GTCTAAAAAACATAAATTTCTTTAATCATTTTGCCTCTTTTCTCTGTGCTTCAATT AATAAAAAATGGAAAGAATCTAATAGAGTGGTACAGCACTGTTATTTTTCAAAGA TGTGTTGCTATCCTGAAAATTCTGTAGGTTCTGTGGAAGTTCCAGTGTTCTCTCT TATTCCACTTCGGTAGAGGATTTCTAGTTTCTTGTGGGCTAATTAAATAAATCAT TAATACTCTTCTAATGGTCTTTGAATAAAGCCTGAGTAGGAAGTCTAGA	2027
3UTR-005	α-globina	GCTGCCTTCTGCGGGGCTTGCCTTCTGGCCATGCCCTTCTTCTCTCCCTTGCA CCTGTACCTCTTGGTCTTTGAATAAAGCCTGAGTAGGAAGGCGGCCGCTCGAG CATGCATCTAGA	2028

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3UTR-006	G-CSF	GCCAAGCCCTCCCCATCCCATGTATTTATCTCTATTTAATATTTATGTCTATTTAA GCCTCATATTTAAAGACAGGGAAGAGCAGAACGGAGCCCCAGGCCTCTGTGTC CTTCCCTGCATTTCTGAGTTTCATTCTCCTGCCTGTAGCAGTGAGAAAAAGCTC CTGTCCTCCCATCCCCTGGACTGGGAGGTAGATAGGTAAATACCAAGTATTTAT TACTATGACTGCTCCCCAGCCCTGGCTCTGCAATGGGCACTGGGATGAGCCGC TGTGAGCCCCTGGTCCTGAGGGTCCCCACCTGGGACCCTTGAGAGTATCAGGT CTCCCACGTGGGAGACAAGAAATCCCTGTTTAATATTTAAACAGCAGTGTTCCC CATCTGGGTCCTTGCACCCCTCACTCTGGCCTCAGCCGACTGCACAGCGGCCC CTGCATCCCCTTGGCTGTGAGGCCCCTGGACAAGCAGAGGTGGCCAGAGCTG GGAGGCATGGCCCTGGGGTCCCACGAATTTGCTGGGGAATCTCGTTTTTCTTC TTAAGACTTTTGGGACATGGTTTGACTCCCGAACATCACCGACGCGTCTCCTGT TTTTCTGGGTGGCCTCGGGACACCTGCCCTGCCCCCACGAGGGTCAGGACTG TGACTCTTTTTAGGGCCAGGCAGGTGCCTGGACATTTGCCTTGCTGGACGGGG ACTGGGGATGTGGGAGGGAGCAGACAGGAGGAATCATGTCAGGCCTGTGTGT GAAAGGAAGCTCCACTGTCACCCTCCACCTCTTCACCCCCCACTCACCAGTGT CCCCTCCACTGTCACATTGTAACTGAACTTCAGGATAATAAAGTGTTTGCCTCC ATGGTCTTTGAATAAAGCCTGAGTAGGAAGGCGGCCGCTCGAGCATGCATCTA GA	2029
3UTR-007	Col1a2; collagene, tipo I, alfa 2	ACTCAATCTAAATTAAAAAAGAAAGAAATTTGAAAAAACTTTCTCTTTGCCATTTC TTCTTCTTCTTTTTTAACTGAAAGCTGAATCCTTCCATTTCTTCTGCACATCTACT TGCTTAAATTGTGGGCAAAAGAGAAAAAGAAGGATTGATCAGAGCATTGTGCAA TACAGTTTCATTAACTCCTTCCCCCGCTCCCCCAAAAATTTGAATTTTTTTTTCAA CACTCTTACACCTGTTATGGAAAATGTCAACCTTTGTAAGAAAACCAAAATAAAA ATTGAAAAATAAAAACCATAAACATTTGCACCACTTGTGGCTTTTGAATATCTTC CACAGAGGGAAGTTTAAAACCCAAACTTCCAAAGGTTTAAACTACCTCAAAACA CTTTCCCATGAGTGTGATCCACATTGTTAGGTGCTGACCTAGACAGAGATGAAC TGAGGTCCTTGTTTTGTTTTGTTCATAATACAAAGGTGCTAATTAATAGTATTTCA GATACTTGAAGAATGTTGATGGTGCTAGAAGAATTTGAGAAGAAATACTCCTGT ATTGAGTTGTATCGTGTGGTGTATTTTTTAAAAAATTTGATTTAGCATTCATATTT TCCATCTTATTCCCAATTAAAAGTATGCAGATTATTTGCCCAAATCTTCTTCAGAT TCAGCATTTGTTCTTTGCCAGTCTCATTTTCATCTTCTTCCATGGTTCCACAGAA GCTTTGTTTCTTGGGCAAGCAGAAAAATTAAATTGTACCTATTTTGTATATGTGA GATGTTTAAATAAATTGTGAAAAAAATGAAATAAAGCATGTTTGGTTTTCCAAAA GAACATAT	2030
3UTR-008	Col6a2; collagene, tipo VI, alfa 2	CGCCGCCGCCCGGGCCCCGCAGTCGAGGGTCGTGAGCCCACCCCGTCCATG GTGCTAAGCGGGCCCGGGTCCCACACGGCCAGCACCGCTGCTCACTCGGACG ACGCCCTGGGCCTGCACCTCTCCAGCTCCTCCCACGGGGTCCCCGTAGCCCC GGCCCCCGCCCAGCCCCAGGTCTCCCCAGGCCCTCCGCAGGCTGCCCGGCC TCCCTCCCCCTGCAGCCATCCCAAGGCTCCTGACCTACCTGGCCCCTGAGCTC TGGAGCAAGCCCTGACCCAATAAAGGCTTTGAACCCAT	2031
3UTR-009	RPN1; riboforina I	GGGGCTAGAGCCCTCTCCGCACAGCGTGGAGACGGGGCAAGGAGGGGGGTT ATTAGGATTGGTGGTTTTGTTTTGCTTTGTTTAAAGCCGTGGGAAAATGGCACA ACTTTACCTCTGTGGGAGATGCAACACTGAGAGCCAAGGGGTGGGAGTTGGGA TAATTTTTATATAAAAGAAGTTTTTCCACTTTGAATTGCTAAAAGTGGCATTTTTC CTATGTGCAGTCACTCCTCTCATTTCTAAAATAGGGACGTGGCCAGGCACGGT GGCTCATGCCTGTAATCCCAGCACTTTGGGAGGCCGAGGCAGGCGGCTCACG AGGTCAGGAGATCGAGACTATCCTGGCTAACACGGTAAAACCCTGTCTCTACTA AAAGTACAAAAAATTAGCTGGGCGTGGTGGTGGGCACCTGTAGTCCCAGCTAC TCGGGAGGCTGAGGCAGGAGAAAGGCATGAATCCAAGAGGCAGAGCTTGCAG TGAGCTGAGATCACGCCATTGCACTCCAGCCTGGGCAACAGTGTTAAGACTCT GTCTCAAATATAAATAAATAAATAAATAAATAAATAAATAAATAAAAATAAAGCGA GATGTTGCCCTCAAA	2032

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3UTR-010	LRP1; proteina correlata al recettore delle lipoproteine a bassa densità 1	GGCCCTGCCCCGTCGGACTGCCCCCAGAAAGCCTCCTGCCCCCTGCCAGTGA AGTCCTTCAGTGAGCCCCTCCCCAGCCAGCCCTTCCCTGGCCCCGCCGGATGT ATAAATGTAAAAATGAAGGAATTACATTTTATATGTGAGCGAGCAAGCCGGCAA GCGAGCACAGTATTATTTCTCCATCCCCTCCCTGCCTGCTCCTTGGCACCCCCA TGCTGCCTTCAGGGAGACAGGCAGGGAGGGCTTGGGGCTGCACCTCCTACCC TCCCACCAGAACGCACCCCACTGGGAGAGCTGGTGGTGCAGCCTTCCCCTCC CTGTATAAGACACTTTGCCAAGGCTCTCCCCTCTCGCCCCATCCCTGCTTGCCC GCTCCCACAGCTTCCTGAGGGCTAATTCTGGGAAGGGAGAGTTCTTTGCTGCC CCTGTCTGGAAGACGTGGCTCTGGGTGAGGTAGGCGGGAAAGGATGGAGTGT TTTAGTTCTTGGGGGAGGCCACCCCAAACCCCAGCCCCAACTCCAGGGGCACC TATGAGATGGCCATGCTCAACCCCCCTCCCAGACAGGCCCTCCCTGTCTCCAG GGCCCCCACCGAGGTTCCCAGGGCTGGAGACTTCCTCTGGTAAACATTCCTCC AGCCTCCCCTCCCCTGGGGACGCCAAGGAGGTGGGCCACACCCAGGAAGGGA AAGCGGGCAGCCCCGTTTTGGGGACGTGAACGTTTTAATAATTTTTGCTGAATT CCTTTACAACTAAATAACACAGATATTGTTATAAATAAAATTGT	2033

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3UTR-011	Nnt1; fattore delle citochine cardiotrofine-like 1	ATATTAAGGATCAAGCTGTTAGCTAATAATGCCACCTCTGCAGTTTTGGGAACA GGCAAATAAAGTATCAGTATACATGGTGATGTACATCTGTAGCAAAGCTCTTGG AGAAAATGAAGACTGAAGAAAGCAAAGCAAAAACTGTATAGAGAGATTTTTCAA AAGCAGTAATCCCTCAATTTTAAAAAAGGATTGAAAATTCTAAATGTCTTTCTGT GCATATTTTTTGTGTTAGGAATCAAAAGTATTTTATAAAAGGAGAAAGAACAGCC TCATTTTAGATGTAGTCCTGTTGGATTTTTTATGCCTCCTCAGTAACCAGAAATG TTTTAAAAAACTAAGTGTTTAGGATTTCAAGACAACATTATACATGGCTCTGAAA TATCTGACACAATGTAAACATTGCAGGCACCTGCATTTTATGTTTTTTTTTTCAAC AAATGTGACTAATTTGAAACTTTTATGAACTTCTGAGCTGTCCCCTTGCAATTCA ACCGCAGTTTGAATTAATCATATCAAATCAGTTTTAATTTTTTAAATTGTACTTCA GAGTCTATATTTCAAGGGCACATTTTCTCACTACTATTTTAATACATTAAAGGACT AAATAATCTTTCAGAGATGCTGGAAACAAATCATTTGCTTTATATGTTTCATTAGA ATACCAATGAAACATACAACTTGAAAATTAGTAATAGTATTTTTGAAGATCCCATT TCTAATTGGAGATCTCTTTAATTTCGATCAACTTATAATGTGTAGTACTATATTAA GTGCACTTGAGTGGAATTCAACATTTGACTAATAAAATGAGTTCATCATGTTGGC AAGTGATGTGGCAATTATCTCTGGTGACAAAAGAGTAAAATCAAATATTTCTGCC TGTTACAAATATCAAGGAAGACCTGCTACTATGAAATAGATGACATTAATCTGTC TTCACTGTTTATAATACGGATGGATTTTTTTTCAAATCAGTGTGTGTTTTGAGGT CTTATGTAATTGATGACATTTGAGAGAAATGGTGGCTTTTTTTAGCTACCTCTTT GTTCATTTAAGCACCAGTAAAGATCATGTCTTTTTATAGAAGTGTAGATTTTCTTT GTGACTTTGCTATCGTGCCTAAAGCTCTAAATATAGGTGAATGTGTGATGAATA CTCAGATTATTTGTCTCTCTATATAATTAGTTTGGTACTAAGTTTCTCAAAAAATT ATTAACACATGAAAGACAATCTCTAAACCAGAAAAAGAAGTAGTACAAATTTTGT TACTGTAATGCTCGCGTTTAGTGAGTTTAAAACACACAGTATCTTTTGGTTTTAT AATCAGTTTCTATTTTGCTGTGCCTGAGATTAAGATCTGTGTATGTGTGTGTGTG TGTGTGTGCGTTTGTGTGTTAAAGCAGAAAAGACTTTTTTAAAAGTTTTAAGTGA TAAATGCAATTTGTTAATTGATCTTAGATCACTAGTAAACTCAGGGCTGAATTAT ACCATGTATATTCTATTAGAAGAAAGTAAACACCATCTTTATTCCTGCCCTTTTTC TTCTCTCAAAGTAGTTGTAGTTATATCTAGAAAGAAGCAATTTTGATTTCTTGAAA AGGTAGTTCCTGCACTCAGTTTAAACTAAAAATAATCATACTTGGATTTTATTTAT TTTTGTCATAGTAAAAATTTTAATTTATATATATTTTTATTTAGTATTATCTTATTCT TTGCTATTTGCCAATCCTTTGTCATCAATTGTGTTAAATGAATTGAAAATTCATGC CCTGTTCATTTTATTTTACTTTATTGGTTAGGATATTTAAAGGATTTTTGTATATAT AATTTCTTAAATTAATATTCCAAAAGGTTAGTGGACTTAGATTATAAATTATGGCA AAAATCTAAAAACAACAAAAATGATTTTTATACATTCTATTTCATTATTCCTCTTTT TCCAATAAGTCATACAATTGGTAGATATGACTTATTTTATTTTTGTATTATTCACT ATATCTTTATGATATTTAAGTATAAATAATTAAAAAAATTTATTGTACCTTATAGTC TGTCACCAAAAAAAAAAAATTATCTGTAGGTAGTGAAATGCTAATGTTGATTTGT CTTTAAGGGCTTGTTAACTATCCTTTATTTTCTCATTTGTCTTAAATTAGGAGTTT GTGTTTAAATTACTCATCTAAGCAAAAAATGTATATAAATCCCATTACTGGGTATA TACCCAAAGGATTATAAATCATGCTGCTATAAAGACACATGCACACGTATGTTTA TTGCAGCACTATTCACAATAGCAAAGACTTGGAACCAACCCAAATGTCCATCAA TGATAGACTTGATTAAGAAAATGTGCACATATACACCATGGAATACTATGCAGC CATAAAAAAGGATGAGTTCATGTCCTTTGTAGGGACATGGATAAAGCTGGAAAC CATCATTCTGAGCAAACTATTGCAAGGACAGAAAACCAAACACTGCATGTTCTC ACTCATAGGTGGGAATTGAACAATGAGAACACTTGGACACAAGGTGGGGAACA CCACACACCAGGGCCTGTCATGGGGTGGGGGGAGTGGGGAGGGATAGCATTA GGAGATATACCTAATGTAAATGATGAGTTAATGGGTGCAGCACACCAACATGGC ACATGTATACATATGTAGCAAACCTGCACGTTGTGCACATGTACCCTAGAACTT AAAGTATAATTAAAAAAAAAAAGAAAACAGAAGCTATTTATAAAGAAGTTATTTGC TGAAATAAATGTGATCTTTCCCATTAAAAAAATAAAGAAATTTTGGGGTAAAAAA ACACAATATATTGTATTCTTGAAAAATTCTAAGAGAGTGGATGTGAAGTGTTCTC ACCACAAAAGTGATAACTAATTGAGGTAATGCACATATTAATTAGAAAGATTTTG TCATTCCACAATGTATATATACTTAAAAATATGTTATACACAATAAATACATACAT TAAAAAATAAGTAAATGTA	2034

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3UTR-012	Col6a1; collagene, tipo VI, alfa 1	CCCACCCTGCACGCCGGCACCAAACCCTGTCCTCCCACCCCTCCCCACTCATC ACTAAACAGAGTAAAATGTGATGCGAATTTTCCCGACCAACCTGATTCGCTAGA TTTTTTTTAAGGAAAAGCTTGGAAAGCCAGGACACAACGCTGCTGCCTGCTTTG TGCAGGGTCCTCCGGGGCTCAGCCCTGAGTTGGCATCACCTGCGCAGGGCCC TCTGGGGCTCAGCCCTGAGCTAGTGTCACCTGCACAGGGCCCTCTGAGGCTCA GCCCTGAGCTGGCGTCACCTGTGCAGGGCCCTCTGGGGCTCAGCCCTGAGCT GGCCTCACCTGGGTTCCCCACCCCGGGCTCTCCTGCCCTGCCCTCCTGCCCG CCCTCCCTCCTGCCTGCGCAGCTCCTTCCCTAGGCACCTCTGTGCTGCATCCC ACCAGCCTGAGCAAGACGCCCTCTCGGGGCCTGTGCCGCACTAGCCTCCCTC TCCTCTGTCCCCATAGCTGGTTTTTCCCACCAATCCTCACCTAACAGTTACTTTA CAATTAAACTCAAAGCAAGCTCTTCTCCTCAGCTTGGGGCAGCCATTGGCCTCT GTCTCGTTTTGGGAAACCAAGGTCAGGAGGCCGTTGCAGACATAAATCTCGGC GACTCGGCCCCGTCTCCTGAGGGTCCTGCTGGTGACCGGCCTGGACCTTGGC CCTACAGCCCTGGAGGCCGCTGCTGACCAGCACTGACCCCGACCTCAGAGAG TACTCGCAGGGGCGCTGGCTGCACTCAAGACCCTCGAGATTAACGGTGCTAAC CCCGTCTGCTCCTCCCTCCCGCAGAGACTGGGGCCTGGACTGGACATGAGAG CCCCTTGGTGCCACAGAGGGCTGTGTCTTACTAGAAACAACGCAAACCTCTCC TTCCTCAGAATAGTGATGTGTTCGACGTTTTATCAAAGGCCCCCTTTCTATGTTC ATGTTAGTTTTGCTCCTTCTGTGTTTTTTTCTGAACCATATCCATGTTGCTGACTT TTCCAAATAAAGGTTTTCACTCCTCTC	2035
3UTR-013	Calr; calreticolina	AGAGGCCTGCCTCCAGGGCTGGACTGAGGCCTGAGCGCTCCTGCCGCAGAGC TGGCCGCGCCAAATAATGTCTCTGTGAGACTCGAGAACTTTCATTTTTTTCCAG GCTGGTTCGGATTTGGGGTGGATTTTGGTTTTGTTCCCCTCCTCCACTCTCCCC CACCCCCTCCCCGCCCTTTTTTTTTTTTTTTTTTAAACTGGTATTTTATCTTTGAT TCTCCTTCAGCCCTCACCCCTGGTTCTCATCTTTCTTGATCAACATCTTTTCTTG CCTCTGTCCCCTTCTCTCATCTCTTAGCTCCCCTCCAACCTGGGGGGCAGTGG TGTGGAGAAGCCACAGGCCTGAGATTTCATCTGCTCTCCTTCCTGGAGCCCAG AGGAGGGCAGCAGAAGGGGGTGGTGTCTCCAACCCCCCAGCACTGAGGAAGA ACGGGGCTCTTCTCATTTCACCCCTCCCTTTCTCCCCTGCCCCCAGGACTGGG CCACTTCTGGGTGGGGCAGTGGGTCCCAGATTGGCTCACACTGAGAATGTAAG AACTACAAACAAAATTTCTATTAAATTAAATTTTGTGTCTCC	2036

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3UTR-014	Col1a1; collagene, tipo I, alfa 1	CTCCCTCCATCCCAACCTGGCTCCCTCCCACCCAACCAACTTTCCCCCCAACC CGGAAACAGACAAGCAACCCAAACTGAACCCCCTCAAAAGCCAAAAAATGGGA GACAATTTCACATGGACTTTGGAAAATATTTTTTTCCTTTGCATTCATCTCTCAAA CTTAGTTTTTATCTTTGACCAACCGAACATGACCAAAAACCAAAAGTGCATTCAA CCTTACCAAAAAAAAAAAAAAAAAAAAGAATAAATAAATAACTTTTTAAAAAAGGAA GCTTGGTCCACTTGCTTGAAGACCCATGCGGGGGTAAGTCCCTTTCTGCCCGT TGGGCTTATGAAACCCCAATGCTGCCCTTTCTGCTCCTTTCTCCACACCCCCCT TGGGGCCTCCCCTCCACTCCTTCCCAAATCTGTCTCCCCAGAAGACACAGGAA ACAATGTATTGTCTGCCCAGCAATCAAAGGCAATGCTCAAACACCCAAGTGGCC CCCACCCTCAGCCCGCTCCTGCCCGCCCAGCACCCCCAGGCCCTGGGGGACC TGGGGTTCTCAGACTGCCAAAGAAGCCTTGCCATCTGGCGCTCCCATGGCTCT TGCAACATCTCCCCTTCGTTTTTGAGGGGGTCATGCCGGGGGAGCCACCAGCC CCTCACTGGGTTCGGAGGAGAGTCAGGAAGGGCCACGACAAAGCAGAAACAT CGGATTTGGGGAACGCGTGTCAATCCCTTGTGCCGCAGGGCTGGGCGGGAGA GACTGTTCTGTTCCTTGTGTAACTGTGTTGCTGAAAGACTACCTCGTTCTTGTCT TGATGTGTCACCGGGGCAACTGCCTGGGGGCGGGGATGGGGGCAGGGTGGA AGCGGCTCCCCATTTTATACCAAAGGTGCTACATCTATGTGATGGGTGGGGTG GGGAGGGAATCACTGGTGCTATAGAAATTGAGATGCCCCCCCAGGCCAGCAAA TGTTCCTTTTTGTTCAAAGTCTATTTTTATTCCTTGATATTTTTCTTTTTTTTTTTT TTTTTTGTGGATGGGGACTTGTGAATTTTTCTAAAGGTGCTATTTAACATGGGAG GAGAGCGTGTGCGGCTCCAGCCCAGCCCGCTGCTCACTTTCCACCCTCTCTCC ACCTGCCTCTGGCTTCTCAGGCCTCTGCTCTCCGACCTCTCTCCTCTGAAACCC TCCTCCACAGCTGCAGCCCATCCTCCCGGCTCCCTCCTAGTCTGTCCTGCGTC CTCTGTCCCCGGGTTTCAGAGACAACTTCCCAAAGCACAAAGCAGTTTTTCCCC CTAGGGGTGGGAGGAAGCAAAAGACTCTGTACCTATTTTGTATGTGTATAATAA TTTGAGATGTTTTTAATTATTTTGATTGCTGGAATAAAGCATGTGGAAATGACCC AAACATAATCCGCAGTGGCCTCCTAATTTCCTTCTTTGGAGTTGGGGGAGGGGT AGACATGGGGAAGGGGCTTTGGGGTGATGGGCTTGCCTTCCATTCCTGCCCTT TCCCTCCCCACTATTCTCTTCTAGATCCCTCCATAACCCCACTCCCCTTTCTCTC ACCCTTCTTATACCGCAAACCTTTCTACTTCCTCTTTCATTTTCTATTCTTGCAAT TTCCTTGCACCTTTTCCAAATCCTCTTCTCCCCTGCAATACCATACAGGCAATCC ACGTGCACAACACACACACACACTCTTCACATCTGGGGTTGTCCAAACCTCATA CCCACTCCCCTTCAAGCCCATCCACTCTCCACCCCCTGGATGCCCTGCACTTG GTGGCGGTGGGATGCTCATGGATACTGGGAGGGTGAGGGGAGTGGAACCCGT GAGGAGGACCTGGGGGCCTCTCCTTGAACTGACATGAAGGGTCATCTGGCCTC TGCTCCCTTCTCACCCACGCTGACCTCCTGCCGAAGGAGCAACGCAACAGGAG AGGGGTCTGCTGAGCCTGGCGAGGGTCTGGGAGGGACCAGGAGGAAGGCGT GCTCCCTGCTCGCTGTCCTGGCCCTGGGGGAGTGAGGGAGACAGACACCTGG GAGAGCTGTGGGGAAGGCACTCGCACCGTGCTCTTGGGAAGGAAGGAGACCT GGCCCTGCTCACCACGGACTGGGTGCCTCGACCTCCTGAATCCCCAGAACACA ACCCCCCTGGGCTGGGGTGGTCTGGGGAACCATCGTGCCCCCGCCTCCCGCC TACTCCTTTTTAAGCTT	2037
3UTR-015	Plod1; procollagene-lisina, 2-ossoglutarato 5-diossigenasi 1	TTGGCCAGGCCTGACCCTCTTGGACCTTTCTTCTTTGCCGACAACCACTGCCCA GCAGCCTCTGGGACCTCGGGGTCCCAGGGAACCCAGTCCAGCCTCCTGGCTG TTGACTTCCCATTGCTCTTGGAGCCACCAATCAAAGAGATTCAAAGAGATTCCT GCAGGCCAGAGGCGGAACACACCTTTATGGCTGGGGCTCTCCGTGGTGTTCT GGACCCAGCCCCTGGAGACACCATTCACTTTTACTGCTTTGTAGTGACTCGTGC TCTCCAACCTGTCTTCCTGAAAAACCAAGGCCCCCTTCCCCCACCTCTTCCATG GGGTGAGACTTGAGCAGAACAGGGGCTTCCCCAAGTTGCCCAGAAAGACTGTC TGGGTGAGAAGCCATGGCCAGAGCTTCTCCCAGGCACAGGTGTTGCACCAGG GACTTCTGCTTCAAGTTTTGGGGTAAAGACACCTGGATCAGACTCCAAGGGCT GCCCTGAGTCTGGGACTTCTGCCTCCATGGCTGGTCATGAGAGCAAACCGTAG TCCCCTGGAGACAGCGACTCCAGAGAACCTCTTGGGAGACAGAAGAGGCATCT GTGCACAGCTCGATCTTCTACTTGCCTGTGGGGAGGGGAGTGACAGGTCCACA CACCACACTGGGTCACCCTGTCCTGGATGCCTCTGAAGAGAGGGACAGACCGT CAGAAACTGGAGAGTTTCTATTAAAGGTCATTTAAACCA	2038

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3UTR-016	Nucbl; nucleobindina 1	TCCTCCGGGACCCCAGCCCTCAGGATTCCTGATGCTCCAAGGCGACTGATGGG CGCTGGATGAAGTGGCACAGTCAGCTTCCCTGGGGGCTGGTGTCATGTTGGG CTCCTGGGGCGGGGGCACGGCCTGGCATTTCACGCATTGCTGCCACCCCAGG TCCACCTGTCTCCACTTTCACAGCCTCCAAGTCTGTGGCTCTTCCCTTCTGTCC TCCGAGGGGCTTGCCTTCTCTCGTGTCCAGTGAGGTGCTCAGTGATCGGCTTA ACTTAGAGAAGCCCGCCCCCTCCCCTTCTCCGTCTGTCCCAAGAGGGTCTGCT CTGAGCCTGCGTTCCTAGGTGGCTCGGCCTCAGCTGCCTGGGTTGTGGCCGC CCTAGCATCCTGTATGCCCACAGCTACTGGAATCCCCGCTGCTGCTCCGGGCC AAGCTTCTGGTTGATTAATGAGGGCATGGGGTGGTCCCTCAAGACCTTCCCCT ACCTTTTGTGGAACCAGTGATGCCTCAAAGACAGTGTCCCCTCCACAGCTGGG TGCCAGGGGCAGGGGATCCTCAGTATAGCCGGTGAACCCTGATACCAGGAGC CTGGGCCTCCCTGAACCCCTGGCTTCCAGCCATCTCATCGCCAGCCTCCTCCT GGACCTCTTGGCCCCCAGCCCCTTCCCCACACAGCCCCAGAAGGGTCCCAGA GCTGACCCCACTCCAGGACCTAGGCCCAGCCCCTCAGCCTCATCTGGAGCCC CTGAAGACCAGTCCCACCCACCTTTCTGGCCTCATCTGACACTGCTCCGCATC CTGCTGTGTGTCCTGTTCCATGTTCCGGTTCCATCCAAATACACTTTCTGGAAC AAA	2039
3UTR-017	α-globina	GCTGGAGCCTCGGTGGCCATGCTTCTTGCCCCTTGGGCCTCCCCCCAGCCCC TCCTCCCCTTCCTGCACCCGTACCCCCGTGGTCTTTGAATAAAGTCTGAGTGG GCGGC	2040

5' UTR e inizio della traduzione

Le 5'UTR naturali hanno caratteristiche che rivestono un ruolo nell'inizio della traduzione. Ospitano firme come sequenze di Kozak che sono comunemente note per essere coinvolte nel processo mediante il quale il ribosoma avvia la traduzione di molti geni. Le sequenze di Kozak hanno il consenso CCR(A/G)CCAUGG, dove R è una purina (adenina o guanina) tre basi a monte del codone di inizio (AUG), che è seguita da un'altra "G". È noto anche che le 5'UTR formano strutture secondarie coinvolte nel legame dei fattori di allungamento.

Ingegnerizzando le caratteristiche che si trovano tipicamente nei geni abbondantemente espressi di specifici organi bersaglio, si può migliorare la stabilità e la produzione di proteine dei polinucleotidi dell'invenzione. Ad esempio, l'introduzione di 5' UTR di mRNA espresso dal fegato, come albumina, amiloide A sierica, apolipoproteina A/B/E, transferrina, alfa fetoproteina, eritropoietina o fattore VIII, potrebbe essere utilizzata per migliorare l'espressione di una molecola di acido nucleico, come un polinucleotide, nelle linee cellulari epatiche o nel fegato. Allo stesso modo, è possibile l'uso di 5' UTR da altri mRNA tessuto-specifici per migliorare l'espressione in quel tessuto, per i muscoli (MyoD, Miosina, Mioglobina, Miogenina,

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Herculin), per le cellule endoteliali (Tie-1, CD36), per le cellule mieloidi (C/EBP, AML1, G-CSF, GM-CSF, CD11b, MSR, Fr-1, i-NOS), per leucociti (CD45, CD18), per tessuto adiposo (CD36, GLUT4, ACRP30, adiponectina) e per cellule epiteliali polmonari (SP-A/B/C/D).

Regioni non tradotte utili nella progettazione e produzione di polinucleotidi (*vale a dire* i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) includono, ma non sono limitati a, quelli descritti nella domanda di brevetto provvisoria U.S. (USSN) co-pendente e in comproprietà 61/829,372 Domanda di brevetto provvisoria U.S. 61/829,372 (USSN) e Domanda internazionale, PCT/US14/21522 depositata il 7 marzo 2014,

Altre sequenze non UTR possono anche essere utilizzate come regioni o sottoregioni all'interno dei polinucleotidi. Ad esempio, introni o porzioni di sequenze introniche possono essere incorporati nelle regioni dei polinucleotidi dell'invenzione. L'incorporazione di sequenze introniche può aumentare la produzione di proteine così come i livelli di polinucleotidi.

Combinazioni di caratteristiche possono essere incluse nelle regioni fiancheggianti e possono essere contenute all'interno di altre caratteristiche. Ad esempio, l'ORF può essere fiancheggiata da una 5' UTR che può contenere un forte segnale di inizio della traduzione di Kozak e/o una 3' UTR che può includere una sequenza oligo(dT) per l'aggiunta con stampo di una coda di poli-A. La 5'UTR può comprendere un primo frammento polinucleotidico e un secondo frammento polinucleotidico dallo stesso gene e/o da geni diversi come le 5'UTR descritte nella Pubblicazione della domanda di brevetto U.S. n. 20100293625,

La domanda di brevetto provvisoria U.S. (USSN) co-pendente e in comproprietà 61/829,372 e la Domanda di brevetto provvisoria U.S. 61/829,372 (USSN) fornisce un elenco di UTR esemplificative che possono essere utilizzate nel polinucleotide della presente invenzione come regioni fiancheggianti. Possono essere utilizzate varianti di 5' o 3' UTR in cui uno o più nucleotidi vengono aggiunti o rimossi in corrispondenza dei terminali, inclusi A, T, C o G.

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Dovrebbe essere compreso che qualsiasi UTR da qualsiasi gene può essere incorporata nelle regioni del polinucleotide. Inoltre, possono essere utilizzate più UTR di tipo selvatico di qualsiasi gene noto. Rientra anche nell'ambito della presente invenzione fornire UTR artificiali che non siano varianti di regioni di tipo selvatico. Queste UTR o porzioni di esse possono essere posizionate nello stesso orientamento del trascritto da cui sono state selezionate o possono essere alterate nell'orientamento o nella posizione. Quindi una 5' o 3' UTR può essere invertita, accorciata, allungata, realizzata con una o più altre 5' UTR o 3' UTR. Come qui utilizzato, il termine "alterato" in relazione a una sequenza UTR, significa che l'UTR è stata modificata in qualche modo in relazione a una sequenza di riferimento. Ad esempio, una UTR 3' o 5' può essere alterata rispetto a una UTR di tipo selvatico o nativa dal cambiamento di orientamento o posizione come insegnato sopra o può essere alterata dall'inclusione di ulteriori nucleotidi, delezione di nucleotidi, scambio o trasposizione di nucleotidi. Ciascuno di questi cambiamenti che producono una UTR "alterata" (che sia 3' o 5') comprende una UTR variante.

In una forma di realizzazione, è possibile utilizzare una UTR doppia, tripla o quadrupla come una 5' o 3' UTR. Come qui utilizzato, una UTR "doppia" è quella in cui due copie della stessa UTR sono codificate in serie o sostanzialmente in serie. Ad esempio, una beta-globina 3' UTR doppia può essere utilizzata come descritto nella pubblicazione di brevetto US 20100129877.

Rientra anche nell'ambito della presente invenzione avere UTR modellate. Come qui utilizzato, "UTR modellate" sono quelle UTR che riflettono un modello ripetitivo o alternato, come ABABAB o AABBAABBAABB o ABCABCABC o loro varianti ripetute una volta, due volte o più di 3 volte. In questi modelli, ciascuna lettera, A, B o C rappresenta una diversa UTR a livello di nucleotidi.

In una forma di realizzazione, le regioni fiancheggianti sono selezionate da una famiglia di trascritti le cui proteine condividono una funzione, una struttura, una caratteristica comune.

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Ad esempio, i polipeptidi di interesse possono appartenere a una famiglia di proteine che sono espresse in una specifica cellula, tessuto o in qualche momento durante lo sviluppo. Le UTR di uno qualsiasi di questi geni possono essere scambiate con qualsiasi altra UTR della stessa o diversa famiglia di proteine per creare un nuovo polinucleotide. Come usato qui, una "famiglia di proteine" è usata nel senso più ampio per riferirsi a un gruppo di due o più polipeptidi di interesse che condividono almeno una funzione, struttura, caratteristica, localizzazione, origine o pattern di espressione.

La regione non tradotta può anche includere elementi di potenziamento della traduzione (TEE). A titolo esemplificativo e non limitativo, i TEE possono includere quelli descritti nella domanda di brevetto U.S. n. 20090226470

3' UTR gli elementi ricchi di AU

Le 3' UTR naturali o di tipo selvatico sono note per il fatto di avere tratti di adenosina e uridine incorporati al loro interno. Queste firme ricche di AU sono particolarmente prevalenti nei geni con alti tassi di turnover. Sulla base delle loro caratteristiche di sequenza e proprietà funzionali, gli elementi ricchi di AU (ARE) possono essere suddivisi in tre classi (Chen et al, 1995): Gli ARE di classe I contengono diverse copie disperse di un motivo AUUUA all'interno di regioni ricche di U. C-Myc e MyoD contengono ARE di classe I. Gli ARE di classe II possiedono due o più nonameri UUAUUUA(U/A)(U/A) sovrapposti. Le molecole che contengono questo tipo di ARE includono GM-CSF e TNF-a. Gli ARES di classe III sono meno ben definiti. Queste regioni ricche di U non contengono un motivo AUUUA. c-Jun e Miogenina sono due esempi ben studiati di questa classe. È noto che la maggior parte delle proteine che si legano agli ARE destabilizzano il messaggero, mentre è stato documentato che i membri della famiglia ELAV, in particolare HuR, aumentano la stabilità dell'mRNA. HuR si lega agli ARE di tutte e tre le classi. L'ingegnerizzazione dei siti di legame specifici di HuR nella 3' UTR delle molecole di acido nucleico porterà al legame di HuR e quindi alla stabilizzazione del messaggio

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in vivo.

L'introduzione, la rimozione o la modificazione degli elementi ricchi di 3' UTR AU (ARE) possono essere utilizzate per modulare la stabilità di polinucleotidi dell'invenzione (vale a dire polinucleotidi antigene-codificanti presenti nei NAV dell'invenzione). Quando si progettano polinucleotidi specifici, è possibile introdurre una o più copie di un ARE per rendere meno stabili i polinucleotidi dell'invenzione e quindi ridurre la traduzione e diminuire la produzione della proteina risultante. Allo stesso modo, gli ARE possono essere identificati e rimossi o mutati per aumentare la stabilità intracellulare e quindi aumentare la traduzione e la produzione della proteina risultante. Gli esperimenti di trasfezione possono essere condotti in linee cellulari rilevanti, utilizzando polinucleotidi dell'invenzione e la produzione di proteine può essere analizzata in vari punti temporali dopo la trasfezione. Ad esempio, le cellule possono essere trasfettate con diverse molecole di ingegneria ARE e utilizzando un kit ELISA per la proteina pertinente e analizzando la proteina prodotta a 6 ore, 12 ore, 24 ore, 48 ore e 7 giorni dopo la trasfezione.

Siti leganti microRNA

I microRNA (o miRNA) sono RNA non codificanti lungi 19-25 nucleotidi che si legano alla 3'UTR delle molecole di acido nucleico e sottoregolano l'espressione genica riducendo la stabilità della molecola di acido nucleico o inibendo la traduzione. I polinucleotidi dell'invenzione (vale a dire polinucleotidi antigene-codificanti presenti nei NAV dell'invenzione) possono comprendere una o più sequenze bersaglio di microRNA, sequenze di microRNA o semi di microRNA. Tali sequenze possono corrispondere a qualsiasi microRNA noto come quelli insegnati nella pubblicazione US US2005/0261218 e pubblicazione US US2005/0059005,

Una sequenza di microRNA comprende una regione di "semina", vale a dire una sequenza nella regione delle posizioni 2-8 del microRNA maturo, la cui sequenza ha una

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perfetta complementarità di Watson-Crick con la sequenza bersaglio del miRNA. Un seme di microRNA può comprendere le posizioni 2-8 o 2-7 del microRNA maturo. In alcune forme di realizzazione, un seme di microRNA può comprendere 7 nucleotidi (ad esempio nucleotidi 2-8 del microRNA maturo), in cui il sito complementare del seme nel corrispondente miRNA bersaglio è fiancheggiato da un'adenina (A) opposta alla posizione 1 del microRNA. In alcune forme di realizzazione, un seme di microRNA può comprendere 6 nucleotidi (ad esempio nucleotidi 2-7 del microRNA maturo), in cui il sito complementare del seme nel corrispondente miRNA bersaglio è fiancheggiato da un'adenina (A) opposta alla posizione 1 del microRNA. Si veda ad esempio Grimson A, Farh KK, Johnston WK, Garrett-Engele P, Lim LP, Bartel DP; Mol Cell. 2007 Jul 6;27(1):91-105; Le basi del seme di microRNA hanno una completa complementarità con la sequenza bersaglio. Ingegnerizzando sequenze bersaglio di microRNA nei polinucleotidi (ad esempio, in una regione simile a 3'UTR o altra regione) dell'invenzione, si può indirizzare la molecola per la degradazione o la traduzione ridotta, a condizione che il microRNA in questione sia disponibile. Questo processo ridurrà il rischio di effetti fuori bersaglio sul rilascio di molecole di acido nucleico. Sono state riportate l'identificazione di microRNA, regioni bersaglio di microRNA e dei loro modelli di espressione e ruolo in biologia (Bonauer et al., Curr Drug Targets 2010 11:943-949; Anand and CheresheCurrOpinHematol 2011 18:171-176; Contreras and Rao Leukemia 2012 26:404-413 (20 dic 2011. doi: 10.1038/leu.2011.356); Bartel Cell 2009 136:215-233; Landgraf et al, Cell, 2007 129:1401-1414;).

Ad esempio, se la molecola di acido nucleico è un mRNA e non è destinata ad essere rilasciata nel fegato ma vi finisce, allora il miR-122, un microRNA abbondante nel fegato, può inibire l'espressione del gene di interesse se uno o più siti bersaglio di miR-122 sono ingegnerizzati nella regione 3'UTR dei polinucleotidi. L'introduzione di uno o più siti di legame per diversi microRNA può essere progettata per ridurre ulteriormente la longevità, la stabilità e

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la traduzione proteica di polinucleotidi.

Come usato nel presente contesto, il termine "sito di microRNA" si riferisce a un sito bersaglio di microRNA o a un sito di riconoscimento di microRNA, o qualsiasi sequenza nucleotidica a cui un microRNA si lega o si associa. Dovrebbe essere chiaro che il "legame" può seguire le tradizionali regole di ibridazione di Watson-Crick o può riflettere qualsiasi associazione stabile del microRNA con la sequenza bersaglio in corrispondenza o adiacente al sito del microRNA.

Al contrario, ai fini dei polinucleotidi della presente invenzione, i siti di legame dei microRNA possono essere ingegnerizzati da (vale a dire rimossi da) sequenze in cui si trovano naturalmente al fine di aumentare l'espressione proteica in tessuti specifici. Ad esempio, i siti di legame di miR-122 possono essere rimossi per migliorare l'espressione delle proteine nel fegato. La regolazione dell'espressione in più tessuti può essere ottenuta attraverso l'introduzione o la rimozione di uno o più siti di legame dei microRNA.

Esempi di tessuti in cui è noto che il microRNA regola l'mRNA, e quindi l'espressione proteica, includono, ma non sono limitati a, fegato (miR-122), muscolo (miR-133, miR-206, miR-208) , cellule endoteliali (miR-17-92, miR-126), cellule mieloidi (miR-142-3p, miR-142-5p, miR-16, miR-21, miR-223, miR-24, miR-27), tessuto adiposo (let-7 e miR-30c), cuore (miR-1d, miR-149), rene (miR-192, miR-194, miR-204) e cellule epiteliali polmonari (let-7, miR-133, miR-126). Il microRNA può anche regolare processi biologici complessi come l'angiogenesi (miR-132) (Anand e ChereshCurrOpinHematol 2011 18:171-176).

Profili di espressione, microRNA e linee cellulari utili nella presente invenzione includono quelli insegnati ad esempio nelle, domande di brevetto U.S. provvisorie nn. 61/857,436 e 61/857,304 ciascuna depositata il 23 luglio 2013,

Nei polinucleotidi della presente invenzione, i siti di legame per i microRNA coinvolti in tali processi possono essere rimossi o introdotti, al fine di adattare l'espressione dei

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polinucleotidi a tipi di cellule biologicamente rilevanti o al contesto dei processi biologici rilevanti. Un elenco di microRNA, sequenze miR e siti di legame miR è elencato nella Tabella 9 della domanda di brevetto provvisoria U.S. n. 61/753,661 depositata il 17 gennaio 2013, nella Tabella 9 della domanda di brevetto U.S. provvisoria n. 61/754,159 depositata il 18 gennaio 2013, e nella Tabella 7 della domanda di brevetto U.S. provvisoria n. 61/758,921 depositata il 31 gennaio 2013,

Sono elencati esempi di utilizzo del microRNA per guidare l'espressione genica specifica per tessuti o malattie (Getner e Naldini, TissueAntigens. 2012, 80:393-403; Inoltre, i siti di semi di microRNA possono essere incorporati nell'mRNA per diminuire l'espressione in determinate cellule, il che si traduce in un miglioramento biologico. Un esempio di ciò è l'incorporazione di siti miR-142 in un vettore lentivirale esprimente UGT1A1. La presenza di siti di semi di miR-142 ha ridotto l'espressione nelle cellule emopoietiche e, di conseguenza, ha ridotto l'espressione nelle cellule presentanti l'antigene, portando all'assenza di una risposta immunitaria contro l'UGT1A1 viralmente espresso (Schmitt et al., Gastroenterology 2010; 139:999-1007; Gonzalez-Asequinolaza et al. Gastroenterology 2010, 139:726-729; L'incorporazione dei siti miR-142 nell'mRNA modificato potrebbe non solo ridurre l'espressione della proteina codificata nelle cellule emopoietiche, ma potrebbe anche ridurre o abolire le risposte immunitarie alla proteina codificata dall'mRNA. L'incorporazione di siti di semi di miR-142 (uno o più) nell'mRNA sarebbe importante nel caso di trattamento di pazienti con carenze proteiche complete (UGT1A1 tipo I, pazienti con deficit di LDLR, pazienti con Pompe CRIM-negativi, eccetera).

Infine, attraverso la comprensione dei modelli di espressione del microRNA in diversi tipi cellulari, i polinucleotidi, (vale a dire i polinucleotidi antigene-codificanti presenti nei NAV dell'invenzione) possono essere ingegnerizzati per un'espressione più mirata in tipi cellulari specifici o solo in condizioni biologiche specifiche. Attraverso l'introduzione di siti di legame

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del microRNA tessuto-specifici, potrebbero essere progettati polinucleotidi che sarebbero ottimali per l'espressione proteica in un tessuto o nel contesto di una condizione biologica.

Gli esperimenti di trasfezione possono essere condotti in linee cellulari rilevanti, utilizzando polinucleotidi ingegnerizzati e la produzione di proteine può essere analizzata in vari punti temporali dopo la trasfezione. Ad esempio, le cellule possono essere trasfettate con diversi polinucleotidi di ingegneria dei siti leganti microRNA e utilizzando un kit ELISA per la proteina pertinente e analizzando la proteina prodotta a 6 ore, 12 ore, 24 ore, 48 ore, 72 ore e 7 giorni dopo la trasfezione. Gli esperimenti *in vivo* possono anche essere condotti utilizzando molecole ingegnerizzate dal sito legante microRNA per esaminare i cambiamenti nell'espressione tessuto-specifica di polinucleotidi formulati.

Regioni aventi un cap 5'

La struttura di capping 5' di un mRNA naturale è coinvolta nell'esportazione nucleare, aumentando la stabilità dell'mRNA e lega la proteina di legame del cap dell'mRNA (CBP), che è responsabile della stabilità dell'mRNA nella cellula e della competenza di traduzione attraverso l'associazione di CBP con la proteina legante poli(A) per formare le specie di mRNA ciclico maturo. Il cap aiuta ulteriormente la rimozione degli introni prossimali 5' durante lo splicing dell'mRNA.

Le molecole endogene di mRNA possono essere incappucciate all'estremità 5' generando un legame 5'-ppp-5'-trifosfato tra un residuo cap di guanosina terminale e il nucleotide senso trascritto all'estremità 5' della molecola di mRNA. Questo cap 5'-guanilato può quindi essere metilato per generare un residuo di N7-metil-guanilato. Gli zuccheri ribosio dei nucleotidi trascritti terminali e/o anteterminali dell'estremità 5' dell'mRNA possono facoltativamente essere anche 2'-O-metilati. Il decapping in 5' attraverso l'idrolisi e la scissione della struttura del capguanilato può colpire una molecola di acido nucleico, come una molecola di mRNA, per la degradazione.

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In alcune forme di realizzazione, i polinucleotidi (vale a dire i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono essere progettati per incorporare una frazione del cap. Le modificazioni ai polinucleotidi della presente invenzione possono generare una struttura di cap non idrolizzabile che impedisce il decapping e quindi aumenta l'emivita dell'mRNA. Poiché l'idrolisi della struttura del cap richiede la scissione dei legami 5'-ppp-5' fosforodiestere, durante la reazione di capping possono essere utilizzati nucleotidi modificati. Ad esempio, un enzima di capping di Vaccinia di New EnglandBiolabs (Ipswich, MA) può essere utilizzato con nucleotidi di α-tio-guanosina secondo le istruzioni del produttore per creare un legame fosforotioato nel 5'-ppp-5' cap. Ulteriori nucleotidi di guanosina modificati possono essere usati come α-metil-fosfonato e nucleotidi di seleno-fosfato.

Ulteriori modificazioni includono, ma non sono limitate a, 2'-O-metilazione degli zuccheri ribosio dei nucleotidi 5'-terminali e/o 5'-anteterminali del polinucleotide (come menzionato sopra) sul gruppo 2'-idrossile dell'anello di zucchero. È possibile utilizzare più strutture 5'-cap distinte per generare il 5'-cap di una molecola di acido nucleico, come un polinucleotide che funziona come una molecola di mRNA.

Gli analoghi di cap, che nel presente contesto sono indicati anche come analoghi di cap sintetici, cap chimici, analoghi di cap chimici, o analoghi di capstrutturali o funzionali, differiscono dai cap 5' naturali (vale a dire endogeni, tipo selvatico o fisiologici) nella loro struttura chimica, pur mantenendo la funzione di cap. Gli analoghi di cap possono essere sintetizzati chimicamente (vale a dire non enzimaticamente) o enzimaticamente e/o legati ai polinucleotidi dell'invenzione.

Ad esempio, il cap analogo di cap anti-inverso (ARCA) contiene due guanine legate da un gruppo 5'-5'-trifosfato, in cui una guanina contiene un gruppo N7 metile e un gruppo 3'-O-metile (vale a dire, N7,3'-O-dimetil-guanosina-5'-trifosfato-5'-guanosina (m^7G-3'mppp-G; che può essere designato in modo equivalente 3' O-Me-m7G(5')ppp(5')G). L'atomo 3'-O dell'altra

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guanina, non modificata, si lega al nucleotide 5'-terminale del polinucleotide con cap. La guanina N7- e 3'-O-metilata fornisce la frazione terminale del polinucleotide con cap.

Un altro cap esemplificativo è mCAP, che è simile ad ARCA ma ha un gruppo 2'-O-metile sulla guanosina (vale a dire, N7,2'-O-dimetil-guanosina-5'-trifosfato-5'-guanosina, m^7Gm-ppp-G).

In una forma di realizzazione, il cap è un analogo di capdinucleotidico. A titolo di esempio non limitativo, l'analogo di capdinucleotidico può essere modificato in diverse posizioni del fosfato con un gruppo boranofosfato o un gruppo fosforoselenoato come gli analoghi di capdinucleotidici descritti nel brevetto U.S. n. US 8,519,110,

In un'altra forma di realizzazione, il cap è un analogo di cap è una forma dicucleotidica N7-(4-clorofenossietile)-sostituita di un analogo di cap noto nella tecnica e/o qui descritto. Esempi non limitativi di una forma dinucleotidica N7-(4-clorofenossietile)-sostituita di un analogo di cap includono un analogo di cap N7-(4-clorofenossietil)-G(5')ppp(5')G e un N7-(4-clorofenossietil) -$m^{3'\text{-}0}$G(5')ppp(5')G (si vedano ad esempio i vari analoghi di cap e i metodi di sintesi degli analoghi di cap descritti in Kore et al. Bioorganic&MedicinalChemistry 2013 21:4570-4574). In un'altra forma di realizzazione, un analogo di cap della presente invenzione è un analogo 4-cloro/bromofenossietile.

Sebbene gli analoghi di cap consentano il concomitante capping di un polinucleotide o di una sua regione, in una reazione di trascrizione in vitro, fino al 20% dei trascritti può rimanere senza cap. Questo, così come le differenze strutturali di un analogo di cap da una struttura endogena 5'-cap di acidi nucleici prodotta dal meccanismo di trascrizione cellulare endogeno, può portare a una ridotta competenza traduzionale e ridotta stabilità cellulare.

I polinucleotidi dell'invenzione possono anche essere dotati di cap dopo la produzione (sia IVT sia sintesi chimica), utilizzando enzimi, al fine di generare strutture 5'-cap più autentiche. Come usato qui, l’espressione "più autentico" si riferisce a una caratteristica che

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rispecchia o imita strettamente, strutturalmente o funzionalmente, una caratteristica endogena o di tipo selvatico. Vale a dire, una caratteristica "più autentica" è meglio rappresentativa di una funzione e/o struttura cellulare endogena, di tipo selvatico, naturale o fisiologica rispetto alle caratteristiche sintetiche o analoghi, eccetera, della tecnica nota, o che supera la corrispondente caratteristica endogena, di tipo selvatico, naturale o fisiologica in uno o più aspetti. Esempi non limitativi di strutture 5'cap più autentiche della presente invenzione sono quelle che, tra le altre cose, hanno un maggiore legame delle proteine leganti il cap, maggiore emivita, ridotta suscettibilità alle endonucleasi 5' e/o ridotto decapping 5', rispetto a strutture 5'cap sintetiche note nella tecnica (o a una struttura 5'cap di tipo selvatico, naturale o fisiologica). Ad esempio, l'enzima di capping del virus vaccino ricombinante e l'enzima 2'-O-metiltransferasi ricombinante possono creare un legame 5'-5'-trifosfato canonico tra il nucleotide 5'-terminale di un polinucleotide e un nucleotide di cap guanina in cui la guanina di cap contiene una N7 metilazione e il nucleotide 5'-terminale dell'mRNA contiene un 2'-O-metile. Tale struttura è denominata struttura Cap1. Questo cap dà come risultato una maggiore competenza traduzionale e stabilità cellulare e una ridotta attivazione di citochine pro-infiammatorie cellulari, rispetto, ad esempio, ad altre strutture analoghe 5'cap note nella tecnica. Le strutture cap includono, ma non sono limitate a, 7mG(5')ppp(5')N,pN2p (cap 0), 7mG(5')ppp(5')NlmpNp (cap 1) e 7mG(5')-ppp(5')NlmpN2mp (cap 2)

A titolo di esempio non limitativo, il capping dei polinucleotidi chimerici dopo la produzione può essere più efficiente poiché quasi il 100% dei polinucleotidi chimerici può essere dotato di cap. Ciò è in contrasto con circa il -80% quando un analogo di cap è legato a un polinucleotide chimerico nel corso di una reazione di trascrizione in vitro.

Secondo la presente invenzione, i cap 5'-terminali possono includere cap endogeni o analoghi di cap. Secondo la presente invenzione, un cap 5'-terminale può comprendere un analogo della guanina. Analoghi della guanina utili includono, ma non sono limitati a, inosina,

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N1-metil-guanosina, 2'fluoro-guanosina, 7-deaza-guanosina, 8-osso-guanosina, 2-ammino-guanosina, LNA-guanosina e 2-azido-guanosina.

Sequenze virali

Sequenze virali aggiuntive come, ma non limitate a, la sequenza di potenziamento della traduzione del virus della nana gialla d'orzo (BYDV-PAV), il retrovirus della pecora Jaagsiekte (JSRV) e/o il virus del tumore nasale enzootico (si veda ad esempio la pubblicazione internazionale n. WO2012129648;) possono essere ingegnerizzati e inseriti nei polinucleotidi dell'invenzione e possono stimolare la traduzione del costrutto *in vitro* e *in vivo*. Gli esperimenti di trasfezione possono essere condotti in linee cellulari rilevanti a e la produzione di proteine può essere analizzata mediante ELISA a 12 ore, 24 ore, 48 ore, 72 ore e 7 giorni dopo la trasfezione.

Sequenze IRES

Inoltre, sono forniti i polinucleotidi (vale a dire polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) che possono contenere un sito di ingresso del ribosoma interno (IRES). Identificato per la prima volta come una caratteristica dell'RNA del virus Picorna, l'IRES svolge un ruolo importante nell'iniziare la sintesi proteica in assenza della struttura 5' cap. Un IRES può agire come unico sito di legame ribosomiale, o può fungere da uno dei molteplici siti di legame ribosomiale di un mRNA. Polinucleotidi contenenti più di un sito di legame ribosomiale funzionale possono codificare diversi peptidi o polipeptidi che sono tradotti indipendentemente dai ribosomi ("molecole di acido nucleico multicistronico"). Quando i polinucleotidi sono provvisti di un IRES, è inoltre facoltativamente prevista una seconda regione traducibile. Esempi di sequenze IRES che possono essere utilizzate secondo l'invenzione includono, senza limitazione, quelle da picornavirus (ad esempio FMDV), virus dei parassiti (CFFV), virus della poliomielite (PV), virus dell'encefalomiocardite (ECMV), virus dell'afta epizootica (FMDV), virus dell'epatite C (HCV), virus della peste suina classica

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(CSFV), virus della leucemia murina (MLV), virus dell'immunodeficienza delle scimmie (SIV) o virus della paralisi del grillo (CrPV).

Code di poli-A

Durante l'elaborazione dell'RNA, una lunga catena di nucleotidi di adenina (coda di poli-A) può essere aggiunta a un polinucleotide come una molecola di mRNA per aumentare la stabilità. Immediatamente dopo la trascrizione, l'estremità 3' del trascritto può essere scissa per liberare un idrossile 3'. Quindi la poli-A polimerasi aggiunge una catena di nucleotidi di adenina all'RNA. Il processo, chiamato poliadenilazione, aggiunge una coda di poli-A che può avere una lunghezza compresa tra, ad esempio, approssimativamente 80 e approssimativamente 250 residui (SEQ ID NO: 2279), incluso approssimativamente 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240 o 250 residui di lunghezza.

Le code di poliApossono anche essere aggiunte dopo che il costrutto è stato esportato dal nucleo.

Secondo la presente invenzione, i gruppi terminali sulla coda di poliA possono essere incorporati per la stabilizzazione nei polinucleotidi dell'invenzione (vale a dire polinucleotidi codificanti l'antigene presenti negli RNAV dell'invenzione). I polinucleotidi della presente invenzione possono contenere code di des-3'idrossile. Possono anche includere frazioni strutturali o modificazioni 2'-Ometile come insegnato da Junjie Li, et al. (CurrentBiology, Vol. 15, 1501-1507, 23 agosto 2005, .

I polinucleotidi della presente invenzione (vale a dire i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono essere progettati per codificare trascritti con strutture di coda di poliA alternative includenti l'mRNA istonico. Secondo Norbury, "l'uridilazione terminale è stata rilevata anche sugli mRNA istonici dipendenti dalla replicazione umani. Si ritiene che il turnover di questi mRNA sia importante per la prevenzione dell'accumulo di istoni potenzialmente tossici in seguito al completamento o all'inibizione della

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replicazione del DNA cromosomico. Questi mRNA si distinguono per la mancanza di una coda di 3' poli(A), la cui funzione è invece assunta da una struttura a stelo-ansa stabile e dalla sua proteina legante stelo-ansa affine (SLBP); quest'ultima svolge le stesse funzioni di quelle della PABP sugli mRNA poliadenilati" (Norbury, "Cytoplasmic RNA: a case of the tailwagging the dog," Nature Reviews Molecular Cell Biology; AOP, pubblicato online il 29 agosto 2013; doi:10.1038/nrm3645)

Lunghezze uniche delle code di poli-A forniscono alcuni vantaggi ai polinucleotidi della presente invenzione (vale a dire polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione).

In generale, la lunghezza di una coda di poli-A, quando presente, è maggiore di 30 nucleotidi (SEQ ID NO: 2280) di lunghezza. In un'altra forma di realizzazione, la coda di poli-A è maggiore di 35 nucleotidi (SEQ ID NO: 2281) di lunghezza (ad esempio, almeno o maggiore di circa 35, 40, 45, 50, 55, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1.000, 1.100, 1.200, 1.300, 1.400, 1.500, 1.600, 1.700, 1.800, 1.900, 2.000, 2.500 e 3.000 nucleotidi). In alcune forme di realizzazione, il polinucleotide o swua regione include da circa 30 a circa 3.000 nucleotidi (ad esempio, da 30 a 50, da 30 a 100, da 30 a 250, da 30 a 500, da 30 a 750, da 30 a 1.000, da 30 a 1.500, da 30 a 2.000, da 30 a 2.500, da 50 a 100, da 50 a 250, da 50 a 500, da 50 a 750, da 50 a 1.000, da 50 a 1.500, da 50 a 2.000, da 50 a 2.500, da 50 a 3.000, da 100 a 500, da 100 a 750, da 100 a 1.000, da 100 a 1.500, da 100 a 2.000, da 100 a 2.500, da 100 a 3.000, da 500 a 750, da 500 a 1.000, da 500 a 1.500, da 500 a 2.000, da 500 a 2.500, da 500 a 3.000, da 1.000 a 1.500, da 1.000 a 2.000, da 1.000 a 2.500, da 1.000 a 3.000, da 1.500 a 2.000, da 1.500 a 2.500, da 1.500 a 3.000, da 2.000 a 3.000, da 2.000 a 2.500 e da 2.500 a 3.000).

In una forma di realizzazione, la coda di poli-A è progettata rispetto alla lunghezza del polinucleotide complessivo o alla lunghezza di una particolare regione del polinucleotide.

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Questa progettazione può essere basata sulla lunghezza di una regione codificante, sulla lunghezza di una particolare caratteristica o regione o sulla lunghezza del prodotto finale espresso dai polinucleotidi.

In questo contesto, la coda di poli-A può essere 10, 20, 30, 40, 50, 60, 70, 80, 90 o 100% maggiore in lunghezza del polinucleotide o sua caratteristica. La coda di poli-A può anche essere progettata come una frazione dei polinucleotidi a cui appartiene. In questo contesto, la coda di poli-A può essere il 10, 20, 30, 40, 50, 60, 70, 80 o 90% o più della lunghezza totale del costrutto, una regione del costrutto o della lunghezza totale del costrutto meno la coda di poli-A. Inoltre, i siti di legame ingegnerizzati e la coniugazione di polinucleotidi per la proteina di legame Poli-A possono migliorare l'espressione.

Inoltre, più polinucleotidi distinti possono essere legati insieme alla PABP (proteina legante poli-A) attraverso l'estremità 3' utilizzando nucleotidi modificati all'estremità 3' della coda di poli-A. Gli esperimenti di trasfezione possono essere condotti in linee cellulari rilevanti a e la produzione di proteine può essere analizzata mediante ELISA a 12 ore, 24 ore, 48 ore, 72 ore e 7 giorni dopo la trasfezione.

In una forma di realizzazione, i polinucleotidi della presente invenzione (vale a dire i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) sono progettati per includere una regione a quartetto di poliA-G. Il quartetto G è una matrice ciclica legata all'idrogeno di quattro nucleotidi guanina che possono essere formati da sequenze ricche di G sia nel DNA sia nell'RNA. In questa forma di realizzazione, il quartetto G è incorporato all'estremità della coda di poli-A. Il polinucleotide risultante viene analizzato per la stabilità, la produzione di proteine e altri parametri inclusa l'emivita in vari punti temporali. È stato scoperto che il quartetto di poliA-G determina una produzione proteica da un mRNA equivalente ad almeno il 75% di quella osservata utilizzando una coda di poli-A di 120 nucleotidi da (SEQ ID NO: 2282) soltanto.

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Regione del codone di inizio

In alcune forme di realizzazione, i polinucleotidi della presente invenzione (vale a dire i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono avere regioni che sono analoghe a o che funzionano come una regione del codone di inizio.

In una forma di realizzazione, la traduzione di un polinucleotide può iniziare su un codone che non è il codone di inizio AUG. La traduzione del polinucleotide può iniziare su un codone di inizio alternativo come, ma non limitato a, ACG, AGG, AAG, CTG/CUG, GTG/GUG, ATA/AUA, ATT/AUU, TTG/UUG (si veda Touriol et al. Biology of the Cell 95 (2003) 169-178 e Matsuda e Mauro PLoS ONE, 2010 5:11;). A titolo di esempio non limitativo, la traduzione di un polinucleotide inizia sul codone di inizio alternativo ACG. Come altro esempio non limitativo, la traduzione del polinucleotide inizia sul codone di inizio alternativo CTG o CUG. Come ulteriore esempio non limitativo, la traduzione di un polinucleotide inizia sul codone di inizio alternativo GTG o GUG.

È noto che i nucleotidi che fiancheggiano un codone che avvia la traduzione come, ma non limitati a, un codone di inizio o un codone di inizio alternativo, influiscono sull'efficienza di traduzione, sulla lunghezza e/o sulla struttura del polinucleotide. (Si veda ad esempio Matsuda e Mauro PLoS ONE, 2010 5:11;). Il mascheramento di uno qualsiasi dei nucleotidi che fiancheggiano un codone che avvia la traduzione può essere utilizzato per alterare la posizione di inizio della traduzione, l'efficienza della traduzione, la lunghezza e/o la struttura di un polinucleotide.

In una forma di realizzazione, un agente mascherante può essere utilizzato vicino al codone di inizio o al codone di inizio alternativo per mascherare o nascondere il codone per ridurre la probabilità di inizio della traduzione in corrispondenza del codone di inizio mascherato o del codone di inizio alternativo. Esempi non limitativi di agenti mascheranti includono polinucleotidi di acidi nucleici bloccati antisenso (LNA) e complessi di giunzione

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esonica (EJC) (si veda ad esempio Matsuda e Mauro che descrivono agenti mascheranti polinucleotidi LNA ed EJC (PLoS ONE, 2010 5:11);

In un'altra forma di realizzazione, un agente mascherante può essere utilizzato per mascherare un codone di inizio di un polinucleotide al fine di aumentare la probabilità che la traduzione abbia inizio su un codone di inizio alternativo.

In una forma di realizzazione, un agente mascherante può essere utilizzato per mascherare un primo codone di inizio o un codone di inizio alternativo al fine di aumentare la possibilità che la traduzione abbia inizio su un codone di inizio o un codone di inizio alternativo a valle del codone di inizio mascherato o di un codone di inizio alternativo.

In una forma di realizzazione, un codone di inizio o un codone di inizio alternativo può essere posizionato all'interno di un complemento perfetto per un sito di legame miR. Il complemento perfetto di un sito di legame miR può aiutare a controllare la traduzione, la lunghezza e/o la struttura del polinucleotide simile a un agente mascherante. A titolo di esempio non limitativo, il codone di inizio o il codone di inizio alternativo può trovarsi al centro di un complemento perfetto per un sito di legame miR-122. Il codone di inizio o il codone di inizio alternativo può essere posizionato dopo il primo nucleotide, secondo nucleotide, terzo nucleotide, quarto nucleotide, quinto nucleotide, sesto nucleotide, settimo nucleotide, ottavo nucleotide, nono nucleotide, decimo nucleotide, undicesimo nucleotide, dodicesimo nucleotide, tredicesimo nucleotide, quattordicesimo nucleotide, quindicesimo nucleotide, sedicesimo nucleotide, diciassettesimo nucleotide, diciottesimo nucleotide, diciannovesimo nucleotide, ventesimo nucleotide o ventunesimo nucleotide.

In un'altra forma di realizzazione, il codone di inizio di un polinucleotide può essere rimosso dalla sequenza polinucleotidica in modo che la traduzione del polinucleotide abbia inizio su un codone che non è il codone di inizio. La traduzione del polinucleotide può iniziare sul codone dopo il codone di inizio rimosso o su un codone di inizio o codone di inizio

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alternativo a valle. In un esempio non limitativo, il codone di inizio ATG o AUG viene rimosso come i primi 3 nucleotidi della sequenza polinucleotidica in modo che la traduzione inizi su un codone di inizio o un codone di inizio alternativo a valle. La sequenza polinucleotidica in cui è stato rimosso il codone di inizio può inoltre comprendere almeno un agente mascherante per il codone di inizio e/o codoni di inizio alternativi a valle al fine di controllare o tentare di controllare l'inizio della traduzione, la lunghezza del polinucleotide e/o la struttura del polinucleotide.

Regione del codone di arresto

In una forma di realizzazione, i polinucleotidi della presente invenzione (vale a dire i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono includere almeno due codoni di arresto prima della regione non tradotta 3' (UTR). Il codone di arresto può essere selezionato tra TGA, TAA e TAG. In una forma di realizzazione, i polinucleotidi della presente invenzione includono il codone di arresto TGA e un codone di arresto aggiuntivo. In un'ulteriore forma di realizzazione, il codone di arresto di addizione può essere TAA. In un'altra forma di realizzazione, i polinucleotidi della presente invenzione includono tre codoni di arresto.

Sequenze di segnale

I polinucleotidi dell'invenzione (*vale a dire* i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono anche codificare caratteristiche aggiuntive che facilitano il traffico dei polipeptidi verso siti terapeuticamente rilevanti. Una di queste caratteristiche che aiuta nel traffico di proteine è la sequenza di segnale. Come usato qui, una "sequenza di segnale" o "peptide di segnale" è un polinucleotide o un polipeptide, rispettivamente, che ha una lunghezza da circa 9 a 200 nucleotidi (3-60 amminoacidi) che è incorporato in corrispondenza del 5' (o N- terminale) della regione codificante o del polipeptide codificato, rispettivamente. L'aggiunta di queste sequenze determina il traffico del polipeptide

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codificato al reticolo endoplasmatico attraverso una o più vie secretorie. Alcuni peptidi segnale vengono scissi dalla proteina dalla peptidasi segnale dopo che le proteine sono state trasportate.

Ulteriori sequenze di segnale che possono essere utilizzate nella presente invenzione includono quelle insegnate, ad esempio, in database come quelli trovati su http://www.signalpeptide.de/ o http://proline.bic.nus.edu.sg/spdb/. Quelli descritti nei brevetti U.S. 8,124,379; 7,413,875 e 7,385,034 sono anche nell'ambito dell'invenzione.

Segnali e siti di scissione delle proteine

In forme di realizzazione esemplificative, i polipeptidi dell'invenzione (vale a dire polipeptidi antigenici) possono includere vari segnali e/o siti di scissione delle proteine.

In una forma di realizzazione, i polipeptidi della presente invenzione possono includere almeno un segnale di scissione proteica contenente almeno un sito di scissione proteica. Il sito di scissione proteica può essere localizzato in corrispondenza del terminale N, del terminale C, in qualsiasi spazio tra il terminale N e C come, ma non limitato a, a metà strada tra il terminale N e C, tra il terminale N e il punto intermedio, tra il punto intermedio e il terminale C e loro combinazioni.

In una forma di realizzazione, i polinucleotidi della presente invenzione possono essere progettati in modo tale che il polinucleotide contenga almeno un segnale di scissione proteica codificato. Il segnale di scissione della proteina codificata può essere localizzato in qualsiasi regione, incluso, tuttavia senza limitazione, prima del codone di inizio, dopo il codone di inizio, prima della regione di codifica, all'interno della regione di codifica come, ma non solo, a metà della regione di codifica, tra il codone di inizio e il punto medio, tra il punto medio e il codone di arresto, dopo la regione di codifica, prima del codone di arresto, tra due codoni di arresto, dopo il codone di arresto e loro combinazioni.

In una forma di realizzazione, i polinucleotidi della presente invenzione possono includere almeno un segnale di scissione della proteina codificata contenente almeno un sito di

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scissione proteica. Il segnale di scissione della proteina codificata può includere, ma non è limitato a, una convertasi di proproteina (o convertasi di proormone), trombina e/o segnale di scissione della proteina del fattore Xa.

Come esempio non limitativo,il brevetto U.S. n. 7,374,930 e la pubblicazione U.S. n. 20090227660, utilizzano un sito di scissione della furina per scindere la metionina N-terminale di GLP-1 nel prodotto di espressione dall'apparato di Golgi delle cellule. In una forma di realizzazione, i polipeptidi della presente invenzione includono almeno un segnale e/o sito di scissione proteica a condizione che il polipeptide non sia GLP-1.

Inserzioni e sostituzioni

In forme di realizzazione esemplificative, i polinucleotidi dell'invenzione (vale a dire polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono includere varie sostituzioni e/o inserzioni.

In una forma di realizzazione, la 5'UTR del polinucleotide può essere sostituita mediante l'inserzione di almeno una regione e/o stringa di nucleosidi della stessa base. La regione e/o stringa di nucleotidi può includere, ma non è limitata a, almeno 3, almeno 4, almeno 5, almeno 6, almeno 7 o almeno 8 nucleotidi e i nucleotidi possono essere naturali e/o innaturali. Come esempio non limitativo, il gruppo di nucleotidi può includere 5-8 adenina, citosina, timina, una stringa di uno qualsiasi degli altri nucleotidi qui descritti e/o loro combinazioni.

In una forma di realizzazione, la 5'UTR del polinucleotide può essere sostituita mediante l'inserzione di almeno due regioni e/o stringhe di nucleotidi di due basi diverse come, ma non solo, adenina, citosina, timina, uno qualsiasi dei gli altri nucleotidi descritti nel presente contesto e/o loro combinazioni. Ad esempio, la 5'UTR può essere sostituita inserendo 5-8 basi di adenina seguite dall'inserzione di 5-8 basi di citosina. In un altro esempio, la 5'UTR può essere sostituita inserendo 5-8 basi di citosina seguite dall'inserzione di 5-8 basi di adenina.

In una forma di realizzazione, il polinucleotide può includere almeno una sostituzione

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e/o inserzione a valle del sito di inizio della trascrizione che può essere riconosciuto da una RNA polimerasi. Come esempio non limitativo, almeno una sostituzione e/o inserzione può avvenire a valle del sito di inizio della trascrizione sostituendo almeno un acido nucleico nella regione appena a valle del sito di inizio della trascrizione (come, ma non solo, da +1 a +6). Le modifiche alla regione dei nucleotidi appena a valle del sito di inizio della trascrizione possono influenzare i tassi di inizio, aumentare i valori apparenti della costante di reazione del nucleotide trifosfato (NTP) e aumentare la dissociazione dei brevi trascritti dal complesso di trascrizione durante la trascrizione iniziale (Brieba et al, Biochemistry (2002) 41: 5144-5149). La modificazione, la sostituzione e/o l'inserzione di almeno un nucleoside può causare una mutazione silente della sequenza o può causare una mutazione nella sequenza amminoacidica.

In una forma di realizzazione, il polinucleotide può includere la sostituzione di almeno 1, almeno 2, almeno 3, almeno 4, almeno 5, almeno 6, almeno 7, almeno 8, almeno 9, almeno 10, almeno 11, almeno 12 o almeno 13 basi di guanina a valle del sito di inizio della trascrizione.

In una forma di realizzazione, il polinucleotide può includere la sostituzione di almeno 1, almeno 2, almeno 3, almeno 4, almeno 5 o almeno 6 basi di guanina nella regione appena a valle del sito di inizio della trascrizione. Come esempio non limitativo, se i nucleotidi nella regione sono GGGAGA le basi di guanina possono essere sostituite da almeno 1, almeno 2, almeno 3 o almeno 4 nucleotidi di adenina. In un altro esempio non limitativo, se i nucleotidi nella regione sono GGGAGA le basi di guanina possono essere sostituite da almeno 1, almeno 2, almeno 3 o almeno 4 basi di citosina. In un altro esempio non limitativo, se i nucleotidi nella regione sono GGGAGA le basi di guanina possono essere sostituite da almeno 1, almeno 2, almeno 3 o almeno 4 timine, e/o qualsiasi dei nucleotidi descritti nel presente contesto.

In una forma di realizzazione, il polinucleotide può includere almeno una sostituzione e/o inserzione a monte del codone di inizio. A scopo di chiarezza, un esperto del ramo

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apprezzerebbe che il codone di inizio è il primo codone della regione codificante la proteina mentre il sito di inizio della trascrizione è il sito in cui inizia la trascrizione. Il polinucleotide può includere, ma non è limitato a, almeno 1, almeno 2, almeno 3, almeno 4, almeno 5, almeno 6, almeno 7 o almeno 8 sostituzioni e/o inserzioni di basi nucleotidiche. Le basi nucleotidiche possono essere inserite o sostituite in 1, almeno 1, almeno 2, almeno 3, almeno 4 o almeno 5 posizioni a monte del codone di inizio. I nucleotidi inseriti e/o sostituiti possono essere la stessa base (ad esempio tutti A o tutti C o tutti T o tutti G), due basi differenti (ad esempio A e C, A e T, oppure C e T), tre basi differenti (ad esempio A, C e T o A, C e T) o almeno quattro basi differenti. Come esempio non limitativo, la base guanina a monte della regione codificante nel polinucleotide può essere sostituita con adenina, citosina, timina o uno qualsiasi dei nucleotidi qui descritti. In un altro esempio non limitativo la sostituzione delle basi guanina nel polinucleotide può essere progettata in modo da lasciare una base guanina nella regione a valle del sito di inizio della trascrizione e prima del codone di inizio (si veda Esvelt et al. Nature (2011) 472(7344):499-503). Come esempio non limitativo, almeno 5 nucleotidi possono essere inseriti in 1 posizione a valle del sito di inizio della trascrizione ma a monte del codone di inizio e gli almeno 5 nucleotidi possono essere dello stesso tipo di base.

Incorporazione di modulatori di controllo post-trascrizionale

In una forma di realizzazione, i polinucleotidi della presente invenzione (vale a dire i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono includere almeno un modulatore di controllo post-trascrizionale. Questi modulatori di controllo post-trascrizionale possono essere, ma non sono limitati a, piccole molecole, composti e sequenze regolatorie. A titolo di esempio non limitativo, il controllo post-trascrizionale può essere ottenuto utilizzando piccole molecole identificate da PTC Therapeutics Inc. (South Plainfield, NJ) utilizzando la loro tecnologia di screening GEMS™ (Gene ExpressionModulation by Small-Moleclues).

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Il modulatore di controllo post-trascrizionale può essere un modulatore dell'espressione genica che viene sottoposto a screening mediante il metodo descritto in dettaglio nella o un modulatore dell'espressione genica descritto nella pubblicazione internazionale n. WO2006022712. I metodi che identificano le sequenze regolatrici dell'RNA coinvolte nel controllo della traduzione sono descritti nella pubblicazione internazionale n. WO2004067728; i metodi che identificano i composti che modulano l'espressione dipendente dalla regione non tradotta di un gene sono descritti nella pubblicazione internazionale n. WO2004065561.

In una forma di realizzazione, i polinucleotidi della presente invenzione possono includere almeno un modulatore di controllo post-trascrizionale situato nella regione non tradotta 5' e/o 3' dei polinucleotidi della presente invenzione.

In un'altra forma di realizzazione, i polinucleotidi della presente invenzione possono includere almeno un modulatore di controllo post-trascrizione per modulare la terminazione prematura della traduzione. I modulatori di controllo post-trascrizionale possono essere composti descritti nella o un composto trovato mediante metodi descritti nelle pubblicazioni internazionalinn. WO2004010106, WO2006044456, WO2006044682, WO2006044503 e WO2006044505. A titolo di esempio non limitativo, il composto può legarsi a una regione dell'RNA ribosomiale 28S al fine di modulare la terminazione prematura della traduzione (si veda ad esempio WO2004010106).

In una forma di realizzazione, i polinucleotidi della presente invenzione possono includere almeno un modulatore di controllo post-trascrizionale per alterare l'espressione proteica. A titolo di esempio non limitativo, l'espressione di VEGF può essere regolata utilizzando i composti descritti nelle o un composto trovato con i metodi descritti nelle pubblicazioni internazionali nn. WO2005118857, WO2006065480, WO2006065479 e WO2006058088,.

I polinucleotidi della presente invenzione possono includere almeno un modulatore di

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controllo post-trascrizionale per controllare la traduzione. In una forma di realizzazione, il modulatore di controllo post-trascrizionale può essere una sequenza regolatrice dell'RNA. A titolo di esempio non limitativo, la sequenza regolatrice dell'RNA può essere identificata mediante i metodi descritti nella pubblicazione internazionale n. WO2006071903,.

Ottimizzazione dei codoni

I polinucleotidi contenuti nei NAV dell'invenzione, le loro regioni o parti o sottoregioni possono essere codone-ottimizzate. I metodi di ottimizzazione dei codoni sono noti nella tecnica e possono essere utili negli sforzi per raggiungere uno o più di diversi obiettivi. Questi obiettivi includono abbinare le frequenze dei codoni negli organismi bersaglio e ospite per garantire un corretto ripiegamento, influenzare il contenuto di GC per aumentare la stabilità dell'mRNA o ridurre le strutture secondarie, ridurre al minimo i codoni ripetuti in tandem o i cicli di base che possono compromettere la costruzione o l'espressione genica, personalizzare le regioni di controllo trascrizionale e traduzionale, inserire o rimuovere sequenze di traffico delle proteine, rimuovere/aggiungere siti di modificazione post-traduzionale in proteine codificate (ad esempio siti di glicosilazione), aggiungere, rimuovere o mescolare domini di proteine, inserire o eliminare siti di restrizione, modificare i siti di legame ribosomiale e i siti di degradazione dell'mRNA, per regolare i tassi di traduzione per consentire ai vari domini della proteina di ripiegarsi correttamente o per ridurre o eliminare le strutture secondarie problematiche all'interno del polinucleotide. Strumenti, algoritmi e servizi di ottimizzazione dei codoni sono noti nella tecnica; esempi non limitativi includono servizi di GeneArt (Life Technologies), DNA2.0 (Menlo Park, CA) e/o metodi proprietari. In una forma di realizzazione, la sequenza ORF è ottimizzata utilizzando algoritmi di ottimizzazione. Le opzioni di codone per ciascun amminoacido sono fornite nella Tabella 21.

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Tabella 21. Opzioni codone

Amminoacido	**Codice a lettera singola**	**Opzioni codone**
Isoleucina	I	ATT, ATC, ATA
Leucina	L	CTT, CTC, CTA, CTG, TTA, TTG
Valina	V	GTT, GTC, GTA, GTG
Fenilalanina	F	TTT, TTC
Metionina	M	ATG
Cisteina	C	TGT, TGC
Alanina	A	GCT, GCC, GCA, GCG
Glicina	G	GGT, GGC, GGA, GGG
Prolina	P	CCT, CCC, CCA, CCG
Treonina	T	ACT, ACC, ACA, ACG
Serina	S	TCT, TCC, TCA, TCG, AGT, AGC
Tirosina	Y	TAT, TAC
Triptofano	W	TGG
Glutammina	Q	CAA, CAG
Asparagina	N	AAT, AAC
Istidina	H	CAT, CAC
Acido glutammico	E	GAA, GAG
Acido aspartico	D	GAT, GAC
Lisina	K	AAA, AAG
Arginina	R	CGT, CGC, CGA, CGG, AGA, AGG
selenocisteina	Sec	UGA in mRNA in presenza dell'elemento di inserzione di selenocisteina (SECIS)
Codoni di arresto	Arresto	TAA, TAG, TGA

Le caratteristiche, che possono essere considerate vantaggiose in alcune forme di realizzazione della presente invenzione, possono essere codificate da regioni del polinucleotide e tali regioni possono essere a monte (5') o a valle (3') di una regione che codifica un polipeptide. Queste regioni possono essere incorporate nel polinucleotide prima e/o dopo

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l'ottimizzazione dei codoni della regione di codifica delle proteine o della cornice di lettura aperta (ORF). Non è necessario che un polinucleotide contenga entrambe una regione fiancheggiante 5' e 3'. Esempi di tali caratteristiche includono, ma non sono limitati a, regioni non tradotte (UTR), sequenze di Kozak, una sequenza oligo(dT) e tag rilevabili e possono includere più siti di clonazione che possono avere il riconoscimento Xbal.

In alcune forma di realizzazione, una regione 5' UTR e/o una 3' UTR possono essere fornite come regioni fiancheggianti. UTR 5' o 3' multiple possono essere incluse nelle regioni fiancheggianti e possono essere uguali o di sequenze diverse. Qualsiasi porzione delle regioni fiancheggianti, inclusa nessuna, può essere codone-ottimizzata e qualsiasi può contenere indipendentemente una o più modificazioni strutturali o chimiche differenti, prima e/o dopo la codone-ottimizzazione.

Dopo l'ottimizzazione (se lo si desidera), i componenti polinucleotidi vengono ricostituiti e trasformati in un vettore come, ma non solo, plasmidi, virus, cosmidi e cromosomi artificiali. Ad esempio, il polinculeotide ottimizzato può essere ricostituito e trasformato in *E. coli,* lievito, neurospora, mais, drosophila, eccetera chimicamente competenti, dove si verificano strutture simili a plasmidi o cromosomi ad alto numero di copie mediante i metodi qui descritti.

I polinucleotidi sintetici e i loro analoghi di acido nucleico svolgono un ruolo importante nella ricerca e negli studi sui processi biochimici. Sono stati sviluppati vari metodi assistiti da enzimi e basati su sostanze chimiche per sintetizzare polinucleotidi e acidi nucleici, in particolare polinucleotidi e acidi nucleici presenti nei NAV dell'invenzione, come descritto *infra.*

Sintesi: Metodi enzimatici

Trascrizione in vitro-sintesi enzimatica

Il cDNA codifica per i polinucleotidi qui descritti può essere trascritto utilizzando un sistema di trascrizione *in vitro* (IVT). Il sistema comprende tipicamente un tampone di

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trascrizione, nucleotidi trifosfati (NTP), un inibitore della RNasi e una polimerasi. Gli NTP possono essere fabbricati internamente, possono essere selezionati da un fornitore o possono essere sintetizzati come qui descritto. Gli NTP possono essere selezionati da, ma non sono limitati a, quelli descritti nel presente contesto, inclusi gli NTP naturali e innaturali (modificati). La polimerasi può essere scelta tra, ma non è limitata a, T7 RNA polimerasi, T3 RNA polimerasi e polimerasi mutanti come, ma non solo, polimerasi in grado di incorporare polinucleotidi (ad esempio, acidi nucleici modificati).

RNA Polimerasi utili per la sintesi

Nella sintesi dei polinucleotidi della presente invenzione può essere utilizzato qualsiasi numero di RNA polimerasi o varianti.

Le RNA polimerasi possono essere modificate inserendo o eliminando amminoacidi della sequenza dell'RNA polimerasi. Come esempio non limitativo, la RNA polimerasi può essere modificata per mostrare una maggiore capacità di incorporare un nucleotide trifosfato 2'-modificato rispetto a una RNA polimerasi non modificata (si veda lapubblicazione internazionale WO2008078180eil brevetto U.S. 8,101,385).

Le varianti possono essere ottenute evolvendo una RNA polimerasi, ottimizzando la sequenza amminoacidica e/o di acido nucleico della RNA polimerasi e/o utilizzando altri metodi noti nel settore. Come esempio non limitativo, varianti di T7 RNA polimerasi possono essere evolute utilizzando il sistema di evoluzione continua diretta esposto da Esvelt et al. (Nature (2011) 472(7344):499-503) dove i clonidi T7 RNA polimerasipossonocodificarealmeno una mutazione come, ma non solo, la lisina in posizione 93 sostituitaalla treonina (K93T), I4M, A7T, E63V, V64D, A65E, D66Y, T76N, C125R, S128R, A136T, N165S, G175R, H176L, Y178H, F182L, L196F, G198V, D208Y, E222K, S228A, Q239R, T243N, G259D, M267I, G280C, H300R, D351A, A354S, E356D, L360P, A383V, Y385C, D388Y, S397R, M401T, N410S, K450R, P451T, G452V, E484A, H523L, H524N, G542V, E565K, K577E, K577M,

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N601S, S684Y, L699I, K713E, N748D, Q754R, E775K, A827V, D851N o L864F. Come altro esempio non limitativo, le varianti della T7 RNA polimerasi possono codificare almeno una mutazione come descritto nelle pubblicazioni U.S. nn. 20100120024 e 20070117112; Varianti di RNA polimerasi possono anche includere, ma non sono limitate a, varianti sostituzionali, sostituzione amminoacidica conservativa, varianti inserzionali, varianti delezionali e/o derivati covalenti.

In una forma di realizzazione, il polinucleotide può essere progettato per essere riconosciuto dalle RNA polimerasi di tipo selvatico o varianti. In tal modo, il polinucleotide può essere modificato per contenere siti o regioni di cambiamenti di sequenza dal polinucleotide di tipo selvatico o di origine.

Le reazioni di sintesi di polinucleotidi o acidi nucleici possono essere eseguite mediante metodi enzimatici che utilizzano polimerasi. Le polimerasi catalizzano la creazione di legami fosfodiestere tra nucleotidi in una catena polinucleotidica o di acido nucleico. Le DNA polimerasi attualmente note possono essere suddivise in diverse famiglie in base al confronto delle sequenze amminoacidiche e all'analisi della struttura cristallina. DNA polimerasi I (pol I) o una famiglia di polimerasi, inclusi i frammenti di Klenow di *E. Coli,* DNA polimerasi I di *Bacillus*, DNA polimerasi di *Thermus acquatico* (Taq) e le T7 RNA e DNA polimerasi sono tra le meglio studiate di queste famiglie. Un'altra grande famiglia è la DNA polimerasi a (pol a) o la famiglia B della polimerasi, incluse tutte le DNA polimerasi e le polimerasi replicanti eucariotiche dai fagi T4 e RB69. Sebbene utilizzino un meccanismo catalitico simile, queste famiglie di polimerasi differiscono per specificità del substrato, efficienza di incorporazione di analoghi del substrato, grado e velocità di estensione del primer, modalità di sintesi del DNA, attività esonucleasica e sensibilità agli inibitori.

Le DNA polimerasi sono anche selezionate in base alle condizioni di reazione ottimali richieste, come temperatura di reazione, pH e concentrazioni di stampo e primer. A volte viene

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impiegata una combinazione di più di una DNA polimerasi per ottenere la dimensione del frammento di DNA e l'efficienza di sintesi desiderate. Ad esempio, Cheng et al. aumentare il pH, aggiungere glicerolo e dimetilsolfossido, diminuire i tempi di denaturazione, aumentare i tempi di estensione e utilizzare una DNA polimerasi termostabile secondaria che possiede un'attività esonucleasica da 3' a 5' per amplificare efficacemente i bersagli lunghi da inserti clonati e DNA genomico umano (Cheng et al., PAMS, vol. 91, 5695-5699 (1994)), le RNA polimerasi dal batteriofago T3, T7 e SP6 sono stati ampiamenti utilizzati per preparare RNA per studi biochimici e biofisici. Le RNA polimerasi, gli enzimi di capping e le poli-A polimerasi sono descritti nella domanda co-pendente n. PCT/US2013/054635 (M032),

In un caso, la RNA polimerasi che può essere utilizzata nella sintesi dei polinucleotidi chimerici qui descritti è una Syn5 RNA polimerasi (si veda Zhu et al. Nucleic Acids Research 2013). La Syn5 RNA polimerasi è stata recentemente caratterizzata dal cianofago marino Syn5 da Zhu et al. dove hanno anche identificato la sequenza promotore (si veda Zhu et al. Nucleic Acids Research 2013). Zhu et al. Hanno scoperto che la Syn5 RNA polimerasi catalizzava la sintesi dell'RNA in un intervallo più ampio di temperature e salinità rispetto alla T7 RNA polimerasi. Inoltre, il requisito per il nucleotide iniziale in corrispondenza del promotore è risultato essere meno stringente per la Syn5 RNA polimerasi rispetto alla T7 RNA polimerasi, rendendo la Syn5 RNA polimerasi promettente per la sintesi dell'RNA.

In un caso, una Syn5 RNA polimerasi può essere utilizzata nella sintesi dei polinucleotidi chimerici qui descritti. A titolo di esempio non limitativo, una Syn5 RNA polimerasi può essere utilizzata nella sintesi del polinucleotide chimerico che richiede un preciso terminale 3'.

In un caso, un promotore Syn5 può essere utilizzato nella sintesi dei polinucleotidi chimerici. A titolo di esempio non limitativo, il promotore Syn5 può essere 5'-ATTGGGCACCCGTAAGGG-3' (SEQ ID NO: 2041) come descritto da Zhu et al. (Nucleic

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Acids Research 2013).

In un caso, una Syn5 RNA polimerasi può essere utilizzata nella sintesi di polinucleotidi chimerici comprendenti almeno una modificazione chimica qui descritta e/o nota nella tecnica (si veda ad esempio l'incorporazione di pseudo-UTP e 5Me-CTP descritta in Zhu et al. Nucleic Acids Research 2013).

In un caso, i polinucleotidi chimerici qui descritti possono essere sintetizzati usando una Syn5 RNA polimerasi che è stata purificata usando una procedura di purificazione modificata e migliorata descritta da Zhu et al. (Nucleic Acids Research 2013).

Vari strumenti nell'ingegneria genetica si basano sull'amplificazione enzimatica di un gene bersaglio che funge da stampo. Per lo studio di sequenze di singoli geni o di specifiche regioni di interesse e di altre esigenze di ricerca, è necessario generare copie multiple di un gene bersaglio da un piccolo campione di polinucleotidi o acidi nucleici. Tali metodi possono essere applicati nella fabbricazione dei polinucleotidi della descrizione.

La reazione a catena della polimerasi (PCR) ha ampie applicazioni nell'amplificazione rapida di un gene bersaglio, nonché nella mappatura e nel sequenziamento del genoma. I componenti chiave per la sintesi del DNA comprendono molecole di DNA bersaglio come stampo, primer complementari alle estremità dei filamenti di DNA bersaglio, desossinucleosidi trifosfati (dNTP) come elementi costitutivi e una DNA polimerasi. Man mano che la PCR progredisce attraverso le fasi di denaturazione, annealing ed estensione, le molecole di DNA appena prodotte possono fungere da stampo per il successivo circolo di replicazione, ottenendo un'amplificazione esponenziale del DNA bersaglio. La PCR richiede un ciclo di riscaldamento e raffreddamento per la denaturazione e l'annealing. Le variazioni della PCR di base includono, ma non sono limitate a, la PCR asimmetrica (si veda ad esempio Innis et al., PNAS, vol. 85, 9436-9440 (1988)), PCR inversa (si veda ad esempio Ochman et al., Genetics, vol. 120(3), 621-623, (1988)), la e PCR a trascrizione inversa (RT-PCR) (si veda ad esempio Freeman et al.,

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BioTechniques, vol. 26(1), 112-22, 124-5 (1999)). In RT-PCR, un RNA a singolo filamento è il bersaglio desiderato e viene convertito in un DNA a doppio filamento prima dalla trascrittasi inversa.

Una varietà di tecniche di amplificazione di acidi nucleici *in vitro* isotermiche sono state sviluppate come alternative o complementi della PCR. Ad esempio, l'amplificazione a spostamento del filamento (SDA) si basa sulla capacità di un enzima di restrizione di formare un taglio (nicking) (Walker et al., PNAS, vol. 89, 392-396 (1992)). Una sequenza di riconoscimento dell'enzima di restrizione viene inserita in una sequenza di primer sottoposta ad annealing. I primer sono estesi mediante una DNA polimerasi e dNTP per formare un duplex. Soltanto un filamento del duplex viene scisso dall'enzima di restrizione. Ciascuna singola catena di filamenti è quindi disponibile come stampo per la successiva sintesi. La SDA non richiede il complicato ciclo di controllo della temperatura della PCR.

L'amplificazione basata sulla sequenza di acidi nucleici (NASBA), chiamata anche amplificazione mediata dalla trascrizione (TMA), è anche un metodo di amplificazione isotermica che utilizza una combinazione di DNA polimerasi, trascrittasi inversa, RNAsi H e T7 RNA polimerasi (Compton, Nature, vol. 350, 91-92 (1991)). Un RNA bersaglio viene utilizzato come stampo e una trascrittasi inversa sintetizza il suo filamento di DNA complementare. L'RNAsi H idrolizza lo stampo di RNA, facendo spazio a una DNA polimerasi per sintetizzare un filamento di DNA complementare al primo filamento di DNA che è complementare all'RNA bersaglio, formando un duplex di DNA. La T7 RNA polimerasi genera continuamente filamenti di RNA complementari di questo duplex di DNA. Questi filamenti di RNA fungono da stampi per nuovi cicli di sintesi del DNA, con conseguente amplificazione del gene bersaglio.

L'amplificazione rollingcircle (RCA) amplifica un polinucleotide circolare a singolo filamento e prevede numerosi cicli di sintesi enzimatica isotermica in cui la DNA polimerasi φ29 estende un primer avanzando continuamente attorno al cerchio del polinucleotide per

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replicare la sua sequenza più e più volte. Pertanto, si ottiene una copia lineare dello stampo circolare. Un primer può quindi essere sottoposto ad annealing a questa copia lineare e la sua catena complementare può essere sintetizzata (Lizardi et al., Nature Genetics, vol. 19, 225-232 (1998)). Un DNA circolare a singolo filamento può anche fungere da stampo per la sintesi dell'RNA in presenza di una RNA polimerasi (Daubendiek et al., JACS, vol. 117, 7818-7819 (1995)). Un'amplificazione rapida inversa delle estremità del cDNA (RACE) RCA è descritta da Polidoros et al. (BioTechniques, vol. 41, 35-42 (2006)). Un RNA messaggero (mRNA) viene retrotrascritto in cDNA, seguito dal trattamento con RNAsi H per separare il cDNA. Il cDNA viene quindi circolarizzato mediante CircLigase in un DNA circolare. L'amplificazione del DNA circolare risultante è ottenuta con RCA.

Uno qualsiasi dei metodi precedenti può essere utilizzato nella fabbricazione di una o più regioni dei polinucleotidi della presente invenzione (vale a dire, polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione).

L’assemblaggio di polinucleotidi o acidi nucleici (*ad esempio*, i polinucleotidi o acidi nucleici codificanti l'antigene) da parte di una ligasi è altresì ampiamente utilizzato. Le DNA o RNA ligasi promuovono la ligazione intermolecolare delle estremità 5' e 3' delle catene polinucleotidiche attraverso la formazione di un legame fosfodiestere. La reazione a catena della ligasi (LCR) è una tecnica diagnostica promettente basata sul principio che due sonde polinucleotidiche adiacenti si ibridano su un filamento di un gene bersaglio e si accoppiano tra loro mediante una ligasi. Se un gene bersaglio non è presente, o se vi è una discrepanza nel gene bersaglio, come un polimorfismo a singolo nucleotide (SNP), le sonde non possono unirsi tramite ligasi (Wiedmann et al., PCR Methods and Application, vol.3 (4), s51-s64 (1994)). La LCR può essere combinata con varie tecniche di amplificazione per aumentare la sensibilità di rilevamento o per aumentare la quantità di prodotti se viene utilizzata nella sintesi di polinucleotidi e acidi nucleici.

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Sono ora disponibili in commercio diversi kit di preparazione di librerie per acidi nucleici. Esse includono enzimi e tamponi per convertire una piccola quantità di campioni di acido nucleico in una libreria indicizzata per applicazioni a valle. Ad esempio, i frammenti di DNA possono essere inseriti in un NEBNEXT® ULTRA™ DNA Library Prep Kit di NEWENGLAND BIOLABS® per la preparazione finale, la ligazione, la selezione per dimensioni, la pulizia, l'amplificazione PCR e la pulizia finale.

Uno sviluppo continuo prosegue per migliorare le tecniche di amplificazione. Ad esempio, il brevetto U.S. 8,367,328 di Asada et al. , insegna l'utilizzo di un potenziatore di reazione per aumentare l'efficienza delle reazioni di sintesi del DNA da parte delle DNA polimerasi. Il potenziatore di reazione comprende una sostanza acida o complessi cationici di una sostanza acida. Il brevetto U.S. 7,384,739 di Kitabayashi et al. insegna una sostanza che fornisce ioni carbossilato che promuove la sintesi enzimatica del DNA, in cui la sostanza che fornisce ioni carbossilato è scelta tra acido ossalico, acido malonico, esteri dell'acido ossalico, esteri dell'acido malonico, sali dell'acido malonico ed esteri dell'acido maleico. Il brevetto U.S. 7,378,262 di Sobek et al. , descrive una composizione enzimatica per aumentare la fedeltà delle amplificazioni del DNA. La composizione comprende un enzima con attività esonucleasica in 3' ma nessuna attività di polimerasi e un altro enzima che è una polimerasi. Entrambi gli enzimi sono termostabili e sono modificati in modo reversibile per essere inattivi a temperature più basse.

Il brevetto U.S. 7,550,264 di Getts et al. insegna che più cicli di sintesi delle molecole di RNA senso vengono eseguiti attaccando le code di oligodesossinucleotidi all'estremità 3' delle molecole di cDNA e avviando la trascrizione dell'RNA usando la RNA polimerasi. La pubblicazione di brevetto U.S. n. 2013/0183718 di Rohayem insegna la sintesi di RNA mediante RNA polimerasi RNA-dipendenti (RdRp) mostrando un'attività di RNA polimerasi su stampi di DNA a singolo filamento. Oligonucleotidi con nucleotidi non standard possono essere

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sintetizzati con polimerizzazione enzimatica mettendo a contatto uno stampo comprendente nucleotidi non standard con una miscela di nucleotidi complementari con i nucleotidi dello stampo come descritto nel brevetto U.S. No. 6,617,106 di Benner, .

Sintesi: Sintesi chimica in fase solida

Polinucleotidi chimerici o polinucleotidi circolari della presente invenzione (vale a dire polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono essere prodotti in tutto o in parte utilizzando tecniche in fase solida.

La sintesi chimica in fase solida di polinucleotidi o acidi nucleici è un metodo automatizzato in cui le molecole vengono immobilizzate su un supporto solido e sintetizzate passo dopo passo in una soluzione reagente. Le impurità e i reagenti in eccesso vengono lavati via e non è necessaria alcuna purificazione dopo ciascun passaggio. L'automazione del processo è gestibile su un sintetizzatore in fase solida controllato da computer. La sintesi in fase solida consente una rapida produzione di polinucleotidi o acidi nucleici su scala relativamente ampia che porta alla disponibilità commerciale di alcuni polinucleotidi o acidi nucleici. Inoltre, è utile nell'introduzione sito-specifica di modificazioni chimiche nelle sequenze polinucleotidiche o di acido nucleico. È uno strumento indispensabile nella progettazione di derivati modificati di acidi nucleici naturali.

Nella sintesi automatizzata in fase solida, la catena viene sintetizzata nella direzione da 3' a 5'. Il gruppo ossidrile all'estremità 3' di un nucleoside è legato a un supporto solido tramite un linker scindibile chimicamente o fotoclivabile. I monomeri nucleosidici attivati, come i 2'-desossinucleosidi (dA, dC, dG e T), i ribonucleosidi (A, C, G e U) o i nucleosidi chimicamente modificati, vengono aggiunti in sequenza al nucleoside legato al supporto. I monomeri attualmente più utilizzati sono i derivati 3'-foforamidite dei blocchi costitutivi dei nucleosidi. L'atomo di fosforo 3' del monomero attivato si accoppia con l'atomo di ossigeno 5' del nucleoside legato al supporto per formare un fosfito triestere. Per prevenire reazioni collaterali,

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tutti i gruppi funzionali non coinvolti nella reazione di accoppiamento, come il gruppo idrossile 5', il gruppo idrossile sull'atomo di fosforo 3', il gruppo idrossile 2' nei monomeri ribonucleosidici e i gruppi amminici sulle basi purina o pirimidina, sono tutti bloccati con gruppi di protezione. Il passaggio successivo prevede l'ossidazione del fosfito triestere per formare un fosfato triestere o fosfotriestere, in cui l'atomo di fosforo è pentavalente. Il gruppo di protezione sul gruppo idrossile 5' all'estremità della catena in crescita viene quindi rimosso, pronto per accoppiarsi con un blocco costitutivo di monomero attivato in ingresso. Al termine della sintesi viene aggiunto un agente di scissione come ammoniaca o idrossido di ammonio per rimuovere tutti i gruppi protettori e liberare le catene polinucleotidiche dal supporto solido. La luce può anche essere applicata per scindere la catena polinucleotidica. Il prodotto può quindi essere ulteriormente purificato con cromatografia liquida ad alta pressione (HPLC) o elettroforesi.

Nella sintesi in fase solida, la catena polinucleotidica è legata in modo covalente al supporto solido tramite il suo gruppo idrossile 3'. I supporti solidi sono particelle insolubili dette anche resine, tipicamente di diametro 50-200 μm. Sono ora disponibili molti diversi tipi di resine, come esaminato in "Solid-phase supports for polynucleotidesynthesis" di Guzaev (Guzaev, CurrentProtocols in Nucleic Acid Chemistry, 3.1.1-3.1.60 (2013)). I materiali più comuni per le resine includono biglie di polistirene altamente reticolato e biglie di vetro a pori controllati (CPG). La superficie delle biglie può essere trattata per avere gruppi funzionali, come gruppi amminici o amminometilici che possono essere usati come punti di ancoraggio per linker per legare i nucleosidi. Possono essere implementati in colonne, piastre multipozzetto, microarray o microchip. Il formato basato su colonna consente la sintesi su scala relativamente ampia dei polinucleotidi o acidi nucleici. Le resine sono trattenute tra filtri in colonne che consentono a tutti i reagenti e solventi di passare liberamente. Piastre multipozzetto, microarray o microchip sono progettati specificamente per la sintesi su piccola scala economicamente

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vantaggiosa. È possibile produrre fino a un milione di polinucleotidi su un singolo chip di microarray. Tuttavia, i tassi di errore della sintesi basata su microchip sono superiori rispetto ai metodi tradizionali basati su colonna (Borovkov et al., Nucleic Acids Research, vol. 38(19), e180 (2010)). Le piastre multipozzetto consentono la sintesi parallela di polinucleotidi o acidi nucleici con sequenze diverse simultaneamente (Sindelar, et al., vol. 23, 982-987 (1995)). Il caricamento sui supporti solidi è limitato. Inoltre, con il progredire dell'estensione, la morfologia e l'ingombro delle catene in accrescimento sui supporti solidi potrebbero impedire ai monomeri in ingresso di reagire con il gruppo terminale delle catene in accrescimento. Pertanto, anche il numero di monomeri che possono essere aggiunti alla catena in accrescimento è limitato.

I linker sono attaccati al solido supporto per un'ulteriore estensione della catena. Sono stabili a tutti i reagenti utilizzati nel processo di sintesi, tranne che al termine della sintesi quando la catena si stacca dal supporto solido. Supporti solidi con uno specifico linkernucleosidico, vale a dire A, C, dT, G o U, possono essere usati per preparare polinucleotidi con A, C, T, G o U rispettivamente come primo nucleotide nella sequenza. Supporti solidi universali con linker non nucleosidici possono essere utilizzati per tutte le sequenze polinucleotidiche (brevetto U.S. 6,653,468 a Guzaev et al. Sono stati sviluppati vari linker non nucleosidici per supporti universali, molti dei quali con due gruppi idrossile vicinali. Ad esempio, un gruppo succinile è un linker utilizzato di frequente.

Come usato qui, un linker si riferisce a un gruppo di atomi, ad esempio 10-1.000 atomi, e può essere costituito da atomi o gruppi come, ma non limitati a, carbonio, ammino, alchilammino, ossigeno, zolfo, solfossido, solfonile, carbonile e immina. Il linker può essere attaccato a un nucleoside o nucleotide modificato sulla base azotata o frazione zuccherina. Un linker può essere a base di acido nucleico o non nucleosidico. Il linker può essere di lunghezza sufficiente da non interferire con l'incorporazione in una sequenza di acido nucleico. Il linker

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può essere utilizzato per qualsiasi scopo utile, come per formare multimeri (ad esempio, attraverso il collegamento di due o più molecole di polinucleotidi chimerici) o coniugati, nonché per somministrare una molecola terapeutica o incorporare una marcatura, come descritto nel presente contesto. Esempi di gruppi chimici che possono essere incorporati nel linker includono, ma non sono limitati a, alchile, alchenile, alchinile, ammido, ammino, etere, tioetere, estere, alchilene, eteroalchilene, arile o eterociclile, ciascuno dei quali può essere facoltativamente sostituito, come qui descritto. Esempi di linker includono, ma non sono limitati a, alcani insaturi, polietilenglicoli (ad esempio, unità monomeriche di etilene o propilenglicole, ad esempio dietilenglicole, dipropilenglicole, trietilenglicole, tripropilenglicole, tetraetilenglicole o tetraetilenglicole) e polimeri di destrano e loro derivati. Altri esempi includono, ma non sono limitati a, frazioni scindibili all'interno del linker, come, ad esempio, un legame disolfuro (-S-S-) o un legame azo (-N=N-), che può essere scisso utilizzando un agente riducente o fotolisi. Esempi non limitativi di un legame separabile selettivamente includono un legame ammidico che può essere scisso ad esempio mediante l'uso di tris(2-carbossietil)fosfina (TCEP), o altri agenti riducenti, e/o fotolisi, nonché un legame estere può essere scisso ad esempio mediante idrolisi acida o basica).

Oltre ai gruppi funzionali sul monomero attivato e alla catena in crescita necessaria per la reazione di accoppiamento per estendere la catena, tutti gli altri gruppi funzionali devono essere protetti per evitare reazioni collaterali. Le condizioni per la protezione e la deprotezione e la selezione di gruppi protettori appropriati possono essere prontamente determinate da un esperto del ramo. La chimica dei gruppi protettori può essere trovata e/o descritta, ad esempio, in Greene, et al. (Protective Groups in Organic Synthesis, 2d. Ed., Wiley &Sons, 1991.) Ad esempio, il gruppo idrossile 5' sui monomeri di fosforamiditenucleosidici attivati può essere protetto con 4,4'-dimetossitritile (DMT) e il gruppo idrossile sull'atomo di fosforo può essere protetto con 2-cianoetile. I gruppi amminoesociclici sulle basi A, C, G possono essere protetti

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con gruppi acile.

In un sistema di sintesi in fase solida, la reattività dei monomeri attivati è importante, a causa dell'eterogeneità dei mezzi. La maggior parte della sintesi in fase solida utilizza nucleosidi di fosforamidite, il cui meccanismo è discusso sopra. Un altro esempio di monomero attivato è costituito dai nucleoside *H*-fosfonati (Abramova, Molecules, vol. 18, 1063-1075 (2013)). Un grande eccesso di reagenti, come monomeri, agenti ossidanti e agenti di deprotezione, è necessario per garantire rese elevate nel sistema di sintesi in fase solida.

Sono in corso studi e ricerche scientifiche per migliorare ulteriormente il metodo di sintesi in fase solida. Ad esempio, invece della consolidata sintesi da 3' a 5', il brevetto U.S. n. 8,309,707 e la pubblicazione di brevetto U.S. n. 2013/0072670 di Srivastava et al. hanno descritto una sintesi da 5' a 3' di RNA utilizzando una nuova fosforamidite e un nuovo derivato nucleosidico, consentendo così facili modificazioni dell'RNA sintetico all'estremità 3'. La domanda PCT WO2013123125 di Church et al. descrive l'assemblaggio di una sequenza di acido nucleico bersaglio da una pluralità di sottosequenze, in cui le resine con le sottosequenze sono poste in una gocciolina di emulsione. Le sottosequenze vengono staccate dalle resine e assemblate all'interno della gocciolina di emulsione. Per ridurre il costo dei supporti solidi, è stato sviluppato un supporto solido CPG riutilizzabile con linker di idrochinone-*O*, *O*'-acidodiacetico (Q-linker) (Pon et al., Nucleic Acid Research, vol. 27, 1531-1538 (1999)).

Sono stati inoltre sviluppati nuovi gruppi protettori per la sintesi in fase solida. Nagat et al. ha sintetizzato con successo un RNA lungo 110 nt con la sequenza di un microRNA precursore candidato utilizzando 2-cianoetossimetile (CEM) come gruppo protettore 2'-idrossi (Shiba et al., Nucleic Acids Research, vol. 35, 3287-3296 (2007)). Anche con CEM come gruppo protettore 2'-O, è stato sintetizzato un mRNA di 130 nt codificante un peptide di 33 amminoacidi che include la sequenza del peptide-1 simile al glucagone (GLP-1). L'attività biologica dell'mRNA artificiale da 130 nt è dimostrata dalla produzione di GLP-1 in un sistema

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di sintesi proteica privo di cellule e nelle cellule ovariche di criceto cinese (CHO) (Nagata et al., Nucleic Acids Research, vol. 38(21), 7845-7857 (2010), Nuovi gruppi protettori per monomeri di sintesi in fase solida includono, ma non sono limitati a, il gruppo protettore di carbonato descritto nel brevetto U.S. n. 8,309,706 di Dellinger et al., gruppo protettore idrossile di tipo 2' di ortoestere e un gruppo protettore idrossile di tipo acilcarbonato descritti nel brevetto U.S. n. 8,242,258 di Dellinger et al., gruppo protettore 2'-idrossile tiocarbonio descritto nel brevetto U.S. n. 8,202,983 di Dellinger et al., gruppo protettore di tiocarbonato contenente 2'-silile descritto nel brevetto U.S. n. 7,999,087 di Dellinger et al., derivati del 9-fluorenilmetossicarbonile (FMOS) come gruppo protettore amminico descritti nel brevetto U.S. n. 7,667,033 di Alvarado, gruppo protettore 5'silile fluoruro-labile descritto nel brevetto U.S. n. 5.889.136 di Scaringe et al., e gruppi protettori pixile descritti nella pubblicazione di brevetto U.S. n. 2008/0119645 di Griffey et al., pubblicazione di brevetto U.S. n. 2011/0275793 di Debart et al. insegna la sintesi di RNA usando un gruppo protettore degli iossili in posizione 2' del ribosio che può essere rimosso da una base, i nuovi supporti solidi includono polimeri costituiti da monomeri comprendenti catena di idrossipolialchilenossi C_{2-4} protetto attaccata a un'unità polimerizzabile insegnata nel brevetto U.S. n. 7.476,709 di Moody et al.

Sintesi: Sintesi chimica in fase liquida

La sintesi di polinucleotidi chimerici o polinucleotidi circolari della presente invenzione (vale a dire, i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) mediante l'aggiunta sequenziale di blocchi costitutivi di monomeri possono può essere eseguita in una fase liquida. Si forma un legame covalente tra i monomeri o tra un gruppo funzionale terminale della catena in crescita e un monomero in entrata. I gruppi funzionali non coinvolti nella reazione devono essere temporaneamente protetti. Dopo l'aggiunta di ciascun blocco costitutivo monomerico, la miscela di reazione deve essere purificata prima di aggiungere il blocco costitutivo monomerico successivo. Il gruppo funzionale a un terminale della catena deve essere

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deprotetto per poter reagire con i successivi blocchi costitutivi monomerici. Una sintesi in fase liquida richiede tempo e manodopera e non può essere automatizzata. Nonostante i limiti, la sintesi in fase liquida è ancora utile nella preparazione di brevi polinucleotidi su larga scala. Poiché il sistema è omogeneo, non richiede un grande eccesso di reagenti ed è conveniente sotto questo aspetto.

Sintesi: Combinazione di metodi sintetici

I metodi sintetici discussi sopra hanno ciascuno i propri vantaggi e limiti. Sono stati condotti tentativi per combinare questi metodi per superare i limiti. Tali combinazioni di metodi rientrano nell'ambito della presente descrizione.

Catene polinucleotidiche corte con 2-4 nucleotidi possono essere preparate in fase liquida, seguite dal legame a un supporto solido per reazioni di estensione mediante sintesi in fase solida. Viene sviluppata una sintesi in fase liquida ad alta efficienza (HELP) che utilizza etere monometilico di biglie di polietilenglicole (MPEG) come supporto per i blocchi costitutivi monomerici. MPEG è solubile in cloruro di metilene e solventi di piridina ma precipita in un solvente di dietiletere. Scegliendo un solvente appropriato, la reazione di accoppiamento tra monomeri o tra una catena in crescita e un monomero in ingresso legato su MPEG può essere condotta in un sistema omogeneo in fase liquida. La miscela può quindi essere lavata con un solvente dietiletere per precipitare e purificare facilmente il prodotto (Bonora et al., Nucleic Acids Research, vol. 18, 3155-3159 (1990)). Il brevetto U.S. n. 8,304,532 di Adamo et al., insegna una sintesi di oligonucleotidi in fase di soluzione in cui almeno alcuni dei reagenti sono supportati da solidi.

L'uso della sintesi chimica in fase solida o in fase liquida in combinazione con la ligazione enzimatica fornisce un modo efficiente per generare polinucleotidi a catena lunga che non possono essere ottenuti mediante la sola sintesi chimica. Moore e Sharp descrivono la preparazione di frammenti di RNA lunghi da 10 a 20 nt mediante sintesi chimica, a cui possono

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essere introdotte modificazioni sito-specifiche, eseguendo l'annealing i frammenti su un ponte cDNA, e quindi assemblare i frammenti con la T4 DNA ligasi (Moore et al., Science, vol. 256, 992-997 (1992)).

Un sintetizzatore in fase solida può produrre abbastanza polinucleotidi o acidi nucleici con una buona purezza per preformare la PCR e altre tecniche di amplificazione. Agilent Technologies ha sviluppato microarray disponibili in commercio. I polinucleotidi possono essere sintetizzati su un substrato di microarray, scisso da una base forte o luce, seguito da amplificazione PCR per generare una libreria di polinucleotidi (Cleary et al., Nature Methods, vol. 1(3), 241-247 (2004)).

Sintesi: Sintesi di piccole regioni

Regioni o sottoregioni dei polinucleotidi della presente invenzione (vale a dire, i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono comprendere piccole molecole di RNA come siRNA, e quindi possono essere sintetizzati nello stesso modo. Esistono diversi metodi per preparare siRNA, come la sintesi chimica utilizzando fosforamiditiribonucleosidiche opportunamente protette, trascrizione *in vitro*, vettori di espressione siRNA e cassette di espressione PCR. Sigma-Aldrich® è uno dei fornitori di siRNA e sintetizza il loro siRNA utilizzando monomeri di ribonucleosidefosforamidite protetti in posizione 2' con un gruppo t-butilmetilsilile (TBDMS). La sintesi chimica in fase solida viene effettuata con SIGMA-ALDRICH®Ultra Fast ParallelSynthesis (UFPS) e Ultra Fast ParallelDeprotection (UFPD) per ottenere un'elevata efficienza di accoppiamento e una rapida deprotezione. I prodotti finali di siRNA possono essere purificati con HPLC o PAGE. Tali metodi possono essere utilizzati per sintetizzare regioni o sottoregioni di polinucleotidi chimerici.

La trascrizione *in vitro* e l'espressione da un vettore o da una cassetta siRNA generata dalla PCR richiedono modelli appropriati per produrre siRNA. Il kit di costruzione di siRNA

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AMBION SILENCER® produce siRNA mediante la trascrizione *in vitro* di stampi di DNA e contiene gli enzimi, i tamponi, i primer necessari. Tali metodi possono essere utilizzati per sintetizzare regioni o sottoregioni di polinucleotidi chimerici.

Sintesi: Ligazione di regioni o sottoregioni polinucleotidiche

Polinucleotidi dell'invenzione (*vale a dire* i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) come i polinucleotidi chimerici e/o i polinucleotidi circolari possono essere preparati mediante ligazione di una o più regioni o sottoregioni.

La ligazione è uno strumento indispensabile per assemblare frammenti di polinucleotidi o acidi nucleici in costrutti più grandi. I frammenti di DNA possono essere uniti da una reazione catalizzata dalla ligasi per creare DNA ricombinante con diverse funzioni. Due oligodesossinucleotidi, uno con un gruppo fosforile 5' e un altro con un gruppo idrossile 3' libero, fungono da substrati per una DNA ligasi. Gli oligodesossinucleotidi con marcature fluorescenti o chemiluminescenti possono anche fungere da substrati della DNA ligasi (Martinelli et al., Clinical Chemistry, vol. 42, 14-18 (1996)). Le RNA ligasi come la T4 RNA ligasi catalizzano la formazione di un legame fosfodiestere tra due oligoribonucleotidi a filamento singolo o frammenti di RNA. Copie di grandi costrutti di DNA sono state sintetizzate con una combinazione di frammenti di polinucleotidi, DNA polimerasi termostabili e DNA ligasi. La pubblicazione di brevetto U.S. n. 2009/0170090 di Ignatov et al., descrive il miglioramento della PCT, in particolare il miglioramento della resa di una PCR a lunga distanza e/o un'amplificazione PCR di stampo di DNA a basso numero di copie, utilizzando una DNA ligasi oltre a una DNA polimerasi.

Le ligasi possono essere utilizzate con altri enzimi per preparare le molecole di polinucleotide chimerico o di acido nucleico desiderate e per eseguire l'analisi del genoma. Ad esempio, l'amplificazione PCR selettiva mediata da ligazione è descritta nella pubblicazione di brevetto EP n. 0735144 di Kato. I DNA complementari (cDNA) trascritti inversamente da RNA

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o DNA derivati da tessuti o cellule vengono digeriti in frammenti con enzimi di restrizione di tipo IIS. Le sequenze adattatore biotinilate sono attaccate ai frammenti da DNA ligasi di *E.coli*. I frammenti di DNA marcati con biotina vengono quindi immobilizzati su biglie rivestite di streptavidina per l'analisi a valle.

Uno splint di ligazione o un oligospint di ligazione è un oligonucleotide che viene utilizzato per fornire un sito di annealing o uno stampo di ligazione per unire due estremità di un acido nucleico, vale a dire giunzione intramolecolare, o due estremità di due acidi nucleici, vale a dire giunzione intermolecolare, utilizzando una ligasi o un altro enzima con attività ligasica. Lo splint di ligazione tiene le estremità adiacenti l'una all'altra e crea una giunzione di ligazione tra le estremità 5'-fosforilate e 3'-idrossilate che devono essere ligate.

In un caso, si può usare un metodo di ligazione mediata da splint o ligazionesplint per sintetizzare i polinucleotidi chimerici qui descritti. Il polinucleotide chimerico può essere assemblato usando un metodo che non si basa sulla presenza di siti di scissione dell'endonucleasi di restrizione come il metodo descritto nella Pubblicazione di brevetto internazionale n. WO2012138453. La ligazione mediata da splint consente la rapida sintesi del costrutto utilizzando la concatenazione controllata e senza la necessità o con una necessità limitata di introduzione di siti di restrizione nelle regioni di giunzione. Come esempio non limitativo, la ligazionesplint può essere utilizzata per aggiungere almeno una regione non tradotta a una regione codificante del polinucleotide chimerico. In un caso, la ligazionesplint può essere utilizzata in combinazione con altri metodi di sintesi nella sintesi dei polinucleotidi chimerici qui descritti.

Se le estremità 5'-fosforilata e 3'-idrossile degli acidi nucleici vengono legate quando le estremità vengono sottoposte ad annealing a uno splint di ligazione in modo che le estremità siano adiacenti, possono essere utilizzati enzimi come, ma non limitati a, T4 DNA ligasi, AMPLIGASE® DNA ligasi (EPICENTRE® Technologies), *Tth* DNA ligasi, *Tfl* DNA ligasi,

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o *Tsc* DNA ligasi (Prokaria). Farugui IN brevetto U.S. n. 6,368,801 descrive che la T4 RNA ligasi può ligare in modo efficiente le estremità delle molecole di DNA adiacenti l'una all'altra quando ibridate con uno splint di RNA. Pertanto, la T4 RNA ligasi è una ligasi adatta per unire le estremità del DNA con un oligosplint di ligazione comprendente RNA o RNA modificato. Esempi di splint di RNA includono RNA modificato contenente 2'-fluoro-CTP (2'-F-dCTP) e 2'-fluoro-UTP (2'-F-dUTP) realizzato utilizzando il kit di trascrizione T7 DURASCRIBE® (EPICENTRE® Technologies) descritto nel brevetto U.S. n. 8,137,911 e nella pubblicazione di brevetto U.S. 2012/0156679 di Dahl et al. L'RNA modificato prodotto dal kit di trascrizione T7 DURASCRIBE® è completamente resistente alla digestione con RNasi A. Lo splint di DNA e la DNA ligasi possono essere utilizzati per generare fusioni RNA-proteine descritte nel brevetto U.S. n. 6,258,558 di Szostak et al.

Per la ligazione intramolecolare di ssDNA lineare, il brevetto U.S. n. 7,906,490 di Kool et al. insegna a costruire un cerchio di 83 nucleotidi creando frammenti di oligodesossinucleotidi lineari su un sintetizzatore di DNA seguito da ligazione con T4 DNA ligasi e due oligonucleotidi splint da 30 nucleotidi. La circolazione del cDNA contenente il promotore senso lineare è descritta nella pubblicazione di brevetto U.S. n. 2012/0156679 di Dahl et al. La ssDNAligasi THERMOPHAGE™ (Prokazyme), che è derivata dal fago TS2126 che infetta *Thermusscotoductus,* catalizza la ligazione intra e intermolecolare ATP-dipendente di DNA e RNA.

Il metodo di sintesi chimica in fase solida che utilizza monomeri di fosforamidite è limitato a produrre molecole di DNA con filamenti corti. La purezza dei prodotti del DNA e la resa delle reazioni diventano scarse quando la lunghezza supera le 150 basi. Per la sintesi di lunghi polinucleotidi con rese elevate, è più conveniente utilizzare il metodo di ligazione enzimatica in tandem con la sintesi chimica. Ad esempio, Moore e Sharp descrivono la preparazione di frammenti di RNA lunghi da 10 a 20 nt mediante sintesi chimica, a cui possono

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essere introdotte modifiche sito-specifiche, eseguendo l'annealing dei frammenti in un cDNAsplint, e quindi assemblando i frammenti con T4 DNA ligasi (Moore et al., Science, vol. 256, 992-997 (1992)). Le reazioni di ligazione di oligoribonucleotidi con T4 DNA ligasi, e uno splint di DNA o un polinucleotide per generare RNA sintetici grandi sono descritte in Bain et al., Nucleic Acids Research vol. 20(16), 4372 (1992), Stark et al., RNA, vol. 12, 2014-2019 (2006), e nella domanda di brevetto U.S. n. 2005/0130201 di Deras et al.. 5'-cap e 3'-polyA tail vengono spesso aggiunti per aggiunta enzimatica a un oligonucleotide sintetizzato con metodi in fase solida. A titolo di esempio non limitativo, un mRNA 42-mer con cap sintetico è stato sintetizzato in tre frammenti ligatienzimaticamente come descritto da Iwase et al. (Nucleic Acids Research, vol. 20, 1643-1648 (1992)). Come altro esempio, un genoma mitocondriale di topo di 16,3 chilobasi è stato prodotto da 600 polinucleotidi 60-mer sovrapposti. I cicli del metodo tra la ricombinazione *in vitro* e l'amplificazione possono essere ripetuti fino al raggiungimento della lunghezza desiderata (Gibson et al., Nature Methods, vol. 7, 901-903 (2010)). È stato anche riportato l'assemblaggio del genoma JCVI-syn1.0 di *Mycoplasmamycoides* da 1,08 megabasi. A titolo di esempio non limitativo, le cassette da 1080 bp vengono prodotte assemblando frammenti di polinucleotidi generati chimicamente da un sintetizzatore di polinucleotidi. Il genoma viene quindi assemblato in tre fasi mediante trasformazione e ricombinazione omologa in lievito (Gibson, et al., Science, vol. 329, 52-56 (2010)).

Sono stati condotti studi per unire brevi frammenti di DNA con linker chimici. La chimica "a clic" o la ligazione a "clic", la reazione di cicloaddizione tra azide e alchino, ha guadagnato molto interesse a causa dei suoi vantaggi come condizioni di reazione blande, rese elevate e sottoprodotti inoffensivi. La chimica "Click" viene esaminata da Nwe et al. in Cancer Biotherapy and Radiopharmaceuticals, vol. 24(3), 289-302 (2009). Con la ligazione a clic sono stati prodotti costrutti di DNA lunghi fino a 300 basi e sono possibili sequenze più lunghe.

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Dimostrato con i dati della PCR, varie DNA polimerasi sono in grado di amplificare i costrutti di DNA sintetizzati realizzati mediante ligazione a click nonostante i linker triazolici tra i frammenti risultanti dalla reazione di cicloaddizione. La trascrizione *in vitro* e l'amplificazione rollingcircle possono essere eseguite anche sui costrutti di DNA sintetizzati. Sono stati preparati anche ribozimi a forcina fino a 100 nucleotidi di lunghezza e mini-DNA duplex ciclici con ligazione a click (El-Sagheer et al., Accounts of Chemical Research, vol. 45(8), 1258-1267 (2012)).

La ligazione sequenziale può essere eseguita su un substrato solido. Ad esempio, le molecole di DNA linker iniziali modificate con biotina all'estremità sono attaccate a biglie rivestite di streptavidina. Le estremità 3' delle molecole di DNA linker sono complementari alle estremità 5' dei frammenti di DNA in entrata. Le biglie vengono lavate e raccolte dopo ogni fase di ligazione e i costrutti lineari finali vengono rilasciati da una meganucleasi. Questo metodo consente l'assemblaggio rapido ed efficiente dei geni in un ordine e un orientamento ottimizzati. (Takata, DNA Research, vol. 20(4), 1-10 (2013)), I polinucleotidi marcati sintetizzati su supporti solidi sono descritti nella pubblicazione di brevetto U.S. n. 2001/0014753 di Soloveichik et al. e nella pubblicazione di brevetto U.S. n. 2003/0191303 di Vinayak et al.,

Quantificazione

In un caso, i polinucleotidi della presente invenzione (vale a dire i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono essere quantificati negli esosomi o quando derivati da uno o più fluidi corporei. Come usato qui, i "fluidi corporei" includono sangue periferico, siero, plasma, ascite, urina, liquido cerebrospinale (CSF), espettorato, saliva, midollo osseo, liquido sinoviale, umore acqueo, liquido amniotico, cerume, latte materno, liquido di lavaggio broncheoalveolare, sperma, liquido prostatico, liquido di Cowper o liquido pre-eiaculatorio, sudore, materia fecale, capelli, lacrime, liquido cistico, liquido pleurico e peritoneale, liquido pericardico, linfa, chimo, chilo, bile, liquido interstiziale,

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mestruazioni, pus, sebo, vomito, secrezioni vaginali, secrezione delle mucose, feci acquose, succo pancreatico, liquidi di lavaggio delle cavità di seni, aspirati broncopolmonari, liquido della cavità blastocilica e sangue del cordone ombelicale. In alternativa, gli esosomi possono essere recuperati da un organo scelto dal gruppo costituito da polmone, cuore, pancreas, stomaco, intestino, vescica, rene, ovaio, testicolo, pelle, colon, seno, prostata, cervello, esofago, fegato e placenta.

Nel metodo di quantificazione esosomiale, si ottiene un campione di non più di 2 mL dal soggetto e gli esosomi isolati mediante cromatografia a esclusione dimensionale, centrifugazione in gradiente di densità, centrifugazione differenziale, ultrafiltrazione su nanomembrana, cattura immunoassorbente, purificazione per affinità, separazione microfluidica o combinazioni di questi. Nell'analisi, il livello o la concentrazione di un polinucleotide può essere un livello di espressione, presenza, assenza, troncamento o alterazione del costrutto somministrato. È vantaggioso correlare il livello con uno o più fenotipi clinici o con un dosaggio per un biomarcatore di malattia umana. Il saggio può essere eseguito utilizzando sonde specifiche, citometria, qRT-PCR, PCR in tempo reale, PCR, citometria a flusso, elettroforesi, spettrometria di massa o loro combinazioni mentre gli esosomi possono essere isolati utilizzando metodi immunoistochimici come i metodi di saggio di immunoassorbimento enzimatico (ELISA). Gli esosomi possono anche essere isolati mediante cromatografia a esclusione dimensionale, centrifugazione in gradiente di densità, centrifugazione differenziale, ultrafiltrazione su nanomembrane, cattura a immunoassorbimento, purificazione per affinità, separazione microfluidica o loro combinazioni.

Questi metodi offrono allo sperimentatore la capacità di monitorare, in tempo reale, il livello di polinucleotidi rimanenti o rilasciati. Ciò è possibile perché i polinucleotidi della presente invenzione differiscono dalle forme endogene a causa delle modificazioni strutturali o chimiche.

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In un caso, il polinucleotide può essere quantificato utilizzando metodi come, ma non solo, la spettroscopia nell'ultravioletto visibile (UV/Vis). Un esempio non limitativo di spettrometro UV/Vis è uno spettrometro NANODROP (ThermoFisher, Waltham, MA). Il polinucleotide quantificato può essere analizzato al fine di determinare se il polinucleotide può essere di dimensioni adeguate, controllare che non si sia verificata alcuna degradazione del polinucleotide. La degradazione del polinucleotide può essere controllata con metodi come, ma non solo, elettroforesi su gel di agarosio, metodi di purificazione basati su HPLC come, ma non solo, HPLC a scambio anionico forte, HPLC a scambio anionico debole, HPLC a fase inversa (RP-HPLC) e HPLC di interazione idrofobica (HIC-HPLC), cromatografia liquida-spettrometria di massa (LCMS), elettroforesi capillare (CE) ed elettroforesi capillare su gel (CGE).

Purificazione

La purificazione dei polinucleotidi dell'invenzione (vale a dire i polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) qui descritti può includere, ma non è limitata a, la pulizia dei polinucleotidi, la garanzia della qualità e il controllo della qualità. La pulizia può essere eseguita mediante metodi noti nella tecnica come, tuttavia senza limitazione, biglie AGENCOURT®(Beckman Coulter Genomics, Danvers, MA), bigglie poli-T, sonde di cattura oligo-T LNA™ (EXIQON Inc, Vedbaek, Danimarca) o metodi di purificazione basati su HPLC come, tuttavia senza limitazione, HPLC a scambio anionico forte, HPLC a scambio anionico debole, HPLC a fase inversa (RP-HPLC) e HPLC a interazione idrofobica (HIC-HPLC). Il termine "purificato" quando usato in relazione a un polinucleotide come un "polinucleotide purificato" si riferisce a uno che è separato da almeno un contaminante. Come qui utilizzato, un "contaminante" è qualsiasi sostanza che ne renda un'altra inadatta, impura o inferiore. Quindi, un polinucleotide purificato (ad es. DNA e RNA) è presente in una forma o ambiente diverso da quello in cui si trova in natura, o una forma o ambiente diverso da quello che esisteva prima di sottoporlo a un trattamento o metodo di purificazione.

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Una garanzia di qualità e/o un controllo di qualità possono essere condotti utilizzando metodi quali, ma non solo, l'elettroforesi su gel, l'assorbanza UV o l'HPLC analitica.

In un altro caso, i polinucleotidi possono essere sequenziati mediante metodi che includono, ma non sono limitati a, la trascrittasi inversa-PCR.

IV. Modificazioni

In forme di realizzazione esemplificative, i polinucleotidi dell'invenzione (vale a dire polinucleotidi codificanti l'antigene presenti nei NAV dell'invenzione) possono includere varie sostituzioni e/o inserzioni.

I dati presentati negli Esempi dimostrano risposte immunitarie potenziate significative usando le formulazioni dell'invenzione. I dati hanno dimostrato l'efficacia dei vaccini a RNA sia chimicamente modificati sia non modificati della descrizione. Sorprendentemente, contrariamente ai rapporti della tecnica anteriore secondo cui era preferibile utilizzare mRNA non modificato chimicamente formulato in un veicolo per la produzione di vaccini, qui si è scoperto che i vaccini a mRNA-LNP chimicamente modificati richiedevano una dose di mRNA efficace molto più bassa rispetto all'mRNA non modificato, vale a dire, dieci volte meno dell'mRNA non modificato.

In aggiunta, uno studio qui descritto ha coinvolto la vaccinazione endovenosa (EV), intramuscolare (IM) o intradermica (ID) di topi, seguita da provocazione con una dose letale di virus. Oltre a tutti gli animali vaccinati sopravvissuti alla dose letale, sono state osservate risposte immunitarie precoci significativamente più forti (attività antivirale tramite saggio di neutralizzazione del virus e inibizione di HA (HAI)) rispetto all'antigene proteico e ad altre formulazioni a base di lipidi (lipoplex). I dati hanno dimostrato che già 1 settimana dopo la vaccinazione entrambi i gruppi di animali che ricevevano una formulazione di mRNA-LNP chimicamente modificata (ID o IM) mostravano titoli HAI superiori a 40, rispettivamente a 60 e 114. Un titolo HAI maggiore di 40 è ritenuto sufficiente per proteggere da una provocazione

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letale dell'influenza. La risposta rapida è stata inaspettata, in particolare se confrontata con la risposta osservata con i vaccini ad antigene proteico e a mRNA formulati in altri vettori lipidici (lipoplex), che a una settimana e anche a tre settimane dopo la vaccinazione hanno continuato a mostrare titoli HAI inefficaci minori di 40.

In ciascuno dei punti temporali successivi (3 settimane e 5 settimane), le formulazioni dell'invenzione hanno continuato a fornire risposte terapeutiche significativamente più forti rispetto all'antigene proteico. In effetti, anche la formulazione di mRNA-LNP non modificata chimicamente somministrata per via endovenosa aveva titoli HAI potenziati rispetto all'antigene proteico. Entro la settimana 3, tutti gli animali che hanno ricevuto una formulazione di mRNA-LNP mediante somministrazione IM o ID hanno mostrato un'attività HAI maggiore di 40, rispetto all'antigene proteico, che a una settimana e tre settimane ha continuato a mostrare titoli HAI minori di 40. Entro la settimana 5 una formulazione di mRNA-LNP modificata chimicamente modificato somministrata per via ID aveva un'attività HAI sorprendente superiore a 10.000, in contrasto con il titolo HAI di circa 400 per l'antigene proteico in quel punto temporale.

I vaccini a RNA sia chimicamente modificati sia non modificati hanno prodotto risposte immunitarie migliori rispetto ai vaccini a mRNA formulati in un diverso vettore lipidico (lipoplex). Alla settimana 5 il vaccino mRNA-lipoplex non modificato chimicamente ha prodotto titoli HAI di 197, rispetto a quelli ottenuti dalle formulazioni mRNA-LNP dell'invenzione (titoli HAI di 635-10.152). In tutti gli altri punti temporali e per tutti i vaccini mRNA-lipoplex modificati chimicamente, nessuno dei titoli HAI ha raggiunto il livello critico superiore a 40. Inoltre, il vaccino a mRNA-lipoplex non ha determinato alcuna attività neutralizzante rilevabile nell'attività di microneutralizzazione, anche fino a cinque settimane dopo la vaccinazione.

Come utilizzati nel presente contesto in un polinucleotide (come un polinucleotide

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chimerico, un polinucleotide IVT o un polinucleotide circolare), i termini "modificazione chimica" o, a seconda dei casi, "modificato chimicamente" si riferiscono a modificazione rispetto ad adenosina (A), guanosina (G), uridina (U), timidina (T) o citidina (C) ribo- o desossiribonucleosidi in una o più delle loro posizioni, pattern, percentuale o popolazione. In generale, nel presente documento, questi termini non intendono riferirsi alle modificazioni ribonucleotidiche nelle frazioni di cap di mRNA 5'-terminali presenti in natura.

In un polipeptide, il termine "modificazione" si riferisce a una modificazione rispetto all'insieme canonico di 20 amminoacidi.

Le modificazioni possono essere varie modificazioni distinte. In alcune forme di realizzazione, le regioni possono contenere una, due o più modificazioni nucleosidiche o nucleotidiche (facoltativamente differenti). In alcune forme di realizzazione, un polinucleotide modificato, introdotto in una cellula può mostrare una degradazione ridotta nella cellula, rispetto a un polinucleotide non modificato.

L'almeno una modificazione chimica della presente invenzione è esposta nelle rivendicazioni allegate.

Le modificazioni dei polinucleotidi dei NAV che sono utili nella presente invenzione includono, ma non sono limitate a quelle nella Tabella 22. Nella tabella sono indicati il simbolo della modificazione, il tipo base azotata e se la modificazione è presente in natura o meno.

Tabella 22. Modificazioni

Nome	**Simbolo**	**Base**	**Presente in natura**
2-metiltio-N6-(cis-idrossiisopentenil)adenosina	ms2i6A	A	SÌ
2-metiltio-N6-metiladenosina	ms2m6A	A	SÌ
2-metiltio-N6-treonilcarbamoiladenosina	ms2t6A	A	SÌ
N6-glicinilcarbamoiladenosina	g6A	A	SÌ
N6-isopenteniladenosina	i6A	A	SÌ
N6-metiladenosina	m6A	A	SÌ

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Nome	**Simbolo**	**Base**	**Presente in natura**
N6-treonilcarbamoiladenosina	t6A	A	SÌ
1,2'-O-dimetiladenosina	m1Am	A	SÌ
1-metiladenosina	m1A	A	SÌ
2'-O-metiladenosina	Am	A	SÌ
2'-O-ribosiladenosina (fosfato)	Ar(p)	A	SÌ
2-metiladenosina	m2A	A	SÌ
2-metiltio-N6 isopenteniladenosina	ms2i6A	A	SÌ
2-metiltio-N6-idrossinorvalilcarbamoiladenosina	ms2hn6A	A	SÌ
2'-O-metiladenosina	m6A	A	SÌ
2'-O-ribosiladenosina (fosfato)	Ar(p)	A	SÌ
Isopenteniladenosina	Iga	A	SÌ
N6-(cis-idrossiisopentenil)adenosina	io6A	A	SÌ
N6,2'-O-dimetiladenosina	m6Am	A	SÌ
N^6,2'-O-dimetiladenosina	m^6Am	A	SÌ
N6,N6,2'-O-trimetiladenosina	m62Am	A	SÌ
N6,N6-dimetiladenosina	m62A	A	SÌ
N6-acetiladenosina	ac6A	A	SÌ
N6-idrossinorvalilcarbamoiladenosina	hn6A	A	SÌ
N6-metil-N6-treonilcarbamoiladenosina	m6t6A	A	SÌ
2-metiladenosina	m^2A	A	SÌ
2-metiltio-N^6-isopenteniladenosina	ms^2i^6A	A	SÌ
7-deaza-adenosina	--	A	NO
N1-metil-adenosina	--	A	NO
N6, N6 (dimetil)adenina	--	A	NO
N6-cis-idrossi-isopentenil-adenosina	--	A	NO
α-tio-adenosina	--	A	NO
2 (ammino)adenina	--	A	NO
2 (amminopropil)adenina	--	A	NO
2 (metiltio) N6 (isopentenil)adenina	--	A	NO
2-(alchil)adenina	--	A	NO
2-(amminoalchil)adenina	--	A	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
2-(amminopropil)adenina	--	A	NO
2-(alogeno)adenina	--	A	NO
2-(alogeno)adenina	--	A	NO
2-(propil)adenina	--	A	NO
2'-ammino-2'-desossi-ATP	--	A	NO
2'-azido-2'-desossi-ATP	--	A	NO
2'-desossi-2'-a-amminoadenosina TP	--	A	NO
2'-Desossi-2'-a-azidoadenosina TP	--	A	NO
6 (alchil)adenina	--	A	NO
6 (metil)adenina	--	A	NO
6-(alchil)adenina	--	A	NO
6-(metil)adenina	--	A	NO
7 (deaza)adenina	--	A	NO
8 (alchenil)adenina	--	A	NO
8 (alchinil)adenina	--	A	NO
8 (ammino)adenina	--	A	NO
8 (tioalchil)adenina	--	A	NO
8-(alchenil)adenina	--	A	NO
8-(alchil)adenina	--	A	NO
8-(alchinil)adenina	--	A	NO
8-(ammino)adenina	--	A	NO
8-(alogeno)adenina	--	A	NO
8-(idrossil)adenina	--	A	NO
8-(tioalchil)adenina	--	A	NO
8-(tiolo)adenina	--	A	NO
8-azido-adenosina	--	A	NO
aza adenina	--	A	NO
deaza adenina	--	A	NO
N6 (metil)adenina	--	A	NO
N6-(isopentil)adenina	--	A	NO
7-deaza-8-aza-adenosina	--	A	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
7-metiladenina	--	A	NO
1-Deazaadenosina TP	--	A	NO
2'Fluoro-N6-Bz-desossiadenosina TP	--	A	NO
2'-OMe-2-ammino-ATP	--	A	NO
2'O-metil-N6-Bz-desossiadenosina TP	--	A	NO
2'-a-etiniladenosina TP	--	A	NO
2-amminoadenina	--	A	NO
2-Amminoadenosina TP	--	A	NO
2-Ammino-ATP	--	A	NO
2'-a-trifluorometiladenosina TP	--	A	NO
2-Azidoadenosina TP	--	A	NO
2'-b-etiniladenosina TP	--	A	NO
2-Bromoadenosina TP	--	A	NO
2'-b-trifluorometiladenosina TP	--	A	NO
2-cloroadenosina TP	--	A	NO
2'-Desossi-2',2'-difluoroadenosina TP	--	A	NO
2'-Desossi-2'-a-mercaptoadenosina TP	--	A	NO
2' - Desossi - 2' -a -tiometossiadenosina TP	--	A	NO
2'-Desossi-2'-b-amminoadenosina TP	--	A	NO
2'-Desossi-2'-b-azidoadenosina TP	--	A	NO
2'-Desossi-2'-b-bromoadenosina TP	--	A	NO
2'-Desossi-2'-b-cloroadenosina TP	--	A	NO
2'-Desossi-2'-b-fluoroadenosina TP	--	A	NO
2'-Desossi-2'-b-iodoadenosina TP	--	A	NO
2'-Desossi-2'-b-mercaptoadenosina TP	--	A	NO
2'-Desossi-2'-b-tiometossiadenosina TP	--	A	NO
2-Fluoroadenosina TP	--	A	NO
2-Iodoadenosina TP	--	A	NO
2-mercaptoadenosina TP	--	A	NO
2-metossi-adenina	--	A	NO
2-metiltio-adenina	--	A	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
2-trifluorometiladenosina TP	--	A	NO
3-Deaza-3-bromoadenosina TP	--	A	NO
3-Deaza-3-cloroadenosina TP	--	A	NO
3-Deaza-3-fluoroadenosina TP	--	A	NO
3-Deaza-3-iodoadenosina TP	--	A	NO
3-Deazaadenosina TP	--	A	NO
4'-Azidoadenosina TP	--	A	NO
4'-adenosina carbociclica TP	--	A	NO
4'-Etiniladenosina TP	--	A	NO
5'-omo-adenosina TP	--	A	NO
8-Aza-ATP	--	A	NO
8-bromo-adenosina TP	--	A	NO
8-trifluorometiladenosina TP	--	A	NO
9-Deazaadenosina TP	--	A	NO
2-amminopurina	--	A/G	NO
7-deaza-2,6-diamminopurina	--	A/G	NO
7-deaza-8-aza-2,6-diamminopurina	--	A/G	NO
7-deaza-8-aza-2-amminopurina	--	A/G	NO
2,6-diamminopurina	--	A/G	NO
7-deaza-8-aza-adenina, 7-deaza-2-amminopurina	--	A/G	NO
2-tiocitidina	s2C	C	SÌ
3-metilcitidina	m3C	C	SÌ
5-formilcitidina	f5C	C	SÌ
5-idrossimetilcitidina	hm5C	C	SÌ
5-metilcitidina	m5C	C	SÌ
N4-acetilcitidina	ac4C	C	SÌ
2'-O-metilcitidina	Cm	C	SÌ
2'-O-metilcitidina	Cm	C	SÌ
5,2'-O-dimetilcitidina	m5 Cm	C	SÌ
5-formil-2'-O-metilcitidina	f5Cm	C	SÌ
Lisidina	k2C	C	SÌ

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Nome	**Simbolo**	**Base**	**Presente in natura**
N4,2'-O-dimetilcitidina	m4Cm	C	SÌ
N4-acetil-2'-O-metilcitidina	ac4Cm	C	SÌ
N4-metilcitidina	m4C	C	SÌ
N4,N4-Dimetil-2'-OMe-Citidina TP	--	C	SÌ
4-metilcitidina	--	C	NO
5-aza-citidina	--	C	NO
Pseudo-iso-citidina	--	C	NO
pirrolo-citidina	--	C	NO
α-tio-citidina	--	C	NO
2-(tio)citosina	--	C	NO
2'-ammino-2'-desossi-CTP	--	C	NO
2'-azido-2'-desossi-CTP	--	C	NO
2'-Desossi-2'-a-amminocitidina TP	--	C	NO
2'-Desossi-2'-a-azidocitidina TP	--	C	NO
3 (deaza) 5 (aza) citosina	--	C	NO
3 (metil)citosina	--	C	NO
3-(alchil)citosina	--	C	NO
3- (deaza) 5 (aza) citosina	--	C	NO
3-(metil)citidina	--	C	NO
4,2'-O-dimetilcitidina	--	C	NO
5 (alo)citosina	--	C	NO
5 (metil)citosina	--	C	NO
5 (propinil)citosina	--	C	NO
5 (trifluorometil)citosina	--	C	NO
5-(alchil)citosina	--	C	NO
5-(alchinil)citosina	--	C	NO
5-(alo)citosina	--	C	NO
5-(propinil)citosina	--	C	NO
5-(trifluorometil)citosina	--	C	NO
5-bromo-citidina	--	C	NO
5-iodo-citidina	--	C	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
5-propinil citosina	--	C	NO
6-(azo)citosina	--	C	NO
6-aza-citidina	--	C	NO
aza citosina	--	C	NO
deaza citosina	--	C	NO
N4 (acetil)citosina	--	C	NO
1-metil-1-deaza-pseudoisocitidina	--	C	NO
1-metil-pseudoisocitidina	--	C	NO
2-metossi-5-metil-citidina	--	C	NO
2-metossi-citidina	--	C	NO
2-tio-5-metil-citidina	--	C	NO
4-metossi-1-metil-pseudoisocitidina	--	C	NO
4-metossi-pseudoisocitidina	--	C	NO
4-tio-1-metil-1-deaza-pseudoisocitidina	--	C	NO
4-tio-1-metil-pseudoisocitidina	--	C	NO
4-tio-pseudoisocitidina	--	C	NO
5-aza-zebularina	--	C	NO
5-metil-zebularina	--	C	NO
pirrolo-pseudoisocitidina	--	C	NO
Zebularina	--	C	NO
(E)-5-(2-bromo-vinil)citidina TP	--	C	NO
2,2'-anidrocitidina TP cloridrato	--	C	NO
2'Fluor-N4-Bz-citidina TP	--	C	NO
2'Fluoro-N4-acetil-citidina TP	--	C	NO
2'-O-metil-N4-acetil-citidina TP	--	C	NO
2'O-metil-N4-Bz-citidina TP	--	C	NO
2'-a-etinilcitidina TP	--	C	NO
2'-a-trifluorometilcitidina TP	--	C	NO
2'-b-etinilcitidina TP	--	C	NO
2'-b-trifluorometilcitidina TP	--	C	NO
2'-Desossi-2',2'-difluorocitidina TP	--	C	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
2'-Desossi-2'-a-mercaptocitidina TP	--	C	NO
2' - Desossi - 2' -a -tiometossicitidina TP	--	C	NO
2'-Desossi-2'-b-amminocitidina TP	--	C	NO
2'-Desossi-2'-b-azidocitidina TP	--	C	NO
2'-Desossi-2'-b-bromocitidina TP	--	C	NO
2'-Desossi-2'-b-clorocitidina TP	--	C	NO
2'-Desossi-2'-b-fluorocitidina TP	--	C	NO
2'-Desossi-2'-b-iodocitidina TP	--	C	NO
2'-Desossi-2'-b-mercaptocitidina TP	--	C	NO
2'-Desossi-2'-b-tiometossicitidina TP	--	C	NO
2'-O-metil-5-(1-propinil)citidina TP	--	C	NO
3'-Etinilcitidina TP	--	C	NO
4'-Azidocitidina TP	--	C	NO
4'-citidina carbociclica TP	--	C	NO
4'-Etinilcitidina TP	--	C	NO
5-(1-propinil)ara-citidina TP	--	C	NO
5-(2-cloro-fenil)-2-tiocitidina TP	--	C	NO
5-(4-ammino-fenil)-2-tiocitidina TP	--	C	NO
5-amminoallil-CTP	--	C	NO
5-Cianocitidina TP	--	C	NO
5-Etinilara-citidina TP	--	C	NO
5-Etinilcitidina TP	--	C	NO
5'-omo-citidina TP	--	C	NO
5-metossicitidina TP	--	C	NO
5-Trifluorometil-Citidina TP	--	C	NO
N4-Ammino-citidina TP	--	C	NO
N4-Benzoil-citidina TP	--	C	NO
Pseudoisocitidina	--	C	NO
7-metilguanosina	m7G	G	SÌ
N2,2'-O-dimetilguanosina	m2Gm	G	SÌ
N2-metilguanosina	m2G	G	SÌ

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Nome	**Simbolo**	**Base**	**Presente in natura**
Wyosina	imG	G	SÌ
1,2'-O-dimetilguanosina	m1Gm	G	SÌ
1-metilguanosina	m1G	G	SÌ
2'-O-metilguanosina	Gm	G	SÌ
2'-O-ribosilguanosina (fosfato)	Gr(p)	G	SÌ
2'-O-metilguanosina	Gm	G	SÌ
2'-O-ribosilguanosina (fosfato)	Gr(p)	G	SÌ
7-amminometil-7-deazaguanosina	preQ1	G	SÌ
7-ciano-7-deazaguanosina	preQ0	G	SÌ
Archeosina	G+	G	SÌ
Metilwyosina	mimG	G	SÌ
N2,7-dimetilguanosina	m2,7G	G	SÌ
N2,N2,2'-O-trimetilguanosina	m22Gm	G	SÌ
N2,N2,7-trimetilguanosina	m2,2,7G	G	SÌ
N2,N2-dimetilguanosina	m22G	G	SÌ
N^2,7,2'-O-trimetilguanosina	$m^{2,7}$Gm	G	SÌ
6-tio-guanosina	--	G	NO
7-deaza-guanosina	--	G	NO
8-osso-guanosina	--	G	NO
N1-metil-guanosina	--	G	NO
α-tio-guanosina	--	G	NO
2 (propil)guanina	--	G	NO
2-(alchil)guanina	--	G	NO
2'-Ammino-2'-desossi-GTP	--	G	NO
2'-Azido-2'-desossi-GTP	--	G	NO
2'-Desossi-2'-a-amminoguanosina TP	--	G	NO
2'-Desossi-2'-a-azidoguanosina TP	--	G	NO
6 (metil)guanina	--	G	NO
6-(alchil)guanina	--	G	NO
6-(metil)guanina	--	G	NO
6-metil-guanosina	--	G	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
7 (alchil)guanina	--	G	NO
7 (deaza)guanina	--	G	NO
7 (metil)guanina	--	G	NO
7-(alchil)guanina	--	G	NO
7-(deaza)guanina	--	G	NO
7-(metil)guanina	--	G	NO
8 (alchil)guanina	--	G	NO
8 (alchinil)guanina	--	G	NO
8 (alo)guanina	--	G	NO
8 (tioalchil)guanina	--	G	NO
8-(alchenil)guanina	--	G	NO
8-(alchil)guanina	--	G	NO
8-(alchinil)guanina	--	G	NO
8-(ammino)guanina	--	G	NO
8-(alo)guanina	--	G	NO
8-(idrossil)guanina	--	G	NO
8-(tioalchil)guanina	--	G	NO
8-(tiolo)guanina	--	G	NO
aza guanina	--	G	NO
deaza guanina	--	G	NO
N (metil)guanina	--	G	NO
N-(metil)guanina	--	G	NO
1-metil-6-tio-guanosina	--	G	NO
6-metossi-guanosina	--	G	NO
6-tio-7-deaza-8-aza-guanosina	--	G	NO
6-tio-7-deaza-guanosina	--	G	NO
6-tio-7-metil-guanosina	--	G	NO
7-deaza-8-aza-guanosina	--	G	NO
7-metil-8-osso-guanosina	--	G	NO
N2,N2-dimetil-6-tio-guanosina	--	G	NO
N2-metil-6-tio-guanosina	--	G	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
1-Me-GTP	--	G	NO
2'Fluoro-N2-isobutil-guanosina TP	--	G	NO
2'O-metil-N2-isobutil-guanosina TP	--	G	NO
2'-a-Etinilguanosina TP	--	G	NO
2'-a-trifluorometilguanosina TP	--	G	NO
2'-b-Etinilguanosina TP	--	G	NO
2'-b-trifluorometilguanosina TP	--	G	NO
2'-Desossi-2',2'-difluoroguanosina TP	--	G	NO
2'-Desossi-2'-a-mercaptoguanosina TP	--	G	NO
2' - Desossi - 2' -a -tiometossiguanosina TP	--	G	NO
2'-Desossi-2'-b-aminoguanosina TP	--	G	NO
2'-Desossi-2'-b-azidoguanosina TP	--	G	NO
2'-Desossi-2'-b-bromoguanosina TP	--	G	NO
2'-Desossi-2'-b-cloroguanosina TP	--	G	NO
2'-Desossi-2'-b-fluoroguanosina TP	--	G	NO
2'-Desossi-2'-b-iodoguanosina TP	--	G	NO
2'-Desossi-2'-b-mercaptoguanosina TP	--	G	NO
2'-Desossi-2'-b-tiometossiguanosina TP	--	G	NO
4'-Azidoguanosina TP	--	G	NO
4'-Guanosina carbociclica TP	--	G	NO
4'-Etinilguanosina TP	--	G	NO
5'-omo-guanosina TP	--	G	NO
8-bromo-guanosina TP	--	G	NO
9-Deazaguanosina TP	--	G	NO
N2-isobutil-guanosina TP	--	G	NO
1-metilinosina	m1I	I	SÌ
Inosina	I	I	SÌ
1,2'-O-dimetilinosina	m1Im	I	SÌ
2'-O-metilinosina	Im	I	SÌ
7-metilinosina		I	NO
2'-O-metilinosina	Im	I	SÌ

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Nome	**Simbolo**	**Base**	**Presente in natura**
Epossiqueuosina	oQ	Q	SÌ
galattosil-queuosina	galQ	Q	SÌ
Mannosilqueuosina	manQ	Q	SÌ
Queuosina	Q	Q	SÌ
alliamino-timidina	--	T	NO
aza timidina	--	T	NO
deaza timidina	--	T	NO
desossi-timidina	--	T	NO
2'-O-metiluridina	--	U	SÌ
2-tiouridina	s2U	U	SÌ
3-metiluridina	m3U	U	SÌ
5-carbossimetiluridina	cm5U	U	SÌ
5-idrossiuridina	ho5U	U	SÌ
5-metiluridina	m5U	U	SÌ
5-taurinometil-2-tiouridina	τm5s2U	U	SÌ
5-taurinometiluridina	τm5U	U	SÌ
Diidrouridina	D	U	SÌ
Pseudouridina	Ψ	U	SÌ
(3-(3-ammino-3-carbossipropil)uridina	acp3U	U	SÌ
1-metil-3-(3-ammino-5-carbossipropil)pseudouridina	m1acp3Ψ	U	SÌ
1-metilpseudouridina	m1Ψ	U	SÌ
1-metil-pseudouridina	--	U	SÌ
2'-O-metiluridina	Um	U	SÌ
2'-O-metilpseudouridina	Ψm	U	SÌ
2'-O-metiluridina	Um	U	SÌ
2-tio-2'-O-metiluridina	s2Um	U	SÌ
3-(3-ammino-3-carbossipropil)uridina	acp3U	U	SÌ
3,2'-O-dimetiluridina	m3Um	U	SÌ
3-Metil-pseudo-Uridina TP	--	U	SÌ
4-tiouridina	s4U	U	SÌ
5-(carbossiidrossimetil)uridina	chm5U	U	SÌ

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Nome	**Simbolo**	**Base**	**Presente in natura**
5-(carbossiidrossimetil)uridina metilestere	mchm5U	U	SÌ
5,2'-O-dimetiluridina	m5Um	U	SÌ
5,6-diidro-uridina	--	U	SÌ
5-amminometil-2-tiouridina	nm5s2U	U	SÌ
5-carbamoilmetil-2'-O-metiluridina	ncm5Um	U	SÌ
5-carbamoilmetiluridina	ncm5U	U	SÌ
5-carbossiidrossimetiluridina	--	U	SÌ
5-Carbossiidrossimetiluridina metilestere	--	U	SÌ
5-carbossimetilamminometil-2'-O-metiluridina	cmnm5Um	U	SÌ
5-carbossimetilamminometil-2-tiouridina	cmnm5s2U	U	SÌ
5-carbossimetilamminometil-2-tiouridina	--	U	SÌ
5-carbossimetilamminometiluridina	cmnm5U	U	SÌ
5-carbossimetilamminometiluridina	--	U	SÌ
5-Carbamoilmetiluridina TP	--	U	SÌ
5-metossicarbonilmetil-2'-O-metiluridina	mcm5Um	U	SÌ
5-metossicarbonilmetil-2-tiouridina	mcm5s2U	U	SÌ
5-metossicarbonilmetiluridina	mcm5U	U	SÌ
5-metossiuridina	mo5U	U	SÌ
5-metil-2-tiouridina	m5s2U	U	SÌ
5-metilamminometil-2-selenouridina	mnm5se2U	U	SÌ
5-metilamminometil-2-tiouridina	mnm5s2U	U	SÌ
5-metilamminometiluridina	mnm5U	U	SÌ
5-metildiidrouridina	--	U	SÌ
Acido 5-ossiacetico-Uridina TP	--	U	SÌ
Acido 5-ossiacetico-estere metilico-Uridina TP	--	U	SÌ
N1-metil-pseudo-uridina	--	U	SÌ
acido uridina 5-ossiacetico	cmo5U	U	SÌ
uridina acido 5-ossiacetico metilestere	mcmo5U	U	SÌ
3-(3-Ammino-3-carbossipropil)-Uridina TP	--	U	SÌ
5-(iso-Pentenilamminometil)-2-tiouridina TP	--	U	SÌ
5-(iso-Pentenilamminometil)-2'-O-metiluridina TP	--	U	SÌ

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

Nome	**Simbolo**	**Base**	**Presente in natura**
5-(iso-Pentenilamminometil)uridina TP	--	U	SÌ
5-propiniluracile	--	U	NO
α-tio-uridina	--	U	NO
1 (amminoalchilammino-carboniletilenil)-2(tio)-pseudouracile	--	U	NO
1 (amminoalchilamminocarboniletilenil)-2,4-(ditio)pseudouracile	--	U	NO
1 (amminoalchilamminocarboniletilenil)-4 (tio)pseudouracile	--	U	NO
1 (amminoalchilamminocarboniletilenil)-pseudouracile	--	U	NO
1 (amminocarboniletilenil)-2(tio)-pseudouracile	--	U	NO
1 (amminocarboniletilenil)-2,4-(ditio)pseudouracile	--	U	NO
1 (amminocarboniletilenil)-4 (tio)pseudouracile	--	U	NO
1 (amminocarboniletilenil)-pseudouracile	--	U	NO
1 sostituito 2(tio)-pseudouracile	--	U	NO
1 sostituito 2,4-(ditio)pseudouracile	--	U	NO
1 sostituito 4 (tio)pseudouracile	--	U	NO
pseudouracile 1 sostituito	--	U	NO
1-(amminoalchilammino-carboniletilenil)-2-(tio)-pseudouracile	--	U	NO
1-metil-3-(3-ammino-3-carbossipropil) pseudouridina TP	--	U	NO
1-metil-3-(3-ammino-3-carbossipropil)pseudo-UTP	--	U	NO
1-metil-pseudo-UTP	--	U	NO
2 (tio)pseudouracile	--	U	NO
2' desossiuridina	--	U	NO
2' fluorouridina	--	U	NO
2-(tio)uracile	--	U	NO
2,4-(ditio)psuedouracile	--	U	NO
2'metile, 2'ammino, 2'azido, 2'fluoro-guanosina	--	U	NO
2'-ammino-2'-desossi-UTP	--	U	NO
2'-azido-2'-desossi-UTP	--	U	NO
2'-Azido-desossiuridina TP	--	U	NO
2'-O-metilpseudouridina	--	U	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
2' desossiuridina	2'dU	U	NO
2' fluorouridina	--	U	NO
2'-Desossi-2'-a-amminouridina TP	--	U	NO
2'-Desossi-2'-a-azidouridina TP	--	U	NO
2-metilpseudouridina	m3Ψ	U	NO
3 (3 ammino-3 carbossipropil)uracile	--	U	NO
4 (tio)pseudouracile	--	U	NO
4-(tio)pseudouracile	--	U	NO
4-(tio)uracile	--	U	NO
4-tiouracile	--	U	NO
5 (1,3-diazolo-1-alchil)uracile	--	U	NO
5 (2-amminopropil)uracile	--	U	NO
5 (amminoalchil)uracile	--	U	NO
5 (dimetilamminoalchil)uracile	--	U	NO
5 (guanidiniumalchil)uracile	--	U	NO
5 (metossicarbonilmetil)-2-(tio)uracile	--	U	NO
5 (metossicarbonil-metil)uracile	--	U	NO
5 (metil) 2 (tio)uracile	--	U	NO
5 (metil) 2,4 (ditio)uracile	--	U	NO
5 (metil) 4 (tio)uracile	--	U	NO
5 (metilamminometil)-2 (tio)uracile	--	U	NO
5 (metilamminometil)-2,4 (ditio)uracile	--	U	NO
5 (metilamminometil)-4 (tio)uracile	--	U	NO
5 (propinil)uracile	--	U	NO
5 (trifluorometil)uracile	--	U	NO
5-(2-amminopropil)uracile	--	U	NO
5-(alchil)-2-(tio)pseudouracile	--	U	NO
5-(alchil)-2,4 (ditio)pseudouracile	--	U	NO
5-(alchil)-4 (tio)pseudouracile	--	U	NO
5-(alchil)pseudouracile	--	U	NO
5-(alchil)uracile	--	U	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
5-(alchinil)uracile	--	U	NO
5-(allilammino)uracile	--	U	NO
5 -(cianoalchil)uracile	--	U	NO
5-(dialchilamminoalchil)uracile	--	U	NO
5-(dimetilamminoalchil)uracile	--	U	NO
5-(guanidiniumalchil)uracile	--	U	NO
5-(alo)uracile	--	U	NO
5-(l,3-diazolo-l-alchil)uracile	--	U	NO
5-(metossi)uracile	--	U	NO
5-(metossicarbonilmetil)-2-(tio)uracile	--	U	NO
5-(metossicarbonil-metil)uracile	--	U	NO
5-(metil) 2(tio)uracile	--	U	NO
5-(metil) 2,4 (ditio)uracile	--	U	NO
5-(metil) 4 (tio)uracile	--	U	NO
5-(metil)-2-(tio)pseudouracile	--	U	NO
5-(metil)-2,4 (ditio)pseudouracile	--	U	NO
5-(metil)-4 (tio)pseudouracile	--	U	NO
5-(metil)pseudouracile	--	U	NO
5-(metilamminometil)-2 (tio)uracile	--	U	NO
5-(metilamminometil)-2,4(ditio)uracile	--	U	NO
5-(metilamminometil)-4-(tio)uracile	--	U	NO
5-(propinil)uracile	--	U	NO
5-(trifluorometil)uracile	--	U	NO
5-amminoallil-uridina	--	U	NO
5-bromo-uridina	--	U	NO
5-iodo-uridina	--	U	NO
5-uracile	--	U	NO
6 (azo)uracile	--	U	NO
6-(azo)uracile	--	U	NO
6-aza-uridina	--	U	NO
alliamino-uracile	--	U	NO

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Consulente in P.I. n° USBM-041R

Nome	**Simbolo**	**Base**	**Presente in natura**
aza uracile	--	U	NO
deaza uracile	--	U	NO
N3 (metil)uracile	--	U	NO
Pseudo-UTP-1-2-acido etanoico	--	U	NO
Pseudouracile	--	U	NO
4-tio-pseudo-UTP	--	U	NO
1-carbossimetil-pseudouridina	--	U	NO
1-metil-1-deaza-pseudouridina	--	U	NO
1-propinil-uridina	--	U	NO
1-taurinometil-1-metil-uridina	--	U	NO
1-taurinometil-4-tio-uridina	--	U	NO
1-taurinometil-pseudouridina	--	U	NO
2-metossi-4-tio-pseudouridina	--	U	NO
2-tio-1-metil-1-deaza-pseudouridina	--	U	NO
2-tio-1-metil-pseudouridina	--	U	NO
2-tio-5-aza-uridina	--	U	NO
2-tio-diidropseudouridina	--	U	NO
2-tio-diidrouridina	--	U	NO
2-tio-pseudouridina	--	U	NO
4-metossi-2-tio-pseudouridina	--	U	NO
4-metossi-pseudouridina	--	U	NO
4-tio-1-metil-pseudouridina	--	U	NO
4-tio-pseudouridina	--	U	NO
5-aza-uridina	--	U	NO
Diidropseudouridina	--	U	NO
(±)1-(2-idrossipropil)pseudouridina TP	--	U	NO
(2R)- 1 -(2-idrossipropil)pseudouridina TP	--	U	NO
(2S)- 1 -(2-idrossipropil)pseudouridina TP	--	U	NO
(E)-5-(2-bromo-vinil)ara-uridina TP	--	U	NO
(E)-5-(2-bromo-vinil)uridina TP	--	U	NO
(Z)-5-(2-bromo-vinil)ara-uridina TP	--	U	NO

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Consulente in P.I. n° USBM-041R

Nome	**Simbolo**	**Base**	**Presente in natura**
(Z)-5-(2-bromo-vinil)uridina TP	--	U	NO
1-(2,2,2-trifluoroetilmetacrilato)-pseudo-UTP	--	U	NO
1-(2,2,3,3,3-Pentafluoropropil)pseudouridina TP	--	U	NO
1-(2,2-Dietossietil)pseudouridina TP	--	U	NO
1-(2,4,6-trimetilbenzil)pseudouridina TP	--	U	NO
1-(2,4,6-Trimetil-benzil)pseudo-UTP	--	U	NO
1-(2,4,6-Trimetil-fenil)pseudo-UTP	--	U	NO
1-(2-ammino-2-carbossietil)pseudo-UTP	--	U	NO
1-(2-ammino-etil)pseudo-UTP	--	U	NO
1-(2-idrossietil)pseudouridina TP	--	U	NO
1-(2-metossietil)pseudouridina TP	--	U	NO
1-(3,4-bis-trifluorometossibenzil)pseudouridina TP	--	U	NO
1-(3,4-Dimetossibenzil)pseudouridina TP	--	U	NO
1-(3-ammino-3-carbossipropil)pseudo-UTP	--	U	NO
1-(3-ammino-propil)pseudo-UTP	--	U	NO
1-(3-ciclopropil-prop-2-inil)pseudouridina TP	--	U	NO
1-(4-ammino-4-carbossibutil)pseudo-UTP	--	U	NO
1-(4-ammino-benzil)pseudo-UTP	--	U	NO
1-(4-ammino-butil)pseudo-UTP	--	U	NO
1-(4-ammino-fenil)pseudo-UTP	--	U	NO
1-(4-Azidobenzil)pseudouridina TP	--	U	NO
1-(4-bromobenzil)pseudouridina TP	--	U	NO
1-(4-clorobenzil)pseudouridina TP	--	U	NO
1-(4-fluorobenzil)pseudouridina TP	--	U	NO
1-(4-iodobenzil)pseudouridina TP	--	U	NO
1-(4-Metansolfonilbenzil)pseudouridina TP	--	U	NO
1-(4-metossibenzil)pseudouridina TP	--	U	NO
1-(4-metossi-benzil)pseudo-UTP	--	U	NO
1-(4-metossi-fenil)pseudo-UTP	--	U	NO
1-(4-metilbenzil)pseudouridina TP	--	U	NO
1-(4-metil-benzil)pseudo-UTP	--	U	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
1-(4-Nitrobenzil)pseudouridina TP	--	U	NO
1-(4-nitro-benzil)pseudo-UTP	--	U	NO
1(4-nitro-fenil)pseudo-UTP	--	U	NO
1-(4-tiometossibenzil)pseudouridina TP	--	U	NO
1-(4-trifluorometossibenzil)pseudouridina TP	--	U	NO
1-(4-trifluorometilbenzil)pseudouridina TP	--	U	NO
1-(5-ammino-pentil)pseudo-UTP	--	U	NO
1-(6-ammino-esil)pseudo-UTP	--	U	NO
1,6-dimetil-pseudo-UTP	--	U	NO
1-[3-(2-{2-[2-(2-amminoetossi)-etossi]-etossi}-etossi)-propionil]pseudouridina TP	--	U	NO
1-{3-[2-(2-amminoetossi)-etossi]-propionil} pseudouridina TP	--	U	NO
1-acetilpseudouridina TP	--	U	NO
1-alchil-6-(1-propinil)-pseudo-UTP	--	U	NO
1-alchil-6-(2-propinil)-pseudo-UTP	--	U	NO
1-alchil-6-allil-pseudo-UTP	--	U	NO
1-alchil-6-etinil-pseudo-UTP	--	U	NO
1-alchil-6-omoallil-pseudo-UTP	--	U	NO
1-alchil-6-vinil-pseudo-UTP	--	U	NO
1-allilpseudouridina TP	--	U	NO
1-amminometil-pseudo-UTP	--	U	NO
1-benzoilpseudouridina TP	--	U	NO
1-benzilossimetilpseudouridina TP	--	U	NO
1-benzil-pseudo-UTP	--	U	NO
1-biotinil-PEG2-pseudouridina TP	--	U	NO
1-Biotinilpseudouridina TP	--	U	NO
1-Butil-pseudo-UTP	--	U	NO
1-Cianometilpseudouridina TP	--	U	NO
1-ciclobutilmetil-pseudo-UTP	--	U	NO
1-ciclobutil-pseudo-UTP	--	U	NO

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Consulente in P.I. n° USBM-041R

Nome	**Simbolo**	**Base**	**Presente in natura**
1-cicloeptilmetil-pseudo-UTP	--	U	NO
1-cicloeptil-pseudo-UTP	--	U	NO
1-cicloesilmetil-pseudo-UTP	--	U	NO
1-cicloesil-pseudo-UTP	--	U	NO
1-cicloottilmetil-pseudo-UTP	--	U	NO
1-cicloottil-pseudo-UTP	--	U	NO
1-ciclopentilmetil-pseudo-UTP	--	U	NO
1-ciclopentil-pseudo-UTP	--	U	NO
1-ciclopropilmetil-pseudo-UTP	--	U	NO
1-ciclopropil-pseudo-UTP	--	U	NO
1-etil-pseudo-UTP	--	U	NO
1-esil-pseudo-UTP	--	U	NO
1-omoallilpseudouridina TP	--	U	NO
1-Idrossimetilpseudouridina TP	--	U	NO
1-iso-propil-pseudo-UTP	--	U	NO
1-Me-2-tio-pseudo-UTP	--	U	NO
1-Me-4-tio-pseudo-UTP	--	U	NO
1-Me-alpha-tio-pseudo-UTP	--	U	NO
1-Metansolfonilmetilpseudouridina TP	--	U	NO
1-metossimetilpseudouridina TP	--	U	NO
1-Metil-6-(2,2,2-Trifluoroetil)pseudo-UTP	--	U	NO
1-Metil-6-(4-morfolino)-pseudo-UTP	--	U	NO
1-Metil-6-(4-tiomorfolino)-pseudo-UTP	--	U	NO
1-metil-6-(fenil sostituito)pseudo-UTP	--	U	NO
1-Metil-6-ammino-pseudo-UTP	--	U	NO
1-Metil-6-azido-pseudo-UTP	--	U	NO
1-Metil-6-bromo-pseudo-UTP	--	U	NO
1-Metil-6-butil-pseudo-UTP	--	U	NO
1-Metil-6-cloro-pseudo-UTP	--	U	NO
1-Metil-6-ciano-pseudo-UTP	--	U	NO
1-Metil-6-dimetilammino-pseudo-UTP	--	U	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
1-Metil-6-etossi-pseudo-UTP	--	U	NO
1-Metil-6-etilcarbossilate-pseudo-UTP	--	U	NO
1-Metil-6-etil-pseudo-UTP	--	U	NO
1-Metil-6-fluoro-pseudo-UTP	--	U	NO
1-Metil-6-formil-pseudo-UTP	--	U	NO
1-Metil-6-idrossiammino-pseudo-UTP	--	U	NO
1-Metil-6-idrossi-pseudo-UTP	--	U	NO
1-Metil-6-iodo-pseudo-UTP	--	U	NO
1-metil-6-iso-propil-pseudo-UTP	--	U	NO
1-Metil-6-metossi-pseudo-UTP	--	U	NO
1-Metil-6-metilammino-pseudo-UTP	--	U	NO
1-Metil-6-fenil-pseudo-UTP	--	U	NO
1-Metil-6-propil-pseudo-UTP	--	U	NO
1-metil-6-terz-butil-pseudo-UTP	--	U	NO
1-Metil-6-trifluorometossi-pseudo-UTP	--	U	NO
1-Metil-6-trifluorometil-pseudo-UTP	--	U	NO
1-morfolinometilpseudouridina TP	--	U	NO
1-Pentil-pseudo-UTP	--	U	NO
1-fenil-pseudo-UTP	--	U	NO
1-Pivaloilpseudouridina TP	--	U	NO
1-Propargilpseudouridina TP	--	U	NO
1-propil-pseudo-UTP	--	U	NO
1-propinil-pseudouridina	--	U	NO
1-p-tolil-pseudo-UTP	--	U	NO
1-terz-Butil-pseudo-UTP	--	U	NO
1-tiometossimetilpseudouridina TP	--	U	NO
1-Tiomorfolinometilpseudouridina TP	--	U	NO
1-Trifluoroacetilpseudouridina TP	--	U	NO
1-Trifluorometil-pseudo-UTP	--	U	NO
1-vinilpseudouridina TP	--	U	NO
2,2'-anidro-uridina TP	--	U	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
2'-bromo-desossiuridina TP	--	U	NO
2'-F-5-Metil-2'-desossi-UTP	--	U	NO
2'-OMe-5-Me-UTP	--	U	NO
2'-OMe-pseudo-UTP	--	U	NO
2'-a-etiniluridina TP	--	U	NO
2'-a-trifluorometiluridina TP	--	U	NO
2'-b-etiniluridina TP	--	U	NO
2'-b-trifluorometiluridina TP	--	U	NO
2'-Desossi-2',2'-difluorouridina TP	--	U	NO
2'-Desossi-2'-a-mercapturidina TP	--	U	NO
2'-Desossi-2'-a-tiometossiuridina TP	--	U	NO
2'-Desossi-2'-b-amminouridina TP	--	U	NO
2'-Desossi-2'-b-azidouridina TP	--	U	NO
2'-Desossi-2'-b-bromouridina TP	--	U	NO
2'-Desossi-2'-b-clorouridina TP	--	U	NO
2'-Desossi-2'-b-fluorouridina TP	--	U	NO
2'-Desossi-2'-b-iodouridina TP	--	U	NO
2'-Desossi-2'-b-mercapturidina TP	--	U	NO
2'-Desossi-2'-b-tiometossiuridina TP	--	U	NO
2-metossi-4-tio-uridina	--	U	NO
2- metossiuridina	--	U	NO
2'-O-metil-5-(1-propinil)uridina TP	--	U	NO
3-Alchil-pseudo-UTP	--	U	NO
4'-Azidouridina TP	--	U	NO
4'-uridina carbociclica TP	--	U	NO
4'-Etiniluridina TP	--	U	NO
5-(1-propinil)ara-uridina TP	--	U	NO
5-(2-furanil)uridina TP	--	U	NO
5-Cianouridina TP	--	U	NO
5-Dimetilamminouridina TP	--	U	NO
5'-Omo-uridina TP	--	U	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
5-iodo-2'-fluoro-desossiuridina TP	--	U	NO
5-feniletiniluridina TP	--	U	NO
5-trideuterometil-6-deuterouridina TP	--	U	NO
5-Trifluorometil-Uridina TP	--	U	NO
5-vinilarauridina TP	--	U	NO
6-(2,2,2-trifluoroetilmetacrilato)-pseudo-UTP	--	U	NO
6-(4-Morfolino)-pseudo-UTP	--	U	NO
6-(4-Tiomorfolino)-pseudo-UTP	--	U	NO
6-(Fenile sostituito)-pseudo-UTP	--	U	NO
6-ammino-pseudo-UTP	--	U	NO
6-Azido-pseudo-UTP	--	U	NO
6-Bromo-pseudo-UTP	--	U	NO
6-Butil-pseudo-UTP	--	U	NO
6-Cloro-pseudo-UTP	--	U	NO
6-Ciano-pseudo-UTP	--	U	NO
6-Dimetilammino-pseudo-UTP	--	U	NO
6-Etossi-pseudo-UTP	--	U	NO
6-Etilcarbossilato-pseudo-UTP	--	U	NO
6-etil-pseudo-UTP	--	U	NO
6-Fluoro-pseudo-UTP	-	U	NO
6-Formil-pseudo-UTP	-	U	NO
6-idrossiammino-pseudo-UTP	--	U	NO
6-idrossi-pseudo-UTP	-	U	NO
6-Iodo-pseudo-UTP	-	U	NO
6-iso-Propil-pseudo-UTP	-	U	NO
6-Metossi-pseudo-UTP	-	U	NO
6-metilammino-pseudo-UTP	-	U	NO
6-metil-pseudo-UTP	-	U	NO
6-fenil-pseudo-UTP	-	U	NO
6-fenil-pseudo-UTP	-	U	NO
6-propil-pseudo-UTP	-	U	NO

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Nome	**Simbolo**	**Base**	**Presente in natura**
6-terz-Butil-pseudo-UTP	-	U	NO
6-Trifluorometossi-pseudo-UTP	--	U	NO
6-Trifluorometil-pseudo-UTP	-	U	NO
Alfa-tio-pseudo-UTP	-	U	NO
Pseudouridina 1 -(acido 4-metilbenzensolfonico) TP	-	U	NO
Pseudouridina 1-(4-metilbenzoico) TP	-	U	NO
Pseudouridina TP 1-[3-(2-etossi)]acidopropionico	-	U	NO
Pseudouridina TP 1-[3-{2-(2-[2-(2-etossi)-etossi]-etossi)-etossi}]acido propionico	-	U	NO
Pseudouridina TP 1-[3-{2-(2-[2-{2(2-etossi)-etossi}-etossi]-etossi)-etossi}]acido propionico	-	U	NO
Pseudouridina TP 1-[3-{2-(2-[2-etossi]-etossi)-etossi}]acido propionico	-	U	NO
Pseudouridina TP 1-[3-{2-(2-etossi)-etossi}] acido propionico	-	U	NO
Pseudouridina TP 1-acido metilfosfonico	-	U	NO
Pseudouridina TP 1-acido metilfosfonicodietilestere	-	U	NO
Acido pseudo-UTP-N1-3-propionico	--	U	NO
Acido pseudo-UTP-N1-4-butanoico	-	U	NO
Acido pseudo-UTP-N1-5-pentanoico	--	U	NO
Acido pseudo-UTP-N1-6-esanoico	-	U	NO
Acido pseudo-UTP-N1-7-eptanoico	-	U	NO
Acido pseudo-UTP-N1-metil-p-benzoico	--	U	NO
Acido pseudo-UTP-NI-p-benzoico	-	U	NO
Wybutosina	yW	W	SÌ
Idrossiwybutosina	OHyW	W	SÌ
Isowyosina	imG2	W	SÌ
Perossiwybutosina	o2yW	W	SÌ
idrossiwybutosinasottomodificata	OHyW*	W	SÌ
4-demetilwyosina	imG-14	W	SÌ

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Altre modificazioni che possono essere utili nei polinucleotidi dei NAV della presente invenzione sono elencate nella Tabella 23.

Tabella 23. Tipi di modificazione aggiuntivi

Nome	**Tipo**
2,6-(diammino)purina	Altro
1-(aza)-2-(tio)-3-(aza)-fenossazin-1-ile	Altro
1,3-(diaza)-2-(osso)-fentiazina-1-ile	Altro
1,3-(diaza)-2-(osso)-fenossazin-1-ile	Altro
1,3,5-(triaza)-2,6-(diossa)-naftalene	Altro
2 (ammino)purina	Altro
2,4,5-(trimetil)fenile	Altro
2'metile, 2'ammino, 2'azido, 2'fluorocitidina	Altro
2'metile, 2'ammino, 2'azido, 2'fluoro-adenina	Altro
2'metile, 2'ammino, 2'azido, 2'fluoro-uridina	Altro
2'-ammino-2'-desossiribosio	Altro
2-ammino-6-Cloro-purina	Altro
2-aza-inosinile	Altro
2'-azido-2'-desossiribosio	Altro
2'fluoro-2'-desossiribosio	Altro
Basi 2'-fluoro-modificate	Altro
2'-O-metil-ribosio	Altro
2-osso-7-amminopiridopirimidin-3-ile	Altro
2-osso-piridopirimidina-3-ile	Altro
2-piridinone	Altro
3 nitropirrolo	Altro
3-(metil)-7-(propinil)isocarbostirilile	Altro
3-(metil)isocarbostirilile	Altro
4-(fluoro)-6-(metil)benzimidazolo	Altro
4-(metil)benzimidazolo	Altro
4-(metil)indolile	Altro
4,6-(dimetil)indolile	Altro
5 nitroindolo	Altro

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Nome	Tipo
Pirimidine 5 sostituite	Altro
5-(metil)isocarbostirilile	Altro
5-nitroindolo	Altro
6-(aza)pirimidina	Altro
6-(azo)timina	Altro
6-(metil)-7-(aza)indolile	Altro
6-cloro-purina	Altro
6-fenil-pirrolo-pirimidin-2-su-3-ile	Altro
7-(amminoalchilidrossi)-1-(aza)-2-(tio)-3-(aza)-fentiazina-1-ile	Altro
7-(amminoalchilidrossi)-1-(aza)-2-(tio)-3-(aza)-fenossazin-1-ile	Altro
7-(amminoalchilidrossi)-1,3-(diaza)-2-(osso)-fenossazin-1-ile	Altro
7-(amminoalchilidrossi)-1,3-(diaza)-2-(osso)-fentiazin-1-ile	Altro
7-(amminoalchilidrossi)-1,3-(diaza)-2-(osso)-fenossazin-1-ile	Altro
7-(aza)indolile	Altro
7-(guanidinioalchilidrossi)-1-(aza)-2-(tio)-3-(aza)-fenossazinl-ile	Altro
7-(guanidinioalchilidrossi)-1-(aza)-2-(tio)-3-(aza)-fentiazina-1-ile	Altro
7-(guanidinioalchilidrossi)-1-(aza)-2-(tio)-3-(aza)-fenossazin-1-ile	Altro
7-(guanidinioalchilidrossi)-1,3-(diaza)-2-(osso)-fenossazin-1-ile	Altro
7-(guanidinioalchil-idrossi)-1,3-(diaza)-2-(osso)-fentiazina-1-ile	Altro
7-(guanidinioalchilidrossi)-1,3-(diaza)-2-(osso)-fenossazin-1-ile	Altro
7-(propinil)isocarbostirile	Altro
7-(propinil)isocarbostirilile, propinil-7-(aza)indolile	Altro
7-deaza-inosinile	Altro
7-sostituito 1-(aza)-2-(tio)-3-(aza)-fenossazin-1-ile	Altro
7-sostituito 1,3-(diaza)-2-(osso)-fenoxazin-1-ile	Altro
9-(metil)-imidizopiridinile	Altro
Amminoindolile	Altro
Antracenile	Altro
bis-orto-(amminoalchilidrossi)-6-fenil-pirrolo-pirimidin-2-on-3-ile	Altro
bis-orto-sostituito-6-fenil-pirrolo-pirimidin-2-su-3-ile	Altro
Difluorotolile	Altro

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Nome	Tipo
Ipoxantina	Altro
Imidizopiridinile	Altro
Inosinile	Altro
Isocarbostirile	Altro
Isoguanisina	Altro
Purine N2-sostituite	Altro
N6-metil-2-ammino-purina	Altro
Purine N6-sostituite	Altro
Derivato N-alchilato	Altro
Naftalenile	Altro
Nitrobenzimidazolile	Altro
Nitroimidazolile	Altro
Nitroindazolile	Altro
Nitropirazolile	Altro
Nubularina	Altro
Purine O6-sostituite	Altro
Derivato O-alchilato	Altro
orto-(amminoalchilidrossi)-6-fenil-pirrolo-pirimidin-2-on-3-ile	Altro
orto-sostituito-6-fenil-pirrolo-pirimidin-2-on-3-ile	Altro
Ossoformicina TP	Altro
para-(amminoalchilidrossi)-6-fenil-pirrolo-pirimidin-2-on-3-ile	Altro
para-sostituito-6-fenil-pirrolo-pirimidin-2-on-3-ile	Altro
Pentacenile	Altro
Fenantracenile	Altro
Fenile	Altro
propinil-7-(aza)indolile	Altro
Pirenile	Altro
piridopirimidin-3-ile	Altro
piridopirimidin-3-il, 2-osso-7-ammino-piridopirimidin-3-ile	Altro
pirrolo-pirimidin-2-on-3-ile	Altro
Pirrolopirimidinile	Altro

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Nome	Tipo
Pirrolopirizinile	Altro
Stilbenzile	Altro
1,2,4-Triazoli sostituiti	Altro
Tetracenile	Altro
Tubercidina	Altro
Xantina	Altro
Xantosina-5'-TP	Altro
2-tio-zebularina	Altro
5-aza-2-tio-zebularina	Altro
7-deaza-2-ammino-purina	Altro
piridin-4-one ribonucleoside	Altro
2-Ammino-riboside-TP	Altro
Formicina A TP	Altro
Formicina B TP	Altro
Pirrolosina TP	Altro
2'-OH-ara-adenosina TP	Altro
2'-OH-ara-citidina TP	Altro
2'-OH-ara-uridina TP	Altro
2'-OH-ara-guanosina TP	Altro
5-(2-carbometossivinil)uridina TP	Altro
N6-(19-ammino-pentaossanonadecil)adenosina TP	Altro

I polinucleotidi dei NAV possono includere qualsiasi linker utile tra i nucleosidi. Tali linker, incluse le modificazioni di catena principale, sono riportati nella Tabella 24.

Tabella 24. Modificazioni di linker

Nome	TIPO
3'-alchilene fosfonati	Linker
3'-ammino fosforammidato	Linker
catene principali contenenti alchene	Linker
Amminoalchilfosforamidati	Linker
Amminoalchilfosfotriesteri	Linker

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Nome	**TIPO**
Boranofosfati	Linker
-CH2-0-N(CH3)-CH2-	Linker
-CH2-N(CH3)-N(CH3)-CH2-	Linker
-CH2-NH-CH2-	Linker
fosfonati chirali	Linker
fosforotioati chirali	Linker
catene principali di formacetile e tioformacetile	Linker
metilene (metilimmino)	Linker
catene principali di metilene formacetile e tioformacetile	Linker
catene principali di metilenimmino e metilenidrazino	Linker
legami morfolino	Linker
-N(CH3)-CH2-CH2-	Linker
oligonucleosidi con legame internucleosidicoeteroatomico	Linker
Fosfinati	Linker
fosforamidati	Linker
fosforoditioati	Linker
legami internucleosidicifosforotioato	Linker
fosforotioati	Linker
Fosfotriesteri	Linker
PNA	Linker
catene principali silossaniche	Linker
catene principali di solfammato	Linker
catene principali di solfuro solfossido e solfone	Linker
catene principali di sulfonato e solfonammide	Linker
Tionoalchilfosfonati	Linker
Tionoalchilfosfotriesteri	Linker
Tionofosforamidati	Linker

I polinucleotidi dei NAV dell'invenzione possono includere qualsiasi modifica utile, come allo zucchero, alla base azotata o al legame internucleosidico (*ad* esempio a un legame fosfato / a un legame fosfodiestere / alla catena principale di fosfodiestere). Uno o più atomi di

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una base pirimidinica possono essere sostituiti o sostituiti con ammino facoltativamente sostituito, tiolo facoltativamente sostituito, alchile facoltativamente sostituito (ad es. metile o etile), o alogeno (ad es. cloro o fluoro). In determinate forme di realizzazione, sono presenti modificazioni (ad esempio una o più modificazioni) in ciascuno tra lo zucchero e il legame internucleosidico. Le modificazioni secondo la presente invenzione possono essere modificazioni di acidi ribonucleici (RNA) in acidi desossiribonucleici (DNA), acidi nucleici di treosio (TNA), acidi nucleici glicolici (GNA), acidi nucleici peptidici (PNA), acidi nucleici bloccati (LNA) o loro ibridi). Ulteriori modifiche sono descritte qui. L'almeno una modificazione chimica della presente invenzione è esposta nelle rivendicazioni allegate.

I nucleotidi modificati non naturali possono essere introdotti nei polinucleotidi, *vale a dire* dei NAV dell'invenzione, o acidi nucleici durante la sintesi o la post-sintesi delle catene per ottenere funzioni o proprietà desiderate. Le modificazioni possono riguardare il lignaggio internucleotidico, le basi puriniche o pirimidiniche o lo zucchero. La modificazione può essere introdotta al terminale di una catena o in qualsiasi altro punto della catena; con sintesi chimica o con un enzima polimerasi. Ad esempio, gli acidi nucleici con esitolo (HNA) sono resistenti alla nucleasi e forniscono una forte ibridazione con l'RNA. Sono stati costruiti RNA messaggero corti (mRNA) con residui di estolo in due codoni (Lavrik et al., Biochemistry, 40, 11777-11784 (2001)). Sono stati studiati anche gli effetti antisenso di un oligonucleotide gapmer di HNA chimerico comprendente una sequenza centrale di fosforotioato fiancheggiata da sequenze di HNA 5' e 3' (si veda ad esempio Kang et al., Nucleic Acids Research, vol. 32(4), 4411-4419 (2004)). La preparazione e gli usi di nucleotidi modificati comprendenti anelli a 6 membri nel RNA interference, nella terapia antisenso o in altre applicazioni sono descritti nella domanda di brevetto U.S. n. 2008/0261905, nella domanda di brevetto U.S. n. 2010/0009865, e nella domanda PCT n. WO97/30064 di Herdewijn et al.). Gli acidi nucleici modificati e la loro sintesi sono descritti nelle domande di brevetto PCT co-pendenti n. PCT/US2012/058519. La sintesi e

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la strategia dei polinucleotidi modificati è descritta da Verma e Eckstein in Annual Review of Biochemistry, vol. 76, 99-134 (1998).

È possibile utilizzare metodi di ligazione enzimatica o chimica per coniugare i polinucleotidi o le loro regioni con diversi blocchi funzionali, come marcature fluorescenti, liquidi, nanoparticelle, agenti di rilascio, eccetera. I coniugati di polinucleotidi e polinucleotidi modificati vengono esaminati da Goodchild in BioconjugateChemistry, vol. 1(3), 165-187 (1990). Il brevetto U.S. n. 6,835,827 e e il brevetto U.S. n. 6,525,183 di Vinayak et al. insegnano la sintesi di oligonucleotidi marcati utilizzando un supporto solido marcato.

In determinate forme di realizzazione, può essere desiderabile degradare intracellularmente un polinulcleotide introdotto nella cellula. Ad esempio, la degradazione di un polinulcleotide può essere preferibile se si desidera una tempistica precisa della produzione di proteine. Pertanto, in alcune forme di realizzazione, l'invenzione fornisce un polinulcleotide contenente un dominio di degradazionesu cui è possibile agire in modo diretto all'interno di una cellula.

Qualsiasi delle regioni dei polinucleotidi può essere modificata chimicamente come qui descritto o come descritto nella domanda internazionale numero PCT/2012/058519 depositata il 3 ottobre 2012 e nella domanda provvisoria U.S. numero 61/837297 depositata il 20 giugno 2013.

Molecole polinucleotidiche modificate

La presente invenzione include anche elementi costitutivi, ad esempio ribonucleosidi modificati e ribonucleotidi modificati, di molecole polinucleotidiche, ad esempio dei NAV dell'invenzione. Ad esempio, questi elementi costitutivi possono essere utili per preparare i polinucleotidi dell'invenzione. Tali elementi costitutivi sono insegnati nella domanda internazionale numero PCT/2012/058519 depositata il 3 ottobre 2012 e nella domanda provvisoria U.S. numero 61/837297 depositata il 20 giugno 2013.

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Modificazioni allo zucchero

I nucleosidi ei nucleotidi modificati (ad esempio molecole di elementi costitutivi), che possono essere incorporati in un polinucleotide (ad esempio RNA o mRNA, come qui descritto), possono essere modificati sullo zucchero dell'acido ribonucleico. Ad esempio, il gruppo idrossile 2' (OH) può essere modificato o sostituito con un numero di sostituenti differenti. Sostituzioni esemplificative in posizione 2' includono, ma non sono limitate a, H, alogeno, alchile C_{1-6} facoltativamente sostituito; alcossi C_{1-6} facoltativamente sostituito; arilossi C_{6-10} facoltativamente sostituito; cicloalchile C_{3-8} facoltativamente sostituito; cicloalchilossi C_{3-8} facoltativamente sostituito; arilossi C_{6-10} facoltativamente sostituito; aril C_{6-10} -alcossi C_{1-6} facoltativamente sostituito, (eterociclil)ossi C_{1-12} facoltativamente sostituito; uno zucchero (ad esempio ribosio, pentosio o qualsiasi altro descritto nel presente contesto); un polietilenglicole (PEG), - $O(CH_2CH_2O)_nCH_2CH_2OR$, dove R è H o alchile facoltativamente sostituito, e n è un numero intero compreso tra 0 e 20 (ad esempio da 0 a 4, da 0 a 8, da 0 a 10, da 0 a 16, da 1 a 4, da 1 a 8, da 1 a 10, da 1 a 16, da 1 a 20, da 2 a 4, da 2 a 8, da 2 a 10, da 2 a 16, da 2 a 20, da 4 a 8, da 4 a 10, da 4 a 16 e da 4 a 20), acidi nucleici "bloccati" (LNA) in cui il 2'-idrossile è collegato da un ponte alchilene C_{1-6} o eteroalchilene C_{1-6} al carbonio 4' dello stesso zucchero ribosio, dove ponti esemplificativi includevano ponti di metilene, propilene, etere o ammino; amminoalchile, come qui definito; amminoalcossi, come qui definito; ammino come qui definito; e amminoacido, come qui definito

Generalmente, l'RNA include il gruppo dello zucchero ribosio, che è un anello a 5 membri avente un ossigeno. I nucleotidi modificati esemplificativi e non limitativi includono la sostituzione dell'ossigeno nel ribosio (ad esempio, con S, Se o alchilene, come metilene o etilene); aggiunta di un doppio legame (ad esempio, per sostituire il ribosio con ciclopentenile o cicloesenile); contrazione dell'anello di ribosio (ad esempio, per formare un anello a 4 membri di ciclobutano o ossoetano); espansione dell'anello di ribosio (ad esempio, per formare un anello

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a 6 o 7 membri avente un carbonio o eteroatomo aggiuntivo, come per anidroestolo, altritolo, mannitolo, cicloesanile, cicloesenile e morfolino che hanno anche una catena principale di fosforamidato); forme multicicliche (ad esempio, triciclo; e forme "sbloccate", come l'acido glicole nucleico (GNA) (ad esempio, R-GNA o S-GNA, dove il ribosio è sostituito da unità di glicole attaccate a legami fosfodiestere), acido treosio nucleico (TNA, dove il ribosio viene sostituito con α-L-treofuranosil-(3→2')), e acido nucleico peptidico (PNA, dove i legami 2-ammino-etil-glicina sostituiscono la catena principale di ribosio e fosfodiestere). Il gruppo di zucchero può anche contenere uno o più atomi di carbonio che possiedono la configurazione stereochimica opposta a quella del corrispondente carbonio nel ribosio. Pertanto, una molecola polinucleotidica può includere nucleotidi contenenti, ad esempio, arabinosio, come zucchero. Tali modificazioni allo zucchero vengono insegnate nella domanda internazionale numero PCT/2012/058519 depositata il 3 ottobre 2012 e domanda provvisoria U.S. Numero 61/837297 depositata il 20 giugno 2013

Modificazioni sulla base azotata

La presente descrizione fornisce nucleosidi e nucleotidi modificati. Come descritto nel presente contesto "nucleoside" è definito come un composto contenente una molecola di zucchero (ad esempio un pentosio o ribosio) o un suo derivato in combinazione con una base organica (ad esempio una purina o pirimidina) o un suo derivato (anche indicato come "base azotata"). Come qui descritto, "nucleotide" è definito come un nucleoside che include un gruppo fosfato. I nucleotidi modificati possono essere sintetizzati mediante qualsiasi metodo utile, come qui descritto (ad esempio chimicamente, enzimaticamente o ricombinantemente per includere uno o più nucleosidi modificati o non naturali). I polinucleotidi possono comprendere una regione o regioni di nucleosidi legati. Tali regioni possono avere legami di catena principale variabili. I legami possono essere legami fosfoestere standard, nel qual caso i polinucleotidi comprenderebbero regioni di nucleotidi.

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L'accoppiamento di basi nucleotidiche modificato comprende non solo le coppie di basi standard adenosina-timina, adenosina-uracile o guanosina-citosina, ma anche coppie di basi formate tra nucleotidi e/o nucleotidi modificati comprendenti basi non standard o modificate, in cui la disposizione dei donatori di legame idrogeno e accettori di legame idrogeno consente il legame idrogeno tra una base non standard e una base standard o tra due strutture di base non standard complementari. Un esempio di tale accoppiamento di basi non standard è l'accoppiamento di basi tra il nucleotide modificato inosina e adenina, citosina o uracile.

I nucleosidi e i nucleotidi modificati possono includere una base azotata modificata. Esempi di basi azotate presenti nell'RNA includono, ma non sono limitati a, adenina, guanina, citosina e uracile. Esempi di basi azotate presenti nel DNA includono, ma non sono limitati a, adenina, guanina, citosina e timina. Tali basi azotate modificate (comprese le distinzioni tra presenti in natura e non presenti in natura) sono insegnate nella domanda internazionale numero PCT/2012/058519 depositata il 3 ottobre 2012 e nella domanda provvisoria U.S. numero 61/837297 depositata il 20 giugno 2013.

Combinazioni di zuccheri modificati, basi azotate e legami internucleosidici

I polinucleotidi dell'invenzione, vale a dire i NAV dell'invenzione possono includere una combinazione di modificazioni allo zucchero, alla base azotata e/o al legame internucleosidico. Queste combinazioni possono includere una o più modificazioni qui descritte. L'almeno una modificazione chimica della presente invenzione è esposta nelle rivendicazioni allegate.

Esempi di nucleotidi modificati e combinazioni di nucleotidi modificati sono forniti di seguito nella Tabella 25. Queste combinazioni di nucleotidi modificati possono essere usate per formare i polinucleotidi dell'invenzione. Salvo diversa indicazione, i nucleotidi modificati possono essere completamente sostituiti con i nucleotidi naturali dei polinucleotidi dell'invenzione. A titolo di esempio non limitativo, l'uridina nucleotidica naturale può essere

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sostituita con un nucleoside modificato qui descritto. In un altro esempio non limitativo, il nucleotide naturale uridina può essere parzialmente sostituito (ad esempio circa lo 0,1%, 1%, 5%, 10%, 15%, 20%, 25%, 30%, 35%, 40%, 45 %, 50%, 55%, 60%, 65%, 70%, 75%, 80%, 85%, 90%, 95% o 99,9%) con almeno uno dei nucleosidi modificati qui descritti. Qualsiasi combinazione di base/zucchero o linker può essere incorporata nei polinucleotidi dell'invenzione e tali modificazioni sono insegnate nella domanda internazionale numero PCT/2012/058519 depositata il 3 ottobre 2012 e domanda provvisoria U.S. numero 61/837297 depositata il 20 giugno.

Tabella 25. Combinazioni

Nucleotide modificato	**Combinazione di nucleotidi modificati**
α-tio-citidina	α-tio-citidina / 5-iodo-uridina
	α-tio-citidina / N1-metil-pseudouridina
	α-tio-citidina / α-tio-uridina
	α-tio-citidina / 5-metil-uridina
	α-tio-citidina / pseudo-uridina
	circa il 50% delle citosine sono α-tio-citidina
Pseudoisocitidina	pseudoisocitidina / 5-iodo-uridina
	pseudoisocitidina/N1-metil-pseudouridina
	pseudoisocitidina / a-tio-uridina
	pseudoisocitidina / 5-metil-uridina
	pseudoisocitidina / pseudouridina
	circa il 25% delle citosine sono pseudoisocitidina
	pseudoisocitidina/circa il 50% delle uridine è N1-metil-pseudouridina e circa il 50% delle uridine è pseudouridina
	pseudoisocitidina/circa il 25% delle uridine è N1-metil-pseudouridina e circa il 25% delle uridine è pseudouridina
pirrolo-citidina	pirrolo-citidina / 5-iodo-uridina
	pirrolo-citidina/N1-metil-pseudouridina
	pirrolo-citidina / a-tio-uridina
	pirrolo-citidina / 5-metil-uridina

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Nucleotide modificato	Combinazione di nucleotidi modificati
	pirrolo-citidina / pseudouridina
	circa il 50% delle citosine sono pirrolo-citidina
5-metil-citidina	5-metil-citidina / 5-iodo-uridina
	5-metil-citidina / N1-metil-pseudouridina
	5-metil-citidina α-tio-uridina
	5-metil-citidina/5-metil-uridina
	5-metil-citidina / pseudouridina
	circa il 25% delle citosine sono 5-metil-citidina
	circa il 50% delle citosine sono 5-metil-citidina
	5-metil-citidina / 5-metossi-uridina
	5-metil-citidina / 5-bromo-uridina
	5-metil-citidina / 2-tio-uridina
	5-metil citidina/circa il 50% delle uridine sono 2-tio-uridina
	circa il 50% delle uridine sono 5-metil-citidina/circa il 50% delle uridine sono 2-tio-uridina
N4-acetil-citidina	N4-acetil-citidina / 5-iodo-uridina
	N4-acetil-citidina / N1-metil-pseudouridina
	N4-acetil-citidina/a-tio-uridina
	N4-acetil-citidina / 5-metil-uridina
	N4-acetil-citidina / pseudouridina
	circa il 50% delle citosine sono N4-acetil-citidina
	circa il 25% delle citosine sono N4-acetil-citidina
	N4-acetil-citidina / 5-metossi-uridina
	N4-acetil-citidina / 5-bromo-uridina
	N4-acetil-citidina / 2-tio-uridina
	circa il 50% delle citosine sono N4-acetil-citidina/circa il 50% delle uridine sono 2-tio-uridina

V. Composizioni farmaceutiche di vaccini

Formulazione, somministrazione, rilascio e dosaggio

La presente descrizione fornisce composizioni farmaceutiche che includono NAV e composizioni e/o complessi di NAV facoltativamente in combinazione con uno o più eccipienti

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Consulente in P.I. n° USBM-041R

farmaceuticamente accettabili.

I presenti inventori hanno scoperto che i NAV sono superiori agli attuali vaccini in diversi modi. In primo luogo, l'iniezione sottocutanea e/o intradermica è migliore della somministrazione intramuscolare come via di somministrazione. In secondo luogo, il rilascio di nanoparticelle lipidiche è superiore ad altre formulazioni, incluso l'approccio alla protamina in letteratura di un fattore compreso tra 10-100 volte e non sono risultati necessari adiuvanti aggiuntivi. I terzi NAV modificati e formulati erano superiori ai NAV formulati non modificati di un fattore di 50 volte.

La presente descrizione fornisce NAV e composizioni e complessi farmaceutici di NAV facoltativamente in combinazione con uno o più eccipienti farmaceuticamente accettabili. Le composizioni farmaceutiche possono eventualmente comprendere una o più sostanze attive aggiuntive, ad esempio sostanze attive a scopo terapeutico e/o profilattico. Le composizioni farmaceutiche della presente descrizione possono essere sterili e / o prive di pirogeno. Considerazioni generali nella formulazione e/o produzione di agenti farmaceutici si possono trovare, ad esempio, inRemington: The Science and Practice of Pharmacy 21a ed., Lippincott Williams & Wilkins, 2005.

In alcuni casi, le composizioni vengono somministrate a esseri umani, pazienti o soggetti umani. Ai fini della presente descrizione, l'espressione "principio attivo" si riferisce generalmente ai NAV o ai polinucleotidi in essi contenuti, ad esempio, polinucleotidi codificanti l'antigene, ad esempio polinucleotidi di RNA, da rilasciare come qui descritto.

Sebbene le descrizioni delle composizioni farmaceutiche fornite nel presente contesto siano principalmente dirette a composizioni farmaceutiche che sono adatte per la somministrazione all'uomo, il tecnico esperto comprenderà che tali composizioni sono generalmente adatte per la somministrazione a qualsiasi altro animale, ad esempio, ad animali non umani, ad esempio mammiferi non umani. La modifica di composizioni farmaceutiche

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adatte per la somministrazione agli esseri umani al fine di rendere le composizioni adatte per la somministrazione a vari animali è ben compresa e il farmacologo veterinario esperto con competenza ordinaria può progettare e/o eseguire tale modifica con la semplice sperimentazione ordinaria, se presente. I soggetti ai quali è contemplata la somministrazione delle composizioni farmaceutiche comprendono, ma non sono limitati a, umani e/o altri primati; mammiferi, compresi mammiferi commercialmente rilevanti come bovini, suini, cavalli, pecore, gatti, cani, topi e/o ratti; e/o uccelli, compresi gli uccelli commercialmente rilevanti come pollame, galline, anatre, oche e/o tacchini.

Le formulazioni delle composizioni farmaceutiche qui descritte possono essere preparate con qualsiasi metodo noto o di seguito sviluppato nella tecnica della farmacologia. In generale, tali metodi preparatori comprendono la fase di associazione del principio attivo con un eccipiente e/o uno o più altri ingredienti accessori, quindi, se necessario e/o desiderabile, la divisione, la modellatura e/o l'imballaggio del prodotto in un unità singola o multi-dose desiderata.

Le quantità relative dell'ingrediente attivo, dell'eccipiente farmaceuticamente accettabile e/o di eventuali ingredienti aggiuntivi in una composizione farmaceutica in conformità con la descrizione varieranno, a seconda dell'identità, delle dimensioni e/o delle condizioni del soggetto trattato e ulteriormente a seconda della via attraverso la quale deve essere somministrata la composizione. A titolo di esempio, la composizione può comprendere tra lo 0,1% e il 100%, ad esempio tra lo 0,5 e il 50%, tra 1-30%, tra 5-80%, almeno l’80% (p/p) di principio attivo.

Formulazioni

I NAV della descrizione possono essere formulati utilizzando uno o più eccipienti per: (1) aumentare la stabilità; (2) aumentare la trasfezione cellulare; (3) consentire il rilascio prolungato o ritardato (ad esempio da una formulazione deposito); (4) alterare la

Ing. Ines Sangiacomo
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biodistribuzione (ad esempio, mirare tessuti o tipi cellulari specifici); (5) aumentare la traduzione della proteina codificata *in vivo;* e/o (6) alterare il profilo di rilascio della proteina codificata (antigene) in vivo. Oltre ai tradizionali eccipienti quali qualsiasi e tutti i solventi, mezzi di dispersione, diluenti o altri veicoli liquidi, adiuvanti di dispersione o sospensione, agenti tensioattivi, agenti isotonici, agenti addensanti o emulsionanti, conservanti, gli eccipienti della presente invenzione possono includere, senza limitazione, lipidoidi, liposomi, nanoparticelle lipidiche, polimeri, lipoplex, nanoparticelle core-shell, peptidi, proteine, cellule trasfettate con NAV (ad esempio, per il trapianto in un soggetto), ialuronidasi, mimetici di nanoparticelle e loro combinazioni.

Di conseguenza, le formulazioni della descrizione possono includere uno o più eccipienti, ciascuno in una quantità che può aumentare la stabilità del NAV, aumentare la trasfezione cellulare da parte del NAV, aumentare l'espressione della proteina codificata da polinucleotidi e/o alterare il profilo di rilascio di proteine codificate da polinucleotidi. Inoltre, i polinucleotidi della presente descrizione possono essere formulati usando nanoparticelle di acido nucleico autoassemblate.

Le formulazioni delle composizioni farmaceutiche qui descritte possono essere preparate con qualsiasi metodo noto o di seguito sviluppato nella tecnica della farmacologia. In generale, tali metodi preparatori comprendono la fase di associare il principio attivo ad un eccipiente e/o uno o più altri ingredienti accessori.

Una composizione farmaceutica secondo la presente descrizione può essere preparata, confezionata e/o venduta sfusa, come una singola dose unitaria e/o come una pluralità di singole dosi unitarie. Come utilizzata nel presente contesto, una "dose unitaria" si riferisce a una quantità discreta della composizione farmaceutica comprendente una quantità predeterminata del principio attivo. La quantità del principio attivo è generalmente uguale al dosaggio del principio attivo che verrebbe somministrato a un soggetto e/o una frazione opportuna di tale

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dosaggio come, ad esempio, metà o un terzo di tale dosaggio.

Le quantità relative dell'ingrediente attivo, dell'eccipiente farmaceuticamente accettabile e/o di eventuali ingredienti aggiuntivi in una composizione farmaceutica in conformità con la presente descrizione possono variare, a seconda dell'identità, delle dimensioni e/o delle condizioni del soggetto che viene trattato e ulteriormente a seconda della via attraverso la quale deve essere somministrata la composizione. Ad esempio, la composizione può comprendere tra lo 0,1% e il 99% (p/p) del principio attivo. A titolo di esempio, la composizione può comprendere tra lo 0,1% e il 100%, ad esempio tra lo 0,5 e il 50%, tra 1-30%, tra 5-80%, almeno l'80% (p/p) di principio attivo.

In alcuni casi, le formulazioni qui descritte possono contenere almeno un polinucleotide, ad esempio un polinucleotide codificante l'antigene. Come esempio non limitativo, le formulazioni possono contenere 1, 2, 3, 4 o 5 polinucleotidi.

In un caso, le formulazioni qui descritte possono comprendere più di un tipo di polinucleotide, ad esempio polinucleotide codificante l'antigene. In un caso, la formulazione può comprendere un polinucleotide chimerico in forma lineare e circolare. In un altro caso, la formulazione può comprendere un polinucleotide circolare e un polinucleotide IVT. In ancora un altro caso, la formulazione può comprendere un polinucleotide IVT, un polinucleotide chimerico e un polinucleotide circolare.

In un caso, la formulazione può contenere proteine codificanti polinucleotidi scelte da categorie quali, ma non solo, proteine umane, proteine veterinarie, proteine batteriche, proteine biologiche, anticorpi, proteine immunogeniche, peptidi e proteine terapeutici, proteine secrete, proteine della membrana plasmatica, proteine citoplasmatiche e proteine del citoscheletro, proteine legate alla membrana intracellulare, proteine nucleari, proteine associate a malattie umane e/o proteine associate a malattie non umane. In un caso, la formulazione contiene almeno tre polinucleotidi codificanti proteine. In un caso, la formulazione contiene almeno cinque

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polinucleotidi codificanti proteine.

Le formulazioni farmaceutiche possono inoltre comprendere un eccipiente farmaceuticamente accettabile, che, come usato nel presente contesto, include, ma non è limitato a, qualsiasi e tutti i solventi, mezzi di dispersione, diluenti o altri veicoli liquidi, coadiuvanti di dispersione o sospensione, agenti tensioattivi, agenti isotonici, addensanti o emulsionanti, conservanti e simili, a seconda della particolare forma di dosaggio desiderata. Sono noti nella tecnica vari eccipienti per formulare composizioni farmaceutiche e tecniche per preparare la composizione (si veda Remington: The Science and Practice of Pharmacy, 21^ edizione, A. R. Gennaro, Lippincott, Williams & Wilkins, Baltimore, MD, 2006). L'uso di un mezzo eccipiente convenzionale può essere contemplato nell'ambito della presente descrizione, tranne nella misura in cui qualsiasi mezzo eccipiente convenzionale può essere incompatibile con una sostanza o suoi derivati, ad esempio producendo qualsiasi effetto biologico indesiderato o interagendo in altro modo in modo deleterio con qualsiasi altro componente/i della composizione farmaceutica.

In alcuni casi, la granulometria della nanoparticella lipidica può essere aumentata e/o ridotta. Il cambiamento nella dimensione delle particelle può essere in grado di aiutare a contrastare la reazione biologica come, ma non solo, l'infiammazione o può aumentare l'effetto biologico dell'mRNA modificato consegnato ai mammiferi.

Gli eccipienti farmaceuticamente accettabili utilizzati nella produzione di composizioni farmaceutiche includono, ma non sono limitati a, diluenti inerti, agenti tensioattivi e/o emulsionanti, conservanti, agenti tampone, agenti lubrificanti e/o oli. Tali eccipienti possono eventualmente essere inclusi nelle formulazioni farmaceutiche della descrizione.

Nanoparticelle lipidiche

I NAV dell'invenzione sono formulati utilizzando una o più nanoparticelle lipidiche.

In alcune forme di realizzazione, il rapporto di PEG nelle formulazioni di nanoparticelle

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lipidiche (LNP) può essere aumentato o diminuito e/o la lunghezza della catena di carbonio del lipide PEG può essere modificata da C14 a C18 per alterare la farmacocinetica e/o la biodistribuzione delle formulazioni LNP. A titolo di esempio non limitativo, le formulazioni di LNP possono contenere da circa lo 0,5% a circa il 3,0%, da circa l'1,0% a circa il 3,5%, da circa l'1,5% a circa il 4,0%, da circa il 2,0% a circa il 4,5%, da circa il 2,5% a circa il 5,0% e/o da circa il 3,0% a circa il 6,0% del rapporto molare lipidico di PEG-c-DOMG (R-3-[(ω-metossi-poli(etilenglicole)2000)carbamoil)]-1,2-dimiristilossipropil-3-ammina) (qui indicato anche come PEG-DOMG) rispetto al lipide cationico, DSPC e colesterolo. In un'altra forma di realizzazione, il PEG-c-DOMG può essere sostituito con un lipide PEG come, ma non limitato a, PEG-DSG (1,2-Distearoil-sn-glicerolo, metossipolietilenglicole) PEG-DMG (1,2-Dimiristoil-sn-glicerolo) e/o PEG-DPG (1,2-dipalmitoil-sn-glicerolo, metossipolietilenglicole). Il lipide cationico può essere selezionato da qualsiasi lipide noto nella tecnica come, ma non limitato a, DLin-MC3-DMA, DLin-DMA, C12-200 e DLin-KC2-DMA.

In una forma di realizzazione, i NAV possono essere formulati in una nanoparticella lipidica come quelle descritte nella pubblicazione internazionale n. WO2012170930,.

In un caso, la formulazione di NAV comprendente il polinucleotide è una nanoparticella che può comprendere almeno un lipide. Il lipide può essere scelto tra, ma non limitato a, DLin-DMA, DLin-K-DMA, 98N12-5, C12-200, DLin-MC3-DMA, DLin-KC2-DMA, DODMA, PLGA, PEG, PEG -DMG, lipidi PEGilati e lipidi ammino alcolici. In un altro aspetto, il lipide può essere un lipide cationico come, ma non limitato a, DLin-DMA, DLin-D-DMA, DLin-MC3-DMA, DLin-KC2-DMA, DODMA e lipidi ammino alcolici. Il lipide cationico amminoalcolico può essere costituito dai lipidi descritti e/o prodotti con i metodi descritti nella pubblicazione di brevetto U.S. n. US20130150625. A titolo di esempio non limitativo, il lipide cationico può essere 2-ammino-3-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]-2-{[(9Z,2Z)-ottadeca-9,12-dien-1-ilossi]metil}propan-1-olo (Composto 1 in US20130150625); 2-ammino-3-[(9Z)-

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ottadec-9-en-1-ilossi]-2-{[(9Z)-ottadec-9-en-1-ilossi]metil}propan-1-olo (Composto 2 in US20130150625); 2-ammino-3-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]-2-[(ottilossi)metil]propan-1-olo (Composto 3 in US20130150625); e 2-(dimetilammino)-3-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]-2-{[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]metil}propan-1-olo (Composto 4 in US20130150625); o qualsiasi loro sale o stereoisomero farmaceuticamente accettabile.

Le formulazioni di nanoparticelle lipidiche comprendono tipicamente un lipide, in particolare un lipide cationico ionizzabile, ad esempio 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4- dimetilamminobutirrato (DLin-MC3-DMA) o di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), e comprendono inoltre un lipide neutro, uno sterolo e una molecola in grado di ridurre l'aggregazione delle particelle, ad esempio un lipide PEG o modificato con PEG.

In una forma di realizzazione, la formulazione di nanoparticelle lipidiche consiste essenzialmente in (i) almeno un lipide scelto dal gruppo costituito da 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4-dimetilamminobutirrato (DLin-MC3-DMA), e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319); (ii) un lipide neutro scelto tra DSPC, DPPC, POPC, DOPE e SM; (iii) uno sterolo, ad esempio colesterolo; e (iv) un lipide PEG, ad esempio PEG-DMG o PEG-cDMA, in un rapporto molare di circa il 20-60% di lipide cationico: 5-25% di lipide neutro: 25-55% di sterolo; 0,5-15% di PEG-lipide.

In un caso, la formulazione comprende da circa il 25% a circa il 75% su base molare di un lipide cationico scelto tra 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4-dimetilamminobutirrato (DLin-MC3-DMA) e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), *ad esempio,* da circa il 35 a circa il 65%, da circa il 45 a circa il 65%, circa il 60%, circa il 57,5%, circa il 50% o circa il 40% su

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base molare. Nell'invenzione, il rapporto molare della nanoparticella lipidica è come esposto nelle rivendicazioni allegate.

In un caso, la formulazione include da circa lo 0,5% a circa il 15% su base molare del lipide neutro *ad esempio,* da circa il 3 a circa il 12%, da circa il 5 a circa il 10% o circa il 15%, circa il 10% o circa il 7,5% su base molare. Esempi di lipidi neutri includono, ma non sono limitati a, DSPC, POPC, DPPC, DOPE e SM. In un caso, la formulazione include da circa il 5% a circa il 50% su base molare dello sterolo (ad esempio, da circa il 15 a circa il 45%, da circa il 20 a circa il 40%, circa il 40%, circa il 38,5%, circa il 35%, o circa il 31% su base molare. Uno sterolo esemplificativo è il colesterolo. In un caso, la formulazione comprende da circa lo 0,5% a circa il 20% su base molare del lipide PEG o modificato con PEG (ad esempio, da circa lo 0,5 a circa il 10%, da circa lo 0,5 a circa il 5%, circa l'1,5%, circa lo 0,5%, circa l'1,5%, circa il 3,5% o circa il 5% su base molare. In una forma di realizzazione, il PEG o lipide modificato con PEG comprende una molecola di PEG avente un peso molecolare medio di 2.000 Da. In altre forme di realizzazione, il lipide PEG o modificato con PEG comprende una molecola di PEG con un peso molecolare medio inferiore a 2.000, ad esempio circa 1.500 Da, circa 1.000 Da o circa 500 Da. Esempi di lipidi modificati con PEG includono, ma non sono limitati a, PEG-distearoil glicerolo (PEG-DMG) (qui indicato anche come PEG-C14 o C14-PEG), PEG-cDMA (ulteriormente discusso in Rey et al. J. Controlled Release, 107, 276-287 (2005). Nell'invenzione, il rapporto molare della nanoparticella lipidica è come esposto nelle rivendicazioni allegate.

In un caso, le formulazioni della descrizione includono il 25-75% di un lipide cationico scelto da 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4-dimetilamminobutirrato (DLin-MC3-DMA) e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), lo 0,5-15% del lipide neutro, il 5-50% dello sterolo e lo 0,5-20% del lipide modificato con PEG o PEG su base molare.

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In un caso, le formulazioni della descrizione includono il 35-65% di un lipide cationico scelto tra 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4 -dimetilamminobutirrato (DLin-MC3-DMA) e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), il 3-12% del lipide neutro, il 15-45% dello sterolo e lo 0,5-10% del lipide modificato con PEG o PEG su base molare.

In una forma di realizzazione, le formulazioni delle invenzioni includono il 45-65% di un lipide cationico scelto tra 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4-dimetilamminobutirrato (DLin-MC3-DMA), e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), il 5-10% del lipide neutro, il 25-40% dello sterolo e lo 0,5-10% del lipide PEG o modificato con PEG su base molare.

In una forma di realizzazione, le formulazioni delle invenzioni includono circa il 60% di un lipide cationico scelto traa 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4-dimetilamminobutirrato (DLin-MC3-DMA) e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), circa il 7,5% del neutro lipide, circa il 31% dello sterolo e circa l'1,5% del PEG o lipide modificato con PEG su base molare.

In una forma di realizzazione, le formulazioni delle invenzioni includono circa il 50% di un lipide cationico scelto traa 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4-dimetilamminobutirrato (DLin-MC3-DMA) e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), circa il 10% del neutro lipide, circa il 38,5% dello sterolo e circa l'1,5% del PEG o lipide modificato con PEG su base molare.

In una forma di realizzazione, le formulazioni delle invenzioni includono circa il 50% di un lipide cationico scelto tra 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4-dimetilamminobutirrato (DLin-MC3-DMA) e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), circa il 10% del neutro lipide, circa il 35% dello sterolo, circa il 4,5% o circa il 5% del lipide modificato con PEG o PEG e circa lo

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0,5% del lipide di bersagliamento su base molare.

In una forma di realizzazione, le formulazioni delle invenzioni includono circa il 40% di un lipide cationico scelto traa 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4-dimetilamminobutirrato (DLin-MC3-DMA) e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), circa il 15% del neutro lipide, circa il 40% dello sterolo e circa l'5% del PEG o lipide modificato con PEG su base molare.

In una forma di realizzazione, le formulazioni delle invenzioni includono circa il 57,2% di un lipide cationico scelto traa 2,2-dilinoleil-4-dimetilamminoetil-[1,3]-diossolano (DLin-KC2-DMA), dilinoleil-metil-4-dimetilamminobutirrato (DLin-MC3-DMA) e di((Z)-non-2-en-1-il) 9-((4-(dimetilammino)butanoil)ossi)eptadecandioato (L319), circa il 7,1% del neutro lipide, circa il 34,3% dello sterolo e circa l'1,4% del PEG o lipide modificato con PEG su base molare.

In una forma di realizzazione, le formulazioni delle invenzioni includono circa il 57,5% di un lipide cationico scelto dal lipide PEG è PEG-cDMA (il PEG-cDMA è ulteriormente discusso in Rey et al. (J. Controlled Release, 107, 276-287 (2005), circa il 7,5% del lipide neutro, circa il 31,5% dello sterolo e circa il 3,5% del lipide PEG o modificato con PEG su base molare.

In particolari forme di realizzazione, il rapporto lipidico molare è di circa 50/10/38,5/1,5 (mol% di lipide cationico/lipide neutro, ad esempio, lipide modificato con DSPC/Chol/PEG, ad esempio, PEG-DMG, PEG-DSG o PEG-DPG), 57,2/7,1134,3/1,4 (mol% lipide cationico/lipide neutro, *ad esempio,* lipide modificato con DPPC/Chol/PEG, *ad esempio,* PEG-cDMA), 40/15/40/5 (mol% lipide cationico/lipide neutro, *ad esempio,* lipide modificato con DSPC/Chol/PEG, *ad esempio,* PEG-DMG), 50/10/35/4,5/0,5 (mol% lipide cationico/lipide neutro, *ad esempio,* DSPC/Chol/lipide modificato con PEG, ad esempio PEG-DSG), 50/10/35/5 (lipide cationico/lipide neutro, *ad esempio,* lipide modificato con DSPC/Chol/PEG, *ad esempio,* PEG-DMG), 40/10/40/10 (mol% lipide cationico/lipide neutro, *ad esempio,* lipide

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modificato con DSPC/Chol/PEG, *ad esempio,* PEG-DMG o PEG-cDMA), 35/15/40/10 (mol% di lipide cationico/lipide neutro, ad esempio DSPC/Chol/lipide modificato con PEG, ad esempio PEG-DMG o PEG-cDMA) o 52/13/30/5 (mol% lipide cationico/lipide neutro, *ad esempio,* lipide modificato con DSPC/Chol/PEG, *ad esempio,* PEG-DMG o PEG-cDMA).

Composizioni e metodi di realizzazione di nanoparticelle lipidiche esemplificative sono descritti, ad esempio, in Semple et al. (2010) Nat. Biotechnol. 28:172-176; Jayarama et al. (2012), Angew. Chem. Int. Ed., 51: 8529-8533; e Maier et al. (2013) Molecular Therapy 21, 1570-1578.

Le formulazioni di nanoparticelle lipidiche possono essere nanoparticelle lipidiche a 4 componenti. Le nanoparticelle lipidiche possono comprendere un lipide cationico, un lipide non cationico, un lipide PEG e un lipide strutturale. A titolo di esempio non limitativo, la nanoparticella lipidica può comprendere circa il 40-60% di lipide cationico, circa il 5-15% di un lipide non cationico, circa l'1-2% di un lipide PEG e circa il 30-50% di un lipide strutturale. A titolo di un altro esempio non limitativo, la nanoparticella lipidica può comprendere circa il 50% di lipide cationico, circa il 10% di lipide non cationico, circa l'1,5% di lipide PEG e circa il 38,5% di lipide strutturale. A titolo di un ulteriore altro esempio non limitativo, la nanoparticella lipidica può comprendere circa il 55% di lipide cationico, circa il 10% di lipide non cationico, circa il 2,5% di lipide PEG e circa il 32,5% di lipide strutturale. In una forma di realizzazione, il lipide cationico può essere qualsiasi lipide cationico descritto nella presente come, ma non limitato a, DLin-KC2-DMA, DLin-MC3-DMA e L319.

Le formulazioni di nanoparticelle lipidiche comprendono un lipide cationico, un lipide non cationico, un lipide PEG e un lipide strutturale. A titolo di esempio non limitativo, la nanoparticella lipidica comprende circa il 50% del lipide cationico DLin-KC2-DMA, circa il 10% del lipide non cationico DSPC, circa l'1,5% del PEG-lipide PEG-DOMG e circa il 38,5% del lipide strutturale colesterolo. A titolo di esempio non limitativo, la nanoparticella lipidica

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comprende circa il 50% del lipide cationico DLin-MC3-DMA, circa il 10% del lipide non cationico DSPC, circa l'1,5% del PEG-lipide PEG-DOMG e circa il 38,5% del lipide strutturale colesterolo. A titolo di esempio non limitativo, la nanoparticella lipidica comprende circa il 50% del lipide cationico DLin-MC3-DMA, circa il 10% del lipide non cationico DSPC, circa l'1,5% del PEG-lipide PEG-DMG e circa il 38,5% del lipide strutturale colesterolo. Come ulteriore esempio non limitativo, la nanoparticella lipidica comprende circa il 55% del lipide cationico L319, circa il 10% del lipide non cationico DSPC, circa il 2,5% del lipide PEG PEG-DMG e circa il 32,5% del lipide strutturale colesterolo.

In una forma di realizzazione, il lipide cationico può essere scelto tra, ma non limitato a, un lipide cationico descritto nelle pubblicazioni internazionali nn. WO2012040184, WO2011153120, WO2011149733, WO2011090965, WO2011043913, WO2011022460, WO2012061259, WO2012054365, WO2012044638, WO2010080724, WO201021865, WO2008103276, WO2013086373 e WO2013086354, nei brevetti U.S. nn. 7,893,302, 7,404,969, 8,283,333, e 8,466,122 e le pubblicazioni di brevetto U.S. nn. US20100036115, US20120202871, US20130064894, US20130129785, US20130150625, US20130178541 e US20130225836; . In un'altra forma di realizzazione, il lipide cationico può essere scelto tra, ma non limitato a, formula A descritta nelle pubblicazioni internazionali nn. WO2012040184, WO2011153120, WO2011149733, WO2011090965,WO2011043913, WO2011022460, WO2012061259, WO2012054365,WO2012044638 e WO2013116126 o le pubblicazioni di brevetto U.S. nn. US20130178541 e US20130225836; . In ancora un'altra forma di realizzazione, il lipide cationico può essere scelto tra, tuttavia senza limitazione, formula CLI-CLXXIX della pubblicazione internazionale n. WO2008103276, formula CLI-CLXXIX del brevetto U.S. n. 7,893,302, formula CLI-CLXXXXII del brevetto U.S. n. 7,404,969 e formula I-VI della pubblicazione di brevetto U.S. n. US20100036115, formula I della pubblicazione di brevetto U.S. n. US20130123338; . Come esempio non limitante, il lipide

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cationico può essere scelto tra (20Z,23Z)-N,N-dimetilnonacosa-20,23-dien-10-ammina, (17Z,20Z)-N,N-dimemilesacosa-17,20-dien-9-ammina, (1Z,19Z)-N5N-dimetilpentacosa-1 6, 19-dien-8-ammina, (13Z,16Z)-N,N-dimetildocosa-13,16-dien-5-ammina, (12Z,15Z)-N,N-dimetilenicosa-12,15-dien-4-ammina, (14Z,17Z)-N,N-dimetiltricosa-14,17-dien-6-ammina, (15Z,18Z)-N,N-dimetiltetracosa-15,18-dien-7-ammina, (18Z,21Z)-N,N-dimetileptacosa-18,21-dien-10-ammina, (15Z,18Z)-N,N-dimetiltetracosa-15,18-dien-5-ammina, (14Z,17Z)-N,N-dimetiltricosa-14,17-dien-4-ammina, (19Z,22Z)-N,N-dimeiilottacosa-19,22-dien-9-ammina, (18Z,21 Z)-N,N-dimetileptacosa-18,21-dien-8-ammina, (17Z,20Z)-N,N-dimetilesacosa-17,20-dien-7-ammina, (16Z,19Z)-N,N-dimetilpentacosa-16,19-dien-6-ammina, (22Z,25Z)-N,N-dimetilentriaconta-22,25-dien-10-ammina, (21 Z ,24Z)-N,N-dimetiltriaconta-21,24-dien-9-ammina, (18Z)-N,N-dimetileptacos-18-en-10-ammina, (17Z)-N,N-dimetilesacos-17-en-9-ammina, (19Z,22Z)-N,N-dimetiloctacosa-19,22-dien-7-ammina, N,N-dimetileptacosan-10-ammina, (20Z,23Z)-N-etil-N-metilnonacosa-20,23-dien-10-ammina, 1-[(11Z,14Z)-1-nonilicosa-11,14-dien-1-il] pirrolidina, (20Z)-N,N-dimetileptacos-20-en-1 0-ammina, (15Z)-N,N-dimetil eptacos-15-en-1 0-ammina, (14Z)-N,N-dimetilnonacos-14-en-10-ammina, (17Z)-N,N-dimetilnonacos-17-en-10-ammina, (24Z)-N,N-dimetiltritriacont-24-en-10-ammina, (20Z)-N,N-dimetilnonacos-20-en-1 0-ammina, (22Z)-N,N-dimetilhentriacont-22-en-10-ammina, (16Z)-N,N-dimetilpentacos-16-en-8-ammina, (12Z,15Z)-N,N-dimetil-2-nonilenicosa-12,15-dien-1-ammina, (13Z,16Z)-N,N-dimetil-3-nonildocosa-13,16-dien-1-ammina, N,N-dimetil-1-[(1S,2R)-2-ottilciclopropil] eptadecan-8-ammina, 1-[(1S,2R)-2-esilciclopropil]-N,N-dimetilnonadecan-10-ammina, N,N-dimetil-1-[(1S,2R)-2-ottilciclopropil]nonadecan-10-ammina, N,N-dimetil-21-[(1S,2R)-2-ottilciclopropil]enicosan-10-ammina,N,N-dimetil-1-[(1S,2S)-2-{[(1R,2R)-2-pentilcicIopropil]metil}ciclopropil]nonadecan-10-ammina,N,N-dimetil-1-[(1S,2R)-2-ottilciclopropil]esadecan-8-ammina, N,N-dimetil-[(1R,2S)-2-undeciIciclopropil]tetradecan-5-ammina, N,N-dimetil-3-{7-[(1S,2R)-2-ottilciclopropil]eptil} dodecan-1—ammina, 1-[(1R,2S)-

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2-eptilciclopropil]-N,N-dimetiloctadecan-9-ammina, 1-[(1S,2R)-2-decilciclopropil]-N,N-dimetilpentadecan-6-ammina, N,N-dimetil-1-[(1S,2R)-2-ottilciclopropil]pentadecan-8-ammina, R-N,N-dimetil-1-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]-3-(ottilossi)propan-2-ammina, S-N,N-dimetil-1-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]-3-(ottilossi)propan-2-ammina, 1-{2-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]-1-[(ottilossi)metil]etil}pirrolidina, (2S)-N,N-dimetil-1-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]-3-[(5Z)-ott-5-en-1-ilossi]propan-2-ammina, 1-{2-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]-1-[(ottilossi)metil]etil}azetidina, (2S)-1-(esilossi)-N,N-dimetil-3-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]propan-2-ammina, (2S)-1-(eptilossi)-N,N-dimetil-3-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]propan-2-ammina, N,N-dimetil-1-(nonilossi)-3-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]propan-2-ammina, N,N-dimetil-1-[(9Z)-ottadec-9-en-1-ilossi]-3-(ottilossi)propan-2-ammina; (2S)-N,N-dimetil-1-[(6Z,9Z,12Z)-ottadeca-6,9,12-trien-1-ilossi]-3-(ottilossi)propan-2-ammina, (2S)-1-[(11Z,14Z)-icosa-11,14-dien-1-ilossi]-N,N-dimetil-3-(pentilossi)propan-2-ammina, (2S)-1-(esilossi)-3-[(11Z,14Z)-icosa-11,14-dien-1-ilossi]-N,N-dimetilpropan-2-ammina, 1-[(11Z,14Z)-icosa-11,14-dien-1-ilossi]-N,N-dimeti1-3-(ottilossi)propan-2-ammina, 1-[(13Z,16Z)-docosa-13, 16-dien-1-ilossi]-N,N-dimetil-3-(ottilossi)propan-2-ammina, (2S)-1-[(13Z,16Z)-docosa-13,16-dien-1-ilossi]-3-(esilossi)-N,N-dimetilpropan-2-ammina, (2S)-1-[(13Z)-docos-13-en-1-ilossi]-3-(esilossi)-N,N-dimetilpropan-2-ammina, 1-[(13Z)-docos-13-en-1-ilossi]-N,N-dimetil-3-(ottilossi)propan-2-ammina, 1-[(9Z)-esadec-9-en-1-ilossi]-N,N-dimetil-3-(ottilossi)propan-2-ammina, (2R)-N,N-dimetil-H(1-metoilottil)ossi]-3-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]propan-2-ammina, (2R)-1-[(3,7-dimetilottil)ossi]-N,N-dimetil-3-[(9Z,12Z)-ottadeca-9,12-dien-1-ilossi]propan-2-ammina, N,N-dimetil-1-(ottilossi)-3-({8-[(1S,2S)-2-{[(1R,2R)-2-pentilciclopropil]metil}ciclopropil]octil}ossi)propan-2-ammina, N,N-dimetil-1-{[8-(2-oc1ilciclopropil)ottil]ossi}-3-(ottilossi)propan-2-ammina e (1lE,20Z,23Z)-N,N-dimetilnonacosa-l1,20,2-trien-10-ammina o un loro sale o stereoisomero farmaceuticamente

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accettabile.

In una forma di realizzazione, il lipide può essere un lipide scindibile come quelli descritti nella pubblicazione internazionale n. WO2012170889,

In un'altra forma di realizzazione, il lipide può essere un lipide cationico come, ma non limitato a, la Formula (I) della domanda di brevetto U.S. n. US20130064894.

In una forma di realizzazione, il lipide cationico può essere sintetizzato con metodi noti nella tecnica e/o come descritto nelle pubblicazioni internazionali nn. WO2012040184, WO2011153120, WO2011149733, WO2011090965, WO2011043913, WO2011022460, WO2012061259, WO2012054365, WO2012044638, WO2010080724, WO201021865, WO2013086373 e WO2013086354;

In un'altra forma di realizzazione, il lipide cationico può essere un lipide trialchil cationico. Esempi non limitativi di lipidi trialchil cationici e metodi per produrre e utilizzare i lipidi trialchil cationici sono descritti nella pubblicazione di brevetto internazionale n. WO2013126803,.

In una forma di realizzazione, le formulazioni LNP dei NAV possono contenere PEG-c-DOMG con un rapporto molare lipidico del 3%. In un'altra forma di realizzazione, gli RNAV delle formulazioni LNP possono contenere PEG-c-DOMG con un rapporto molare lipidico dell'1,5%.

In una forma di realizzazione, le composizioni farmaceutiche dei NAV possono includere almeno uno dei lipidi PEGilati descritti nella pubblicazione internazionale n. WO2012099755.

In una forma di realizzazione, la formulazione LNP può contenere PEG-DMG 2000 (1,2-dimiristoil-sn-glicero-3-fofoetanolammina-N-[metossi(polietilenglicole)-2000). In una forma di realizzazione, la formulazione di LNP può contenere PEG-DMG 2000, un lipide cationico noto nella tecnica e almeno un altro componente. In un’altra forma di realizzazione, la

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formulazione di LNP può contenere PEG-DMG 2000, un lipide cationico noto nella tecnica, DSPC e colesterolo. Come esempio non limitativo, la formulazione di LNP può contenere PEG-DMG 2000, DLin-DMA, DSPC e colesterolo. Come altro esempio non limitativo, la formulazione LNP può contenere PEG-DMG 2000, DLin-DMA, DSPC e colesterolo in un rapporto molare di 2:40:10:48 (si veda ad esempio Geall et al., Nonviral delivery of self-amplifying RNA vaccinis, PNAS 2012; PMID: 22908294).

Le formulazioni di nanoparticelle possono comprendere un coniugato di fosfato. Il coniugato di fosfato può aumentare i tempi di circolazione *in vivo* e/o aumentare il rilascio mirato della nanoparticella. I coniugati di fosfato per l'uso con la presente invenzione possono essere prodotti mediante i metodi descritti nella domanda internazionale n. WO2013033438 o la pubblicazione di brevetto U.S. n. US20130196948. A titolo di esempio non limitativo, i coniugati di fosfato possono includere un composto di una qualsiasi delle formule descritte nella domanda internazionale n. WO2013033438,

La formulazione di nanoparticelle può comprendere un coniugato polimerico. Il coniugato polimerico può essere un coniugato solubile in acqua. Il coniugato polimerico può avere una struttura come descritto nella domanda di brevetto U.S. n. 20130059360. In un aspetto, i coniugati polimerici con i polinucleotidi della presente invenzione possono essere realizzati utilizzando i metodi e/o i reagenti polimerici segmentati descritti nella domanda di brevetto U.S. n. 20130072709. In un altro aspetto, il coniugato polimerico può avere gruppi laterali pendenti comprendenti porzioni di anello come, ma non solo, i coniugati polimerici descritti nella pubblicazione di brevetto U.S. n. US20130196948,

Le formulazioni di nanoparticelle possono comprendere un coniugato per migliorare il rilascio di nanoparticelle della presente invenzione in un soggetto. Inoltre, il coniugato può inibire la clearance fagocitica delle nanoparticelle in un soggetto. In un aspetto, il coniugato può essere un peptide "self" progettato dalla proteina di membrana umana CD47 (ad esempio, le

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particelle "self" descritte da Rodriguez et al (Science 2013 339, 971-975)). Come mostrato da Rodriguez et al. i peptidi self hanno ritardato la clearance mediata dai macrofagi delle nanoparticelle che ha migliorato il rilascio delle nanoparticelle. In un altro aspetto, il coniugato può essere la proteina di membrana CD47 (si veda ad esempio Rodriguez et al. Science 2013 339, 971-975,). Rodriguez et al. ha mostrato che, in modo simile ai peptidi "self", CD47 può aumentare il rapporto delle particelle circolanti in un soggetto rispetto ai peptidi rimescolati e alle nanoparticelle rivestite con PEG.

In una forma di realizzazione, i NAV della presente invenzione sono formulati in nanoparticelle che comprendono un coniugato per migliorare il rilascio delle nanoparticelle della presente invenzione in un soggetto. Il coniugato può essere la membrana CD47 o il coniugato può essere derivato dalla proteina di membrana CD47, come il peptide "self" descritto in precedenza. In un altro aspetto, la nanoparticella può comprendere PEG e un coniugato di CD47 o un suo derivato. In ancora un altro aspetto, la nanoparticella può comprendere sia il peptide "self" descritto sopra sia la proteina di membrana CD47.

In un altro aspetto, un peptide "self" e/o una proteina CD47 possono essere coniugati a una particella simil-virale o pseudovirione, come descritto qui per il rilascio dei NAV della presente invenzione.

In un'altra forma di realizzazione, composizioni farmaceutiche di NAV comprendenti i polinucleotidi della presente invenzione e un coniugato che può avere un legame degradabile. Esempi non limitativi di coniugati includono una parte aromatica comprendente un atomo di idrogeno ionizzabile, una frazione spaziatore e un polimero solubile in acqua. A titolo di esempio non limitativo, le composizioni farmaceutiche comprendenti un coniugato con un legame degradabile e metodi per fornire tali composizioni farmaceutiche sono descritte nella pubblicazione di brevetto U.S. n. US20130184443.

Le formulazioni di nanoparticelle possono essere una nanoparticella di carboidrati

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comprendente un veicolo di carboidrati e un NAV. Come esempio non limitativo, il veicolo di carboidrati può includere, ma non è limitato a, un fitoglicogeno modificato con anidride o un materiale di tipo glicogeno, fitoglicogenoottenil succinato, fitoglicogeno beta-destrina, fitoglicogeno beta-destrina modificata con anidride. (Si veda ad esempio, la pubblicazione internazionale n. WO2012109121).

Le formulazioni di nanoparticelle della presente invenzione possono essere rivestite con un tensioattivo o un polimero per migliorare il rilascio della particella. In una forma di realizzazione, la nanoparticella può essere rivestita con un rivestimento idrofilo come, ma non limitato a, rivestimenti di PEG e/o rivestimenti che hanno una carica superficiale neutra. I rivestimenti idrofili possono aiutare a fornire nanoparticelle con carichi maggiori come, ma non solo, NAV all'interno del sistema nervoso centrale. A titolo di esempio non limitativo, le nanoparticelle comprendenti un rivestimento idrofilo e i metodi per produrre tali nanoparticelle sono descritti nella pubblicazione di brevetto U.S. n. US20130183244.

Le formulazioni di nanoparticelle lipidiche possono essere migliorate sostituendo il lipide cationico con un lipide cationico biodegradabile che è noto come nanoparticella lipidica rapidamente eliminata (reLNP). È stato dimostrato che i lipidi cationici ionizzabili, come, ma non solo, DLinDMA, DLin-KC2-DMA e DLin-MC3-DMA, si accumulano nel plasma e nei tessuti nel tempo e possono essere una potenziale fonte di tossicità. Il rapido metabolismo dei lipidi rapidamente eliminati può migliorare la tollerabilità e l'indice terapeutico delle nanoparticelle lipidiche di un ordine di grandezza da una dose di 1 mg/kg a una dose di 10 mg/kg nel ratto. L'inclusione di un legame estere degradato enzimaticamente può migliorare il profilo di degradazione e metabolismo del componente cationico, pur mantenendo l'attività della formulazione di reLNP. Il legame estere può essere localizzato internamente all'interno della catena lipidica o può essere localizzato terminale all'estremità terminale della catena lipidica. Il legame estere interno può sostituire qualsiasi carbonio nella catena lipidica.

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In una forma di realizzazione, il legame estereo interno può essere posizionato su entrambi i lati del carbonio saturo.

In una forma di realizzazione, una risposta immunitaria può essere stimolata rilasciando una nanoparticella lipidica che può includere una nanospecie, un polimero e un immunogeno. (Pubblicazione U.S. n. 20120189700 e pubblicazione internazionale n. WO2012099805). Il polimero può incapsulare le nanospecie o parzialmente incapsulare le nanospecie. L'immunogeno può essere una proteina ricombinante, un RNA modificato e/o un polinucleotide qui descritto. In una forma di realizzazione, la nanoparticella lipidica può essere formulata per l'uso in un vaccino come, ma non limitato a, contro un agente patogeno.

Le nanoparticelle lipidiche possono essere ingegnerizzate per alterare le proprietà superficiali delle particelle in modo che le nanoparticelle lipidiche possano penetrare nella barriera mucosa. Il muco si trova sul tessuto della mucosa come, ma non solo, orale (ad esempio, le membrane buccali ed esofagee e il tessuto tonsillare), oftalmico, gastrointestinale (ad esempio, stomaco, intestino tenue, intestino crasso, colon, retto), nasale, respiratorio (ad esempio, membrane nasali, faringee, tracheali e bronchiali), genitali (ad esempio, membrane vaginali, cervicali e uretrali). Si ritiene che le nanoparticelle più grandi di 10-200 nm che sono preferite per una maggiore efficienza di incapsulamento dei farmaci e la capacità di fornire il rilascio prolungato di un'ampia gamma di farmaci siano troppo grandi per diffondersi rapidamente attraverso le barriere della mucosa. Il muco viene continuamente secreto, versato, scartato o digerito e riciclato in modo che la maggior parte delle particelle intrappolate possa essere rimossa dal tessuto mucoso in pochi secondi o entro poche ore. Grandi nanoparticelle polimeriche (200 nm -500 nm di diametro) che sono state rivestite densamente con un glicole polietilenico a basso peso molecolare (PEG) diffuso attraverso il muco solo da 4 a 6 volte inferiore rispetto alle stesse particelle che diffondono nell'acqua (Lai et al. PNAS 2007 104(5):1482-487; Lai et al. Adv Drug Deliv Rev. 2009 61(2): 158-171). Il trasporto di

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nanoparticelle può essere determinato utilizzando velocità di permeazione e/o tecniche di microscopia fluorescente inclusi, ma non limitati a, recupero di fluorescenza dopo fotosbiancamento (FRAP) e tracciamento di particelle multiple ad alta risoluzione (MPT). A titolo di esempio non limitativo, possono essere realizzate composizioni che possono penetrare in una barriera mucosa come descritto nel brevetto U.S. n. 8,241,670 o nella pubblicazione di brevetto internazionale n. WO2013110028,

La nanoparticella lipidica progettata per penetrare nel muco può comprendere un materiale polimerico (vale a dire un nucleo polimerico) e/o un coniugato polimero-vitamina e/o un copolimero a tre blocchi. Il materiale polimerico può includere, ma non è limitato a, poliammine, polieteri, poliammidi, poliesteri, policarbammati, poliuree, policarbonati, poli(stireni), poliimmidi, polisolfoni, poliuretani, poliacetileni, polietileni, polietilenimmine, poliisocianati, poliacrilati, polimetacrilonitrili e poliarilati. Il materiale polimerico può essere biodegradabile e/o biocompatibile. Esempi non limitativi di polimeri biocompatibili sono descritti nella pubblicazione di brevetto internazionale n. WO2013116804, . Il materiale polimerico può essere inoltre irradiato. A titolo di esempio non limitativo, il materiale polimerico può essere irradiato con raggi gamma (si veda ad esempio la domanda internazionale n. WO201282165,). Esempi non limitativi di polimeri specifici includono poli(caprolattone) (PCL), polimero di etilene vinil acetato (EVA), acido poli(lattico) (PLA), alcido poli(L-lattico) (PLLA), acido poli(glicolico) (PGA), poli(acido lattico-co-acido glicolico) (PLGA), poli(acido L-lattico-co-acido glicolico) (PLLGA), poli(D,L-lattide) (PDLA), poli(L-lattide) (PLLA), poli(D,L-lattide-co-caprolattone), poli(D,L-lattide-co-caprolattone-co-glicolide), poli(D,L-lattide-co-PEO-co-D,L-lattide), poli(D,L-lattide-co-PPO-co-D,L-lattide), polialchilcianoacralato, poliuretano, poli-L-lisina (PLL), idrossipropil metacrilato (HPMA), polietilenglicole, acido poli-L-glutammico, poli(idrossiacidi), polianidridi, poliortoesteri, poli(estere ammidi), poliammidi, poli(ester eteri), policarbonati, polialchileni come polietilene e

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polipropilene, polialchilenglicoli come poli(etilenglicole) (PEG), polialchlenossidi (PEO), polialchilene tereftalati come poli(etilene tereftalato), polivinilalcol (PVA), polivinileteri, polivinilesteri come poli(vinilacetato), polivinilalogenuri come poli(vinilcloruro) (PVC), polivinilpirrolidone, polisilossani, polistirene (PS), poliuretani, cellulose derivatizzate come alchilcellulose, idrossialchilcellulose, eteri di cellulosa, esteri di cellulosa, nitrocellulose, idrossipropilcellulosa, carbossimetilcellulosa, polimeri di acidi acrilici, come poli(metil(met)acrilato) (PMMA), poli(etil(met)acrilato), poli(butil(met)acrilato), poli(isobutil(met)acrilato), poli(esil(met)acrilato), poli(isodecil(met)acrilato), poli(lauril(met)acrilato), poli(fenil(met)acrilato), poli(metilacrilato), poli(isopropilacrilato), poli(isobutilacrilato), poli(ottadecilacrilato) e loro copolimeri e miscele, polidiossanone e suoi copolimeri, poliidrossialcanoati, polipropilene fumarato, poliossimetilene, polossameri, poli(orto)esteri, acido poli(butirrico), acido poli(valerico), poli(lattide-co-caprolattone), PEG-PLGA-PEG e trimetilene carbonato, polivinilpirrolidone. La nanoparticella lipidica può essere rivestita o associata a un co-polimero come, tuttavia senza limitazione, un copolimero a blocchi (come un copolimero a blocchi di polietere-poliammide ramificato descritto nella pubblicazione internazionale n. WO2013012476), e un copolimero triblocco (poli(etilenglicole))-(poli(propilenossido))-(poli(etilenglicole)) (si vedano ad esempio, la pubblicazione U.S. 20120121718 e la pubblicazione U.S. 20100003337 e il brevetto U.S. n. 8263665). Il copolimero può essere un polimero generalmente considerato sicuro (GRAS) e la formazione della nanoparticella lipidica può essere tale da non creare nuove entità chimiche. Ad esempio, la nanoparticella lipidica può comprendere polossameri che rivestono nanoparticelle di PLGA senza formare nuove entità chimiche che sono ancora in grado di penetrare rapidamente nel muco umano (Yang et al. Angew. Chem. Int. Ed. 2011 50:2597-2600). Un metodo scalabile non limitante per produrre nanoparticelle che possono penetrare nel muco umano è descritto da Xu et al. (Si veda ad esempio, J Control Release 2013, 170(2):279-86).

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La vitamina del coniugato polimero-vitamina può essere la vitamina E. La porzione vitaminica del coniugato può essere sostituita con altri componenti adatti come, ma non solo, vitamina A, vitamina E, altre vitamine, colesterolo, una sostanza idrofoba frazione o un componente idrofobo di altri tensioattivi (ad es. catene di steroli, acidi grassi, catene di idrocarburi e catene di ossido di alchilene).

La nanoparticella lipidica ingegnerizzata per penetrare nel muco può includere agenti che alterano la superficie come, ma non solo, polinucleotidi, proteine anioniche (ad esempio, albumina sierica di bovino), tensioattivi (ad esempio, tensioattivi cationici come ad esempio dimetildiottadecil-ammonio bromuro), zuccheri o derivati dello zucchero (ad esempio ciclodestrina), acidi nucleici, polimeri (ad esempio eparina, polietilenglicole e polossamero), agenti mucolitici (ad esempio N-acetilcisteina, artemisia, bromelina, papaina, clerodendrum, acetilcisteina, bromexina, carbocisteina, eprazinone, mesna, ambroxolo, sobrerolo, domiodolo, letosteina, stepronina, tiopronina, gelsolina, timosina β4 dornase alfa, neltenexina, erdosteina) e varie DNasi inclusa la rhDNasi. L'agente che altera la superficie può essere incorporato o intrappolato nella superficie della particella o disposto (ad esempio mediante rivestimento, adsorbimento, legame covalente o altro processo) sulla superficie della nanoparticella lipidica. (Si veda ad esempio, la pubblicazione U.S. 20100215580 e la pubblicazione U.S. 20080166414 e US20130164343).

In una forma di realizzazione, le nanoparticelle lipidiche che penetrano nel muco possono comprendere almeno un polinucleotide qui descritto. Il polinucleotide può essere incapsulato nella nanoparticella lipidica e/o disposto sulla superficie della particella. Il polinucleotide può essere accoppiato covalentemente alla nanoparticella lipidica. Le formulazioni di nanoparticelle lipidiche che penetrano nel muco possono comprendere una pluralità di nanoparticelle. Inoltre, le formulazioni possono contenere particelle che possono interagire con il muco e alterare le proprietà strutturali e/o adesive del muco circostante per

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diminuire la mucoadesione che può aumentare il rilascio delle nanoparticelle lipidiche che penetrano nel muco al tessuto mucoso.

In un'altra forma di realizzazione, le nanoparticelle lipidiche che penetrano nel muco possono essere una formulazione ipotonica comprendente un rivestimento che migliora la penetrazione della mucosa. La formulazione può essere ipotonica per l'epitelio in cui viene rilasciata. Esempi non limitativi di formulazioni ipotoniche possono essere trovati nella pubblicazione di brevetto internazionale n. WO2013110028.

In una forma di realizzazione, al fine di migliorare il rilascio attraverso la barriera mucosa, la formulazione di NAV può comprendere o essere una soluzione ipotonica. È stato riscontrato che le soluzioni ipotoniche aumentano la velocità con cui le particelle mucoinerti come, ma non solo, le particelle che penetrano nel muco, sono state in grado di raggiungere la superficie epiteliale vaginale (si veda ad esempio Ensign et al. Biomaterials 2013 34(28):6922-9).

In una forma di realizzazione, tali formulazioni possono anche essere costruite o composizioni alterate in modo tale da essere dirette passivamente o attivamente a diversi tipi di cellule *in vivo,* inclusi ma non limitati a epatociti, cellule immunitarie, cellule tumorali, cellule endoteliali, cellule presentanti antigeni e leucociti (Akinc et al. Mol Ther. 2010 18:1357-1364; Song et al., Nat Biotechnol. 2005 23:709-717; Judge et al., J Clin Invest. 2009 119:661-673; Kaufmann et al., MicrovascRes 2010 80:286-293; Santel et al., Gene Ther 2006 13:1222-1234; Santel et al., Gene Ther 2006 13:1360-1370; Gutbier et al., PulmPharmacol. Ther. 2010 23:334-344; Basha et al., Mol. Ther. 2011 19:2186-2200; Fenske e Cullis, Expert Opin Drug Deliv. 2008 5:25-44; Peer et al., Science. 2008 319:627-630; Peer e Lieberman, Gene Ther. 2011 18:1127-1133;). Un esempio di bersagliamento passivo delle formulazioni alle cellule epatiche include le formulazioni di nanoparticelle lipidiche a base di DLin-DMA, DLin-KC2-DMA e DLin-MC3-DMA che hanno dimostrato di legarsi all'apolipoproteina E e promuovere il

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legame e l'assorbimento di queste formulazioni negli epatociti in vivo (Akinc et al. MolTher. 2010 18:1357-1364). Le formulazioni possono anche essere mirate selettivamente attraverso l'espressione di diversi ligandi sulla loro superficie come esemplificato, ma non limitato da, folati, transferrina, N-acetilgalattosamina (GalNAc) e approcci mirati agli anticorpi (Kolhatkar et al., Curr Drug DiscovTechnol. 2011 8:197-206; Musacchio e Torchilin, Front Biosci. 2011 16:1388-1412; Yu et al., MolMembrBiol. 2010 27:286-298; Patil et al., CritRevTher Drug Carrier Syst. 2008 25:1-61; Benoit et al., Biomacromolecules. 2011 12:2708-2714; Zhao et al., Expert Opin Drug Deliv. 2008 5:309-319; Akinc et al., Mol Ther. 2010 18:1357-1364; Srinivasan et al., Methods Mol Biol. 2012 820:105-116; Ben-Arie et al., Methods Mol Biol. 2012 757:497-507; Peer 2010 J Control Release. 20:63-68; Peer et al., Proc Natl Acad Sci U S A. 2007 104:4095-4100; Kim et al., Methods Mol Biol. 2011 721:339-353; Subramanya et al., Mol Ther. 2010 18:2028-2037; Song et al., Nat Biotechnol. 2005 23:709-717; Peer et al., Science. 2008 319:627-630; Peer e Lieberman, Gene Ther. 2011 18:1127-1133).

In una forma di realizzazione, i NAV della presente invenzione possono essere formulati per il rilascio controllato e/o il rilascio mirato. Come usato qui, "rilascio controllato" si riferisce a una composizione farmaceutica o profilo di rilascio del composto che si conforma a un particolare schema di rilascio per ottenere un risultato terapeutico. In una forma di realizzazione, gli RNAV possono essere incapsulati in un agente di rilascio qui descritto e/o noto nella tecnica per il rilascio controllato e/o il rilascio mirato. Come qui usato, il termine "incapsulare" significa racchiudere, circondare o racchiudere. Per quanto riguarda la formulazione dei composti dell'invenzione, l'incapsulamento può essere sostanziale, completo o parziale. Il termine "sostanzialmente incapsulato" significa che almeno più del 50, 60, 70, 80, 85, 90, 95, 96, 97, 98, 99, 99,9, 99,9 o più del 99,999% della composizione farmaceutica o del composto dell'invenzione può essere racchiuso, circondato o inglobato all'interno dell'agente di rilascio. "Incapsulamento parziale" significa che meno di 10, 10, 20, 30, 40 50 o meno della

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composizione farmaceutica o del composto della descrizione può essere racchiuso, circondato o inglobato all'interno dell'agente di rilascio. Vantaggiosamente, l'incapsulamento può essere determinato misurando la fuga o l'attività della composizione farmaceutica o del composto dell'invenzione mediante fluorescenza e/o micrografia elettronica. Ad esempio, almeno l'1, 5, 10, 20, 30, 40, 50, 60, 70, 80, 85, 90, 95, 96, 97, 98, 99, 99,9, 99,99 o più del 99,99% della composizione farmaceutica o composto dell'invenzione sono incapsulati nell'agente di rilascio.

In una forma di realizzazione, la formulazione a rilascio controllato può includere, ma non è limitata a, copolimeri a tre blocchi. A titolo di esempio non limitativo, la formulazione può comprendere due diversi tipi di copolimeri tri-blocco (pubblicazione internazionale n. WO2012131104 e WO2012131106).

In un'altra forma di realizzazione, i NAV possono essere incapsulati in una nanoparticella lipidica o una nanoparticella lipidica a rapida eliminazione e le nanoparticelle lipidiche o una nanoparticella lipidica a rapida eliminazione possono quindi essere incapsulate in un polimero, idrogel e/o sigillante chirurgico descritto qui e/o noto nella tecnica. Come esempio non limitativo, il polimero, idrogel o sigillante chirurgico può essere PLGA, etilene vinil acetato (EVAc), polossamero, GELSITE® (Nanotherapeutics, Inc. Alachua, FL), HYLENEX® (HalozymeTherapeutics, San Diego CA), sigillanti chirurgici come polimeri di fibrinogeno (Ethicon Inc. Cornelia, GA), TISSELL (Baxter International, Inc Deerfield, IL), sigillanti a base di PEG e COSEAL® (Baxter International, IncDeerfield, IL).

In un'altra forma di realizzazione, la nanoparticella lipidica può essere incapsulata in qualsiasi polimero noto nella tecnica che può formare un gel quando iniettato in un soggetto. Come altro esempio non limitativo, la nanoparticella lipidica può essere incapsulata in una matrice polimerica che può essere biodegradabile.

In una forma di realizzazione, la formulazione di NAV per rilascio controllato e/o rilascio mirato può anche includere almeno un rivestimento a rilascio controllato. I rivestimenti

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a rilascio controllato includono, ma non sono limitati a, OPADRY®, copolimero di polivinilpirrolidone/vinilacetato, polivinilpirrolidone, idrossipropilmetilcellulosa, idrossipropilcellulosa, idrossietilcellulosa, EUDRAGIT RL®, EUDRAGIT RS® e derivati della cellulosa come dispersioni acquose di etilcellulosa (AQUACOAT® e SURELEASE®).

In una forma di realizzazione, la formulazione a rilascio controllato e/o a rilascio mirato del NAV può comprendere almeno un poliestere degradabile che può contenere catene laterali policationiche. I poliesteri degradabili includono, ma non sono limitati a, poli(estere di serina), poli(L-lattide-co-L-lisina), poli(4-idrossi-L-estere di prolina) e loro combinazioni. In un'altra forma di realizzazione, i poliesteri degradabili possono includere una coniugazione PEG per formare un polimero PEGilato.

In una forma di realizzazione, la formulazione a rilascio controllato e/o a rilascio mirato del NAV comprendente almeno un polinucleotide può comprendere almeno un PEG e/o derivati polimerici correlati al PEG come descritto nel brevetto U.S. n. 8,404,222.

In un'altra forma di realizzazione, la formulazione per la somministrazione a rilascio controllato di NAV comprendente almeno un polinucleotide può essere il sistema polimerico a rilascio controllato descritto in US20130130348.

In una forma di realizzazione, i NAV della presente invenzione possono essere incapsulati in una nanoparticella terapeutica, qui denominata "RNAV di nanoparticelle terapeutiche". Le pubblicazioni internazionali nn. WO2010005740, WO2010030763, WO2010005721, WO2010005723, WO2012054923, pubblicazioni U.S. nn. US20110262491, US20100104645, US20100087337, US20100068285, US20110274759, US20100068286, US20120288541, US20130123351 e US20130230567 e brevetti U.S. nn. 8,206,747, 8,293,276, 8,318,208 e 8,318,211; .In un'altra forma di realizzazione, le nanoparticelle polimeriche terapeutiche possono essere identificate con i metodi descritti nella pubblicazione U.S. n. US20120140790.

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In una forma di realizzazione, in NAV a nanoparticelle terapeutiche può essere formulato per il rilascio prolungato. Come usato qui, "rilascio prolungato" si riferisce a una composizione o composto farmaceutico che si conforma a una velocità di rilascio in un periodo di tempo specifico. Il periodo di tempo può includere, ma non è limitato a, ore, giorni, settimane, mesi e anni. A titolo di esempio non limitativo, la nanoparticella a rilascio prolungato può comprendere un polimero e un agente terapeutico come, a titolo esemplificativo, i polinucleotidi della presente invenzione (si veda la pubblicazione internazionale n. 2010075072 e la pubblicazione U.S. n. US20100216804, US20110217377 e US20120201859). In un altro esempio non limitativo, la formulazione a rilascio prolungato può comprendere agenti che consentono una biodisponibilità persistente come, ma non solo, cristalli, gel macromolecolari e/o sospensioni di particolato (si veda la pubblicazione di brevetto U.S. n. US20130150295.

In una forma di realizzazione, i NAV a nanoparticelle terapeutiche possono essere formulati per essere specifici per il bersaglio. Come esempio non limitativo, le nanoparticelle terapeutiche possono includere un corticosteroide (si veda la pubblicazione internazionale n. WO2011084518). Come esempio non limitativo, le nanoparticelle terapeutiche possono essere formulate in nanoparticelle descritte nella pubblicazione internazionale n. WO2008121949, WO2010005726, WO2010005725, WO2011084521e pubblicazione U.S. n. US20100069426, US20120004293 e US20100104655.

In una forma di realizzazione, le nanoparticelle della presente invenzione possono comprendere una matrice polimerica. A titolo di esempio non limitativo, la nanoparticella può comprendere due o più polimeri quali, ma non solo, polietileni, policarbonati, polianidridi, poliidrossiacidi, polipropilfumerati, policaprolattoni, poliammidi, poliacetali, polieteri, poliesteri, poli(ortoesteri), policianoacrilati, alcoli polivinilici, poliuretani, polifosfazeni, poliacrilati, polimetacrilati, policianoacrilati, poliuree, polistireni, poliammine, polilisina,

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poli(etilene immina), poli(estere di serina), poli(L-lattide-co-L-lisina), poli(4- idrossi-L-prolina estere) o loro combinazioni.

In una forma di realizzazione, la nanoparticella terapeutica comprende un copolimero diblocco. In una forma di realizzazione, il copolimero diblocco può includere PEG in combinazione con un polimero come, ma non solo, polietileni, policarbonati, polianidridi, poliidrossiacidi, polipropilfumerati, policaprolattoni, poliammidi, poliacetali, polieteri, poliesteri, poli(ortoesteri), policianoacrilati, polivinilalcol, poliuretani, polifosfazeni, poliacrilati, polimetacrilati, policianoacrilati, poliuree, polistireni, poliammine, polilisina, poli(etilenimmina), poli(estere di serina), poli(L-lattide-co-L-lisina), poli(4-idrossi-L-estere di prolina) o loro combinazioni. In ancora un'altra forma di realizzazione, il copolimero diblocco può essere un copolimero diblocco ad alto X come quelli descritti nella pubblicazione di brevetto internazionale n. WO2013120052.

Come esempio non limitativo la nanoparticella terapeutica comprende un copolimero a blocchi PLGA-PEG (si veda la pubblicazione U.S. n. US20120004293 e il brevetto U.S. n. 8,236,330). In un altro esempio non limitativo, la nanoparticella terapeutica è una nanoparticella stealth comprendente un copolimero diblocco di PEG e PLA o PEG e PLGA (si veda il brevetto U.S. n. 8,246,968 e la pubblicazione internazionale n. WO2012166923,). In un altro esempio non limitativo, la nanoparticella terapeutica è una nanoparticella invisibile o una nanoparticella nascosta specifica per il bersaglio, come descritto nella pubblicazione di brevetto U.S. n. US20130172406.

In una forma di realizzazione, la nanoparticella terapeutica può comprendere un copolimero multiblocco (si vedano, ad esempio, i brevetti U.S. nn. 8,263,665 e 8,287,910 e la pubblicazione di brevetto U.S. n. US20130195987.

In un altro esempio non limitativo, la nanoparticella lipidica comprende il copolimero a blocchi PEG-PLGA-PEG (si veda ad esempio, l'idrogel termosensibile (PEG-PLGA-PEG) è

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stato utilizzato come veicolo di rilascio del gene TGF-beta1 in Lee et al. Thermosensitive Hydrogel as a Tgf-β1 Gene Delivery Vehicle Enhances Diabetic Wound Healing. PharmaceuticalResearch, 2003 20(12): 1995-2000; come sistema di rilascio genico controllato in Li et al. Controlled Gene Delivery System Based on Thermosensitive Biodegradable Hydrogel. PharmaceuticalResearch 2003 20(6):884-888; e Chang et al., Il copolimero PEG-PLGA-PEG biodegradabile anfifilico non ionico migliora l'efficienza di rilascio genico nel muscolo scheletrico di ratto. J Controlled Release. 2007 118:245-253). I NAV della presente invenzione possono essere formulati in nanoparticelle lipidiche comprendenti il copolimero a blocchi PEG-PLGA-PEG.

In una forma di realizzazione, la nanoparticella terapeutica può comprendere un copolimero multiblocco (si vedano, ad esempio, i brevetti U.S. nn. 8,263,665 e 8,287,910 e la pubblicazione di brevetto U.S. n. US20130195987).

In una forma di realizzazione, i copolimeri a blocchi qui descritti possono essere inclusi in un complesso di poliioni comprendente una micella non polimerica e il copolimero a blocchi. (Si veda ad esempio, la pubblicazione U.S. n. 20120076836).

In una forma di realizzazione, la nanoparticella terapeutica può comprendere almeno un polimero acrilico. I polimeri acrilici includono, ma non sono limitati a, acido acrilico, acido metacrilico, acido acrilico e copolimeri di acido metacrilico, copolimeri di metilmetacrilato, etossietil metacrilati, cianoetil metacrilato, copolimero di amminoalchil metacrilato, poli(acido acrilico), poli(acido metacrilico), policianoacrilato e loro combinazioni.

In una forma di realizzazione, le nanoparticelle terapeutiche possono comprendere almeno un polimero di poli(vinilestere). Il polimero di poli(vinilestere) può essere un copolimero come un copolimero casuale. A titolo di esempio non limitativo, il copolimero casuale può avere una struttura come quelle descritte nella domanda internazionale n. WO2013032829 o nella pubblicazione di brevetto U.S. n US20130121954, . In un aspetto, i

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polimeri di poli(vinil estere) possono essere coniugati ai polinucleotidi qui descritti. In un altro aspetto, il polimero di poli(vinil estere) che può essere utilizzato nella presente invenzione può essere quello descritto in

In una forma di realizzazione, la nanoparticella terapeutica può comprendere almeno un polimero diblocco. Il copolimero diblocco può essere, ma non è limitato a, un copolimero di acido poli(lattico)-poli(etilene)glicole (si veda ad esempio la pubblicazione di brevetto internazionale n. WO2013044219). A titolo di esempio non limitativo, la nanoparticella terapeutica può essere utilizzata per curare il cancro (si veda la pubblicazione internazionale n. WO2013044219).

In una forma di realizzazione, le nanoparticelle terapeutiche possono comprendere almeno un polimero cationico qui descritto e/o noto nella tecnica.

In una forma di realizzazione, le nanoparticelle terapeutiche possono comprendere almeno un polimero contenente ammina come, ma non limitato a polilisina, polietilenimmina, dendrimeri di poli(ammidoammina), poli(beta-amminoesteri) (si veda ad esempio, il brevetto U.S. n. 8,287,849) e loro combinazioni.

In un'altra forma di realizzazione, le nanoparticelle qui descritte possono comprendere un lipide cationico amminico come quelli descritti nella domanda di brevetto internazionale n. WO2013059496. In un aspetto i lipidi cationici possono avere una frazione amminoamminica o amminoammidica.

In una forma di realizzazione, le nanoparticelle terapeutiche possono comprendere almeno un poliestere degradabile che può contenere catene laterali policationiche. I poliesteri degradabili includono, ma non sono limitati a, poli(estere di serina), poli(L-lattide-co-L-lisina), poli(4-idrossi-L-estere di prolina) e loro combinazioni. In un’altra forma di realizzazione, i poliesteri degradabili possono includere una coniugazione PEG per formare un polimero PEGilato.

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In un’altra forma di realizzazione, la nanoparticella terapeutica può includere una coniugazione di almeno un ligando di bersagliamento. Il ligando di bersagliamento può essere qualsiasi ligando noto nella tecnica come, ma non limitato a, un anticorpo monoclonale. (Kirpotin et al, Cancer Res. 2006 66:6732-6740).

In una forma di realizzazione, la nanoparticella terapeutica può essere formulata in una soluzione acquosa che può essere utilizzata per colpire il cancro (si vedanola pubblicazione internazionale n. WO2011084513e la pubblicazione U.S. n.US20110294717).

In una forma di realizzazione, i NAV di nanoparticelle terapeutiche, ad esempio, nanoparticelle terapeutiche comprendenti almeno un NAV possono essere formulati utilizzando i metodi descritti da Podobinski et al nel brevetto U.S. n. 8,404,799.

In una forma di realizzazione, la nanoparticella può essere ottimizzata per la somministrazione orale. La nanoparticella può comprendere almeno un biopolimero cationico come, ma non limitato a, chitosano o un suo derivato. A titolo di esempio non limitativo, la nanoparticella può essere formulata con i metodi descritti nella pubblicazione U.S. n. 20120282343.

In alcune forme di realizzazione, gli LNP comprendono il lipide KL52 (un amminolipide descritto nella Pubblicazione di domanda U.S. n. 2012/0295832). L'attività e/o la sicurezza (misurata esaminando uno o più tra ALT/AST, conta leucocitaria e induzione di citochine) della somministrazione di LNP possono essere migliorate mediante l'incorporazione di tali lipidi. Gli LNP comprendenti KL52 possono essere somministrati per via endovenosa e/o in una o più dosi. In alcune forme di realizzazione, la somministrazione di LNP comprendenti KL52 risulta in un'espressione di mRNA e/o proteine uguale o migliorata rispetto a LNP comprendenti MC3.

In alcune forme di realizzazione, il NAV possono essere rilasciati utilizzando LNP più piccoli. Taliparticellepossonocomprendereundiametro da menodi 0,1 um fino a 100 nm come,

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ma non limitato a, inferiore a 0,1 um, inferiore a 1,0 um, inferiore a 5 um, inferiore a 10 um, inferiore a 15 um, inferiore a 20 um, inferiore a 25 um, inferiore a 30 um, inferiore a 35 um, inferiore a 40 um, inferiore a 50 um, inferiore a 55 um, inferiore a 60 um, inferiore a 65 um, inferiore a 70 um, inferiore a 75 um, inferiore a 80 um, inferiore a 85 um, inferiore a 90 um, inferiore a 95 um, inferiore a 100 um, inferiore a 125 um, inferiore a 150 um, inferiore a 175 um, inferiore a 200 um, inferiore a 225 um, inferiore a 250 um, inferiore a 275 um, inferiore a 300 um, inferiore a 325 um, inferiore a 350 um, inferiore a 375 um, inferiore a 400 um, inferiore a 425 um, inferiore a 450 um, inferiore a 475 um, inferiore a 500 um, inferiore a 525 um, inferiore a 550 um, inferiore a 575 um, inferiore a 600 um, inferiore a 625 um, inferiore a 650 um, inferiore a 675 um, inferiore a 700 um, inferiore a 725 um, inferiore a 750 um, inferiore a 775 um, inferiore a 800 um, inferiore a 825 um, inferiore a 850 um, lessdi 875 um, inferiore a 900 um, menodi 925 um, menodi 950 um, menodi 975 um,

In un'altra forma di realizzazione, i NAV possono essere rilasciati utilizzando LNP più piccoli che possono comprendere un diametro da circa 1 nm a circa 100 nm, da circa 1 nm a circa 10 nm, da circa 1 nm a circa 20 nm, da circa 1 nm a circa 30 nm, da circa 1 nm a circa 40 nm, da circa 1 nm a circa 50 nm, da circa 1 nm a circa 60 nm, da circa 1 nm a circa 70 nm, da circa 1 nm a circa 80 nm, da circa 1 nm a circa 90 nm, da circa 5 nm a circa 100 nm, da circa 5 nm a circa 10 nm, da circa 5 nm a circa 20 nm, da circa 5 nm a circa 30 nm, da circa 5 nm a circa 40 nm, da circa 5 nm a circa 50 nm, da circa 5 nm a circa 60 nm, da circa 5 nm a circa 70 nm, da circa 5 nm a circa 80 nm, da circa 5 nm a circa 90 nm, da circa 10 a circa 50 nM, da circa 20 a circa 50 nm, da circa 30 a circa 50 nm, da circa 40 a circa 50 nm, da circa 20 a circa 60 nm, da circa 30 a circa 60 nm, da circa 40 a circa 60 nm, da circa 20 a circa 70 nm, da circa 30 a circa 70 nm, da circa 40 a circa 70 nm, da circa 50 a circa 70 nm, da circa 60 a circa 70 nm, da circa 20 a circa 80 nm, da circa 30 a circa 80 nm, da circa 40 a circa 80 nm, da circa 50 a circa 80 nm, da circa 60 a circa 80 nm, da circa 20 a circa 90 nm, da circa 30 a circa 90 nm, da

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circa 40 a circa 90 nm, da circa 50 a circa 90 nm, da circa 60 a circa 90 nm e/o da circa 70 a circa 90 nm.

In alcune forme di realizzazione, tali LNP vengono sintetizzati utilizzando metodi comprendenti miscelatori microfluidici. Esempi di miscelatori microfluidici possono includere, ma non sono limitati a, un micromiscelatore interdigitale a fessura inclusi, a titolo esemplificativo, quelli prodotti da Microinnova (Allerheiligen bei Wildon, Austria) e/o un micromiscelatore a spina di pesce sfalsato (SHM) (Zhigaltsev, I.V. et al., Sono state pubblicate la progettazione bottom-up e la sintesi di sistemi di nanoparticelle lipidiche di dimensioni limite con nuclei acquosi e di trigliceridi utilizzando la miscelazione microfluidica di millisecondi (Langmuir. 2012. 28:3633-40; Belliveau, N.M. et al., Microfluidic synthesis of highly potent limit-size lipid nanoparticles for in vivo delivery of siRNA. Molecular Therapy-Nucleic Acids. 2012. 1:e37; Chen, D. et al., Rapid discovery of potent siRNA-containing lipid nanoparticles enabled by controlled microfluidic formulation. J AmChemSoc. 2012. 134(16):6948-51;). In alcuni casi, i metodi di generazione di LNP comprendenti SHM comprendono inoltre la miscelazione di almeno due flussi di ingresso in cui la miscelazione avviene mediante advezione caotica indotta da microstruttura (MICA). Secondo questo metodo, i flussi di fluido scorrono attraverso canali presenti in un andamento a spina di pesce provocando un flusso rotatorio e ripiegando i fluidi l'uno attorno all'altro. Questo metodo può anche comprendere una superficie per la miscelazione del fluido in cui la superficie cambia orientamento durante il ciclo del fluido. I metodi per generare LNP utilizzando SHM includono quelli descritti nelle pubblicazioni di domanda U.S. nn. 2004/0262223 e 2012/0276209,

In una forma di realizzazione, il NAV della presente invenzione può essere formulato in nanoparticelle lipidiche create utilizzando un micromiscelatore come, ma non limitato a, un miscelatore microstrutturato interdigitale a fessura (SIMM-V2) o un micro miscelatore interdigitale a fessura standard (SSIMM) o Caterpillar (CPMM) o Impinging-jet (IJMM)

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dell'Institut fürMikrotechnik Mainz GmbH, Mainz Germania).

In una forma di realizzazione, i NAV della presente invenzione possono essere formulati in nanoparticelle lipidiche create utilizzando la tecnologia microfluidica (si veda Whitesides, George M. The Origins and the Future of Microfluidics. Nature, 2006 442: 368-373; e Abraham et al. Chaotic Mixer for Microchannels. Science, 2002 295: 647-651;). A titolo di esempio non limitativo, la formulazione microfluidica controllata include un metodo passivo per miscelare flussi di flussi a pressione costante in microcanali con un basso numero di Reynolds (si veda ad esempio Abraham et al. Chaotic Mixer for Microchannels. Science, 2002 295: 647-651;).

In una forma di realizzazione, i NAV della presente invenzione possono essere formulati in nanoparticelle lipidiche create utilizzando un chip micromiscelatore come, ma non limitato a, quelli di Harvard Apparatus (Holliston, MA) o Dolomite Microfluidics (Royston, Regno Unito). Un chip micromiscelatore può essere utilizzato per la miscelazione rapida di due o più flussi di fluido con un meccanismo di divisione e ricombinazione.

In una forma di realizzazione, i NAV dell'invenzione possono essere formulati per la somministrazione utilizzando le microsfere incapsulanti il farmaco descritte nella pubblicazione di brevetto internazionale n. WO2013063468 o brevetto U.S. n. 8,440,614. Le microsfere possono comprendere un composto di formula (I), (II), (III), (IV), (V) o (VI) come descritto nella pubblicazione di brevetto internazionale n. WO2013063468. In un altro aspetto, l'amminoacido, peptide, polipeptide, lipidi (APPL) sono utili nel rilasciare i NAV dell'invenzione nelle cellule (si veda la pubblicazione di brevetto internazionale n. WO2013063468.

In una forma di realizzazione, i NAV dell'invenzione possono essere formulati in nanoparticelle lipidiche aventi un diametro da circa 10 a circa 100 nm compresi intervalli tra come, ma non limitato a, da circa 10 a circa 20 nm, da circa 10 a circa 30 nm, da circa 10 a circa

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40 nm, da circa 10 a circa 50 nm, da circa 10 a circa 60 nm, da circa 10 a circa 70 nm, da circa 10 a circa 80 nm, da circa 10 a circa 90 nm, da circa 20 a circa 30 nm, circa Da 20 a circa 40 nm, da circa 20 a circa 50 nm, da circa 20 a circa 60 nm, da circa 20 a circa 70 nm, da circa 20 a circa 80 nm, da circa 20 a circa 90 nm, da circa 20 a circa 100 nm, circa 30 a circa 40 nm, da circa 30 a circa 50 nm, da circa 30 a circa 60 nm, da circa 30 a circa 70 nm, da circa 30 a circa 80 nm, da circa 30 a circa 90 nm, da circa 30 a circa 100 nm, da circa 40 a da circa 50 nm, da circa 40 a circa 60 nm, da circa 40 a circa 70 nm, da circa 40 a circa 80 nm, da circa 40 a circa 90 nm, da circa 40 a circa 100 nm, da circa 50 a circa 60 nm, da circa 50 a circa 70 nm da circa 50 a circa 80 nm, da circa 50 a circa 90 nm , da circa 50 a circa 100 nm, da circa 60 a circa 70 nm, da circa 60 a circa 80 nm, da circa 60 a circa 90 nm, da circa 60 a circa 100 nm, da circa 70 a circa 80 nm, da circa 70 a circa 90 nm, da circa 70 a circa 100 nm, da circa 80 a circa 90 nm, da circa 80 a circa 100 nm e/o da circa 90 a circa 100 nm.

In una forma di realizzazione, le nanoparticelle lipidiche possono avere un diametro da circa 10 a 500 nm.

In una forma di realizzazione, la nanoparticella lipidica può avere un diametro maggiore di 100 nm, maggiore di 150 nm, maggiore di 200 nm, maggiore di 250 nm, maggiore di 300 nm, maggiore di 350 nm, maggiore di 400 nm, maggiore di 450 nm, maggiore di 500 nm, maggiore di 550 nm, maggiore di 600 nm, maggiore di 650 nm, maggiore di 700 nm, maggiore di 750 nm, maggiore di 800 nm, maggiore di 850 nm, maggiore di 900 nm, maggiore di 950 nm o maggiore di 1000 nm.

Le nanoparticelle della presente invenzione possono inoltre includere nutrienti come, ma non limitati a, quelli le cui carenze possono portare a rischi per la salute dall'anemia ai difetti del tubo neurale (si vedano ad esempio le nanoparticelle descritte nella pubblicazione di brevetto internazionale n. WO2013072929). A titolo di esempio non limitativo, il nutriente può essere ferro sotto forma di sali ferrosi, ferrici o ferro elementare, iodio, acido folico, vitamine o

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micronutrienti.

Introduzione nelle cellule

Una varietà di metodi è nota nella tecnica e adatta per l'introduzione di acido nucleico in una cellula, incluse le tecniche mediate da virus e non e qualsiasi di queste può essere utilizzata per introdurre i NAV della presente descrizione. Esempi di tecniche tipiche non mediate da virus includono, ma non sono limitati a, elettroporazione, trasferimento mediato da fosfato di calcio, nucleofezione, sonoporazione, shock termico, magnetofezione, trasferimento mediato da liposomi, microiniezione, trasferimento mediato da microproiettili (nanoparticelle), trasferimento mediato da polimeri cationici (DEAE-destrano, polietilenimmina, polietilenglicole (PEG) e simili) o fusione cellulare.

La tecnica della sonoporazione, o sonicazione cellulare, è l'uso del suono (ad esempio, le frequenze ultrasoniche) per modificare la permeabilità della membrana plasmatica cellulare. I metodi di sonoporazione sono noti agli esperti nel settore e vengono utilizzati per fornire acidi nucleici *in vivo* (Yoon e Park, Expert Opin Drug Deliv. 2010 7:321-330; Postema e Gilja, CurrPharmBiotechnol. 2007 8:355-361; Newman e Bettinger, Gene Ther. 2007 14:465-475). I metodi di sonoporazione sono noti nella tecnica e vengono anche insegnati, ad esempio, per quanto riguarda i batteri nellapubblicazione del brevetto U.S. 20100196983e per quanto riguarda altri tipi di cellule, ad esempio, nellapubblicazione di brevetto U.S. 20100009424.

Anche le tecniche di elettroporazione sono ben note nel settore e vengono utilizzate per fornire acidi nucleici *in vivo* e clinicamente (Andre et al., Curr Gene Ther. 2010 10:267-280; Chiarella et al., Curr Gene Ther. 2010 10:281-286; Hojman, Curr Gene Ther. 2010 10:128-138). I dispositivi di elettroporazione sono venduti da molte aziende in tutto il mondo incluso, ma non limitato a BTX® Instruments (Holliston, MA) (ad esempio AgilePulse In Vivo System) e Inovio (Blue Bell, PA) (ad esempio dispositivo intramuscolare Inovio SP-5P o CELLECTRA® 3000 dispositivo di rilascio intradermico). In un caso, i NAV possono essere

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rilasciati mediante elettroporazione come descritto nell'Esempio 9.

Eccipienti

Le formulazioni farmaceutiche di NAV possono inoltre comprendere un eccipiente farmaceuticamente accettabile, che, come utilizzato nel presente contesto, include, ma non è limitato a, qualsiasi e tutti i solventi, mezzi di dispersione, diluenti o altri veicoli liquidi, adiuvanti di dispersione o sospensione, agenti tensioattivi, atenti isotonici, agenti addensanti o emulsionanti, conservanti, leganti solidi, lubrificanti, agenti aromatizzanti, stabilizzanti, antiossidanti, agenti di regolazione dell'osmolalità, agenti di regolazione del pH e simili, a seconda della particolare forma di dosaggio desiderata. Sono noti nella tecnica vari eccipienti per formulare composizioni farmaceutiche e tecniche per preparare la composizione (si veda Remington: The Science and Practice of Pharmacy, 21^ edizione, A. R. Gennaro (Lippincott, Williams & Wilkins, Baltimore, MD, 2006). L'uso di un mezzo eccipiente convenzionale può essere contemplato nell'ambito della presente descrizione, tranne nella misura in cui qualsiasi mezzo eccipiente convenzionale sia incompatibile con una sostanza o suoi derivati, ad esempio producendo effetti biologici indesiderati o interagendo in altro modo in modo deleterio con qualsiasi altro componente/i della composizione farmaceutica, il suo uso è contemplato per rientrare nell'ambito della presente descrizione.

In alcuni casi, un eccipiente farmaceuticamente accettabile può essere puro per almeno il 95%, almeno il 96%, almeno il 97%, almeno il 98%, almeno il 99% o 100%. In alcuni casi, un eccipiente è approvato per l'uso nell'essere umano e per uso veterinario. In alcuni casi, un eccipiente può essere approvato dalla Food and Drug Administration degli Stati Uniti. In alcuni casi, un eccipiente può essere di qualità farmaceutica. In alcuni casi, un eccipiente può soddisfare gli standard della Farmacopea statunitense (USP), della Farmacopea europea (EP), della Farmacopea britannica, e/o la Farmacopea internazionale.

Gli eccipienti farmaceuticamente accettabili utilizzati nella produzione di composizioni

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farmaceutiche includono, ma non sono limitati a, diluenti inerti, agenti disperdenti e/o granulanti, agenti tensioattivi e/o emulsionanti, agenti disgreganti, agenti leganti, conservanti, agenti tampone, agenti lubrificanti e/o oli. Tali eccipienti possono eventualmente essere inclusi in composizioni farmaceutiche. La composizione può anche includere eccipienti come burro di cacao e cere per supposte, agenti coloranti, agenti di rivestimento, agenti dolcificanti, aromatizzanti e/o profumanti.

Diluenti esemplificativi includono, ma non sono limitati a, carbonato di calcio, carbonato di sodio, fosfato di calcio, fosfato dicalcico, solfato di calcio, calcio idrogeno fosfato, sodio fosfato lattosio, saccarosio, cellulosa, cellulosa microcristallina, caolino, mannitolo, sorbitolo, inositolo, cloruro di sodio, amido secco, amido di mais, zucchero a velo, *ecc.,* e/o loro combinazioni.

Esempi di agenti granulanti e/o disperdenti includono, ma non sono limitati a, fecola di patate, amido di mais, amido di tapioca, sodio amido glicolato, argille, acido alginico, gomma di guar, polpa di agrumi, agar, bentonite, cellulosa e prodotti del legno, spugna naturale, resine scambiatrici di cationi, carbonato di calcio, silicati, carbonato di sodio, poli(vinil-pirrolidone) reticolato (crospovidone), sodio carbossimetil amido (sodio amido glicolato), carbossimetilcellulosa, sodio carbossimetilcellulosa reticolato (croscarmellosa), metilcellulosa, amido pregelatinizzato (amido 1500), amido microcristallino, amido insolubile in acqua, calcio carbossimetilcellulosa, magnesio alluminio silicato (VEEGUM®), sodio laurilsolfato, composti di ammonio quaternario, *eccetera,* e/o loro combinazioni.

Esempi di agenti tensioattivi e/o emulsionanti includono, ma non sono limitati a, emulsionanti naturali (ad esempio acacia, agar, acido alginico, alginato di sodio, gomma adragante, condrux, colesterolo, xantano, pectina, gelatina, tuorlo d'uovo, caseina, grasso di lana, colesterolo, cera e lecitina), argille colloidali (ad esempio bentonite [silicato di alluminio] e VEEGUM ® [silicato di magnesio e alluminio]), derivati di amminoacidi a catena lunga, alcoli

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ad alto peso molecolare (ad esempio alcol stearilico, alcol cetilico, alcol oleilico, triacetinamonostearato, etilenglicoledistearato, glicerilmonostearato e propilenglicolemonostearato, alcol polivinilico), carbomeri (ad esempio carbossipolimetilene, acido poliacrilico, polimero di acido acrilico e polimero carbossivinilico), carragenina, derivati della cellulosa (ad esempio idrossimetilcellulosa, idrossipropilcellulosa, idrossipropilmetilcellulosa, metilcellulosa), esteri di acidi grassi del sorbitano (ad esempio monolaurato di poliossietilene sorbitano [TWEEN®20], poliossietilene sorbitano [TWEEN®60], poliossietilene sorbitanomonooleato [TWEEN®80], sorbitanomonopalmitato [SPAN®40], sorbitanomonostearato [SPAN®60], sorbitanotristearato [SPAN®65], glicerilmonooleato [SPAN®80]), esteri di poliossietilene (ad esempio monostearato di poliossietilene [MYRJ®45], olio di ricino idrogenato poliossietilene, olio di ricino polietossilato, stearato di poliossimetilene e SOLUTOL®), esteri di acidi grassi di saccarosio, esteri di acidi grassi di glicole polietilenico (ad esempio CREMOPHOR ®), eteri di poliossietilene, (ad esempio poliossietilene lauril etere [BRIJ®30]), poli(vinil-pirrolidone), dietilenglicolemonolaurato, trietanolammina oleato, sodio oleato, potassio oleato, etil oleato, acido oleico, etillaurato, sodio laurilsolfato, PLUORINC ® F 68, POLOXAMER ® 188, bromuro di cetrimonio, cloruro di cetilpiridinio, cloruro di benzalconio, sodio docusato, eccetera e/o loro combinazioni.

Agenti leganti esemplari includono, ma non sono limitati a, amido (ad esempio amido di mais e pasta di amido); gelatina; zuccheri (ad esempio saccarosio, glucosio, destrosio, destrina, melassa, lattosio, lattitolo, mannitolo); amminoacidi (ad esempio glicina); gomme naturali e sintetiche (ad esempio acacia, alginato di sodio, estratto di muschio irlandese, gomma di panwar, gomma ghatti, mucillagine di bucce di isapol, carbossimetilcellulosa, metilcellulosa, etilcellulosa, idrossietilcellulosa, idrossipropilcellulosa, idrossipropilmetilcellulosa, cellulosa microcristallina, acetato di cellulosa, poli(vinil-pirrolidone), silicato di magnesio e alluminio (VEEGUM®), e arabinogalattano da larice); alginati; polietilenossido; polietilenglicole; sali di

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calcio inorganici; acido silicico; polimetacrilati; cere; acqua; alcol; *eccetera*; e loro combinazioni.

I conservanti esemplificativi possono includere, ma non sono limitati a, antiossidanti, agenti chelanti, conservanti antimicrobici, conservanti antifungini, conservanti alcolici, conservanti acidi e/o altri conservanti. L'ossidazione è una potenziale via di degradazione dell'mRNA, in particolare per le formulazioni liquide di mRNA. Per prevenire l'ossidazione, alla formulazione possono essere aggiunti antiossidanti. Antiossidanti esemplificativi includono, ma non sono limitati a, alfa tocoferolo, acido ascorbico, acorbilpalmitato, alcol benzilico, idrossianisolobutilato, EDTA, m-cresolo, metionina, idrossitoluenebutilato, monotioglicerolo, metabisolfito di potassio, acido propionico, propilgallato, ascorbato di sodio, bisolfito di sodio, metabisolfito di sodio, tioglicerolo e/o solfito di sodio. Agenti chelanti esemplificativi includono acido etilendiamminotetraacetico (EDTA), acido citrico monoidrato, disodioedetato, dipotassioedetato, acido edetico, acido fumarico, acido malico, acido fosforico, sodio edetato, acido tartarico e trisodioedetato. I conservanti antimicrobici esemplificativi includono, ma non sono limitati a, benzalconio cloruro, benzetonio cloruro, alcol benzilico, bronopol, cetrimide, cetilpiridinio cloruro, clorexidina, clorobutanolo, clorocresolo, cloroxilenolo, cresolo, alcol etilico, glicerina, etanolo, esetidina, imidurea, alcol feniletilico, nitrato fenilmercurico, propilenglicole e/o thimerosal. Conservanti antifungini esemplificativi includono, ma non sono limitati a, butilparabene, metilparabene, etilparabene, propilparabene, acido benzoico, acido idrossibenzoico, benzoato di potassio, sorbato di potassio, benzoato di sodio, propionato di sodio e/o acido sorbico. I conservanti di alcol esemplificativi includono, ma non sono limitati a, etanolo, polietilenglicole, fenolo, composti fenolici, bisfenolo, clorobutanolo, idrossibenzoato e/o alcol feniletilico. I conservanti acidi esemplificativi includono, ma non sono limitati a, vitamina A, vitamina C, vitamina E, beta-carotene, acido citrico, acido acetico, acido deidroacetico, acido ascorbico, acido sorbico e/o acido fitico. Altri conservanti includono, ma

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non sono limitati a, tocoferolo, tocoferolo acetato, deterossimamesilato, cetrimide, idrossianisolobutilato (BHA), idrossianisolobutilato (BHT), etilendiammina, sodio lauril solfato (SLS), sodio lauril etere solfato (SLES), sodio bisolfito, metabisolfito di sodio, solfito di potassio, metabisolfito di potassio, GLYDANT PLUS®, PHENONIP®, metilparaben, GERMALL®115, GERMABEN®II, NEOLONE™, KATHON™ e/o EUXYL®.

In alcune forme di realizzazione, il pH delle soluzioni di NAV viene mantenuto tra pH 5 e pH 8 per migliorare la stabilità. Tamponi esemplificativi per controllare il pH possono includere, ma non sono limitati a, sodio fosfato, sodio citrato, sodio succinato, istidina (o istidina-HCl), sodio carbonato e/o sodio malato. In un'altra forma di realizzazione, i tamponi esemplificativi sopra elencati possono essere usati con controioni monovalenti aggiuntivi (incluso, ma non limitato a potassio). I cationi bivalenti possono anche essere usati come controioni tampone; tuttavia, questi non sono preferiti a causa della formazione complessa e/o della degradazione dell'mRNA.

Agenti tamponanti esemplificativi possono anche includere soluzioni tampone a base di citrato, soluzioni tampone a base di acetato, soluzioni tampone a base di fosfato, cloruro di ammonio, carbonato di calcio, cloruro di calcio, citrato di calcio, glubionato di calcio, gluceptato di calcio, gluconato di calcio, acido D-gluconico, glicerofosfato di calcio, lattato di calcio, acido propanoico, levulinato di calcio, acido pentanoico, calcio fosfato dibasico, acido fosforico, calcio fosfato tribasico, calcio idrossido fosfato, acetato di potassio, cloruro di potassio, gluconato di potassio, miscele di potassio, fosfato di potassio dibasico, fosfato di potassio monobasico, miscele di fosfato di potassio, acetato di sodio, bicarbonato di sodio, cloruro di sodio, citrato di sodio, lattato di sodio, fosfato di sodio dibasico, fosfato di sodio monobasico, miscele di fosfato di sodio, trometamina, idrossido di magnesio, idrossido di alluminio, acido alginico, acqua apirogena, soluzione salina isotonica, soluzione di Ringer, alcol etilico, *eccetera,* e loro combinazioni.

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Agenti lubrificanti esemplificativi includono, tuttavia senza limitazioni, magnesio stearato, calcio stearato, acido stearico, silice, talco, malto, glicerilbeenato, oli vegetali idrogenati, polietilenglicole, sodio benzoato, sodio acetato, sodio cloruro, leucina, magnesio lauril solfato, sodio lauril solfato, *eccetera,* e loro combinazioni.

Oli esemplificativi includono, tuttavia senza limitazioni, mandorla, nocciolo di albicocca, avocado, babassu, bergamotto, semi di ribes nero, borragine, cade, camomilla, canola, cumino, carnauba, ricino, cannella, burro di cacao, cocco, fegato di merluzzo, caffè, mais, semi di cotone, emu, eucalipto, enagra, pesce, semi di lino, geraniolo, cucurbitacea, vinacciolo, nocciola, issopo, isopropil miristato, jojoba, olio di noci kukui, lavandino, lavanda, limone, litseacubeba, noce di macadamia, malva, semi di mango, semi di schiuma dei prati, minerale, visone, noce moscata, oliva, arancia, pesce specchio, palma, nocciolo di palma, nocciolo di pesca, arachidi, semi di papavero, semi di zucca, colza, crusca di riso, rosemarino, zafferanone, legno di sandalo, sasquana, savoury, ramno di mare, sesamo, burro di karitè, silicone, soia, girasole, melaleuca, cardo, tsubaki, vetiver, noci, germe di cereale e loro miscele. Oli esemplificativi includono, ma non sono limitati a, butil stearato, trigliceride caprilico, trigliceride caprico, ciclometicone, dietilsebacato, dimeticone 360, isopropil miristato, olio minerale, ottildodecanolo, alcol oleico, olio di silicone e/o loro combinazioni.

Nella composizione possono essere presenti eccipienti come burro di cacao e cere per supposte, agenti coloranti, agenti di rivestimento, agenti dolcificanti, aromatizzanti e di profumazione, secondo il giudizio del formulatore.

Esempi di additivi includono tamponi fisiologicamente biocompatibili (ad esempio trimetilammina cloridrato), l'aggiunta di chelanti (come, ad esempio, DTPA o DTPA-bisamide) o complessi chelati di calcio (come ad esempio DTPA di calcio, CaNaDTPA-bisamide) o, facoltativamente, aggiunte di sali di calcio o di sodio (ad esempio cloruro di calcio, ascorbato di calcio, gluconato di calcio o lattato di calcio). Inoltre, possono essere utilizzati antiossidanti e

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agenti sospensivanti.

Crioprotettori

In alcune forme di realizzazione, le formulazioni di NAV possono comprendere crioprotettori. Come qui utilizzato, il termine "crioprotettore" si riferisce a uno o più agenti che quando combinato con una data sostanza, aiuta a ridurre o eliminare il danno a quella sostanza che si verifica al momento del congelamento. In alcune forme di realizzazione, i crioprotettori sono combinati con i NAV per stabilizzarli durante il congelamento. La conservazione congelata dei NAV tra -20 °C e -80 °C può essere vantaggiosa per la stabilità a lungo termine (ad esempio 36 mesi) del polinucleotide. In alcune forme di realizzazione, i crioprotettori sono inclusi nelle formulazioni di NAV per stabilizzare il polinucleotide attraverso cicli di congelamento/scongelamento e in condizioni di conservazione congelata. I crioprotettori della presente invenzione possono includere, ma non sono limitati a, saccarosio, trealosio, lattosio, glicerolo, destrosio, raffinosio e/o mannitolo. Il trealosio è elencato dalla Food and Drug Administration come generalmente considerato sicuro per la salute (GRAS) ed è comunemente usato nelle formulazioni farmaceutiche commerciali.

Agenti di carica

In alcune forme di realizzazione, le formulazioni di NAV possono comprendere agenti di carica. Come usato qui, il termine "agente di carica" si riferisce a uno o più agenti inclusi nelle formulazioni per conferire una consistenza desiderata alla formulazione e/o stabilizzazione dei componenti della formulazione. In alcune forme di realizzazione, agenti di carica sono inclusi in formulazioni di NAV liofilizzate per produrre un panello "farmaceuticamente elegante", stabilizzando i NAV liofilizzati durante la conservazione a lungo termine (ad esempio 36 mesi). Gli agenti di carica della presente invenzione possono includere, ma non sono limitati a, saccarosio, trealosio, mannitolo, glicina, lattosio e/o raffinosio. In alcune forme di realizzazione, combinazioni di crioprotettori e agenti di carica (ad esempio, saccarosio/glicina o

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trealosio/mannitolo) possono essere incluse sia per stabilizzare i NAV durante il congelamento sia per fornire un agente di carica per la liofilizzazione.

Sono inoltre forniti esempi non limitativi di formulazioni e metodi per formulare i NAV della presente invenzione nella pubblicazione internazionale n. WO2013090648 depositata il 14 dicembre 2012.

Ingredienti inattivi

In alcune forme di realizzazione, le formulazioni di NAV possono comprendere almeno un eccipiente che è un ingrediente inattivo. Come qui utilizzato, il termine "ingrediente inattivo" si riferisce a uno o più agenti inattivi inclusi nelle formulazioni. In alcune forme di realizzazione, tutti, nessuno o alcuni degli ingredienti inattivi che possono essere utilizzati nelle formulazioni della presente invenzione possono essere approvati dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo degli ingredienti inattivi e le vie di somministrazione in cui possono essere formulati gli ingredienti inattivi sono descritti nella Tabella 26. Nella Tabella 26, "AN" significa anestetico, "CNBLK" significa blocco del nervo cervicale, "NBLK" significa blocco nervoso, "EV" significa endovenoso, "IM" significa intramuscolare e "SC" significa sottocutaneo

Tabella 26. Ingredienti inattivi

Ingrediente inattivo	**Via di somministrazione**
Alfa-terpineolo	Topica
Alfa-tocoferolo	Endovenosa; topica
Acetato di alfa-tocoferolo, Dl-	Topica
Alfa-tocoferolo, Dl-	Endovenosa; topica
1,2,6-esantriolo	Topica
1,2-Dimiristoil-Sn-Glicero-3-(Fosfo-S-(1-Glicerolo))	Endovenosa; infusione (EV)
1,2-Dimiristoil-Sn-Glicero-3-Fosfocolina	Endovenosa; infusione (EV)
1,2-Dioleoil-Sn-Glicero-3-Fosfocolina	Epidurale
1,2-Dipalmitoil-Sn-Glicero-3-(Fosfo-Rac-(1-Glicerolo))	Epidurale

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Ingrediente inattivo	Via di somministrazione
1,2-Distearoil-Sn-Glicero-3-(Fosfo-Rac-(1-Glicerolo))	Endovenosa
1,2-Distearoil-Sn-Glicero-3-Fosfocolina	Endovenosa
1-O-Tolilbiguanide	Topica
2-etil-1,6-esandiolo	Topica
Acido acetico	Infiltrazione; auricolare (otica); extracorporea; intramuscolare; endovenosa; sottocutanea; intraarticolare; intralesionale; intramuscolare; intrasinoviale; intratracheale; endovenosa; irrigazione; infusione (EV); nasale; blocco nervoso; oftalmica; fotoferesi; tessuto molle; sottomucosale; topica
Acido acetico, glaciale	Endovenosa; infusione (EV); sottocutanea
Anidride acetica	Endovenosa
Acetone	Impianto; topica
Acetone Bisolfito di sodio	Intratecale (AN,CNBLK); infiltrazione (AN); dentale; inalazione; blocco nervoso
Alcoli lanolinici acetilati	Topica
Monogliceridi acetilati	Endovenosa
Acetilcisteina	Inalazione
Acetiltriptofano, DL-	Endovenosa
Copolimero di acrilati	Topica; transdermica
Copolimero acido acrilico-isoottil acrilato	Transdermica
Adesivo acrilico 788	Transdermica
Carbone attivo	Intramuscolare; endovenosa; irrigazione; infusione (EV)
Adcote 72A103	Transdermica
Nastro adesivo	Topica
Acido adipico	Intramuscolare; vaginale
Resina Aerotex 3730	Transdermica
Alanina	Infusione (EV)
Albumina aggregata	Endovenosa
Albumina colloidale	Endovenosa
Albumina umana	Endovenosa; infusione (EV); sottocutanea

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Ingrediente inattivo	Via di somministrazione
Alcol	Dentale; intramuscolare; endovenosa; sottocutanea; inalazione; intravascolare; infusione (EV); oftalmica; rettale; respiratoria (inalazione); topica; transdermica
Alcol, disidratato	Dentale; extracorporea; intramuscolare; endovenosa; sottocutanea; inalazione; intracavitaria; intravascolare; intravescicale; nasale, oftalmica; fotoferesi, rettale; respiratoria (inalazione); sublinguale; topica; transdermica
Alcol, Denaturato	Denatale; endovenosa; topica; vaginale
Alcol, diluito	Intramuscolare; endovenosa; topica
Alfadex	Intracavitaria
Acido alginico	Oftalmica
Acido alchil ammonio solfonico betaina	Topica
Alchilaril solfonato di sodio	Topica
Allantoina	Topica; vaginale
Allil .Alfa.-Ionone	Nasale
Olio di mandorle	Topica
Acetato di alluminio	Auricolare (otica); topica
Cloridrossiallantoinato di alluminio	Topica
Idrossido di alluminio	Topica
Idrossido di alluminio - saccarosio, idratato	Topica
Gel di idrossido di alluminio	Topica
Gel di idrossido di alluminio F 500	Topica
Gel di idrossido di alluminio F 5000	Topica
Monostearato di alluminio	Topica
Ossido di alluminio	Topica
Poliestere alluminio	Transdermica
Silicato di alluminio	Topica
Ottenilsuccinato di amido di alluminio	Topica
Stearato di alluminio	Topica
Subacetato di alluminio	Rettale

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Ingrediente inattivo	Via di somministrazione
Solfato di alluminio anidro	Auricolare (otica); topica
Amerchol C	Topica
Amerchol-Cab	Oftalmica; topica
Amminometilpropanolo	Topica
Ammoniaca	Inalazione
Soluzione di ammoniaca	Topica
Soluzione di ammoniaca, forte	Topica
Acetato di ammonio	Intramuscolare; endovenosa; infusione (EV)
Idrossido d'ammonio	Endovenosa; oftalmica; sottocutanea; topica
Ammonio lauril solfato	Topica
Solfato di ammonio nonoxynol-4	Topica
Sale di ammonio di alcol primario lineare C-12-C-15 etossilato	Topica
Ammonio solfato	Endovenosa
Ammonyx	Topica
Anfotero-2	Topica
Anfotero-9	Topica
Anetolo	Dentale
Acido citrico anidro	Endovenosa; infusione (EV); rettale; topica
Destrosio anidro	Intramuscolare; endovenosa; sottocutanea; infusione (EV); nasale; spinale
Lattosio anidro	Intramuscolare; endovenosa; intracavitaria; endovenosa; infusione (EV); vaginale
Citrato trisodico anidro	Intramuscolare; endovenosa; intra-arteriosa; intraarticolare; intrabursale; infusione (EV); nasale; oftalmica; tessuto molle; topica
Olio di anice	Rettale
AnossidoSbn	Topica
Antischiuma	Topica
Antipirina	Oftalmica

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Ingrediente inattivo	Via di somministrazione
Apaflurano	Respiratoria (inalazione)
Esteri di Peg-6 dell'olio di nocciolo di albicocca	Topica; vaginale
Aquaphor	Topica
Arginina	Intramuscolare; endovenosa; infusione (EV)
Arlacel	Topica
Acido ascorbico	Infiltrazione (AN); blocco caudale; epidurale; intramuscolare; endovenosa; inalazione; infusione (EV); blocco nervoso; rettale; sottocutanea; topica
Ascorbile palmitato	Rettale; topica
Acido aspartico	Infusione (EV)
Balsamo del Perù	Rettale
Solfato di bario	Intrauterina; vaginale
Cera d'api	Topica; vaginale
Cera d'api, sintetica	Topica
Beheneth-10	Topica
Bentonite	Topica; transdermica; vaginale
Benzalconio cloruro	Auricolare (otica); inalazione; intra-articolare; intrabursale; intradermica; intralesionale; intramuscolare; intraoculare; nasale; oftalmica; respiratoria (inalazione); topica
Acido benzensolfonico	Endovenosa; infusione (EV)
Benzetonio cloruro	Auricolare (otica); intramuscolare; endovenosa; infusione (EV); nasale; oftalmica
Benzododecinio bromuro	Oftalmica
Acido benzoico	Intramuscolare; endovenosa; irrigazione; infusione (EV); rettale; topica; vaginale
Alcol benzilico	Infiltrazione (AN); auricolare (otica); dentale; epidurale; extracorporea; interstiziale; intra-arteriosa; intra-articolare; intrabursale; intracavitaria; intradermica; intralesionale; intramuscolare; intraperitoneale; intrapleurica; intrasinoviale; intratecale;

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Ingrediente inattivo	Via di somministrazione
	intratracheale; intratumorale; endovenosa; infusione(EV); nasale; blocco nervoso; rettale; tessuto molle; sottocongiuntivale; sottocutanea; topica; ureterale; vaginale
Benzilbenzoato	Intramuscolare
Benzilcloruro	Endovenosa
Betadex	Topica
Bibapcitide	Endovenosa
Subgallato di bismuto	Rettale
Acido borico	Auricolare (otica); endovenosa; oftalmica; topica
Brocrinat	Infusione (EV)
Butano	Topica
Alcol butilico	Topica
Estere butilico del copolimero vinilmetiletere/anidride maleica (125000 Mw)	Topica
Butile stearato	Topica
Idrossianisolobutilato	Intramuscolare; infusione (EV); nasale; rettale; topica; vaginale
Idrossitoluenebutilato	Intramuscolare; endovenosa; infusione (EV); nasale; rettale; topica; transdermica; vaginale
Butilenglicole	Topica; transdermica
Butilparabene	Intramuscolare; rettale; topica
Acido butirrico	Transdermica
C20-40 Pareth-24	Topica
Caffeina	Nasale; oftalmica
Calcio	Intramuscolare
Carbonato di calcio	Auricolare (otica); respiratoria (inalazione)
Cloruro di calcio	Infiltrazione (AN); blocco caudale; epidurale; intramuscolare; endovenosa; intraoculare; intraperitoneale; intravascolare; intravitreale; blocco nervoso; oftalmica; sottocutanea; topica
Gluceptato di calcio	Endovenosa

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Ingrediente inattivo	Via di somministrazione
Idrossido di calcio	Endovenosa; sottocutanea; topica
Lattato di calcio	Vaginale
Calcobutrolo	Endovenosa
Sodio caldiammide	Endovenosa
Caloxetatotrisodio	Endovenosa
Calteridolo calcico	Endovenosa
Balsamo canadese	Topica
Trigliceride caprilico/caprico	Topica; transdermica
Trigliceride caprilico/caprico/stearico	Topica
Captano	Topica
Captisolo	Endovenosa
Caramello	Rettale; topica
Carbomero 1342	Oftalmica; topica; transdermica
Carbomero 1382	Topica
Carbomero 934	Rettale; topica; vaginale
Carbomer 934p	Oftalmica; rettale; topica; vaginale
Carbomero 940	Oftalmica; topica; transdermica
Carbomero 941	Topica
Carbomero 980	Topica; transdermica
Carbomero 981	Topica
Carbomeromopolimero di tipo B (allilpentaeritritolo reticolato)	Oftalmica; topica
Carbomeromopolimero di tipo C (allilpentaeritritolo reticolato)	Topica
Anidride carbonica	Infiltrazione (AN); intramuscolare (IM); infusione (EV); inalazione; intra-arterioso; intracardiaca; intratecale; intravascolare; endovenosa
Copolimero carbossivinilico	Topica
Carbossimetilcellulosa	Intraarticolare; intrabursale; intralesionale; intramuscolare; tessuto molle; topica
Carbossimetilcellulosa sodica	Dentale; intraarticolare; intrabursale; intradermica; intramuscolare; intrasinoviale; intratracheale; nasale;

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Ingrediente inattivo	Via di somministrazione
	oftalmica; tessuto molle; sottocutanea; topica
Carbossipolimetilene	Rettale; topica
Carragenina	Dentale; topica; transdermica
Sale di Carragenina	Topica
Olio di ricino	Intramuscolare; oftalmica; topica
Olio di foglie di cedro	Topica
Cellulosa	Topica
Cellulosa, microcristallina	Intraarticolare; intramuscolare; endovenosa; intravitreale; nasale; vaginale
Cerasint-Se	Rettale; topica
Ceresina	Topica
Ceteareth-12	Topica
Ceteareth-15	Topica
Ceteareth-30	Topica
Alcol cetearilico/Ceteareth-20	Topica
Ceteariletilesanoato	Topica
Ceteth-10	Topica
Ceteth-2	Topica
Ceteth-20	Topica; vaginale
Ceteth-23	Topica
Alcol cetostearilico	Topica; vaginale
Cloruro di cetrimonio	Topica
Alcol cetilico	Auricolare (otica); oftalmica; rettale; topica; vaginale
Cera di esteri cetilici	Topica; vaginale
Cetil palmitato	Topica; vaginale
Cloruro di cetilpiridinio	Inalazione; ionoforesi; transdermica
Clorobutanolo	Infiltrazione (AN); auricolare (otica); intramuscolare (IM); infusione (EV); sottocutanea (SC); inalazione; endovenosa; nasale; blocco nervoso; oftalmica; topica
Clorobutanolo emiidrato	Intramuscolare; endovenosa

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Ingrediente inattivo	**Via di somministrazione**
Clorobutanolo, anidro	Intramuscolare; endovenosa; oftalmica
Clorocresolo	Topica
Clorossilenolo	Auricolare (otica); topica
Colesterolo	Epidurale; infiltrazione; endovenosa; oftalmica; topica; vaginale
Choleth	Vaginale
Choleth-24	Topica
Citrato	Endovenosa
Acido citrico	Intratecale (AN,CNBLK); infiltrazione (AN); auricolare (otica); blocco caudale; epidurale; intramuscolare (IM); infusione (EV); sottocutanea (SC); infiltrazione; inalazione; intra-amniotica; intra-arterioso; intraarticolare; intrabursale; intracardiaca; intralesionale; intrapleurico; intrasinoviale; intratecale; intravascolare; endovenosa; ionoforesi; nasale; blocco nervoso; oftalmica; peridurale; tessuto molle; topica; transdermica; vaginale
Acido citrico monoidrato	Infiltrazione (AN); intramuscolare (IM); infusione (EV); sottocutanea (SC); intracardiaca; intra oculare; endovenosa; nasale; blocco nervoso; oftalmica; topica; vaginale
Acido citrico, idrato	Intramuscolare (IM); infusione (EV); sottocutanea (SC); endovenosa
Cocamide etere solfato	Topica
Ossido di cocamina	Topica
Cocco Betaina	Topica
Coco Dietanolammide	Topica
Coco Monoetanolammide	Topica
Burro di cacao	Rettale; topica
Coco-gliceridi	Topica
Olio di cocco	Topica
Olio di cocco, idrogenato	Rettale
Gliceridi di olio di cocco/olio di noce di palma, idrogenati	Rettale; vaginale

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Ingrediente inattivo	Via di somministrazione
CocoilCaprilocaprato	Topica
Estratto di semi di Cola Nitida	Rettale
Collagene	Topica
Sospensione colorante	Topica
Olio di mais	Intramuscolare
Olio di semi di cotone	Intramuscolare
Base Crema	Topica
Creatina	Intraarticolare; intralesionale; intramuscolare
Creatinina	Auricolare (otica); intramuscolare (IM); infusione (EV); sottocutanea (SC); intraarticolare; intrabursale; intradermica; intralesionale; intrasinoviale; oftalmica; tessuto molle; topica
Cresolo	Sottocutanea
Croscaramellosa sodica	Intramuscolare
Crospovidone	Impianto; intra-articolare; intramuscolare; intrauterina; topica; transdermica; vaginale
Solfato rameico	Auricolare (otica)
Solfato rameico anidro	Auricolare (otica)
Ciclometicone	Topica
Ciclometicone/DimeticoneCopoliolo	Topica
Cisteina	Intramuscolare (IM); sottocutanea (SC); endovenosa; infusione (EV)
Cisteina cloridrato	Endovenosa; infusione (EV)
Cisteina cloridrato anidra	Intradiscale
Cisteina, Dl-	Intradiscale
D&C Red No. 28	Topica
D&C Red No. 33	Topica
D&C Red No. 36	Topica
D&C Red No. 39	Topica
D&C Yellow n. 10	Dentale; inalazione; rettale; topica
Dalfampridina	Endovenosa
Daubert 1-5 Pestr (Matte) 164z	Transdermica

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Ingrediente inattivo	Via di somministrazione
Decilmetilsolfossido	Topica
Dehydag Cera Sx	Topica
Acido deidroacetico	Topica
Dehymuls E	Topica
Benzoato di denatonio	Topica
Acido desossicolico	Infusione (EV)
Destrano	Endovenosa
Destrano 40	Endovenosa
Destrina	Topica
Destrosio	Intramuscolare (IM); infusione (EV); sottocutanea (SC); interstiziale; intracavitaria; intraperitoneale; intrapleurica; intraspinale; endovenosa; nasale; spinale
Destrosio monoidrato	Endovenosa
Soluzione di destrosio	Endovenosa; infusione (EV)
Acido Diatrizoico	Intra-arteriosa; intraarticolare; intracardiaca; intradiscale; intramuscolare; intrauterina; intravascolare; endovenosa; infusione (EV); periarticolare; sottocutanea; ureterale; uretrale
Diazolidinil urea	Topica
Alcol diclorobenzilico	Topica
Diclorodifluorometano	Inalazione; intrapleurica; nasale; rettale; topica
Diclorotetrafluoroetano	Inalazione; nasale; rettale; topica
Dietanolammina	Infusione (EV); oftalmica; topica
Dietilpirocarbonato	Inflitrazione
Dietilsebacato	Topica
Dietilenglicolemonoetiletere	Topica; transdermica
Dietilesilftalato	Oftalmico; transdermica
Diidrossialluminioamminoacetato	Topica
Diisopropanolamina	Topica
Adipato di diisopropile	Topica

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Ingrediente inattivo	Via di somministrazione
Diisopropildilinoleato	Topica
Dimeticone 350	Topica
Dimeticonecopoliolo	Topica; transermica
Dimeticone Mdx4-4210	Transdermica
Dimeticone fluido medico 360	Dentale; endovenosa; topica; transdermica
Dimetilisosorbide	Topica
Dimetilsolfossido	Infusione (EV); sottocutanea; topica
Dimetilamminoetil metacrilato - butil metacrilato - copolimero di metil metacrilato	Transdermica
Bentonite di dimetildiottadecilammonio	Rettale
Copolimero dimetilsilossano/metilvinilsilossano	Impianto; intrauterina
Dinoseb sale di ammonio	Topica
Dipalmitoilfosfatidilglicerolo, Dl-	Inflitrazione
Dipropilenglicole	Transdermica
Cocoamfodiacetato disodico	Topica
LaurethSolfosuccinato disodico	Topica
Disodiolaurilsolfosuccinato	Topica
Solfosalicilato disodico	Topica
Disofenina	Topica
Copolimero stirene divinilbenzene	Oftalmica
Dmdm idantoina	Topica
Docosanolo	Topica
Docusato di sodio	Intramuscolare; topica
Duro-Tak 280-2516	Transdermica
Duro-Tak 387-2516	Transdermica
Duro-Tak 80-1196	Transdermica
Duro-Tak 87-2070	Transdermica
Duro-Tak 87-2194	Transdermica
Duro-Tak 87-2287	Percutanea; transdermica
Duro-Tak 87-2296	Transdermica
Duro-Tak 87-2888	Transdermica
Duro-Tak 87-2979	Transdermica

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Ingrediente inattivo	Via di somministrazione
Calcio disodioedetato	Infiltrazione (AN); blocco caudale; epidurale; intramuscolare (IM); infusione (EV); intraarticolare; intra-arteriosa; intracardiaca; intradiscale; intraperitoneale; intratecale; intrauterina; intravascolare; endovenosa; intravescicale; blocco nervoso; periarticolare; rettale; sottocutaneo; ureterale; uretrale
Edetato disodico	Infiltrazione (AN), auricolare (otica); blocco caudale; epidurale; intramuscolare (IM); infusione (EV); sottocutanea (SC); inalazione; intra-arterioso; intraarticolare; intrabursale; intracardiaco; intradermico; intradiscale; intralesionale; intrasinoviale; intrauterina; intravascolare; endovenosa; ionoforesi; nasale; blocco nervoso; oftalmica; rettale; respiratoria (inalazione); tessuto molle; topica; transdermica; ureterale; uretrale; vaginale
Disodioedetato anidro	Intra-amniotica; intramuscolare; endovenosa; infusione (EV); oftalmico
Sodio Edetato	Intramuscolare (IM); infusione (EV); sottocutanea (SC); inalazione; oftalmica; topica
Acido edetico	Auricolare (otica); rettale; sottomucosale; topica
Fosfolipidi d'uovo	Endovenosa; infusione (EV)
Entsufon	Topica
Entsufon di sodio	Topica
Epilattosio	Rettale
Epitetraciclina cloridrato	Topica
Bouquet di essenze 9200	Topica
Etanolammina cloridrato	Endovenosa
Etilacetato	Intramuscolare; topica; transdermica
Oleato di etile	Transdermica
Etilcellulose	Topica; transdermica; vaginale
Etilenglicole	Topica
Copolimero di etilene vinilacetato	Impianto; intrauerina; oftalmica;

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Ingrediente inattivo	Via di somministrazione
	parodontale; sottocutanea; transdermica
Etilendiammina	Endovenosa; infusione (EV); rettale; topica
Etilendiamminadicloridrato	Topica
Copolimero etilene-propilene	Transdermica
Copolimero etilene-vinilacetato (28% vinilacetato)	Vaginale
Copolimero etilene-vinilacetato (9% vinilacetato)	Vaginale
Etilesilidrossistearato	Topica
Etilparabene	Topica
Eucaliptolo	Dentale
Exametazima	Endovenosa
Grasso, commestibile	Rettale
Grasso, duro	Rettale
Esteri di acidi grassi	Transdermica
Estere di pentaeritriolo di acido grasso	Topica
Acidi grassi	Topica
Citrato di alcol grasso	Topica
Alcoli grassi	Vaginale
Fd&C Blue No. 1	Dentale; rettale; topica
Fd&C Green No. 3	Dentale; rettale
Fd&C Red No. 4	Topica
Fd&C Red No. 40	Topica
Fd&C Yellow No. 10 (cancellato)	Topica
Fd&C Yellow No. 5	Topica; vaginale
Fd&C Yellow No. 6	Inalazione; rettale; topica
Cloruro ferrico	Endovenosa
Ossido Ferrico	Topica
Aroma 89-186	Dentale
Aroma 89-259	Dentale
Aroma Df-119	Dentale
Aroma Df-1530	Dentale
Esaltatore di sapidità	Dentale

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Ingrediente inattivo	Via di somministrazione
Aroma Fig 827118	Rettale
Aroma Lampone Pfc-8407	Rettale
Aroma RhodiaPharmaceutical No. Rf 451	Topica
Fluorocloroidrocarburi	Inalazione
Formaldeide	Topica
Soluzione di formaldeide	Topica
Olio di cocco frazionato	Topica
Fragranza 3949-5	Topica
Fragranza 520a	Topica
Fragranza 6.007	Topica
Fragranza 91-122	Topica
Fragranza 9128-Y	Topica
Fragranza 93498g	Topica
Fragranza di pino balsamico n. 5124	Topica
Profumo Bouquet 10328	Topica
Fragranza Chemoderm 6401-B	Topica
Fragranza Chemoderm 6411	Topica
Fragranza crema n. 73457	Topica
Fragranza Cs-28197	Topica
Fragranza Felton 066m	Topica
Fragranza Firmenich 47373	Topica
Fragranza Givaudan Ess 9090/lc	Topica
Fragranza H-6540	Topica
Fragranza alle erbe 10396	Topica
Fragranza Nj-1085	Topica
Fragranza P O Fl-147	Topica
Fragranza Pa 52805	Topica
Fragranza Pera Derm D	Topica
Fragranza Rbd-9819	Topica
Fragranza Shaw Mudge U-7776	Topica
Fragranza Tf 044078	Topica

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Ingrediente inattivo	Via di somministrazione
Fragranza Ungerer Caprifoglio K 2771	Topica
Fragranza Ungerer N5195	Topica
Fruttosio	Infusione (EV); rettale
Ossido di gadolinio	Endovenosa
Galattosio	Rettale
Ciclodestrina gamma	Endovenosa
Gelatina	Dentale; intramuscolare (IM); infusione (EV); sottocutanea (SC); endovenosa; respiratoria (inalazione); topica; vaginale
Gelatina, reticolato	Dentale
Spugna in schiuma di gel	N/a
Gomma di gellano (Basso Acile)	Oftalmica
Gelva 737	Transdermica
Acido gentisico	Endovenosa
Etanolamide dell'acido Gentisico	Infusione (EV)
Gluceptato di sodio	Endovenosa
Gluceptato di sodio diidrato	Endovenosa
Gluconolattone	Intramuscolare (IM); infusione (EV); endovenosa; topica
Acido glucuronico	Endovenosa
Acido glutammico, Dl-	Vaginale
Glutatione	Intramuscolare
Glicerina	Auricolare (otica); dentale; intramuscolare; infusione (EV); sottocutanea (SC); inalazione; intradermica; endovenosa; ionoforesi; nasale; oftalmica; perfusione; biliare; rettale; topica; transdermica; vaginale
Estere di glicerolo di colofonia idrogenata	Nasale
Citrato di glicerile	Topica
Isostearato di glicerile	Topica; vaginale
Glicerillaurato	Transdermica
Glicerilmonostearato	Topica; vaginale
Gliceril oleato	Topica; transdermica

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Ingrediente inattivo	Via di somministrazione
Gliceril oleato/propilenglicole	Topica
Palmitato di glicerile	Rettale; topica
Glicerilricinoleato	Topica
Glicerilstearato	Auricolare (otica); dentale; oftalmica; rettale; topica; vaginale
Stearato di glicerile - Laureth-23	Topica
Glicerilstearato/Peg stearato	Rettale
Glicerilstearato/Peg-100 stearato	Topica
Glicerilstearato/Peg-40 stearato	Rettale
Gliceril stearato-stearamidoetildietilammina	Topica
Trioleato di glicerile	Epidurale
Glicina	Intramuscolare (IM); infusione (EV); sottocutanea (SC); endovenosa; rettale; respiratoria (inalazione)
Glicina cloridrato	Sottocutanea
Distearato di glicole	Topica
Stearato di glicole	Topica
Guanidina cloridrato	Endovenosa
Gomma guar	Topica; vaginale
Balsamo per capelli (18n195-1m)	Topica
Eptano	Transdermica
Etaamido	Endovenosa
Esilenglicole	Topica
Polietilene ad alta densità	Dentale; intrauterina; oftalmica; topica; transdermica; vaginale
Istidina	Endovenosa; infusione (EV); sottocutanea
Microsfere di albumina umana	Endovenosa
Sodio ialuronato	Intraarticolare; intramuscolare; intravitreale; topica
Idrocarburo	Rettale
Gel di idrocarburi, plastificato	Dentale; oftalmica; topica
Acido cloridrico	Intratecale (AN, CNBLK); infiltrazione (AN); simpatica (AN, NBLK); auricolare (otica); blocco caudale; dentale;

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Ingrediente inattivo	Via di somministrazione
	diagnostica; epidurale; extracorporea; intramuscolare (IM); infusione (EV); sottocutanea (SC); infiltrazione; inalazioni; interstiziale; intra-amniotica; intra-arteriosa; intraarticolare; intrabursale; intracardiaca; intracaudale; intracavitaria; intradermica; intralesionale; intra oculare; intraperitoneale; intrapleurica; intraspinale; intrasinoviale; intratecale; intratracheale; intratumorale; intravascolare; endovenosa; intravescicale; intravitreale; ionoforesi; irrigazione; nasale; blocco nervoso, oftalmica; parenterale; perfusione, cardiaca; peridurale; perineurale; parodontale; pettorale; respiratoria (inalazione); retrobulbare; tessuto molle; spinale; subaracnoidea; sottocongiuntivale; sottocutanea; topica; transdermica; ureterale; uretrale
Acido cloridrico, diluito	Infiltrazione (AN); intramuscolare (IM); infusione (EV); sottocutanea (SC); inalazione; intra-arterioso; intravascolare; endovenosa; blocco nervoso; oftalmica; topica
Idrocortisone	Auricolare (otica)
Polimero di idrogel	Vaginale
Perossido di idrogeno	Topica
Olio di ricino idrogenato	Topica
Olio di palma idrogenato	Rettale; vaginale
Esteri idrogenati di peg-6 di olio di palma/noce di palma	Topica
Polibutene idrogenato 635-690	Transdermica
Ione idrossido	Intramuscolare; infusione (EV)
Idrossietilcellulosa	Auricolare (otica); oftalmica; topica ;transdermica
Idrossietilpiperazina acido etansolfonico	Endovenosa
Idrossimetilcellulosa	Topica
Idrossiottacosanilidrossistearato	Topica

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Ingrediente inattivo	Via di somministrazione
Idrossipropilcellulosa	Topica
Idrossipropilmetilcellulosa 2906	Oftalmica
Idrossipropil-Bciclodestrina	Endovenosa; infusione (EV)
Ipromellosa 2208 (15000 Mpa.S)	Vaginale
Ipromellosa 2910 (15000 Mpa.S)	Nasale; oftalmica
Ipromellose	Irrigazione; oftalmica; rettale; topica; vaginale
Imidurea	Topica
Iodio	Intra-arteriosa; intraarticolare; intracardiaca; intradiscale; intravascolare; endovenosa; periarticolare
Acido iodossamico	Endovenosa
Iofetamina cloridrato	Endovenosa
Estratto di muschio irlandese	Topica
Isobutano	Topica
Isoceteth-20	Topica
Isoleucina	Infusione (EV)
Isoottil acrilato	Topica
Alcol isopropilico	Endovenosa; topica
Isopropilisostearato	Topica
Miristato isopropilico	Auricolare (otica); topica; transdermica; vaginale
Miristato isopropilico - alcol miristilico	Topica
Isopropilpalmitato	Topica; transdermica
Stearato isopropilico	Topica
Acido isostearico	Topica
Alcol isostearilico	Topica
Soluzione isotonica di cloruro di sodio	Epidurale; intratracheale; endovenosa; infusione (EV)
Jelene	Oftalmica; topica
Caolino	Topica
Kathon Cg	Topica
Kathon Cg II	Topica

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Ingrediente inattivo	Via di somministrazione
Lattato	Topica
Acido lattico	Infiltrazione (AN); auricolare (otica); intramuscolare (IM); infusione (EV); sottocutanea (SC); intracardiaca; endovenosa; blocco nervoso; topica; vaginale
Acido lattico, Dl-	Intramuscolare (IM); infusione (EV); endovenosa; topica; vaginale
Acido lattico, L-	Endovenosa; sottocutanea
Acido lattobionico	Endovenosa; infusione (EV)
Lattosio	Intramuscolare (IM); infusione (EV); sottocutanea (SC); inalazione; intracavitaria; endovenosa; rettale; transdermica; vaginale
Lattosio monoidrato	Intramuscolare (IM); infusione (EV); sottocutanea (SC); intracavitaria; endovenosa; respiratoria (inalazione); vaginale
Lattosio, idrato	Intramuscolare (IM); infusione (EV); endovenosa; vaginale
Laneth	Topica
Lanolina	Oftalmica; rettale; topica; vaginale
Alcol di lanolina - Olio minerale	Topica
Alcoli di lanolina	Oftalmica; topica
Lanolina anidra	Oftalmica; topica; transdermica; vaginale
Colesteroli di lanolina	Topica
Derivati non ionici della lanolina	Oftalmica
Lanolina, etossilata	Topica
Lanolina, idrogenata	Topica
Cloruro di Lauralconio	Oftalmica
Ossido di Lauramina	Topica
Collagene animale idrolizzato di laurdiammonio	Topica
Laureth Solfato	Topica
Laureth-2	Topica
Laureth-23	Topica

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Ingrediente inattivo	Via di somministrazione
Laureth-4	Topica
Dietanolammide laurica	Topica
Dietanolammide miristica laurica	Topica
LauroilSarcosina	Oftalmica
Lauril lattato	Transdermica
Laurilsolfato	Topica
Top fiorito di Lavandula Angustifolia	Topica
Lecitina	Inalazione; intramuscolare; rettale; topica; transdermica; vaginale
Lecitina non sbiancata	Topica
Lecitina, Uovo	Endovenosa
Lecitina, idrogenata	Auricolare (otica)
Lecitina, Soia Idrogenata	Inalazione; endovenosa
Lecitina, Soia	Inalazione; vaginale
Olio di limone	Topica
Leucina	Infusione (EV)
Acido levulinico	Transdermica
Lidofenina	Endovenosa
Olio minerale leggero	Oftalmica; rettale; topica; vaginale; transdermica
Olio minerale leggero (85 Ssu)	Topica
Limonene, (+/-)-	Topica
Lipocol Sc-15	Topica
Lisina	Intramuscolare (IM); infusione (EV)
Acetato di lisina	Infusione (EV)
Lisina Monoidrato	Respiratoria (inalazione)
Silicato di magnesio-alluminio	Rettale; topica; vaginale
Silicato di magnesio-alluminio idrato	Rettale; topica; vaginale
Cloruro di magnesio	Intramuscolare; intraoculare; intraperitoneale; intravitreale; infusione (EV); oftalmica; sottocutanea
Nitrato di magnesio	Topica
Stearato di magnesio	Impianto; intravitreale; sottocutanea;

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Ingrediente inattivo	Via di somministrazione
	topica; transmucosale; vaginale
Acido maleico	Intramuscolare; infusione (EV)
Mannitolo	Intramuscolare (IM); infusione (EV); sottocutanea (SC); endovenosa; oftalmica; parenterale; respiratoria (inalazione); sottomucosale; topica; transdermica
Maprofix	Topica
Mebrofenina	Endovenosa
Adesivo medico modificato S-15	Transdermica
Emulsione medica antiforme A-F	Topica
Medronatodisodio	Endovenosa
Acido medronico	Endovenosa
Meglumina	Intra-arteriosa; intraarticolare; intracardiaca; intradiscale; intramuscolare; intrauterina; intravascolare; endovenosa; infusione (EV); periarticolare; ureterale; uretrale
Mentolo	Dentale; inalazione; topica
Metacresolo	Intramuscolare (IM); infusione (EV); sottocutanea (SC); intradermica
Acido metafosforico	Infusione (EV)
Acido metansolfonico	Intramuscolare (IM); infusione (EV); sottocutanea (SC)
Metionina	Intramuscolare; intratecale; endovenosa; infusione (EV); sottocutanea
Alcol metilico	Transdermica
Metil Gluceth-10	Topica
Metil Gluceth-20	Topica
Metil Gluceth-20 Sesquistearato	Topica
Metil glucosio sesquistearato	Topica
Metillaurato	Transdermica
Metile pirrolidone	Parodontale; sottocutanea
Metil salicilato	Topica
Stearato di metile	Topica; vaginale
Acido metilboronico	Endovenosa

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Ingrediente inattivo	Via di somministrazione
Metilcellulosa (4000 Mpa.S)	Oftalmica
Metilcellulosa	Intraarticolare; intralesionale; intramuscolare; intrasinoviale; nasale; oftalmica; tessuto molle; topica
Metilcloroisotiazolinone	Topica
Blu di metilene	Endovenosa
Metilisotiazolinone	Topica
Metilparabene	Infiltrazione (AN); auricolare (otica); blocco caudale; epidurale; intramuscolare (IM); infusione (EV); sottocutanea (SC); inalazione; intra-arteriosa; intraarticolare; intrabursale; intradermica; intralesionale; intrasinoviale; endovenosa; ionoforesi; irrigazione; nasale; blocco nervoso; oftalmico; peridurale; rettale; tessuto molle; topica; ureterale; uretrale; vaginale
Cera microcristallina	Topica; vaginale
Olio minerale	Auricolare (otica); dentale; oftalmica; topica; transdermica; vaginale
Mono e digliceridi	Topica
Citrato di monostearile	Topica
Monotioglicerolo	Infiltrazione (AN); blocco caudale; epidurale; intramuscolare (IM); infusione (EV); sottocutanea (SC); endovenosa; blocco nervoso
Estratto di multisterolo	Topica
Alcol miristilico	Topica
Miristil Lattato	Topica
Miristil-.Gamma.-Picolinio cloruro	Intraarticolare; intralesionale; intramuscolare; intrasinoviale; tessuto molle
Sodio N-(Carbamoil-metossi Peg-40)-1,2-distearoil-cefalina	Endovenosa
N,N-Dimetilacetammide	Intramuscolare; endovenosa; infusione (EV)
Niacinammide	Intramuscolare; infusione (EV); intraarticolare; intralesionale; intrasinoviale; topica

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Ingrediente inattivo	Via di somministrazione
Niossima	Endovenosa
Acido nitrico	Inalazione; infusione (EV); oftalmica; topica; vaginale
Azoto	Infiltrazione (AN); blocco caudale; dentale; epidurale; intramuscolare; infusione (EV); sottocutanea (SC); inalazione; intra-arteriosa; intracavitaria; intramuscolare (IM); intratecale; intratumorale; intravascolare; endovenosa; intravescicale; irrigazione; nasale; blocco nervoso; oftalmica; parenterale; sottomucosale; topica; transdermica
Iodio nonossinolico	Topica
Nonossinolo-15	Topica
Nonossinolo-9	Oftalmica; topica
Norflurano	Inalazione; nasale; respiratoria (inalazione)
Farina d'avena	Topica
Copolimero ottadecene-1/acido maleico	Topica
Acido ottanoico	Endovenosa
Ottisalato	Transdermica
Octoxynol-1	Topica
Octoxynol-40	Oftalmica
Octoxynol-9	Topica
Ottildodecanolo	Topica; transdermica; vaginale
Polimetilene di ottilfenolo	Oftalmica
Acido oleico	Inalazione; nasale; respiratoria (inalazione); topica; transdermica
Oleth-10/Oleth-5	Topica
Oleth-2	Topica
Oleth-20	Topica
Alcol oleico	Topica; transdermica
Oleiloleato	Topica; transdermica
Olio d'oliva	Topica
Disodioossidronato	Endovenosa

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Ingrediente inattivo	Via di somministrazione
Ossichinolina	Endovenosa
Olio di noce di palma	Rettale
Ossido di palmitamina	Topica
Parabeni	Topica
Paraffina	Rettale; topica
Paraffina, Bianca Morbida	Topica
Crema Profumata 45/3	Topica
Olio di arachidi	Intramuscolare; intratracheale; topica; vaginale
Olio di Arachidi, Raffinato	Topica
Pectina	Dentale; topica
Peg 6-32 Stearato/Glicole Stearato	Topica; vaginale
Olio vegetale Peg	Intramuscolare (IM); infusione (EV); sottocutanea (SC)
Peg-100 Stearato	Topica; vaginale
Peg-12 glicerillaurato	Topica
Peg-120 gliceril stearato	Topica; vaginale
Dioleato di glucosio metilico Peg-120	Topica
Peg-15 Cocamina	Topica
Peg-150 Distearato	Topica
Peg-2 Stearato	Topica; vaginale
Peg-20 isostearato di sorbitano	Intramuscolare
Copolimero Peg-22 etere metilico/dodecil glicole	Topica
Peg-25 propilenglicole stearato	Topica
Peg-4 Dilaurato	Topica
Peg-4 Laurato	Topica
Peg-40 olio di ricino	Intramuscolare (IM); sottocutanea (SC); infusione (EV)
Diisostearato di sorbitano Peg-40	Dentale
Peg-45/Dodecilglicole copolimero	Topica
Peg-5 Oleato	Topica; vaginale
Peg-50 Stearato	Topica

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Ingrediente inattivo	Via di somministrazione
Peg-54 olio di ricino idrogenato	Topica
Peg-6 Isostearato	Topica
Peg-60 olio di ricino	Infusione (EV)
Peg-60 olio di ricino idrogenato	Topica
Peg-7 etere metilico	Topica
Peg-75 Lanolina	Topica
Peg-8 Laurato	Topica
Peg-8 Stearato	Topica
Pegoxol 7 Stearato	Topica; vaginale
Pentadecalattone	Transdermica
Pentaeritritolococcoato	Topica
Pentasodiopentetato	Endovenosa
Pentetato Calcio Trisodio	Intratecale; endovenosa; infusione (EV)
Ecidopentetico	Intratecale; endovenosa
Olio di menta piperita	Dentale; topica
Perflutreno	Endovenosa
Profumo 25677	Topica
Profumo Bouquet	Topica
Profumo E-1991	Topica
Profumo Gd 5604	Topica
Profumo Tana 90/42 Scba	Topica
Profumo W-1952-1	Topica
Petrolato	Auricolare (otica); oftalmica; topica
Petrolato, bianco	Auricolare (otica); dentale; nasale; oftalmica; rettale; topica; transdermica; vaginale
Distillati di petrolio	Topica
Fenolo	Intramuscolare (IM); infusione (EV); sottocutanea (SC); intraarticolare; intradermica; intralesionale; intrasinoviale; endovenosa; tessuto molle
Fenolo, liquefatto	Intramuscolare (IM); infusione (EV); sottocutanea (SC); endovenosa

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Ingrediente inattivo	Via di somministrazione
Fenonip	Ionoforesi; topica
Fenossietanolo	Topica
Fenilalanina	Infusione (EV)
Feniletilalcol	Auricolare (otica); nasale; oftalmica
Fenilmercurio acetato	Oftalmica; topica; vaginale
Fenilmercurio nitrato	Intramuscolare; oftalmica
Fosfatidil glicerolo, uovo	Endovenosa
Fosfolipide	Infusione (EV)
Fosfolipidi, Uovo	Endovenosa; infusione (EV)
Fosfolipone 90 g	Vaginale
Acido fosforico	Intramuscolare (IM); infusione (EV); sottocutanea (SC); infiltrazione; intraarticolare; intralesionale; endovenosa; oftalmica; tessuto molle; topica; vaginale
Olio di aghi di pino (PinusSylvestris)	Topica
Piperazina esaidrato	Vaginale
Plastibase-50w	Dentale; topica
Polacrilina	Ionoforesi; transdermica
Cloruro di polidronio	Oftalmica; topica
Polossamero 124	Topica
Polossamero 181	Topica
Polossamero 182	Topica
Polossamero 188	Endovenosa; oftalmica; parodontale; sottocutanea; topica
Polossamero 237	Topica
Polossamero 407	Oftalmica; parodontale; topica
Anidride di propano di poli(bis(P-carbossifenossi)): acido sebacico	Impianto
Poli(dimetilsilossano/metilvinilsilossano/metilidrogeno silossano) dimetilvinile o dimetilidrossi o trimetile con blocco terminale	Vaginale
Acido poli(Dl-lattico-co-glicolico), (50:50	N/a
Acido poli(Dl-lattico-co-glicolico), terminato con estere etilico, (50:50	N/a

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Ingrediente inattivo	Via di somministrazione
Acido poliacrilico (250000 Mw)	Transdermica
Polibutene (1400 Mw)	Transdermica
Policarbofilo	Oftalmica; topica; vaginale
Poliestere	Transdermica; vaginale
Copolimero di poliammina poliestere	Transdermica
Rayon di poliestere	Transdermica
Polietilenglicole 1000	Rettale; respiratoria (inalazione); topica; vaginale
Polietilenglicole 1450	Topica; uretrale
Polietilenglicole 1500	Topica
Polietilenglicole 1540	Dentale; rettale; topica
Polietilenglicole 200	Intramuscolare; topica
Polietilenglicole 300	Intramuscolare (IM); infusione (EV); endovenosa; oftalmica; topica
Polietilenglicole 300-1600	Topica
Polietilenglicole 3350	Intraarticolare; intralesionale; intramuscolare; intrasinoviale; nasale; rettale; tessuto molle; sottocutanea; topica; vaginale
Polietilenglicole 400	Intramuscolare (IM); infusione (EV); endovenosa; nasale; oftalmica; rettale; topica; vaginale
Polietilenglicole 4000	Intraarticolare; intralesionale; intramuscolare; intrasinoviale; rettale; tessuto molle; topica; vaginale
Polietilenglicole 540	Topica
Polietilenglicole 600	Endovenosa; topica
Polietilenglicole 6000	Rettale; topica; vaginale
Polietilenglicole 8000	Oftalmica; rettale; topica; vaginale
Polietilenglicole 900	Topica
Polietilene ad alta densità contenente ossido ferrico nero (<1%)	Intrauterina
Polietilene a bassa densità contenente solfato di bario (20-24%)	Intrauterina
Polietilene T	Intrauterina

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Ingrediente inattivo	Via di somministrazione
Polietilentereftalati	Transdermica
Poliglattina	Dentale; impianto; intramuscolare; sottocutanea
Poligliceril-3 oleato	Vaginale
Poligliceril-4 oleato	Vaginale
Poliidrossietil metacrilato	Topica
Poliisobutilene	Topica; transdermica
Poliisobutilene (1100000 Mw)	Topica; transdermica
Poliisobutilene (35000 Mw)	Transdermica
Poliisobutilene 178-236	Transdermica
Poliisobutilene 241-294	Transdermica
Poliisobutilene 35-39	Transdermica
Poliisobutilene a basso peso molecolare	Transdermica
Poliisobutilene a medio peso molecolare	Transdermica
Adesivo poliisobutilene/polibutene	Transdermica
Polilattide	Intramuscolare; parodontale
Polioli	Dentale
Poliossietilene - Poliossipropilene 1800	Oftalmica; topica
Alcoli poliossietilenici	Topica
Esteri di acidi grassi poliossietilenici	Intramuscolare (IM); infusione (EV); sottocutanea (SC); topica
Poliossietilene propilene	Topica
Poliossil 20 cetostearil etere	Topica
Olio di ricino Poliossil 35	Intravescicale; infusione (EV); oftalmica
Poliossile 40 olio di ricino idrogenato	Dentale; oftalmica; topica
Poliossil 40 stearato	Auricolare (otica); dentale; oftalmica; topica
Poliossil 400 stearato	Nasale; topica
Palmitostearato di poliossile 6 e poliossile 32	Topica
Distearato di poliossile	Topica
Poliossilglicerile stearato	Topica
Lanolina poliossilica	Topica

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Ingrediente inattivo	Via di somministrazione
Palmitato di poliossile	Vaginale
Poliossile stearato	Auricolare (otica); topica
Polipropilene	Intrauterina; topica; transdermica
Polipropilenglicole	Intramuscolare (IM); infusione (EV); oftalmica
Poliquaternium-10	Topica
Poliquaternium-7 (70/30 acrilammide/Dadmac	N/a
Polisilossano	Endovenosa
Polisorbato 20	Auricolare (otica); intramuscolare (IM); sottocutanea (SC); endovenosa; infusione (EV); nasale; oftalmica; topica; vaginale
Polisorbato 40	Intramuscolare (IM); infusione (EV); topica
Polisorbato 60	Oftalmica; rettale; topica; vaginale
Polisorbato 65	Topica
Polisorbato 80	Auricolare (otica); intraarticolare; intrabursale; intradermica; intralesionale; intramuscolare; intrasinoviale; endovenosa; infusione (EV); nasale; oftalmica; rettale; tessuto molle; sottocutanea; topica; vaginale
Poliuretano	Vaginale
Polivinilacetato	Transdermica
Alcol polivinilico	Auricolare (otica); intramuscolare; intra oculare; intravitreale; ionoforesi; oftalmica; topica; transdermica
Polivinilcloruro	Transdermica
Copolimero cloruro di polivinile-acetato di polivinile	Transdermica
Polivinilpiridina	Transdermica
Olio di semi di papavero	Intralinfatica; intrauterina
Potassa	Topica
Acetato di potassio	Oftalmica; rettale
Allume di potassio	Vaginale
Bicarbonato di potassio	Transmucosale
Bisolfito di potassio	Endovenosa

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Ingrediente inattivo	Via di somministrazione
Cloruro di potassio	Infiltrazione (AN); blocco caudale; epidurale; intra oculare; endovenosa; intravitreale; infusione (EV); blocco nervoso; oftalmica
Citrato di potassio	Topica
Idrossido di potassio	Intravascolare; endovenosa; infusione (EV); topica; vaginale
Metabisolfito di potassio	Infiltrazione (AN); auricolare (otica); intramuscolare (IM); infusione (EV); blocco nervoso; rettale
Fosfato di potassio, bibasico	Intraarticolare; intramuscolare; endovenosa; infusione (EV); sottocutanea
Fosfato di potassio, monobasico	Infiltrazione (AN); auricolare (otica); intramuscolare (IM); infusione (EV); intraarticolare; intrauterina; endovenosa; intravescicale; nasale; blocco nervoso; oftalmica; sottocutanea
Sapone di potassio	Topica
Sorbato di potassio	Nasale; oftalmica; topica
Copolimero di Povidone Acrilato	Topica
Povidone idrogel	Ionoforesi; topica
Povidone K17	Sottocutanea
Povidone K25	Respiratoria (inalazione)
Povidone K29/32	Oftalmica; transdermica; vaginale
Povidone K30	Oftalmica
Povidone K90	Oftalmica; topica
Povidone K90f	Auricolare (otica)
Copolimero di Povidone/Eicosene	Topica
Povidoni	Auricolare (otica); intramuscolare; endovenosa; infusione (EV); oftalmica; sottocutanea; topica; transdermica; vaginale
Copolimero Ppg-12/Smdi	Topica
Ppg-15 etere stearilico	Topica
Distearato di etere di glucosio metilico Ppg-20	Topica
Ppp-26 Oleato	Topica

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Ingrediente inattivo	Via di somministrazione
Prodotto Wat	Topica
Prolina	Infusione (EV)
Promulgen D	Topica; vaginale
Promulgen G	Topica
Propano	Topica
Propellente A-46	Topica
Propilgallato	Topica; intramuscolare
Carbonato di propilene	Topica
Propilenglicole	Auricolare (otica); dentale; extracorporea; intramuscolare (IM); infusione (EV); inalazione; endovenosa; nasale; oftalmica; fotoferesi; rettale; sottocutanea; topica; transdermica; vaginale
Propilenglicolediacetato	Auricolare (otica); topica
Propilenglicoledicaprilato	Topica
Propilenglicolemonolaurato	Transdermica
Propilenglicolemonopalmitostearato	Topica; vaginale
Propilenglicolepalmitostearato	Topica
Propilenglicolericinoleato	Topica
Propilenglicole/Diazolidinil urea/Metilparabene/Propilparbene	Topica
Propilparabene	Infiltrazione (AN); auricolare (otica); intramuscolare (IM); infusione (EV); sottocutanea (SC); inalazione; intra-arteriosa; intraarticolare; intrabursale; intralesionale; intrasinoviale; endovenosa; nasale; blocco nervoso; oftalmica; rettale; tessuto molle; topica; ureterale; uretrale; vaginale
Solfato di protamina	Intramuscolare (IM); sottocutanea (SC); intradermica
Idrolisato proteico	Topica
Copolimero Pvm/Ma	Dentale
Quaternio-15	Topica
Quaternium-15 Cis-Form	Topica; vaginale
Quaternio-52	Topica

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Ingrediente inattivo	Via di somministrazione
Ra-2397	Transdermica
Ra-3011	Transdermica
Saccarina	Inalazione; topica
Saccarina sodica	Dentale; intramuscolare (IM); infusione (EV); inalazione; endovenosa; rettale; topica
Saccarina sodica anidra	Intramuscolare (IM); infusione (EV); rettale
Olio di cartamo	Topica
Sd Alcol 3a	Topica
Sd Alcol 40	Topica
Sd Alcol 40-2	Topica
Sd Alcol 40b	Topica
Sepineo P 600	Topica
Serina	Infusione (EV)
Olio di sesamo	Intramuscolare (IM); sottocutanea (SC)
Burro di karitè	Topica
Tubi di grado medico di marca Silastic	Impianto
Adesivo medico silastico, silicone tipo A	Impianto
Silice, dentale	Dentale
Silicio	Topica; transdermica
Biossido di silicio	Dentale; topica; vaginale
Biossido di silicio, colloidale	Endocervicale; rettale; respiratoria (inalazione); transdermica; vaginale
Silicone	Intramuscolare (IM); infusione (EV); intrauterina; topica; transdermica; vaginale
Adesivo siliconico 4102	Percutanea; transdermica
Adesivo siliconico 4502	Transdermica
Adesivo siliconico Bio-Psa Q7-4201	Transdermica; topica
Adesivo siliconico Bio-Psa Q7-4301	Transdermica; topica
Emulsione siliconica	Topica
Striscia di pellicola in silicone/poliestere	Transdermica
Simeticone	Intramuscolare (IM); infusione (EV);

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Ingrediente inattivo	Via di somministrazione
	rettale; topica
Simeticone emulsione	Topica
SiponLs 20np	Topica
Carbonato di sodio	Oftalmica
Acetato di sodio	Auricolare (otica); extracorporea; intramuscolare (IM); infusione (EV); sottocutanea (SC); interstiziale; intraarticolare; intracavitaria; intradermica; intralesionale; intra oculare; intraperitoneale; intrapleurica; intrasinoviale; endovenosa; intravitreale; nasale; oftalmica; parenterale; fotoferesi; tessuto molle; sottomucosale; topica
Acetato di sodio anidro	Intramuscolare (IM); infusione (EV); sottocutanea (SC); endovenosa; topica
Sodio alchilsolfato	Topica
Ascorbato di sodio	Endovenosa
Benzoato di sodio	Dentale; intramuscolare (IM); infusione (EV); endovenosa; rettale; topica
Bicarbonato di sodio	Intramuscolare (IM); infusione (EV); intraperitoneale; intratecale; intratracheale; endovenosa; intravitreale; sottocutanea; vaginale
Bisolfato di sodio	Intramuscolare (IM); infusione (EV); sottocutanea (SC); inalazione; oftalmica
Bisolfito di sodio	Infiltrazione (AN); auricolare (otica); intramuscolare (IM); infusione (EV); sottocutanea (SC); epidurale; inalazione; intra-arteriosa; intraarticolare; intrabursale; intracardiaca; intradermica; intradiscale; intralesionale; intraperitoneale; intrasinoviale; ionoforesi; irrigazione; endovenosa; blocco nervoso; oftalmica; tessuti molli; topica
Borato di sodio	Auricolare (otica); oftalmica; topica
Sodio Borato Decaidrato	Oftalmica
Carbonato di sodio	Infiltrazione (AN); intramuscolare (IM); infusione (EV); intra-arteriosa; intraperitoneale; intrapleurica;

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Ingrediente inattivo	Via di somministrazione
	intratumorale; intravascolare; endovenosa; intravitreale; blocco nervoso; oftalmica; rettale
Sodio carbonato decaidrato	Endovenosa
Carbonato di sodio monoidrato	Intra-arteriosa; intracardiaca; endovenosa; oftalmica
Sodio cetostearilsolfato	Topica
Clorato di sodio	Infiltrazione (AN); intramuscolare; infusione (EV); blocco nervoso
Cloruro di sodio	Infiltrazione; inalazione; intra-arteriosa; intraarticolare; intrabursale; intracardiaca; intracaudale; intracavitaria; intradermica; intralesionale; intramuscolare; intra oculare; intraperitoneale; intrapleurica; intrasinoviale; intratecale; intratracheale; intratumorale; intravascolare; endovenosa; bolo endovenoso; intravescicale; intravitreale; ionoforesi; infusione (EV); intramuscolare (IM); sottocutanea (SC); nasale; blocco nervoso; oftalmica; parenterale; peridurale; fotoferesi; rettale; respiratoria (inalazione); tessuto molle; subaracnoidea; sottomucosale; topica; transdermica
Iniezione di cloruro di sodio	Intramuscolare
Iniezione di cloruro di sodio, batteriostatico	Endovenosa
Sodio colesterilsolfato	Infusione (EV)
Citrato di sodio	Infiltrazione (AN); auricolare (otica); epidurale; intramuscolare (IM); infusione (EV); sottocutanea (SC); inalazione; intra-arteriosa; intraarticolare; intracardiaco; intravacitario; intralesionale; intra oculare; iintraperitoneale; intrapleurica; intrasinoviale; intratecale; intratracheale; intrauterina; intravasolare; endovenosa; ionoforesi; irrigazione; nasale; blocco nervoso; oftalmica; rettale; respiratoria (inalazione); tessuto molle; topica; transdermica; ureterale; vaginale
CoccoileSarcosinato di sodio	Topica
Sodio desossicolato	Infusione (EV)

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Ingrediente inattivo	Via di somministrazione
Ditionito di sodio	Intramuscolare (IM); infusione (EV); sottocutanea (SC); endovenosa
Sodio dodecilbenzensolfonato	Topica
Sodio formaldeide solfossilato	Intramuscolare (IM); infusione (EV); sottocutanea (SC); topica
Gluconato di sodio	Endovenosa; infusione (EV)
Idrossido di sodio	Intratecale (AN, CNBLK); inflizione (AN); simpatica (AN, NBLK); auricolare (otica); blocco caudale; dentale; epidurale; extracorporea; intramuscolare (IM); infusione (EV); sottocutanea (SC); infiltrazione; inalazioni; interstiziale; intra-amniotica; intra-arteriosa; intraarticolare; intrabursale; intracardiaca; intracaudale; intracavitaria; intradermica; intradiscale; intralesionale; intra oculare; intraperitoneale; intrapleurica; intraspinale; intrasinoviale; intratecale; intratracheale; intratumorale; intrauterina; intravascolare; endovenosa; intravitreale; ionoforesi; irrigazione; nasale; blocco nervoso; oftalmica; parenterale; perfusione, cardiaca; peridurale; perineurale; fotoferesi; rettale; respiratoria (inalazione); retrobolare; tessuto molle; spinale; subaracnoidea; sottocongiuntivale; sottomucosale; topica; transdermica; ureterale; uretrale; vaginale
Ipoclorito di sodio	Infusione (EV)
Ioduro di sodio	Endovenosa; topica
Lattato di sodio	Infiltrazione (AN); nero caudale; intramuscolare (IM); infusione (EV); sottocutanea (SC); intracardiaca; intraperitoneale; endovenosa; blocco nervoso; topica
Lattato di sodio, L-	Epidurale; intramuscolare (IM); infusione (EV); sottocutanea (SC); intracardiaca; blocco nervoso
Sodium Laureth-2 Solfato	Topica
Sodium Laureth-3 Solfato	Topica
Sodium Laureth-5 Solfato	Topica

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Ingrediente inattivo	Via di somministrazione
Sodio lauroilsarcosinato	Topica
Sodio laurilsolfato	Dentale; respiratoria (inalazione); topica; vaginale
Sodio laurilsolfoacetato	Topica
Metabisolfito di sodio	Intratecale (AN, CNBLK); infiltrazione (AN); blocco cardale; dentale; epidurale; intramuscolare (IM); infusione (EV); sottocutanea (SC); infiltrazione; inalazione; intraarticolare; intrabursale; intracardiaca; intramuscolare; intraperitoneale; endovenosa; ionoforesi; blocco nervoso; oftalmica; peridurale; rettale; sottomucosale; topica; vaginale
Nitrato di sodio	Oftalmica
Fosfato di sodio	Intramuscolare (IM); infusione (EV); intraarticolare; intrabursale; intradermica; intralesionale; nasale; blocco nervoso; oftalmica; tessuto molle; sottocutanea; topica
Fosfato di sodio diidrato	Intramuscolare (IM); sottocutanea (SC); oftalmica
Fosfato di sodio, bibasico	Intramuscolare (IM); infusione (EV); intradermica; intralesionale; intrasinoviale; endovenosa; nasale; oftalmico; tessuto molle; topica; sottocutanea (SC)
Fosfato di sodio, bibasico, anidro	Auricolare (otica); intramuscolare (IM); infusione (EV); sottocutanea (SC); intraarticolare; intralesionale; intramuscolare; endovenosa; intravescicale; nasale; oftalmica; topica; vaginale
Fosfato di sodio, bibasico, diidrato	Intramuscolare (IM); infusione (EV); endovenosa; nasale; oftalmica; sottocutanea; topica
Fosfato di sodio, bibasico, dodecaidrato	Nasale
Fosfato di sodio, bibasico, eptaidrato	Infiltrazione (AN); auricolare (otica); intramuscolare (IM); infusione (EV); sottocutanea (SC); intra-articolare; intrabursale; intradermica; intralesionale; intramuscolare; intrasinoviale; endovenosa; intravitreale; nasale; blocco

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Ingrediente inattivo	Via di somministrazione
	nervoso; oftalmica; tessuto molle; topica; uretrale
Fosfato di sodio, monobasico	Intramuscolare (IM); infusione (EV); intralesionale; intrasinoviale; ionoforesi; oftalmica; tessuto molle; sottocutanea; topica
Fosfato di sodio, monobasico, anidro	Auricolare (otica); intramuscolare (IM); infusione (EV); intrabursale; intradermica; intralesionale; intrasinoviale; intravascolare; endovenosa; intravescicale; nasale; oftalmica; tessuto molle; sottocutanea; topica; vaginale
Fosfato di sodio, monobasico, diidrato	Endovenosa; infusione (EV); nasale; oftalmica; sottocutanea; topica
Fosfato di sodio, monobasico, monoidrato	Intramuscolare (IM); infusione (EV); intraarticolare; intralesionale; intravascolare; endovenosa; intravitreale; oftalmica; sottocutanea; topica
Sodio Poliacrilato (2500000 Mw)	Topica
Sodio pirofosfato	Endovenosa
Sodio pirrolidone carbossilato	Topica
Glicolato di amido di sodio	Transmucosale
Succinato di sodio esaidrato	Endovenosa
Solfato di sodio	Intramuscolare (IM); infusione (EV); oftalmica
Solfato di sodio anidro	Inalazione; intramuscolare; oftalmica
Sodio solfato decaidrato	Oftalmica
Solfito di sodio	Auricolare (otica); epidurale; intramuscolare (IM); infusione (EV); inalazione; intraarticolare; intralesionale; endovenosa; oftalmica; tessuto molle; sottocutanea; topica
Monoalchilolamideundeciclenicasolfosuccinata di sodio	Topica
Tartrato di sodio	Intramuscolare (IM); infusione (EV); endovenosa
Tioglicolato di sodio	Sottocutanea
Tiomalato di sodio	Intramuscolare (IM); infusione (EV)

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Ingrediente inattivo	Via di somministrazione
Tiosolfato di sodio	Endovenosa; oftalmica; topica
Tiosolfato di sodio anidro	Endovenosa
Trimetafosfato di sodio	Endovenosa
Xilensolfonato di sodio	Topica
Somay 44	Topica
Acido sorbico	Oftalmica; topica; vaginale
Sorbitano	Topica
Isostearato di sorbitano	Topica
Monolaurato di sorbitano	Oftalmica; topica
Monooleato di sorbitano	Rettale; topica; transdermica
Monopalmitato di sorbitano	Intramuscolare; topica
Monostearato di sorbitano	Topica; vaginale
Sesquioleato di sorbitano	Rettale; topica
Trioleato di sorbitano	Inalazione; nasale
Tristearato di sorbitano	Topica
Sorbitolo	Dentale; intraarticolare; intralesionale; intramuscolare; intrasinoviale; endovenosa; infusione (EV); nasale; oftalmica; rettale; topica; vaginale
Soluzione di sorbitolo	Intraarticolare; intralesionale; intramuscolare; endovenosa; infusione (EV); nasale; oftalmica; rettale; topica; vaginale
Farina Di Soia	Topica
Olio di semi di soia	Endovenosa; infusione (EV); topica
Olio di menta verde	Topica
Spermaceto	Topica; vaginale
Squalano	Topica
Complesso di ossicloro stabilizzato	Oftalmica
Stannoso 2-etilesanoato	Vaginale
Cloruro Stannoso	Endovenosa; infusione (EV)
Cloruro Stannoso Anidro	Endovenosa; infusione (EV)
Fluoruro Stannoso	Endovenosa

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Ingrediente inattivo	Via di somministrazione
Tartrato Stanno	Endovenosa
Amido	Intramuscolare; rettale; topica; vaginale
Amido 1500, Pregelatinizzato	Vaginale
Amido, mais	Vaginale
Cloruro di stearalconio	Topica
Stearalconioectorite/carbonato di propilene	Transdermica
Stearamidoetildietilammina	Topica; vaginale
Steareth-10	Rettale; topica
Steareth-100	Topica
Steareth-2	Topica
Steareth-20	Topica
Steareth-21	Topica
Steareth-40	Topica; rettale
Acido stearico	Impianto; sottocutanea; topica; vaginale
Dietanolammide stearica	Topica
Stearossitrimetilsilano	Topica
Collagene animale idrolizzato di steartrimonio	Topica
Alcol stearilico	Topica; vaginale
Acqua sterile per inalazione	Infusione (EV)
Copolimero a blocchi di stirene/isoprene/stirene	Topica
Succimer	Endovenosa
Acido succinico	Intramuscolare (IM); infusione (EV); endovenosa
Sucralosio	Nasa
Saccarosio	Intramuscolare; endovenosa; infusione (EV); rettale; sottocutanea; topica
Saccarosio Distearato	Topica
Poliesteri di saccarosio	Topica
Sulfacetamide di sodio	Topica
Sulfobutiletere .Beta.-Ciclodestrina	Intramuscolare; endovenosa; infusione (EV)
Diossido di zolfo	Infusione (EV)

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Ingrediente inattivo	Via di somministrazione
Acido solforico	Auricolare (otica); epidurale; intramuscolare (IM); infusione (EV); inalazione; intraperitoneale; endovenosa; irrigazione; nasale; oftalmica; respiratoria (inalazione); topica
Acido solforoso	Intramuscolare
SurfactolQs	Topica
Tagatosio, D-	Rettale
Talco	Topica
Tallolio	Topica
Gliceridi di sego	Topica
Acido tartarico	Intramuscolare; endovenosa; infusione (EV); topica
Acido tartarico, Dl-	Intramuscolare (IM); infusione (EV); endovenosa; rettale; vaginale
Tenox	Topica
Tenox-2	Topica
Alcol terz-butilico	Endovenosa; infusione (EV); topica
Terz-butilidroperossido	Topica
Terz-butilidrochinone	Vaginale
Tetrakis(2-metossiisobutilisocianuro)Rame(I) Tetrafluoroborato	Endovenosa
Ortosilicato tetrapropilico	Vaginale
Tetrafosmina	Infusione (EV)
Teofillina	Endovenosa; infusione (EV)
Thimerosal	Auricolare (otica); intramuscolare (IM); infusione (EV); sottocutanea (SC); endovenosa; oftalmica; topica
Treonina	Endovenosa; infusione (EV)
Timolo	Inalazione
Stagno	Endovenosa
Biossido di titanio	Dentale; intrauterina; oftalmica; respiratoria (inalazione); topica; transdermica
Tocoferolo	Topica

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Ingrediente inattivo	Via di somministrazione
Tocoferolano	Oftalmica; topica
Triacetina	Endocervicale; transdermica
Tricaprilina	Epidurale; infiltrazione
Tricloromonofluorometano	Inalazione; nasale; topica
Trideceth-10	Topica
Trietanolamminalauril solfato	Topica
Acido trifluoroacetico	Infusione (EV)
Trigliceridi, Catena Media	Topica
Triidrossistearina	Topica
Trilaneth-4 fosfato	Topica
Trilaureth-4 fosfato	Topica
Citrato trisodico diidrato	Intramuscolare (IM); infusione (EV); endovenosa; intravitreale; nasale; oftalmica; topica
Hedta trisodica	Topica
Triton 720	Oftalmica
Triton X-200	Topica
Trolamina	Rettale; topica; transdermica; vaginale
Tromantadina	Intramuscolare; endovenosa
Trometamina	Intramuscolare (IM); infusione (EV); intra-arteriosa; intratecale; intratracheale; intravasolare; endovenosa; oftalmica; rettale; respiratoria (inalazione); sottocutanea; topica; transdermica; uretrale
Triptofano	Infusione (EV)
Tiloxapol	Oftalmica; topica
Tirosina	Infusione (EV)
Acido undecilenico	Topica
Union 76 Amsco-Res 6038	Transdermica
Urea	Intramuscolare; vaginale
Valina	Infusione (EV)
Olio vegetale	Topica
Olio vegetale gliceride, idrogenato	Rettale

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Ingrediente inattivo	Via di somministrazione
Olio vegetale, idrogenato	Rettale; topica; vaginale
Versetamide	Endovenosa
Viscarin	Topica
Viscosa/Cotone	Transdermica
Vitamina E	Topica
Cera, emulsionante	Rettale; topica
Wecobee Fs	Topica; vaginale
Cera ceresina bianca	Vaginale
Cera bianca	Rettale; topica; vaginale
Gomma xantorrea	Rettale; topica
Zinco	Sottocutanea
Acetato di zinco	Sottocutanea, topica
Carbonato di Zinco	Sottocutanea
Cloruro di Zinco	Intramuscolare (IM); sottocutanea (SC); intradermica; oftalmica
Ossido di zinco	Intramuscolare (IM); sottocutanea (SC); rettale; respiratoria (inalazione)

Rilascio

La presente descrizione comprende il rilascio di NAV per qualsiasi tra uso terapeutico, farmaceutico, diagnostico o di imaging attraverso qualsiasi via appropriata, tenendo in considerazione i probabili progressi nelle scienze del rilascio di farmaci. Il rilascio può essere nudo o formulato.

Rilascio formulato

I NAV della presente invenzione possono essere formulati, utilizzando i metodi descritti nel presente contesto. Le formulazioni contengono polinucleotidi modificati. Le formulazioni possono inoltre includere, ma non sono limitate a, agenti di penetrazione cellulare, un veicolo farmaceuticamente accettabile, un agente di somministrazione, un polimero bioerodibile o biocompatibile, un solvente e un deposito di erogazione a rilascio prolungato. I NAV formulati possono essere rilasciati nella cellula utilizzando vie di somministrazione note

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nella tecnica e descritte nel presente contesto.

Le composizioni possono anche essere formulate per la somministrazione diretta a un organo o tessuto in uno qualsiasi dei diversi modi nella tecnica inclusi, ma non limitati a, ammollo o bagno diretti, tramite un catetere, mediante gel, polvere, unguenti, creme, gel, lozioni e/o gocce, utilizzando substrati come tessuti o materiali biodegradabili rivestiti o impregnati con le composizioni, e simili.

Somministrazione

I NAV della presente invenzione possono essere somministrati tramite qualsiasi via che determini un esito terapeuticamente efficace. Queste includono, ma non sono limitate a enterale (nell'intestino), gastroenterale, epidurale (nella dura madre), orale (tramite la bocca), transdermica, peridurale, intracerebrale (nel cervello), intracerebroventricolare (nei ventricoli cerebrali), epicutanea (applicazione sulla pelle), intradermica, (nella pelle stessa), sottocutanea (sotto la pelle), somministrazione nasale (attraverso il naso), endovenosa (in una vena), bolo endovenoso, flebo endovenosa, intraarteriosa (in un'arteria), intramuscolare (in un muscolo), intracardiaca (nel cuore), infusione intraossea (nel midollo osseo), intratecale (nel canale spinale), intraperitoneale, (infusione o iniezione nel peritoneo), infusione intravescicale, intravitreale, (attraverso l'occhio), iniezione intracavernosa (in una cavità patologica) intracavitaria (alla base del pene), somministrazione intravaginale, intrauterina, somministrazione extra-amniotica, transdermica (diffusione attraverso la pelle intatta per la distribuzione sistemica), transmucosale (diffusione attraverso una membrana mucosa), transvaginale, insufflazione, sublinguale, sublabiale, clistere, collirio (sulla congiuntiva), in gocce auricolari, auricolare (nell'orecchio o attraverso l'orecchio), buccale (diretto verso la guancia), congiuntivale, cutanea, dentale (a uno o più denti), elettro-osmosi, endocervicale, endosinusiale, endotracheale, extracorporea, emodialisi, infiltrazione, interstiziale, intra-addominale, intra-amniotica, intra-articolare, intrabiliare, intrabronchiale, Intrabursale,

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intracartilaginea (all'interno di una cartilagine), intracaudale (all'interno della cauda equina), intracisternale (all'interno della cisterna magna cerebellomedularis), intracorneale (all'interno della cornea), dentale intracornale, intracoronarica (all'interno delle arterie coronarie), intracorporo cavernosa (all'interno degli spazi dilatabili del corpo cavernoso del pene), intradiscale (all'interno di un disco), intraduttale (all'interno di un dotto di una ghiandola), intraduodenale (all'interno del duodeno), intradurale (all'interno o al di sotto della dura), intraepidermica (all'epidermide), intraesofagea (all'esofago), intragastrica (all'interno dello stomaco), intragengivale (all'interno delle gengive), intraileale(all'interno della porzione distale dell'intestino tenue), intralesionale (all'interno o introdotta direttamente in una lesione localizzata), intraluminale (all'interno di un lume di un tubo), intralinfatica (all'interno della linfa), intramidollare (all'interno della cavità midollare di un osso), intrameningeale (all'interno delle meningi), intraoculare (all'interno dell'occhio), intraovarica (all'interno l'ovaio), intrapericardica (all'interno del pericardio), intrapleurica (all'interno della pleura), intraprostatica (all'interno della ghiandola prostatica), intrapolmonare (all'interno dei polmoni o dei suoi bronchi), intrasinale (all'interno dei seni nasali o periorbitali), intraspinale (all'interno del colonna vertebrale), intrasinoviale (all'interno della cavità sinoviale di un'articolazione), intratendinosa (all'interno di un tendine), intratesticolare (all'interno del testicolo), intratecale (all'interno del liquido cerebrospinale a qualsiasi livello dell'asse cerebrospinale), intratoracica (all'interno del torace), intratubulare (all'interno dei tubuli di un organo), intratumorale (all'interno di un tumore), intratimpanico (all'interno dell'aurus media), intravascolare (all'interno di un vaso o vasi), intraventricolare (all'interno di un ventricolo), ionoforesi (mediante corrente elettrica dove gli ioni dei sali solubili migrano nei tessuti del corpo), irrigazione (per fare il bagno o sciacquare ferite aperte o cavità corporee), laringea (direttamente sulla laringe), nasogastrica (attraverso il naso e nello stomaco), tecnica di medicazione occlusiva, oftalmica (all'occhio esterno), orofaringea (direttamente alla bocca e alla faringe),

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parenterale, percutanea, periarticolare, peridurale, perineurale, parodontale, rettale, respiratoria (all'interno del tratto respiratorio inalando per via orale o nasale per o effetto sistemico), retrobulbare (dietro il ponte o dietro il bulbo oculare), intramiocardica (entrando nel miocardio), tessuti molli, subaracnoidea, sottocongiuntivale, sottomucosale, transplacentare (tramite o attraverso la placenta), transtracheale (attraverso la parete della trachea), transtimpanica (attraverso o attraverso la cavità timpanica), ureterale (all'uretere), uretrale (all'uretra), vaginale, blocco caudale, diagnostica, blocco nervoso, perfusione biliare, perfusione cardiaca, fotoferesi o spinale. In casi specifici, le composizioni possono essere somministrate in un modo che consenta loro di attraversare la barriera emato-encefalica, la barriera vascolare o un'altra barriera epiteliale. In un caso, una formulazione per una via di somministrazione può includere almeno un ingrediente inattivo. Nella Tabella 20 sono riportati esempi non limitativi di vie di somministrazione e di ingredienti inattivi che possono essere inclusi nelle formulazioni per la via di somministrazione specifica. Nella Tabella 27, "AN" significa anestetico, "CNBLK" significa blocco del nervo cervicale, "NBLK" significa blocco nervoso, "EV" significa endovenoso, "IM" significa intramuscolare e "SC" significa sottocutaneo.

Tabella 27. Vie di somministrazione e ingredienti inattivi

Via di somministrazione	**Ingrediente inattivo**
Intratecale (AN, CNBLK)	Bisolfito di sodio acetone; Acido citrico; Acido cloridrico; Cloruro di sodio; Idrossido di sodio; Metabisolfito di sodio
Infiltrazione (AN)	Acido acetico; bisolfito di sodio acetone; Acido ascorbico; Alcol benzilico; Cloruro di calcio; Diossido di carbonio; clorobutanolo; Acido citrico; acido citrico monoidrato; Disodio di calcio edetato; Disodioedetato; Acido cloridrico; acido cloridrico, diluito; Acido lattico; metilparabene; monotioglicerolo; Azoto; Cloruro di potassio; Metabisolfito di potassio; Fosfato di potassio, monobasico; propilparabene; bisolfito di sodio; Carbonato di sodio; clorato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; lattato di sodio; Metabisolfito di sodio; Fosfato di sodio, bibasico, eptaidrato
NBLK simpatico (AN)	Acido cloridrico; Cloruro di sodio; Idrossido di sodio
Auricolare (Otica)	Acido acetico; Acetato di alluminio; Solfato di alluminio anidro; benzalconio cloruro; cloruro di benzetonio; Alcol benzilico; Acido borico; Carbonato di calcio; alcol cetilico; clorobutanolo; Cloroxilenolo; Acido

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	citrico; creatinina; solfato rameico; solfato rameico anidro; Disodioedetato; acido edetico; Glicerina; gliceril stearato; Acido cloridrico; idrocortisone; Idrossietilcellulosa; miristato isopropilico; Acido lattico; lecitina, idrogenata; metilparabene; Olio minerale; Petrolato; Petrolato, bianco; alcol feniletilico; poliossile 40 stearato; Stearato di poliossile; Polisorbato 20; Polisorbato 80; Alcol polivinilico; Metabisolfito di potassio; Fosfato di potassio, monobasico; Povidone K90f; Povidoni; propilenglicole; Diacetato di propilenglicole; propilparabene; Acetato di sodio; bisolfito di sodio; borato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, eptaidrato; Fosfato di sodio, monobasico, anidro; Sodio; Solfito; Acido solforico; Thimerosal
Blocco caudale	Acido ascorbico; Cloruro di calcio; Acido citrico; Disodio di calcio edetato; Disodioedetato; Acido cloridrico; metilparabene; monotioglicerolo; Azoto; Cloruro di potassio; Cloruro di sodio; Idrossido di sodio; lattato di sodio; Metabisolfito di sodio
Dentale	Bisolfito di sodio acetone; Alcol; Alcol, disidratato; Alcol, Denaturato; anetolo; Alcol benzilico; Carbossimetilcellulosa Sodio; Carragenina; D&C Yello No. 10; Dimeticone fluido medico 360; eucaliptolo; Fd&C Blue No. 1; Fd&C verde n. 3; Aroma 89-186; Aroma 89-259; sapore Df-119; Sapore Df-1530; esaltatore di sapidità; Gelatina; gelatina, reticolata; Glicerina; gliceril stearato; Polietilene ad alta densità; Gel di idrocarburi, plastificato; Acido cloridrico; Mentolo; Olio minerale; Azoto; Pectina; Diisostearato di sorbitano Peg-40; Olio di menta piperita; Petrolato, bianco; Plastibase-50w; Polietilenglicole 1540; poliglattina; polioli; Olio di ricino idrogenato Poliossile 40; poliossile 40 stearato; propilenglicole; Copolimero Pvm/Ma; saccarina sodica; silice, dentale; Biossido di silicio; Benzoato di sodio; Cloruro di sodio; Idrossido di sodio; Sodio lauril solfato; Metabisolfito di sodio; sorbitolo; Diossido di titanio
Diagnostica	Acido cloridrico
Endocervicale	Diossido di silicio colloidale, triacetina
Epidurale	1,2-Dioleoil-Sn-Glicero-3 -Fosfocolina; 1,2-Dipalmitoil-Sn-Glicero-3-(Fosfo-Rac-(l-Glicerolo)); Acido ascorbico; Alcol benzilico; Cloruro di calcio; Colesterolo; Acido citrico; Disodio di calcio edetato; Disodioedetato; gliceriltrioleato; Acido cloridrico; Soluzione isotonica di cloruro di sodio; metilparabene; monotioglicerolo; Azoto; Cloruro di potassio; bisolfito di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Lattato di sodio, L-; Metabisolfito di sodio; Solfito di sodio; Acido solforico; Tricaprilina
Extracorporea	Acido acetico; Alcol, disidratato; Alcol benzilico; Acido cloridrico; propilenglicole; Acetato di sodio; Cloruro di sodio; Idrossido di sodio
Intramuscolare-Intravenosa	Acido acetico; Alcol; Alcol, disidratato; Alcol, diluito; destrosio anidro; lattosio anidro; citrato trisodico anidro; Arginina; Acido ascorbico; cloruro di benzetonio; Acido benzoico; Alcol benzilico; Cloruro di calcio; Diossido di carbonio; clorobutanolo; Acido citrico; acido citrico monoidrato; creatinina; Destrosio; Disodio di calcio edetato; Disodioedetato; sodio edetato; gluconolattone; Glicerina; Acido

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	cloridrico; acido cloridrico, diluito; Acido lattico; acido lattico, DI-; Lattosio; lattosio monoidrato; lattosio, idrato; lisina; mannitolo; metilparabene; monotioglicerolo; niacinamide; Azoto; Fenolo; fenolo, liquefatto; Acido fosforico; Polietilenglicole 300; Polietilenglicole 400; Polipropilenglicole; Polisorbato 40; Metabisolfito di potassio; Fosfato di potassio, monobasico; propilenglicole; propilparabene; saccarina sodica; saccarina sodica anidra; Silicone; Simeticone; Acetato di sodio; Acetato di sodio anidro; Benzoato di sodio; Bicarbonato di sodio; bisolfato di sodio; bisolfito di sodio; Carbonato di sodio; Cloruro di sodio; Citrato di sodio; sodio formaldeide solfossilato; Idrossido di sodio; Lattato di sodio, L-; Metabisolfito di sodio; Fosfato di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, diidrato; Fosfato di sodio, bibasico, eptaidrato; fosfato di sodio, monobasico; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, monoidrato; Solfato di sodio; Solfito di sodio; tartrato di sodio; tiomalato di sodio; Acido succinico; Acido solforico; acido tartarico, DI-; Thimerosal; citrato trisodico diidrato; Trometamina
Intramuscolare-Intravenosa -Sottocutanea	Acido acetico; Alcol; Alcol, disidratato; Alcol benzilico; clorobutanolo; Acido citrico; acido citrico monoidrato; acido citrico, idrato; creatinina; Destrosio; Disodioedetato; sodio edetato; Gelatina; Glicerina; glicina; Acido cloridrico; acido cloridrico, diluito; Acido lattico; Lattosio; lattosio monoidrato; metacresolo; acido metansolfonico; metilparabene; monotioglicerolo; Azoto; Fenolo; Acido fosforico; Poliossietilene Esteri di acidi grassi; propilparabene; Acetato di sodio; bisolfato di sodio; bisolfito di sodio; Cloruro di sodio; Citrato di sodio; ditionite di sodio; Idrossido di sodio; lattato di sodio; Lattato di sodio, L-; Metabisolfito di sodio; Fosfato di sodio, bibasico, eptaidrato; Thimerosal
Intramuscolare -Sottocutanea	Acido acetico; destrosio anidro; Alcol benzilico; clorobutanolo; Acido citrico; cisteina; Disodioedetato; Gelatina; Glicerina; glicina; Acido cloridrico; lattosio monoidrato; mannitolo; metacresolo; metilparabene; Azoto; olio vegetale di piselli; Olio di ricino Peg-40; Fenolo; fenolo, liquefatto; Acido fosforico; Poliossietilene Esteri di acidi grassi; Polisorbato 20; propilparabene; solfato di protamina; Olio di sesamo; Acetato di sodio; Acetato di sodio anidro; Cloruro di sodio; Citrato di sodio; Pormaldeide di sodio sulfossilato; Idrossido di sodio; fosfato di sodio diidrato; Fosfato di sodio, bibasico, eptaidrato; Acido solforico; Thimerosal; cloruro di zinco; Ossido di zinco
Impianto	Acetone; Crospovidone; copolimero dimetilsilossano/metilvinilsilossano; copolimero di etilene vinilacetato; Stearato di magnesio; Anidride di propano di poli(bis(P-carbossifenossi)): acido sebacico; poliglattina; Tubi di grado medico di marca Silastic; Adesivo medico silastico, silicone tipo A; Acido stearico
Infiltrazione	Colesterolo; Acido citrico; pirocarbonato dietilico; Dipalmitoilfosfatidilglicerolo, DI-; Acido cloridrico; Azoto; Acido fosforico; Cloruro di sodio; Idrossido di sodio; Metabisolfito di sodio; Tricaprilina
Inalazione	Bisolfito di sodio acetone; acetilcisteina; Alcol; Alcol, disidratato; Ammoniaca; Acido ascorbico; benzalconio cloruro; Diossido di carbonio;

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	cloruro di cetilpiridinio; clorobutanolo; Acido citrico; D&C giallo n. 10; diclorodifluorometano; Diclorotetrafluoroetano; Disodioedetato; sodio edetato; Fd&C giallo n. 6; fluorocloroidrocarburi; Glicerina; Acido cloridrico; acido cloridrico, diluito; Lattosio; Lecitina; lecitina, soia idrogenata; lecitina, semi di soia; Mentolo; metilparabene; L'acido nitrico; Azoto; norflurano; Acido oleico; propilenglicole; propilparabene; Saccarina; saccarina sodica; bisolfato di sodio; bisolfito di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Metabisolfito di sodio; solfato di sodio anidro; Solfito di sodio; trioleato di sorbitano; Acido solforico; timolo; Tricloromonofluorometano
Interstiziale	Alcol benzilico; Destrosio; Acido cloridrico; Acetato di sodio; Idrossido di sodio
Intra-amniotica	Acido citrico; Edetatodisodio anidro; Acido cloridrico; Idrossido di sodio
Intraarteriosa	Citrato trisodico anidro; Alcol benzilico; Diossido di carbonio; Acido citrico; acido diatrizoico; Disodio di calcio edetato; Disodioedetato; Acido cloridrico; acido cloridrico, diluito; Iodio; meglumina; metilparabene; Azoto; propilparabene; bisolfito di sodio; Carbonato di sodio; carbonato di sodio monoidrato; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Trometamina
Intraarticolare	Acido acetico; citrato trisodico anidro; benzalconio cloruro; Alcol benzilico; carbossimetilcellulosa; Carbossimetilcellulosa Sodio; Cellulosa, Microcristallina; Acido citrico; Creatina; creatinina; Crospovidone; acido diatrizoico; Disodio di calcio edetato; Disodioedetato; Sodio Ialuronato; Acido cloridrico; Iodio; meglumina; metilcellulosa; metilparabene; Miristil-.Gamma.- Picolinio Cloruro; niacinamide; Fenolo; Acido fosforico; Polietilenglicole 3350; Polietilenglicole 4000; Polisorbato 80; fosfato di potassio, bibasico; Fosfato di potassio, monobasico; propilparabene; Acetato di sodio; bisolfito di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Metabisolfito di sodio; Fosfato di sodio; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, eptaidrato; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, monoidrato; Solfito di sodio; sorbitolo; Soluzione di sorbitolo
Intrabursale	Citrato trisodico anidro; benzalconio cloruro; Alcol benzilico; carbossimetilcellulosa; Carbossimetilcellulosa Sodio; Acido citrico; creatinina; Disodioedetato; Acido cloridrico; metilparabene; Polisorbato 80; propilparabene; bisolfito di sodio; Cloruro di sodio; Idrossido di sodio; Metabisolfito di sodio; Fosfato di sodio; Fosfato di sodio, bibasico, eptaidrato; Fosfato di sodio, monobasico, anidro
Intracardiaca	Diossido di carbonio; Acido citrico; acido citrico monoidrato; acido diatrizoico; Disodio di calcio edetato; Disodioedetato; Acido cloridrico; Iodio; Acido lattico; meglumina; bisolfito di sodio; carbonato di sodio monoidrato; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; lattato di sodio; Lattato di sodio, L-; Metabisolfito di sodio
Intracaudale	Acido cloridrico; Cloruro di sodio; Idrossido di sodio
Intracavitaria	Alcol, disidratato; Alfadex; lattosio anidro; Alcol benzilico; Destrosio; Acido cloridrico; Lattosio; lattosio monoidrato; Azoto; Acetato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio

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Intradermica	Benzalconio cloruro; Alcol benzilico; Carbossimetilcellulosa Sodio; creatinina; Disodioedetato; Glicerina; Acido cloridrico; metacresolo; metilparabene; Fenolo; Polisorbato 80; solfato di protamina; Acetato di sodio; bisolfito di sodio; Cloruro di sodio; Idrossido di sodio; Fosfato di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, eptaidrato; Fosfato di sodio, monobasico, anidro; Cloruro di Zinco
Intradiscale	Cisteina cloridrato anidra; cisteina, DI-; acido diatrizoico; Disodio di calcio edetato; Disodioedetato; Iodio; meglumina; bisolfito di sodio; Idrossido di sodio
Intralesionale	Acido acetico; benzalconio cloruro; Alcol benzilico; carbossimetilcellulosa; Carbossimetilcellulosa Sodio; Acido citrico; Creatina; creatinina; Disodioedetato; Acido cloridrico; Metilcellulose; metilparabene; Miristil-.Gamma.-Picolinio cloruro; niacinamide; Fenolo; Acido fosforico; Polietilenglicole 3350; Polietilenglicole 4000; Polisorbato 80; propilparabene; Acetato di sodio; bisolfito di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Fosfato di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, eptaidrato; fosfato di sodio, monobasico; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, monoidrato; Solfito di sodio; sorbitolo; Soluzione di sorbitolo
Intralinfatica	Olio di semi di papavero
Intramuscolare	Acido acetico; Carbone attivo; Acido adipico; Alcol; Alcol, disidratato; acetato di ammonio; destrosio anidro; Acido ascorbico; benzalconio cloruro; cloruro di benzetonio; Acido benzoico; Alcol benzilico; benzoato di benzile; idrossianisolobutilato; Idrossitoluenebutilato; butilparabene; Calcio; Cloruro di calcio; Diossido di carbonio; carbossimetilcellulosa; Carbossimetilcellulosa Sodio; Olio di ricino; Cellulosa, Microcristallina; clorobutanolo; clorobutanolo emiidrato; clorobutanolo, anidro; Acido citrico; acido citrico monoidrato; Olio di mais; olio di semi di cotone; Creatina; creatinina; Croscarmellosa sodica; Crospovidone; Destrosio; acido diatrizoico; Sodio docusato; Disodio di calcio edetato; Disodioedetato; Edetatodisodio anidro; sodio edetato; Acetato di etile; Gelatina; Glutatione; Glicerina; glicina; Sodio Ialuronato; Acido cloridrico; ione idrossido; Acido lattico; acido lattico, DI-; Lattosio; lattosio monoidrato; lattosio, idrato; Lecitina; Cloruro di magnesio; Acido maleico; mannitolo; meglumina; metacresolo; metionina; metilcellulosa; metilparabene; monotioglicerolo; Myristyl - .Gamma.-picolinio cloruro; N,N-dimetilacetammide; niacinamide; Azoto; Olio di arachidi; Peg-20 isostearato di sorbitano; Fenolo; nitrato di fenilmercurico; Acido fosforico; Polietilenglicole 200; Polietilenglicole 300; Polietilenglicole 3350; Polietilenglicole 4000; poliglattina; polilattide; Polisorbato 20; Polisorbato 40; Polisorbato 80; Alcol polivinilico; fosfato di potassio, bibasico; Fosfato di potassio, monobasico; Povidoni; gallato di propile; propilenglicole; propilparabene; saccarina sodica; saccarina sodica anidra; Olio di sesamo; Acetato di sodio; Acetato di sodio anidro; Benzoato di sodio; Bicarbonato di sodio; bisolfito di sodio; Carbonato di sodio; clorato di sodio; Cloruro di sodio; Iniezione di cloruro di sodio; Citrato di sodio; sodio formaldeide solfossilato; Idrossido di sodio; Metabisolfito di sodio;

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	Fosfato di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, eptaidrato; fosfato di sodio, monobasico; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, monoidrato; solfato di sodio anidro; Solfito di sodio; tartrato di sodio; Monopalmitato di sorbitano; sorbitolo; Soluzione di sorbitolo; Amido; Saccarosio; Sulfobutiletere .Beta.-ciclodestrina; Acido solforico; acido solforoso; Acido tartarico; Thimerosal; tromantadina; trometamina; Urea
Intraoculare	Benzalconio cloruro; Cloruro di calcio; acido citrico monoidrato; Acido cloridrico; Cloruro di magnesio; Alcol polivinilico; Cloruro di potassio; Acetato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio
Intraperitoneale	Alcol benzilico; Cloruro di calcio; Destrosio; Disodio di calcio edetato; Acido cloridrico; Cloruro di magnesio; Acetato di sodio; Bicarbonato di sodio; bisolfito di sodio; Carbonato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; lattato di sodio; Metabisolfito di sodio; Acido solforico
Intrapleurica	Alcol benzilico; Acido citrico; Destrosio; diclorodifluorometano; Acido cloridrico; Acetato di sodio; Carbonato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio
Intraspinale	Destrosio; Acido cloridrico; Idrossido di sodio
Intrasinoviale	Acido acetico; Alcol benzilico; Carbossimetilcellulosa Sodio; Acido citrico; creatinina; Disodioedetato; Acido cloridrico; metilcellulosa; metilparabene; Miristil-.Gamma.-Picolinio cloruro; niacinamide; Fenolo; Polietilenglicole 3350; Polietilenglicole 4000; Polisorbato 80; propilparabene; Acetato di sodio; bisolfito di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, eptaidrato; fosfato di sodio, monobasico; Fosfato di sodio, monobasico, anidro; Sorbitolo
Intratecale	Alcol benzilico; Diossido di carbonio; Acido citrico; Disodio di calcio edetato; Acido cloridrico; metionina; Azoto; Pentetato Calcio Trisodio; acido pentetico; Bicarbonato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Acido solforico; Trometamina
Intratracheale	Acido acetico; Alcol benzilico; Carbossimetilcellulosa Sodio; Acido cloridrico; Soluzione isotonica di cloruro di sodio; Olio di arachidi; Bicarbonato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Trometamina
Intratumorale	Alcol benzilico; Acido cloridrico; Azoto; Carbonato di sodio; Cloruro di sodio; Idrossido di sodio
Intrauterina	Solfato di bario; Crospovidone; acido diatrizoico; Copolimero dimetilsilossano/metilvinilsilossano; Calcio Edetato; disodio; Disodioedetato; copolimero di etilene vinilacetato; Polietilene ad alta densità; meglumina; Polietilene ad alta densità contenente ossido ferrico nero (<1%); Polietilene a bassa densità contenente solfato di bario (20-24%); polietilene a T; polipropilene; olio di semi di papavero; Fosfato di potassio, monobasico; Silicone; Citrato di sodio; Idrossido di sodio; Diossido di titanio
Intravascolare	Alcol; Alcol, disidratato; Cloruro di calcio; Diossido di carbonio; Acido citrico; acido diatrizoico; Disodio di calcio edetato; Disodioedetato; Acido

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	cloridrico; acido cloridrico, diluito; Iodio; meglumina; Azoto; Idrossido di potassio; Carbonato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, monoidrato; Trometamina
Endovenosa	alfa-tocoferolo; Alfa-tocoferolo, DI-; 1,2-Dimiristoil-Sn-Glicero-3-Fosfocolina; 1,2-Distearoil-Sn-Glicero-3-(Fosfo-Rac-(1-Glicerolo)); 1,2-Distearoil-Sn-Glicero-3-Fosfocolina; Acido acetico; acido acetico, glaciale; Anidride acetica; Monogliceridi acetilati; Acetiltriptofano, D1-; Carbone attivo; albumina aggregata; albumina colloidale; albumina umana; Alcol; Alcol, disidratato; Alcol, Denaturato; acetato di ammonio; Idrossido d'ammonio; Solfato d'ammonio; acido citrico anidro; destrosio anidro; lattosio anidro; citrato trisodico anidro; Arginina; Acido ascorbico; acido benzensolfonico; cloruro di benzetonio; Acido benzoico; Alcol benzilico; cloruro di benzile; Bibapcite; Acido borico; Idrossitoluenebutilato; Cloruro di calcio; glucettato di calcio; Idrossido di calcio; Calcobutrolo; sodio caldiammide; Caloxetatotrisodio; Calteridolo Calcio; Captisolo; Diossido di carbonio; Cellulosa, Microcristallina; clorobutanolo; clorobutanolo emiidrato; clorobutanolo, anidro; Colesterolo; Citrato; Acido citrico; acido citrico monoidrato; acido citrico, idrato; cisteina; cisteina cloridrato; dalfampridina; destrano; Destrano 40; Destrosio; Destrosio monoidrato; Soluzione di destrosio; acido diatrizoico; Dimeticone fluido medico 360; Disodio di calcio edetato; Disodioedetato; Edetatodisodio anidro; Fosfolipidi d'uovo; Etanolamina cloridrato; etilendiammina; esametazima; Cloruro ferrico; ossido di gadolinio; Gamma Ciclodestrina; Gelatina; acido Gentisico; Sodio Glucettato; Glucettato Sodio Diidrato; gluconolattone; acido glucuronico; Glicerina; glicina; guanidina cloridrato; etaamido; istidina; Microsfere di albumina umana; Acido cloridrico; acido cloridrico, diluito; Idrossietilpiperazina acido etano solfonico; Idrossipropil-Bciclodestrina; Iodio; acido iodossamico; Iofetamina cloridrato; Alcol isopropilico; Soluzione isotonica di cloruro di sodio; Acido lattico; acido lattico, DI-; acido lattico, L-; acido lattobionico; Lattosio; lattosio monoidrato; lattosio, idrato; lecitina, uovo; lecitina, soia idrogenata; Lidofenina; mannitolo; mebrofenina; Medronatodisodio; acido medronico; meglumina; metionina; acido metilboronico; blu di metilene; metilparabene; monotioglicerolo; Sodio N-(Carbamoil-metossi Peg-40)-1,2-distearoil-cefalina; N,N-dimetilacetammide; Niossima; Azoto; acido ottanoico; Disodio ossidato; ossichinolina; pentasodiopentetato; Pentetato Calcio Trisodio; acido pentetico; perflutreno; Fenolo; fenolo, liquefatto; Fosfatidil glicerolo, uovo; Fosfolipidi, Uovo; Acido fosforico; Polossamero 188; Polietilenglicole 300; Polietilenglicole 400; Polietilenglicole 600; polisilossano; Polisorbato 20; Polisorbato 80; bisolfito di potassio; Cloruro di potassio; Idrossido di potassio; Metabisolfito di potassio; fosfato di potassio, bibasico; Fosfato di potassio, monobasico; Povidoni; propilenglicole;
	Propilparabene; saccarina sodica; Acetato di sodio; Acetato di sodio anidro; ascorbato di sodio; Benzoato di sodio; Bicarbonato di sodio; bisolfito di sodio; Carbonato di sodio; carbonato di sodio decaidrato;

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	carbonato di sodio monoidrato; Cloruro di sodio; Iniezione di cloruro di sodio, batteriostatico; Citrato di sodio; ditionite di sodio; gluconato di sodio; Idrossido di sodio; ioduro di sodio; lattato di sodio; Metabisolfito di sodio; Fosfato di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, diidrato; Fosfato di sodio, bibasico, eptaidrato; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, diidrato; Fosfato di sodio, monobasico, monoidrato; pirofosfato di sodio; sodio succinato esaidrato; Solfito di sodio; tartrato di sodio; Tiosolfato di sodio; Tiosolfato di sodio anidro; trimetafosfato di sodio; sorbitolo; Soluzione di sorbitolo; Olio di semi di soia; Cloruro Stannoso; Cloruro Stannoso Anidro; Fluoruro Stannoso; Tartrato Stanno; Succimer; Acido succinico; Saccarosio; Sulfobutiletere .Beta.-Ciclodestrina; Acido solforico; Acido tartarico; acido tartarico, DI-; Alcol terz-butilico; Tetrakis(2-metossiisobutilisocianuro) rame(I) tetrafluoroborato; teofillina; Thimerosal; treonina; Lattina; citrato trisodico diidrato; tromantadina; trometamina; Versetamide
Bolo endovenoso	Cloruro di sodio
Intravescicale	Alcol, disidratato; Disodio di calcio edetato; Acido cloridrico; Azoto; olio di ricino poliossile 35; Fosfato di potassio, monobasico; Cloruro di sodio; Idrossido di sodio; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, monobasico, anidro
Intravitreale	Cloruro di calcio; Carbossimetilcellulosa Sodio; Cellulosa, Microcristallina; Sodio Ialuronato; Acido cloridrico; Cloruro di magnesio; Stearato di magnesio; Polisorbato 80; Alcol polivinilico; Cloruro di potassio; Acetato di sodio; Bicarbonato di sodio; Carbonato di sodio; Cloruro di sodio; Idrossido di sodio; Fosfato di sodio, bibasico, eptaidrato; Fosfato di sodio, monobasico, monoidrato; Citrato trisodico diidrato
Ionoforesi	Cloruro di cetilpiridinio; Acido citrico; Disodioedetato; Glicerina; Acido cloridrico; metilparabene; Fenonip; Polacrilina; Alcol polivinilico; Povidone idrogel; bisolfito di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Metabisolfito di sodio; Fosfato di sodio, monobasico
Irrigazione	Acido acetico; Carbone attivo; Acido benzoico; Acido cloridrico; ipromellosi; metilparabene; Azoto; bisolfito di sodio; Citrato di sodio; Idrossido di sodio; Acido solforico
Endovenosa - Sottocutanea	Acido acetico; Alcol; Alcol benzilico; Idrossido di calcio; Clorobutanolo; Glicerina; Acido cloridrico; lattosio monoidrato; metilparabene; Azoto; Fenolo; fenolo, liquefatto; Acido fosforico; propilparabene; Acetato di sodio; Carbonato di sodio; Cloruro di sodio; Idrossido di sodio
Endovenosa (infusione)	1,2-Dimiristoil-Sn-Glicero-3-(Fosfo-S-(1-Glicerolo)); 1,2-Dimiristoil-Sn-Glicero-3-Fosfocolina; Acido acetico; acido acetico, glaciale; Carbone attivo; Alanina; albumina umana; Alcol; Alcol, disidratato; acetato di ammonio; acido citrico anidro; destrosio anidro; lattosio anidro; citrato trisodico anidro; Arginina; Acido ascorbico; Acido aspartico; acido benzensolfonico; cloruro di benzetonio; Acido benzoico; Alcol benzilico; Brocrinato; idrossianisolobutilato; Idrossitoluenebutilato; Diossido di carbonio; clorobutanolo; Acido citrico; acido citrico monoidrato; acido citrico, idrato; cisteina; cisteina cloridrato; acido desossicolico; Destrosio;

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	Soluzione di destrosio; acido diatrizoico; dietanolammina; dimetilsolfossido; Sulfosalicilato disodico; disofenina; Disodio di calcio edetato; Disodioedetato; Edetatodisodio anidro; sodio edetato; Fosfolipidi d'uovo; etilendiammina; Fruttosio; Gelatina; Etanolamide dell'acido gentisico; Glicerina; glicina; istidina; Acido cloridrico; acido cloridrico, diluito; ione idrossido; Idrossipropil-Bciclodestrina; isoleucina; Soluzione isotonica di cloruro di sodio; Acido lattico; acido lattico, DI-; acido lattobionico; Lattosio; lattosio monoidrato; lattosio, idrato; leucina; lisina; acetato di lisina; Cloruro di magnesio; Acido maleico; mannitolo; meglumina; metacresolo; acido metafosforico; acido metansolfonico; metionina; metilparabene; monotioglicerolo; N,N-dimetilacetammide; L'acido nitrico; Azoto; olio vegetale di piselli; Olio di ricino Peg-40; Olio di ricino Peg-60; Pentetato Calcio Trisodio; Fenolo; fenilalanina; fosfolipidi; Fosfolipidi, Uovo; Acido fosforico; Polietilenglicole 300; Polietilenglicole 400; olio di ricino poliossile 35; Polisorbato 20; Polisorbato 80; Cloruro di potassio; Idrossido di potassio; Metabisolfito di potassio; fosfato di potassio, bibasico; Fosfato di potassio, monobasico; Povidoni; prolina; propilenglicole; propilparabene; saccarina sodica; saccarina sodica anidra; Serina; Acetato di sodio; Acetato di sodio anidro; Benzoato di sodio; Bicarbonato di sodio; bisolfito di sodio;

	Carbonato di sodio; clorato di sodio; Cloruro di sodio; solfato di colesterolo di sodio; Citrato di sodio; sodio desossicolato; ditionite di sodio; sodio formaldeide solfossilato; gluconato di sodio; Idrossido di sodio; Ipoclorito di sodio; lattato di sodio; Lattato di sodio, L-; Metabisolfito di sodio; Fosfato di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, diidrato; Fosfato di sodio, bibasico, eptaidrato; fosfato di sodio, monobasico; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, diidrato; Fosfato di sodio, monobasico, monoidrato; Solfito di sodio; tartrato di sodio; sorbitolo; Soluzione di sorbitolo; Olio di semi di soia; Cloruro Stannoso; Cloruro Stannoso Anidro; Acqua sterile per inalazione; Saccarosio; Sulfobutiletere .Beta.-ciclodestrina; Diossido di zolfo; Acido solforico; Acido tartarico; acido tartarico, DI-; alcol terz-butilico; tetrafosmina; teofillina; treonina; acido trifluoroacetico; citrato trisodico diidrato; trometamina; Triptofano; tirosina; Valina
Qualsiasi percorso di rilascio	Alcol; Alcol benzilico; acido citrico monoidrato; Spugna Gelschiuma; Acido cloridrico; metilparabene; Acido poli(DI-lattico-co-glicolico), (50:50; acido poli(DI-lattico-co-glicolico), terminato con estere etilico, (50:50; Polyquaternium-7 (70/30 acrilammide/Dadmac; propilene Glicole; Propilparaben; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Lattato di sodio; Fosfato di sodio, monobasico, monoidrato
Nasale	Acido acetico; Alcol, disidratato; Allil .Alfa.-Ionone; destrosio anidro; citrato trisodico anidro; benzalconio cloruro; cloruro di benzetonio; Alcol benzilico; idrossianisolobutilato; Idrossitoluenebutilato; Caffeina; Diossido di carbonio;

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	Carbossimetilcellulosa Sodio; Cellulosa, Microcristallina; clorobutanolo; Acido citrico; acido citrico monoidrato; Destrosio; diclorodifluorometano; diclorotetrafluoroetano; Disodioedetato; Glicerina; Estere Glicerolo Di Colofonia Idrogenata; Acido cloridrico; Ipromellosa 2910 (15000 Mpa.S); metilcellulosa; metilparabene; Azoto; norflurano; Acido oleico; Petrolato, bianco; Alcol feniletilico; Polietilenglicole 3350; Polietilenglicole 400; poliossile 400 stearato; Polisorbato 20; Polisorbato 80; Fosfato di potassio, monobasico; Sorbato di potassio; propilenglicole; propilparabene; Acetato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Fosfato di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, diidrato; fosfato di sodio, bibasico, dodecaidrato; Fosfato di sodio, bibasico, eptaidrato; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, diidrato; trioleato di sorbitano; sorbitolo; Soluzione di sorbitolo; sucralosio; Acido solforico; tricloromonofluorometano; Citrato trisodico
	Diidrato
Blocco nervoso	Acido acetico; bisolfito di sodio acetone; Acido ascorbico; Alcol benzilico; Cloruro di calcio; Diossido di carbonio; clorobutanolo; Acido citrico; acido citrico monoidrato; Disodio di calcio edetato; Disodioedetato; Acido cloridrico; acido cloridrico, diluito; Acido lattico; metilparabene; monotioglicerolo; Azoto; Cloruro di potassio; Metabisolfito di potassio; Fosfato di potassio, monobasico; propilparabene; bisolfito di sodio; Carbonato di sodio; clorato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; lattato di sodio; Lattato di sodio, L-; Metabisolfito di sodio; Fosfato di sodio; Fosfato di sodio, bibasico, eptaidrato
Oftalmica	Acido acetico; Alcol; Alcol, disidratato; acido alginico; Amerchol-Cab; Idrossido d'ammonio; citrato trisodico anidro; antipirina; benzalconio cloruro; cloruro di benzetonio; bromuro di benzodecinio; Acido borico; Caffeina; Cloruro di calcio; Carbomer 1342; Carbomer 934p; Carbomer 940; Carbomeromopolimero di tipo B (allilpentaeritritolo reticolato); Carbossimetilcellulosa Sodio; Olio di ricino; Alcol cetilico; clorobutanolo; clorobutanolo, anidro; Colesterolo; Acido citrico; acido citrico monoidrato; creatinina; dietanolammina; Dietilesilftalato **Vedi Cder Guida: Limiting The Use Of CertainPhthalatesAsExcipients In Cder- Regulated Products; copolimero stirene divinilbenzene; Disodioedetato; Edetatodisodio anidro; sodio edetato; copolimero di etilene vinilacetato; gomma di gellano (basso acilico); Glicerina; gliceril stearato; Polietilene ad alta densità; Gel di idrocarburi, plastificato; Acido cloridrico; acido cloridrico, diluito; Idrossietilcellulosa; Idrossipropilmetilcellulosa 2906; Ipromellosa 2910 (15000 Mpa.S); ipromellosi; Jelene; Lanolina; Alcoli di lanolina; lanolina anidra; Derivati non ionici della lanolina; cloruro di lauralconio; lauroilsarcosina; Olio Minerale Leggero; Cloruro di magnesio; mannitolo; metilcellulosa (4000 Mpa.S); metilcellulosa; metilparabene; Olio minerale; L'acido nitrico; Azoto; nonossinolo-9; Octoxynol-40; Polimetilene di ottilfenolo; Petrolato; Petrolato, bianco;

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	Alcol feniletilico; acetato di fenilmercurico; nitrato di fenilmercurico; Acido fosforico; cloruro di polidronio; Polossamero 188; Polossamero 407; policarbofili; Polietilenglicole 300; Polietilenglicole 400; Polietilenglicole 8000; Poliossietilene - Poliossipropilene 1800; olio di ricino poliossile 35; Olio di ricino idrogenato Polyoxyl 40; poliossile 40 stearato; Glicole Polipropilenico; Polisorbato 20; Polisorbato 60; Polisorbato 80; Alcol polivinilico; acetato di potassio; Cloruro di potassio; Fosfato di potassio, monobasico; Sorbato di potassio; Povidone K29/32; Povidone K30; Povidone K90; Povidoni; propilenglicole; propilparabene; carbonato di sodio; Acetato di sodio; bisolfato di sodio; bisolfito di sodio; borato di sodio; sodio borato decaidrato; Carbonato di sodio; carbonato di sodio monoidrato; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Metabisolfito di sodio; Nitrato di sodio; Fosfato di sodio; fosfato di sodio diidrato; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, diidrato; Fosfato di sodio, bibasico, eptaidrato; fosfato di sodio, monobasico;
	Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, diidrato; Fosfato di sodio, monobasico, monoidrato; Solfato di sodio; solfato di sodio anidro; solfato di sodio decaidrato; Solfito di sodio; Tiosolfato di sodio; Acido sorbico; Monolaurato di sorbitano; sorbitolo; Soluzione di sorbitolo; Complesso di ossicloro stabilizzato; Acido solforico; Thimerosal; Diossido di titanio; tocoferolano; citrato trisodico diidrato; Tritone 720; trometamina; tiloxapolo; Cloruro di Zinco
Parenterale	Acido cloridrico; mannitolo; Azoto; Acetato di sodio; Cloruro di sodio; Idrossido di sodio
Percutanea	Duro-Tak 87-2287; Adesivo siliconico 4102
Perfusione, biliare	Glicerina
Perfusione, cardiaca	Acido cloridrico; Idrossido di sodio
Periarticolare	Acido diatrizoico; Disodio di calcio edetato; Iodio; Meglumina
Peridurale	Acido citrico; Acido cloridrico; metilparabene; Cloruro di sodio; Idrossido di sodio; Metabisolfito di sodio
Perineurale	Acido cloridrico; Cloruro di sodio; Idrossido di sodio
Parodontale	copolimero di etilene vinilacetato; Acido cloridrico; metile pirrolidone; Polossamero 188; Polossamero 407; Polilattide
Fotoferesi	Acido acetico; Alcol, disidratato; propilenglicole; Acetato di sodio; Cloruro di sodio; Idrossido di sodio
Rettale	Alcol; Alcol, disidratato; subacetato di alluminio; acido citrico anidro; olio di anice; Acido ascorbico; palmitato di ascorbile; balsamo del Perù; Acido benzoico; Alcol benzilico; sottogallato di bismuto; idrossianisolobutilato; Idrossitoluenebutilato; butilparabene; Caramello; Carbomer 934; Carbomer 934p; carbossipolimetilene; Cerasynt-Se; Alcol cetilico; Burro di cacao; Olio di cocco, idrogenato; Gliceridi di

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	olio di cocco/olio di palmisti, idrogenati; Estratto di semi di Cola Nitida; D&C giallo n. 10; diclorodifluorometano; diclorotetrafluoroetano; Bentonite di dimetildiottadecilammonio; Disodio di calcio edetato; Disodioedetato; acido edetico; epilattosio; etilendiammina; grasso, commestibile; Grasso, duro; Fd&C Blu n. 1; Fd&C verde n. 3; Fd&C giallo n. 6; Aroma Fico 827118; Aroma Lampone Pfc-8407; Fruttosio; galattosio; Glicerina; palmitato di glicerile; gliceril stearato; gliceril stearato/peg stearato; Stearato di glicerile/Peg-40 stearato; glicina; Idrocarburo; Acido cloridrico; olio di palma idrogenato; ipromellosi; Lattosio; Lanolina; Lecitina; Olio Minerale Leggero; silicato di magnesio e alluminio; Magnesio Alluminio Silicato Idrato; metilparabene; Azoto; Olio di palma; Paraffina; Petrolato, bianco; Polietilenglicole 1000; Polietilenglicole 1540; Polietilenglicole 3350; Polietilenglicole 400; Polietilenglicole 4000; Polietilenglicole 6000; Polietilenglicole 8000; Polisorbato 60; Polisorbato 80; acetato di potassio; Metabisolfito di potassio; propilenglicole; propilparabene; saccarina sodica; saccarina sodica anidra; biossido di silicio, colloidale; Simeticone; Benzoato di sodio; Carbonato di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Metabisolfito di sodio; Monooleato di sorbitano; sesquioleato di sorbitano; sorbitolo; Soluzione di sorbitolo; Amido; Steareth-10; Steareth-40; Saccarosio; Tagatosio, D-; acido tartarico, Di-; trolamina; trometamina; Olio vegetale gliceride, idrogenato; Olio vegetale, idrogenato; Cera, emulsionante; cera bianca; gomma xantana; Ossido di zinco
Respiratoria (Inalazione)	Alcol; Alcol, disidratato; apaflurano; benzalconio cloruro; Carbonato di calcio; Disodioedetato; Gelatina; glicina; Acido cloridrico; lattosio monoidrato; lisina monoidrato; mannitolo; norflurano; Acido oleico; Polietilenglicole 1000; Povidone K25; biossido di silicio, colloidale; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Sodio lauril solfato; Acido solforico; Diossido di titanio; trometamina; Ossido di zinco
Retrobulbare	Acido cloridrico; Idrossido di sodio
Tessuto molle	Acido acetico; citrato trisodico anidro; Alcol benzilico; carbossimetilcellulosa; Carbossimetilcellulosa Sodio; Acido citrico; creatinina; Disodioedetato; Acido cloridrico; metilcellulosa; metilparabene; Miristil-.Gamma.-Picolinio cloruro; Fenolo; Acido fosforico; Polietilenglicole 3350; Polietilenglicole 4000; Polisorbato 80; propilparabene; Acetato di sodio; bisolfito di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Fosfato di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, eptaidrato; fosfato di sodio, monobasico; Fosfato di sodio, monobasico, anidro; Solfito di sodio
Spinale	Destrosio anidro; Destrosio; Acido cloridrico; Idrossido di sodio
Subaracnoidea	Acido cloridrico; Cloruro di sodio; Idrossido di sodio
Subcongiuntivale	Alcol benzilico; Acido cloridrico; Idrossido di sodio
Sottocutanea	Acido acetico; acido acetico, glaciale; albumina umana;

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	Idrossido d'ammonio; Acido ascorbico; Alcol benzilico; Cloruro di calcio; Carbossimetilcellulosa Sodio; clorobutanolo; cresolo; acido diatrizoico; dimetilsolfossido; Disodio di calcio edetato; Disodioedetato; copolimero di etilene vinilacetato; Glicerina; glicina; glicina cloridrato; istidina; Acido cloridrico; Acido lattico; acido lattico, L-; Lattosio; Cloruro di magnesio; Stearato di magnesio; mannitolo; metacresolo; acido metansolfonico; metionina; metile pirrolidone; metilparabene; Azoto; Fenolo; fenolo, liquefatto; Acido fosforico; Polossamero 188; Polietilenglicole 3350; poliglattina; Polisorbato 20; Polisorbato 80; fosfato di potassio, bibasico; Fosfato di potassio, monobasico; Povidone K17; Povidoni; propilenglicole; propilparabene; solfato di protamina; Acetato di sodio; Acetato di sodio anidro; Bicarbonato di sodio; bisolfito di sodio; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Metabisolfito di sodio; Fosfato di sodio; fosfato di sodio diidrato; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, diidrato; Fosfato di sodio, bibasico, eptaidrato; fosfato di sodio, monobasico; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, diidrato; Fosfato di sodio, monobasico, monoidrato; Solfito di sodio; tioglicolato di sodio; Acido stearico; Saccarosio; Thimerosal; trometamina; Zinco; acetato di zinco; carbonato di zinco; cloruro di zinco; Ossido di zinco
Sublinguale	Alcol, disidratato
Sottomucosale	Acido acetico; acido edetico; mannitolo; Azoto; Acetato di sodio; Cloruro di sodio; Idrossido di sodio;
	Metabisolfito di sodio
Topica	.Alfa.-terpineolo; .Alfa.-tocoferolo; .alfa.-tocoferolo acetato, Di-; .Alfa.-tocoferolo, Di-; 1,2,6-esantriolo; 1-O-Tolilbiguanide; 2- etil-1,6-esandiolo; Acido acetico; Acetone; Alcoli di lanolina acetilati; copolimero di acrilati; Nastro adesivo; Alcol; Alcol, disidratato; Alcol, Denaturato; Alcol, diluito; Betaina dell'acido alchil ammonio solfonico; alchilaril solfonato di sodio; allantoina; Olio di mandorle; Acetato di alluminio; alluminio cloridrossiallantoinato; idrossido di alluminio; Idrossido di alluminio - saccarosio, idratato; Gel di idrossido di alluminio; Gel di idrossido di alluminio F 500; Gel di idrossido di alluminio F 5000; Monostearato di alluminio; Ossido di alluminio; silicato di alluminio; Ottenilsuccinato di amido di alluminio; Stearato di alluminio; Solfato di alluminio anidro; Amerchol C; Amerchol-Cab; amminometilpropanolo; Soluzione di ammoniaca; Soluzione di ammoniaca, forte; Idrossido d'ammonio; ammonio lauril solfato; solfato di ammonio nonoxinolo-4; Sale di ammonio di etossilato di alcol primario lineare C-12-C-15; ammonice; anfotero-2; anfotero-9; acido citrico anidro; citrato trisodico anidro; AnossidoSbn; antischiuma; Esteri di peg-6 di olio di nocciolo di albicocca; Acquafora; Arlacel; Acido ascorbico; palmitato di ascorbile; Cera d'api; Cera d'api, sintetica; Sotto-10; bentonite; benzalconio cloruro; Acido benzoico; Alcol benzilico; Betadex; Acido borico; Butano; alcol butilico; Estere butilico del copolimero vinilmetiletere/anidride maleica (125000 Mw); butile stearato; idrossianisolobutilato; Idrossitoluenebutilato; glicole

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	butilenico; butilparabene; C20-40 Pareto-24; Cloruro di calcio; Idrossido di calcio; balsamo canadese; Trigliceride caprilico/caprico; Trigliceride caprilico/caprico/stearico; Capitano; Caramello; Carbomer 1342; Carbomer 1382; Carbomer 934; Carbomer 934p; Carbomer 940; Carbomer 941; Carbomer 980; Carbomer 981; Carbomeromopolimero di tipo B (allilpentaeritritolo
	reticolato); Carbomeromopolimero di tipo C (allilpentaeritritoloreticolato); copolimero carbossivinilico; carbossimetilcellulosa; Carbossimetilcellulosa Sodio; carbossipolimetilene; Carragenina; sale di carragenina; Olio di ricino; olio di foglie di cedro; Cellulosa; Cerasynt-Se; Ceresin; Ceteareth-12; Ceteareth-15; Ceteareth-30; Alcol cetearilico/Ceteareth-20; cetearileti lesanoato; Ceteth-10; Ceteth-2; Ceteth-20; Ceteth-23; Alcol cetostearilico; cloruro di cetrimonio; Alcol cetilico; Cera di esteri cetilici; cetil palmitato; clorobutanolo; clorocresolo; Cloroxilenolo; Colesterolo; Choleth-24; Acido citrico; acido citrico monoidrato; solfato di etere di cocamide; ossido di cocamina; betaina di cocco; Coco Dietanolamide; Coco Monoetanolamide; Burro di cacao; Coco-gliceridi; Olio di cocco; CoccoileCaprilocaprato; collagene; Sospensione da colorare; Base Crema; creatinina; Crospovidone; ciclometicone; ciclometicone/dimeticonecopoliolo; D&C rosso n. 28; D&C rosso n. 33; D&C rosso n. 36; D&C rosso n. 39; D&C giallo n. 10; Decilmetilsolfossido; Dehydag Cera Sx; acido deidroacetico; Dehymuls E; benzoato di denatonio; Destrina; diazolidinil urea; Alcol diclorobenzilico; diclorodifluorometano; diclorotetrafluoroetano; dietanolammina; Dietilsebacato; Etere monoetilico di glicole dietilenico; diidrossialluminioamminoacetato; diisopropanolamina; adipato di diisopropile; diisopropildilinoleato; Dimeticone 350; DimeticoneCopoliolo; Dimeticone fluido medico 360; dimetilisosorbide; dimetilsolfossido; Sale di ammonio di Dinoseb; Cocoamfodiacetato disodico; LaurethSulfosuccinato disodico; disodiolaurilsolfosuccinato; Dmdm idantoina; docosanolo; Sodio docusato; Disodioedetato; sodio edetato; acido edetico; Entsufon; Sodio Entsufon; Epitetraciclina cloridrato; Bouquet di essenze 9200; Acetato di etile; etilcellulosa; Glicole etilenico; etilendiammina; etilendiamminadicloridrato; idrossistearato di etilesile; etilparabene; Estere di pentaeritriolo di acido grasso; Acidi grassi; citrato di alcol grasso; Fd&C Blu n. 1; Fd&C rosso n. 4; Fd&C rosso n. 40; Fd&C giallo n. 10 (cancellato); Fd&C giallo n. 5; Fd&C giallo n. 6; ossido ferrico; Aroma Rhodia Pharmaceutical No. Rf 451; Formaldeide; Soluzione di formaldeide; Olio di cocco frazionato; Fragranza 3949-5; Fragranza 520a; Fragranza 6.007; Fragranza 91-122; Fragranza 9128-Y; Fragranza 93498g; Fragranza pino balsamico n. 5124; Profumo Bouquet 10328; Fragranza Chemoderm 6401-B; Fragranza Chemoderm 6411; Crema profumata n. 73457; Fragranza Cs-28197; Fragranza Felton 066m; Fragranza Firmenich 47373; Fragranza Givaudan Ess 909011c; Fragranza H-6540; Fragranza alle erbe 10396; Fragranza Nj-1085; Fragranza PO FL-147; Fragranza Pa 52805; Fragranza Pera

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	Derm D; Fragranza Rbd-9819;
	Fragranza Shaw Mudge U-7776; Fragranza Tf 044078; Fragranza Ungerer Caprifoglio K 2771; Fragranza Ungerer N5195; Gelatina; gluconolattone; Glicerina; citrato di glicerile; isostearato di glicerile; Monostearato di glicerile; gliceril oleato; gliceril oleato/propilenglicole; palmitato di glicerile; glicerilricinoleato; gliceril stearato; Stearato di glicerile - Eaureth-23; Stearato di glicerile/Peg-100 stearato; gliceril stearato-stearamidoetildietilammina; Distearato di glicole; glicole stearato; Gomma di Guar; Balsamo per capelli (18n195-1m); glicole esilenico; Polietilene ad alta densità; Sodio Ialuronato; Gel di idrocarburi, plastificato; Acido cloridrico; acido cloridrico, diluito; perossido di idrogeno; olio di ricino idrogenato; Esteri idrogenati di peg-6 di olio di palma/palma; Idrossietilcellulosa; Idrossimetilcellulosa; IdrossiottacosanilIdrossistearato; Idrossipropilcellulosa; ipromellosi; Imidurea; Estratto di muschio irlandese; isobutano; Isocete-20; isoottil acrilato; Alcol isopropilico; isopropilico isostearato; miristato isopropilico; Miristato isopropilico - Alcol miristilico; palmitato isopropilico; Stearato di isopropile; acido isostearico; alcol isostearilico; Jelene; Caolino; Kathon Cg; Kathon Cg Ii;
	Lattato; Acido lattico; acido lattico, DI-; Laneth; Lanolina; Alcol di lanolina - Olio minerale; Alcoli di lanolina; lanolina anidra; Colesteroli di lanolina; lanolina, etossilata; lanolina, idrogenata; ossido di lauramina; Collagene animale idrolizzato di laurdimonium; Laureth Solfata; Laureth-2; Laureth-23; Laureth-4; Dietanolamide laurico; Dietanolamide miristico laurico; lauril solfato; Cima fiorita di Lavandula Angustifolia; Lecitina; lecitina non sbiancata; Olio di limone; Olio Minerale Leggero; Olio Minerale Leggero (85 Ssu); Limonene, (+/-)-; Lipocol Sc- 15; silicato di magnesio e alluminio; Magnesio Alluminio Silicato Idrato; nitrato di magnesio; Stearato di magnesio; mannitolo; Maprofisso; Emulsione medica antiforme per A-F; Mentolo; Metil Gluceth-10; Metil Gluceth-20; Metil Gluceth-20 Sesquistearato; Metil glucosio sesquistearato; salicilato di metile; stearato di metile; metilcellulosa; metilcloroisotiazolinone; metilisotiazolinone; metilparabene; Cera microcristallina; Olio minerale; Mono e digliceridi; citrato di monostearile; Estratto di multisterolo; alcol miristilico; lattato di miristile; niacinamide; L'acido nitrico; Azoto; Iodio nonossinolico; nonossinolo-15; nonossinolo-9; Farina d'avena; copolimero ottadecene-1/acido maleico; Ottoxinol-1; Ottoxinol-9; Ottildodecanolo; Acido oleico; Oleth-10/Oleth-5; Oleth-2; Oleth-20; Alcol oleilico; oleato di oleato; Olio d'oliva; ossido di palmitamina; Parabeni; Paraffina; Paraffina, Bianca Morbida; Profumo Crema 45/3; Olio di arachidi; Olio di Arachidi, Raffinato; Pectina; Peg 6-32 Stearato/Glicole Stearato; Peg-100 Stearato; Peg-12 glicerillaurato; Peg-120 gliceril stearato; Dioleato di glucosio metilico Peg-120; Peg-15 Cocamina; Peg-150 Distearato; Peg-2 stearato; Copolimero Peg-22 etere metilico/dodecil glicole; Peg-25 propilenglicole stearato; Peg-4 Dilaurate; Peg-4 Laurato; Copolimero di glicole Peg-45/dodecil; Peg-5 Oleato; Peg-50 stearato; Olio di ricino

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	idrogenato Peg-54; Peg-6 isostearato; Olio di ricino idrogenato Peg-60; Peg-7 etere metilico; Peg- 75 lanolina; Peg-8 Laurato; Peg-8 Stearato; pegoxolo 7 stearato; Pentaeritritolo cacao; Olio di menta piperita; Profumo 25677; Profumo Bouquet; Profumo E-1991; Profumo Gd 5604; Profumo Tana 90/42 Scba; Profumo W-1952-1; Petrolato; Petrolato, bianco; distillati di petrolio; Fenonip; fenossietanolo; acetato di fenilmercurico; Acido fosforico; Olio di aghi di pino (PinusSylvestris); Plastibase-50w; cloruro di polidronio; Polossamero 124; Polossamero 181; Polossamero 182; Polossamero 188; Polossamero 237; Polossamero 407; policarbofili; Polietilenglicole 1000; Polietilenglicole 1450; Polietilenglicole 1500; Polietilenglicole 1540; Polietilenglicole 200; Polietilenglicole 300; Polietilenglicole 300-1600; Polietilenglicole 3350; Polietilenglicole 400; Polietilenglicole 4000; Polietilenglicole 540; Polietilenglicole 600; Polietilenglicole 6000; Polietilenglicole 8000; Polietilenglicole 900; poliidrossietil metacrilato; poliisobutilene; Poliisobutilene (1100000 Mw); Poliossietilene - Poliossipropilene 1800; Alcoli poliossietilenici; Esteri di acidi grassi poliossietilenici; Poliossietilene propilene; Poliossil 20 cetostearil etere; Olio di ricino idrogenato Poliossile 40; poliossile 40 stearato; poliossile 400 stearato; Poliossile 6
	e palmitostearato di poliossile 32; Distearato di poliossile; poliossilgliceril stearato; poliossil lanolina; Stearato di poliossile; polipropilene; Polyquaternium-10; Polisorbato 20; Polisorbato 40; Polisorbato 60; Polisorbato 65; Polisorbato 80; Alcol polivinilico; Potassa; citrato di potassio; Idrossido di potassio; sapone di potassio; Sorbato di potassio; copolimero di acrilato di povidone; Povidone idrogel; Povidone K90; Copolimero Povidone/Eicosene; Povidoni; Copolimero Ppg-12/Smdi; Ppg-15 etere stearilico; Distearato di etere di metil glucosio Ppg-20; Ppg-26 oleato; Prodotto Wat; Promulgene D; Promulgene G; Propano; Propellente A-46; gallato di propile; carbonato di propilene; propilenglicole; Diacetato di propilenglicole; propilenglicoledicaprylato; propilenglicolemonopalmitostearato; propilene
	Palmitostearato di glicole; propilenglicolericinoleato; propilenglicole/Diazolidinil urea/Metilparabene/Propilparbene; propilparabene; Idrolizzato proteico; Quaternio-15; Quaternium-15 Cis-Forma; Quaternium-52; Saccarina; saccarina sodica; Olio di cartamo; Sd Alcol 3a; Alcol sd 40; Alcol SD 40-2; Alcol sd 40b; Sepineo P 600; burro di karitè; Silicio; Biossido di silicio; Silicone; Adesivo siliconico Bio-Psa Q7-4201; Adesivo siliconico Bio-Psa Q7-4301; emulsione siliconica; Simeticone; Simeticone emulsione; SiponLs 20 np; Acetato di sodio; Acetato di sodio anidro; solfato di sodio alchilico; Benzoato di sodio; bisolfito di sodio; borato di sodio; cetostearil solfato di sodio; Cloruro di sodio; Citrato di sodio; Sarcosinato di sodio e cocco; sodio dodecilbenzensolfonato; sodio formaldeide solfossilato; Idrossido di sodio; ioduro di sodio; lattato di sodio; sodio laureth-2 solfato; sodio laureth-3 solfato; SodiumLaureth- 5 Sulfate; sodio lauroilsarcosinato;

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	Sodio lauril solfato; Sodio LaurilSulfoacetato; Metabisolfito di sodio; Fosfato di sodio; fosfato di sodio, bibasico; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, bibasico, diidrato; Fosfato di sodio, bibasico, eptaidrato; fosfato di sodio, monobasico; Fosfato di sodio, monobasico, anidro; Fosfato di sodio, monobasico, diidrato; Fosfato di sodio, monobasico, monoidrato; Sodio Poliacrilato (2500000 Mw); Sodio pirrolidone carbossilato; Solfito di sodio; Monoalchilolamideundecyclenicasolfosuccinata di sodio; Tiosolfato di sodio; Xilensolfonato di sodio; Somay 44; Acido sorbico; sorbitano; isostearato di sorbitano; Monolaurato di sorbitano; Monooleato di sorbitano; Monopalmitato di sorbitano; Monostearato di sorbitano; sesquioleato di sorbitano; Tristearato di sorbitano; sorbitolo; Soluzione di sorbitolo; farina di semi di soia; Olio di semi di soia; Olio di menta verde; Spermaceti; squalano; Amido; cloruro di stearalconio; Stearamidoetildietilammina; Steareth-10; Steareth-100; Steareth-2; Steareth-20; Steareth-21; Steareth-40; Acido stearico; Dietanolamide stearica; Stearossitrimetilsilano; Collagene animale idrolizzato di steartrimonio; Alcol stearilico; Copolimero a blocchi di stirene/isoprene/stirene; Saccarosio; Saccarosio Distearato; saccarosio poliesteri; Sulfacetamide sodio; Acido solforico; tensioattivo Qs; Talco; Tall Oil; Gliceridi di sego; Acido tartarico; Tenox; Tenox-2; alcol terz-butilico; Terz-butil idroperossido; Thimerosal; Diossido di titanio; tocoferolo; tocoferolano; tricloromonofluorometano; Trideceth-10; trietanolamminalauril solfato; Trigliceridi, Catena Media; triidrossistearina; Trilaneth-4 fosfato; Trilaureth-4 fosfato; citrato trisodico diidrato; Hedta trisodica; Tritone X-200; trolamina; trometamina; tiloxapolo; acido undecilenico; Olio vegetale; Olio vegetale, idrogenato; viscarina; vitamina E; Cera, emulsionante; WecobeeFs; cera bianca; gomma xantana; Acetato di zinco
Transdermica	copolimero di acrilati; copolimero acido acrilico-isoottil acrilato; Adesivo acrilico 788; Adcote 72a103; Resina Aerotex 3730; Alcol; Alcol, disidratato; alluminio poliestere; bentonite; Idrossitoluenebutilato; glicole butilenico; acido butirrico; Trigliceride caprilico/caprico; Carbomer 1342; Carbomer 940; Carbomer 980; Carragenina; cloruro di cetilpiridinio; Acido citrico; Crospovidone; Daubert 1-5 Pestr (opaco) 164z; Etere monoetilico di glicole dietilenico; Dietilesilftalato **Vedi Cder Guida: Limiting The Use Of CertainPhthalatesAsExcipients In Cder-Regulated Products; DimeticoneCopoliolo; Dimeticone Mdx4-4210; Dimeticone fluido medico 360; dimetilamminoetil metacrilato - butil metacrilato - copolimero di metil metacrilato; glicole dipropilenico; Duro-Tak 280-2516; Duro-Tak 387-2516; Duro-Tak 80-1196; Duro-Tak 87-2070; Duro-Tak 87-2194; Duro-Tak 87-2287; Duro-Tak 87-2296; Duro-Tak 87-2888; Duro-Tak 87-2979; Disodioedetato; Acetato di etile; oleato di etile; etilcellulosa; copolimero di etilene vinilacetato; copolimero etilene-propilene; esteri di acidi grassi; Gelva 737; Glicerina;

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	glicerillaurato; gliceril oleato; eptano; Polietilene ad alta densità; Acido cloridrico; Polibutene idrogenato 635-690; Idrossietilcellulosa; Idrossipropilcellulosa; miristato isopropilico; palmitato isopropilico; Lattosio; lanolina anidra; lauril lattato; Lecitina; acido levulinico; Olio Minerale Leggero; Adesivo medico modificato S-15; alcol metilico; metile laurato; Olio minerale; Azoto; Ottisalato; Ottildodecanolo; Acido oleico; Alcol oleilico; oleato di oleato; Pentadecalattone; Petrolato, bianco; Polacrilina; acido poliacrilico (250000 Mw); Polibutene (1400 Mw); Poliestere; copolimero di poliammina poliestere; rayon poliestere; Polietilentereftalati; poliisobutilene; Poliisobutilene (1100000 Mw); Poliisobutilene (35000 Mw); Poliisobutilene 178-236; Poliisobutilene 241-294; Poliisobutilene 35-39; Poliisobutilene a basso peso molecolare; Poliisobutilene a medio peso molecolare; Adesivo poliisobutilene/polibutene; polipropilene; acetato di polivinile; Alcol polivinilico; Cloruro di polivinile; Copolimero cloruro di polivinile-acetato di polivinile; polivinilpiridina; Povidone K29/32; Povidoni; propilenglicole; Monolaurato di propilenglicole; Ra-2397; Ra-3011; Silicio; biossido di silicio, colloidale; Silicone; Adesivo siliconico 4102; Adesivo siliconico 4502; Adesivo siliconico Bio-Psa Q7-4201; Adesivo siliconico Bio-Psa Q7-4301; Striscia Lilm in silicone/poliestere; Cloruro di sodio; Citrato di sodio; Idrossido di sodio; Monooleato di sorbitano; Stearalconioectorite/carbonato di propilene; Diossido di titanio; triacetina; trolamina; trometamina; Unione 76 Amsco-Res 6038; Viscosa/Cotone
Transmucosale	Stearato di magnesio; mannitolo; bicarbonato di potassio; Glicolato di amido di sodio
Ureterale	Alcol benzilico; acido diatrizoico; Disodio di calcio edetato; Disodioedetato; Acido cloridrico; meglumina; metilparabene; propilparabene; Citrato di sodio; Idrossido di sodio
Uretrale	Acido diatrizoico; Disodio di calcio edetato; Disodioedetato; Acido cloridrico; meglumina; metilparabene; Polietilenglicole 1450; propilparabene; Idrossido di sodio; Fosfato di sodio, bibasico, eptaidrato; Trometamina
Vaginale	Acido adipico; Alcol, Denaturato; allantoina; lattosio anidro; Esteri di peg-6 di olio di nocciolo di albicocca; solfato di bario; Cera d'api; bentonite; Acido benzoico; Alcol benzilico; idrossianisolobutilato; Idrossitoluenebutilato; lattato di calcio; Carbomer 934; Carbomer 934p; Cellulosa, Microcristallina; Ceteth-20; Alcol cetostearilico; Alcol cetilico; Cera di esteri cetilici; cetil palmitato; Colesterolo; Choleth; Acido citrico; acido citrico monoidrato; Gliceridi di olio di cocco/olio di palmisti, idrogenati; Crospovidone; Disodioedetato; etilcellulosa; Copolimero etilene-vinilacetato (28% vinilacetato); Copolimero etilene-vinilacetato (9% vinilacetato); Alcoli Grassi; Fd&C giallo n. 5; Gelatina; acido glutammico, DI-; Glicerina; isostearato di glicerile; Monostearato di glicerile; gliceril stearato; Gomma di Guar; Polietilene ad alta densità; polimero idrogel; olio di palma idrogenato; Ipromellosa 2208 (15000

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	Mpa.S); ipromellosi; miristato isopropilico; Acido lattico; acido lattico, DI-; Lattosio; lattosio monoidrato; lattosio, idrato; Lanolina; lanolina anidra; Lecitina; lecitina, semi di soia; Olio Minerale Leggero; silicato di magnesio e alluminio; Magnesio Alluminio Silicato Idrato; Stearato di magnesio; stearato di metile; metilparabene; Cera microcristallina; Olio minerale; L'acido nitrico; Ottildodecanolo; Olio di arachidi; Peg 6-32 Stearato/Glicole Stearato; Peg-100 Stearato; Peg-120 gliceril stearato; Peg-2 stearato; Peg-5 Oleato; pegoxolo 7 stearato; Petrolato, bianco; acetato di fenilmercurico; Fosfolipone 90 g; Acido fosforico; piperazina esaidrato; Poli(dimetilsilossano/metilvinilsilossano/metilidrogenosilossano) dimetilvinile o dimetilidrossi o trimetile con blocco terminale; policarbofili; Poliestere; Polietilenglicole 1000; Polietilenglicole 3350; Polietilenglicole 400; Polietilenglicole 4000; Polietilenglicole 6000; Polietilenglicole 8000; poligliceril-3 oleato; poligliceril-4 oleato; Palmitato di poliossile; Polisorbato 20; Polisorbato 60; Polisorbato 80; poliuretano; Allume di potassio; Idrossido di potassio; Povidone K29/32; Povidoni; Promulgene D; propilenglicole; propilenglicolemonopalmitostearato; propilparabene; Quaternium-15 Cis-Forma; Biossido di silicio; biossido di silicio, colloidale; Silicone; Bicarbonato di sodio; Citrato di sodio; Idrossido di sodio; Sodio lauril solfato; Metabisolfito di sodio; Fosfato di sodio, bibasico, anidro; Fosfato di sodio, monobasico, anidro; Acido sorbico; Monostearato di sorbitano; sorbitolo; Soluzione di sorbitolo; Spermaceti; Stannoso 2-etilesanoato; Amido; Amido 1500, Pregelatinizzato; amido, mais; Stearamidoetildietilammina; Acido stearico; Alcol stearilico; acido tartarico, DI-; Terz-Butilidrochinone; Ortosilicato tetrapropilico; trolamina; Urea; Olio vegetale, idrogenato; Wecobee Fs; Cera di ceresina bianca; Cera bianca

Di seguito sono descritte vie di somministrazione non limitative per i NAV della presente invenzione.

Somministrazione parenterale e iniettabile

Le forme di dosaggio liquide per la somministrazione parenterale includono, ma non sono limitate a, emulsioni, microemulsioni, soluzioni, sospensioni, sciroppi e/o elisir farmaceuticamente accettabili. In aggiunta ai principi attivi, le forme di dosaggio liquide possono comprendere diluenti inerti comunemente utilizzati nella tecnica come, ad esempio, acqua o altri solventi, agenti solubilizzanti ed emulsionanti quali alcol etilico, alcol isopropilico, etilcarbonato, etilacetato, alcol benzilico, benzilbenzoato, propilenglicole, 1,3-butilenglicole, oli (in particolare oli di semi di cotone, di arachidi, di mais, di germe, di oliva, di ricino e di

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sesamo), glicerolo, alcol di tetraidrofurfurile, polietilenglicoli ed esteri di acido grasso di sorbitano e loro miscele. Oltre a diluenti inerti, le composizioni orali possono anche includere adiuvanti come agenti umettanti, agenti emulsionanti e sospensivanti, agenti edulcoranti, aromatizzanti e/o profumazione. In determinate forme di realizzazione per la somministrazione parenterale, le composizioni vengono miscelate con agenti solubilizzanti come CREMOPHOR®, alcol, oli, oli modificati, glicoli, polisorbati, ciclodestrine, polimeri e/o loro combinazioni.

Una composizione farmaceutica per la somministrazione parenterale può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi per l'uso in composizioni farmaceutiche per somministrazione parenterale comprende acido cloridrico, mannitolo, azoto, acetato di sodio, cloruro di sodio e idrossido di sodio.

Preparazioni iniettabili, ad esempio, sospensioni acquose o oleose iniettabili sterili possono essere formulate secondo la tecnica nota usando agenti disperdenti o umettanti e agenti sospensivanti adatti. I preparati iniettabili sterili possono essere soluzioni iniettabili sterili, sospensioni e/o emulsioni in diluenti e/o solventi parenteralmente accettabili non tossici, ad esempio, come soluzione in 1,3-butandiolo. Tra i veicoli e solventi accettabili che possono essere impiegati vi sono acqua, soluzione di Ringer, USP e soluzione isotonica di cloruro di sodio. Oli fissi sterili sono tradizionalmente impiegati come solvente o terreno di sospensione. A questo scopo può essere impiegato qualsiasi olio fisso blando inclusi mono- o digliceridi sintetici. Acidi grassi come l'acido oleico possono essere utilizzati nella preparazione di iniettabili. La formulazione sterile può anche comprendere adiuvanti come anestetici locali, conservanti e agenti tamponanti.

Le formulazioni iniettabili possono essere sterilizzate ad esempio mediante filtrazione attraverso un filtro di trattenimento dei batteri e/o incorporando agenti sterilizzanti sotto forma

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di composizioni solide sterili che possono essere disciolte o disperse in acqua sterile o altro terreno iniettabile sterile prima dell'uso.

Le formulazioni iniettabili possono essere per l'iniezione diretta in una regione di un tessuto, organo e/o soggetto. A titolo di esempio non limitativo, a un tessuto, organo e/o soggetto può essere iniettata direttamente una formulazione mediante iniezione intramiocardica nella regione ischemica. (Si veda ad esempio, Zangi et al. Nature Biotechnology 2013).

Al fine di prolungare l'effetto di un ingrediente attivo, è spesso desiderabile rallentare l'assorbimento del principio attivo dall'iniezione sottocutanea o intramuscolare. Questo può essere compiuto mediante l'uso di una sospensione liquida di materiale cristallino o amorfo con scarsa idrosolubilità. La velocità di assorbimento del farmaco quindi dipende dalla sua velocità di dissoluzione che, a sua volta, può dipendere dalla dimensione dei cristalli e dalla forma cristallina. In alternativa, l'assorbimento ritardato di una forma di farmaco somministrata per via parenterale viene ottenuto dissolvendo o sospendendo il farmaco in un veicolo oleoso. Le forme di deposito iniettabili sono realizzate formando matrici di microincapsula del farmaco in polimeri biodegradabili come polilattide-poliglicolide. A seconda del rapporto tra farmaco e polimero e della natura dello specifico polimero impiegato, è possibile controllare la velocità di rilascio del farmaco. Esempi di altri polimeri biodegradabili includono poli(ortoesteri) e poli(anidridi). Formulazioni iniettabili di deposito vengono preparate intrappolando il farmaco in liposomi o microemulsioni che sono compatibili con i tessuti corporei.

Somministrazione rettale e vaginale

Le composizioni per la somministrazione rettale o vaginale (ad esempio, transvaginale) sono tipicamente supposte che possono essere preparate mescolando le composizioni con eccipienti non irritanti adatti come burro di cacao, polietilenglicole o una cera per supposte, che sono solidi a temperatura ambiente ma liquidi a temperatura corporea e quindi si sciolgono nel retto o nella cavità vaginale e rilasciano il principio attivo.

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A titolo di esempio non limitativo, le formulazioni per la somministrazione rettale e/o vaginale possono essere preparate miscelando il farmaco con un opportuno eccipiente non irritante che sia solido a temperatura normale ma liquido a temperatura rettale e che quindi si sciolga nel retto e/o nella vagina per rilasciare il farmaco. Tali materiali comprendono burro di cacao e polietilenglicoli.

Una composizione farmaceutica per somministrazione rettale può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi per l'uso in composizioni farmaceutiche per la somministrazione rettale comprende alcol, alcol, disidratato, subacetato di alluminio, acido citrico anidro, olio di anice, acido ascorbico, palmitato di ascorbile, balsamo del Perù, acido benzoico, alcol benzilico, subgallato di bismuto, idrossianisolobutilato, idrossitoluenebutilato, butilparabene, caramello, carbomer 934, carbomer 934p, carbossipolimetilene, cerasynt-se, Alcol cetilico, burro di cacao, olio di cocco, idrogenato, gliceridi di olio di cocco/olio di noce di palma, idrogenato, estratto di semi di cola nitida, d&c giallo n. 10, diclorodifluorometano, diclorotetrafluoroetano, dimetildiottadecilammonio bentonite, calcio disodioedetato, disodioedetato, acido edetico, epilattosio, etilendiammina, grasso, commestibile, grasso, duro, fd&c blu n. 1, fd&c verde n. 3, fd&c giallo n. 6, aroma fico 827118, aroma lampone pfc-8407, fruttosio, galattosio, glicerina, gliceril palmitato, gliceril stearato, gliceril stearato/peg stearato, gliceril stearato/peg-40 stearato, glicina, idrocarburo, acido cloridrico, olio di palma idrogenato, ipromellosi , lattosio, lanolina, lecitina, olio minerale leggero, silicato di magnesio e alluminio, silicato di magnesio e alluminio idrato, metilparabene, azoto, olio di noce di palma, paraffina, petrolato, bianco, polietilenglicole 1000, polietilenglicole 1540, polietilenglicole 3350, polietilenglicole 400, polietilenglicole 4000, polietilenglicole 6000, polietilenglicole 8000, polisorbato 60, polisorbato 80, acetato di potassio, metabisolfito di potassio, propilenglicole, propilparabene, saccarina

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sodica, saccarina sodica anidra, biossido di silicio, colloidale, simeticone, benzoato di sodio, carbonato di sodio, sodio cloruro, citrato di sodio, idrossido di sodio, metabisolfito di sodio, monooleato di sorbitano, sesquioleato di sorbitano, sorbitolo, sol di sorbitolo zione, amido, steareth-10, steareth-40, saccarosio, tagatosio, d-, acido tartarico, dl-, trolamina, trometamina, olio vegetale gliceride, idrogenato, olio vegetale, idrogenato, cera, emulsionante, cera bianca, gomma di xantano e ossido di zinco.

Una composizione farmaceutica per somministrazione vaginale può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi da utilizzare in composizioni farmaceutiche per la somministrazione vaginale comprende acido adipico, alcol, denaturato, allantoina, lattosio anidro, esteri di peg-6 dell'olio di nocciolo di albicocca, solfato di bario, cera d'api, bentonite, acido benzoico, alcol benzilico, idrossianisolobutilato, idrossitoluenebutilato, lattato di calcio, carbomer 934, carbomer 934p, cellulosa, microcristallino, ceteth-20, Alcol cetostearilico, Alcol cetilico, cetil esteri cera, cetil palmitato, colesterolo, coleth, acido citrico, acido citrico monoidrato, olio di cocco/ gliceridi dell'olio di palmisti, idrogenati, crospovidone, disodioedetato, etilcellulosa, copolimero etilene-vinilacetato (28% vinilacetato), copolimero etilene-vinilacetato (9% vinilacetato), alcoli grassi, fd&c giallo n. 5, gelatina, acido glutammico, dl-, glicerina, glicerilisostearato, glicerilmonostearato, gliceril stearato, gomma di guar, polietilene ad alta densità, polimero idrogel, olio di palma idrogenato, ipromellosa 2208 (15000 mpa.s), ipromellosi, miristato isopropilico, lattico acido, acido lattico, dl-, lattosio, lattosio monoidrato, lattosio, idrato, lanolina, lanolina anidra, lecitina, lecitina, semi di soia, olio minerale leggero, silicato di alluminio di magnesio, silicato di alluminio di magnesio idrato, stearato di magnesio, stearato di metile, parabene di metile, microcristallino cera, olio minerale, acido nitrico, ottildodecanolo, olio di arachidi, peg 6-32 stearato/glicole stearato, peg-100

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stearato, peg-120 gliceril stearato, peg-2 stearato, peg-5 oleato, pegoxol 7 stearato, vaselina, bianco , acetato di fenilmercurico, fosfolipon 90 g, acido fosforico, piperazina esaidrato, poli(dimetilsilossano/metilvinilsilossano/metilidrogenosilossano) dimetilvinile o dimetilidrossi o trimetileendblocked, policarbofilo, poliestere, polietilene gly col 1000, polietilenglicole 3350, polietilenglicole 400, polietilenglicole 4000, polietilenglicole 6000, polietilenglicole 8000, poligliceril-3 oleato, poligliceril-4 oleato, poliossil palmitato, polisorbato 20, polisorbato 60, polisorbato 80, poliuretano, allume di potassio, idrossido di potassio, povidone k29/32, povidoni, promulgen d, propilenglicole, propilenglicolemonopalmitostearato, propilparaben, quaternium-15 forma cis, biossido di silicio, biossido di silicio, colloidale, silicone, bicarbonato di sodio, citrato di sodio, idrossido di sodio, laurile di sodio solfato, metabisolfito di sodio, fosfato di sodio, dibasico, anidro, fosfato di sodio, monobasico, anidro, acido sorbico, monostearato di sorbitano, sorbitolo, soluzione di sorbitolo, spermaceti, 2-etilesanoato stannoso, amido, amido 1500, pregelatinizzato, amido, mais, stearamidoetildietilammina , acido stearico, Alcol stearilico, acido tartarico, dl-, terz-butilidrochinone, tetrapropilortosilicato, trolamina, urea, olio vegetale, idrogenato, wecobeefs, cera bianca di ceresina e cera bianca.

Somministrazione orale

Le forme di dosaggio liquide per la somministrazione orale includono, ma non sono limitate a, emulsioni, microemulsioni, soluzioni, sospensioni, sciroppi e/o elisir farmaceuticamente accettabili. In aggiunta ai principi attivi, le forme di dosaggio liquide possono comprendere diluenti e/o eccipienti inerti comunemente utilizzati nella tecnica come, ad esempio, acqua o altri solventi, agenti solubilizzanti ed emulsionanti quali alcol etilico, alcol isopropilico, etilcarbonato, etilacetato, alcol benzilico, benzilbenzoato, propilenglicole, 1,3-butilenglicole, oli (in particolare oli di semi di cotone, di arachidi, di mais, di germe, di oliva, di ricino e di sesamo), glicerolo, alcol di tetraidrofurfurile, polietilenglicoli ed esteri di acido grasso di sorbitano e loro miscele. Oltre a diluenti inerti, le composizioni orali possono anche

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includere adiuvanti come agenti umettanti, agenti emulsionanti e sospensivanti, agenti edulcoranti, aromatizzanti e/o profumazione. In determinate forme di realizzazione per la somministrazione parenterale, le composizioni vengono miscelate con agenti solubilizzanti come CREMOPHOR®, alcol, oli, oli modificati, glicoli, polisorbati, ciclodestrine, polimeri e/o loro combinazioni.

Sciroppi ed elisir possono essere formulati con agenti edulcoranti, ad esempio glicerolo, propilenglicole, sorbitolo, glucosio o saccarosio. Tali formulazioni possono anche contenere un agente emolliente, un conservante e agenti aromatizzanti e coloranti. Le composizioni farmaceutiche possono essere sotto forma di una sospensione acquosa oppure oleaginosa iniettabile sterile. Questa sospensione può essere formulata secondo la tecnica nota utilizzando quegli agenti disperdenti o umettanti adatti e agenti sospensivanti che sono stati menzionati in precedenza. La preparazione iniettabile sterile può anche essere una soluzione o sospensione iniettabile sterile in un diluente o solvente parenteralmente accettabile atossico, ad esempio una soluzione in 1,3-butandiolo. Tra i veicoli e solventi accettabili che possono essere impiegati vi sono acqua, soluzione di Ringer e soluzione di cloruro di sodio isotonica. In aggiunta, oli fissi sterili sono tradizionalmente impiegati come solvente o terreno di sospensione. A questo scopo può essere impiegato qualsiasi olio fisso blando inclusi mono- o digliceridi sintetici. Inoltre, acidi grassi come l'acido oleico trovano impiego nella preparazione di iniettabili.

Sospensioni per il dosaggio orale possono contenere i principi attivi in una miscela con eccipienti adatti per la produzione di sospensioni acquose. Tali eccipienti possono essere agenti sospensivanti, come esempio non limitativo, gli agenti sospensivanti possono essere carbossimetilcellulosa sodica, metilcellulosa, idrossipropilmetilcellulosa, alginato di sodio, polivinilpirrolidone, gomma adragante e gomma di acacia; agenti disperdenti o umettanti possono essere un fosfatide presente in natura, come la lecitina, o prodotti della condensazione di un ossido di alchilene con acidi grassi, ad esempio poliossietilene stearato, o prodotti della

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condensazione di ossido di etilene con alcol alifatici a catena lunga, ad esempio, eptadecaetilenossicetanolo, o prodotti della condensazione di ossido di etilene con esteri parziali derivati da acidi grassi e un esitolo come poliossietilene sorbitolo monooleato, o prodotti della condensazione di ossido di etilene con esteri parziali derivati da acidi grassi e anidridi di esitolo, ad esempio, polietilene sorbitanomonooleato. Le sospensioni acquose possono anche contenere uno o più conservanti, ad esempio, etile o n-propile, p-idrossibenzoato, uno o più agenti coloranti, uno o più agenti aromatizzanti e uno o più agenti edulcoranti, come saccarosio o saccarina.

Le sospensioni oleose per la somministrazione orale possono essere formulate sospendendo i principi attivi in un olio vegetale, ad esempio olio di arachidi, olio di oliva, olio di sesamo oppure olio di cocco, o in un olio minerale, come paraffina liquida. Le sospensioni oleose possono contenere un agente addensante, ad esempio cera d'api, paraffina dura o alcol cetilico. Edulcoranti e agenti aromatizzanti possono essere aggiunti per fornire preparazioni orali appetibili. Queste composizioni possono essere conservate mediante l'addizione di un anti-ossidante come l'acido ascorbico.

Il dosaggio orale può anche essere sotto forma di emulsioni olio in acqua. La fase oleosa può essere un olio vegetale o un olio minerale o miscele di questi. Agenti emulsionanti adatti possono essere gomme presenti in natura, ad esempio gomma d'acacia o gomma adragante, fosfatidi presenti in natura, ad esempio soia, lecitina ed esteri o esteri parziali derivati da acidi grassi e anidridi di esitolo, anidridi, ad esempio sorbitanomonooleato e prodotti della condensazione dei detti esteri parziali con etilenossido, ad esempio poliossietilene sorbitanomonooleato. Le emulsioni possono anche contenere agenti edulcoranti e aromatizzanti.

Forme di dosaggio solide per la somministrazione orale includono capsule, compresse, pillole, polveri e granuli. In tali forme di dosaggio solide, un principio attivo viene miscelato con almeno un eccipiente inerte farmaceuticamente accettabile come citrato di sodio o fosfato

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dicalcico e/o cariche o diluenti (ad esempio amidi, lattosio, saccarosio, glucosio, mannitolo e acido silicico), leganti (ad esempio carbossimetilcellulosa, alginati, gelatina, polivinilpirrolidinone, saccarosio e acacia), umettanti (ad esempio glicerolo), agenti disgreganti (ad esempio agar, carbonato di calcio, amido di patata o di tapioca, acido alginico, determinati silicati e carbonato di sodio), agenti ritardanti di soluzione (ad esempio paraffina), acceleratori di assorbimento *(ad esempio* composti di ammonio quaternario), agenti umettanti *(ad esempio* alcol cetilico e glicerolo monostearato), assorbenti (ad esempio caolino e argilla bentonite), e lubrificanti *(ad esempio* talco, stearato di calcio, stearato di magnesio, polietilenglicoli solidi, sodio laurilsolfato) e loro miscele. Nel caso di capsule, compresse e pillole, le forme di dosaggio possono comprendere agenti tamponanti. Le forme di dosaggio solide possono anche dissolversi una volta venute a contatto con liquidi come, ma non solo, saliva e bile.

Le composizioni destinate all'uso orale possono essere preparate secondo qualsiasi metodo noto nella tecnica per la produzione di composizioni farmaceutiche e tali composizioni possono contenere uno o più tali di agenti edulcoranti, agenti aromatizzanti, agenti coloranti o conservanti al fine di fornire preparazioni farmaceuticamente appropriate e gradevoli al palato.

Le forme di dosaggio solide possono essere non rivestite o possono essere rivestite con tecniche note. In alcuni casi tali rivestimenti possono essere preparati mediante tecniche note per ritardare la disgregazione e l'assorbimento nell'apparato gastrointestinale e quindi fornire un'azione prolungata per un periodo più lungo. Ad esempio, può essere impiegato un materiale a ritardo di tempo come glicerilmonostearato o glicerildistearato.

Le formulazioni per l'uso orale possono anche essere presentate come capsule in gelatina dura in cui il principio attivo è miscelato con un diluente solido inerte, ad esempio carbonato di calcio, fosfato di calcio o caolino, o come capsule in gelatina molle in cui il principio attivo è miscelato con acqua o un mezzo oleoso, ad esempio olio di arachidi, paraffina liquida oppure olio di oliva.

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Le forme di dosaggio per la somministrazione orale possono anche essere masticabili o aspirabili (ad esempio, forma di pastiglia). Le forme di dosaggio masticabili possono essere formulazioni a rilascio prolungato come, ma non limitate a, le composizioni a rilascio prolungato descritte nella Pubblicazione internazionale n. WO2013082470 e nella pubblicazione U.S. n US20130142876. Le forme di dosaggio masticabili possono comprendere lipidi anfipatici come, ma non limitati a, quelli descritti nella Pubblicazione internazionale n. WO2013082470 e nella pubblicazione U.S. n US20130142876.

Somministrazione topica o transdermica

Come qui descritto, le composizioni contenenti i NAV dell'invenzione possono essere formulate per la somministrazione per via transdermica. La pelle può essere un sito bersaglio ideale per il rilascio in quanto è facilmente accessibile. L'espressione genica può essere limitata non solo alla pelle, evitando potenzialmente la tossicità non specifica, ma anche a strati e tipi di cellule specifici all'interno della pelle.

Il sito di espressione cutanea delle composizioni rilasciate dipenderà dalla via di somministrazione dell'acido nucleico. Sono comunemente considerati due percorsi per fornire NAV alla pelle: (ii) iniezione intradermica; e (iii) rilascio sistemico (ad esempio per il trattamento di malattie dermatologiche che colpiscono sia la regione cutanea che quella extracutanea). I NAV possono essere somministrati alla pelle mediante diversi approcci noti nella tecnica. Dopo la somministrazione dell'acido nucleico, sono stati rilevati prodotti genici in un numero di diversi tipi di cellule della pelle, inclusi, ma non limitati a, cheratinociti basali, cellule delle ghiandole sebacee, fibroblasti dermici e macrofagi dermici.

In un caso, la descrizione prevede che le composizioni di NAV siano consegnate in più di un'iniezione.

In un caso, prima della somministrazione transdermica almeno un'area di tessuto, come la pelle, può essere sottoposta a un dispositivo e/o una soluzione che può aumentare la

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permeabilità. In un caso, il tessuto può essere sottoposto a un dispositivo di abrasione per aumentare la permeabilità della pelle (si veda la pubblicazione di brevetto U.S. n. 20080275468). In un altro caso, il tessuto può essere sottoposto a un dispositivo di potenziamento a ultrasuoni. Un dispositivo di miglioramento a ultrasuoni può includere, a titolo esemplificativo, i dispositivi descritti nella Pubblicazione U.S. n. 20040236268 e nei brevetti U.S. nn. 6,491,657 e 6,234,990. I metodi per migliorare la permeabilità dei tessuti sono descritti nella Pubblicazione U.S. n. 20040171980 e 20040236268 e nel brevetto U.S. n. 6,190,315.

In un caso, un dispositivo può essere utilizzato per aumentare la permeabilità del tessuto prima di fornire formulazioni di mRNA modificato qui descritte. La permeabilità della pelle può essere misurata mediante metodi noti nella tecnica e/o descritti nelbrevetto US N. 6,190,315. Come esempio non limitativo, una formulazione di mRNA modificata può essere rilasciata mediante i metodi di rilascio di farmaci descritti nel brevetto U.S. n. 6,190,315.

In un altro esempio non limitativo, il tessuto può essere trattato con una miscela eutettica di crema di anestetici locali (EMLA) prima, durante e/o dopo che il tessuto può essere sottoposto a un dispositivo che può aumentare la permeabilità. Katz et al. (AnesthAnalg (2004); 98:371-76) ha mostrato che utilizzando la crema EMLA in combinazione con una bassa energia, si osservava un'insorgenza di analgesia cutanea superficiale appena 5 minuti dopo un pretrattamento con ultrasuoni a bassa energia.

In un caso, potenziatori possono essere applicati al tessuto prima, durante e/o dopo che il tessuto è stato trattato per aumentare la permeabilità. I potenziatori includono, ma non sono limitati a, potenziatori di trasporto, potenziatori fisici e potenziatori di cavitazione. Esempi non limitativi di potenziatori sono descritti nel brevetto U.S. n. 6,190,315.

In un caso, un dispositivo può essere utilizzato per aumentare la permeabilità del tessuto prima di rilasciare le formulazioni di NAV descritti nel presente contesto, che possono inoltre contenere una sostanza che invoca una risposta immunitaria. In un altro esempio non limitativo,

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una formulazione contenente una sostanza per invocare una risposta immunitaria può essere somministrata mediante i metodi descritti nellepubblicazioni U.S. nn. 20040171980 e 20040236268.

Le forme di dosaggio per la somministrazione transdermica di una composizione possono includere unguenti, paste, creme, lozioni, gel, polveri, soluzioni, spray, inalanti e/o cerotti. Generalmente, un ingrediente attivo è miscelato in condizioni sterili con un eccipiente farmaceuticamente accettabile e/o possono essere richiesti eventuali conservanti e/o tamponi necessari.

Inoltre, la presente descrizione contempla l'uso di cerotti transdermici, che spesso hanno l'ulteriore vantaggio di fornire il rilascio controllato di un composto al corpo. Tali forme di dosaggio possono essere preparate, ad esempio, dissolvendo e/o erogando il composto nel mezzo adatto. In alternativa o in aggiunta, la velocità può essere controllata fornendo una membrana di controllo della velocità e/o disperdendo il composto una matrice e/o gel polimerica/o.

Una composizione farmaceutica di NAV per somministrazione transdermica può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi da utilizzare in composizioni farmaceutiche per la somministrazione transdermica comprende copolimero acrilato, copolimero acido acrilico-isoottil acrilato, adesivo acrilico 788, adcote 72a103, resina aerotex 3730, Alcol, Alcol, disidratato, alluminio poliestere, bentonite, butilatoidrossitoluene, glicole butilenico, acido butirrico, trigliceride caprilico/caprico, carbomer 1342, carbomer 940, carbomer 980, carragenina, cetilpiridinio cloruro, acido citrico, crospovidone, daubert 1-5 pestr (opaco) 164z, dietilenglicolemonoetil etere, dietilesil ftalato, dimethiconecopolyol, dimethicone mdx4-4210, dimethiconemedicalfluid 360, dimetilamminoetil metacrilato - butil metacrilato -

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copolimero di metil metacrilato, glicole dipropilenico, duro-tak 280-2516, duro-tak 387-2516, duro-tak 80-1196, duro-tak 87-2070, duro-tak 87-2194, duro-tak 87-2287, duro-tak 87-2296, duro-tak 87-2888, duro-tak 87-2979, disodioedetato, acetato di etile, oleato di etile, etilcellulosa s, copolimero etilene vinil acetato, copolimero etilene-propilene, esteri di acidi grassi, gelva 737, glicerina, glicerillaurato, gliceril oleato, eptano, polietilene ad alta densità, acido cloridrico, polibutene idrogenato 635-690, idrossietilcellulosa, idrossipropilcellulosa, isopropil miristato , isopropil palmitato, lattosio, lanolina anidra, lauril lattato, lecitina, acido levulinico, olio minerale leggero, adesivo medico modificato S-15, Alcol metilico, metillaurato, olio minerale, azoto, ottisalato, ottildodecanolo, acido oleico, Alcol oleilico, oleile oleato, pentadecalactone, petrolato, bianco, polacrilin, acido poliacrilico (250000 mw), polibutene (1400 mw), poliestere, copolimero poliestere poliammina, rayon poliestere, polietilentereftalati, poliisobutilene, poliisobutilene (1100000 mw), poliisobutilene (35000 mw), poliisobutilene 178-236, poliisobutilene 241-294, poliisobutilene 35-39, poliisobutilene a basso peso molecolare, poliisobutilene a medio peso molecolare, poliisobutilene/po adesivo al libutene, polipropilene, acetato di polivinile, alcol polivinilico, cloruro di polivinile, copolimero di polivinilcloruro-acetato di polivinile, polivinilpiridina, povidone k29132, povidoni, propilenglicole, monolaurato di propilenglicole, ra-2397, ra-3011, silicio, biossido di silicio, colloidale, silicone, adesivo in silicone 4102, adesivo in silicone 4502, adesivo in silicone bio-psa q7-4201, adesivo in silicone bio-psa q7-4301, striscia di pellicola in silicone/poliestere, cloruro di sodio, citrato di sodio, idrossido di sodio, monooleato di sorbitano, hectorite di stearalconio /carbonato di propilene, biossido di titanio, triacetina, trolamina, trometamina, union 76 amsco-res 6038 e viscosa/cotone.

Una composizione farmaceutica di NAV per somministrazione intradermica può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA)

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statunitense. Un elenco non esaustivo di ingredienti inattivi da utilizzare in composizioni farmaceutiche per la somministrazione intradermica comprende benzalconio cloruro, alcol benzilico, carbossimetilcellulosa sodica, creatinina, disodioedetato, glicerina, acido cloridrico, metacresolo, metilparaben, fenolo, polisorbato 80, solfato di protamina, acetato di sodio, bisolfito di sodio, cloruro di sodio, idrossido di sodio, fosfato di sodio, fosfato di sodio, dibasico, fosfato di sodio, dibasico, eptaidrato, fosfato di sodio, monobasico, anidro e cloruro di zinco.

Somministrazione del deposito

Come descritto nel presente contesto, in alcuni casi, la composizione è formulata ad esempio, in depositi per il rilascio prolungato. Generalmente, un organo o tessuto specifico (un "tessuto bersaglio") è preso di mira per la somministrazione.

In alcuni aspetto della descrizione, i NAV sono trattenuti spazialmente all'interno o in prossimità di un tessuto bersaglio. Sono forniti metodi per fornire una composizione a un tessuto bersaglio di un soggetto mammifero mettendo a contatto il tessuto bersaglio (che contiene una o più cellule bersaglio) con la composizione in condizioni tali che la composizione, in particolare il/i componente/i di acido nucleico/i della composizione, è sostanzialmente trattenuta nel tessuto bersaglio, il che significa che almeno il 10, 20, 30, 40, 50, 60, 70, 80, 85, 90, 95, 96, 97, 98, 99, 99,9, 99,99 o più del 99,99% della composizione viene trattenuto nel tessuto bersaglio. Vantaggiosamente, la ritenzione viene determinata misurando la quantità dell'acido nucleico presente nella composizione che entra in una o più cellule bersaglio. Ad esempio, almeno l'1, 5, 10, 20, 30, 40, 50, 60, 70, 80, 85, 90, 95, 96, 97, 98, 99, 99,9, 99,99 o più del 99,99% degli acidi nucleici somministrati al soggetto sono presenti a livello intracellulare in un periodo di tempo successivo alla somministrazione. Ad esempio, l'iniezione intramuscolare a un soggetto mammifero viene eseguita utilizzando una composizione acquosa contenente un acido ribonucleico e un reagente di trasfezione e la ritenzione della composizione

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viene determinata misurando la quantità di acido ribonucleico presente nelle cellule muscolari.

Gli aspetti della descrizione riguardano metodi per fornire una composizione in un tessuto bersaglio di un soggetto mammifero, mettendo a contatto il tessuto bersaglio (contenente una o più cellule bersaglio) con la composizione in condizioni tali che la composizione sia sostanzialmente trattenuta nel tessuto bersaglio. La composizione contiene una quantità efficace di polinucleotidi tale che il polipeptide di interesse sia prodotto in almeno una cellula bersaglio. Le composizioni generalmente contengono un agente di penetrazione cellulare, sebbene sia contemplato anche NAV "nudo" (come acidi nucleici senza un agente di penetrazione cellulare o altro agente) e un veicolo farmaceuticamente accettabile.

In alcune circostanze, la quantità di una proteina prodotta dalle cellule in un tessuto è desiderabilmente aumentata. Preferibilmente, questo aumento della produzione di proteine è limitato spazialmente alle cellule all'interno del tessuto bersaglio. Pertanto, vengono forniti metodi per aumentare la produzione di una proteina di interesse in un tessuto di un soggetto mammifero. Viene fornita una composizione che contiene polinucleotidi, caratterizzata dal fatto che è stata determinata una quantità unitaria di composizione per produrre il polipeptide di interesse in una percentuale sostanziale di cellule contenute all'interno di un volume predeterminato del tessuto bersaglio.

In alcune forme di realizzazione, la composizione di NAV include una pluralità di diversi polinucleotidi, dove uno o più di uno dei polinucleotidi codifica per un polipeptide di interesse. Facoltativamente, la composizione contiene anche un agente di penetrazione cellulare per favorire il rilascio intracellulare della composizione. Viene determinata la dose della composizione necessaria per produrre il polipeptide di interesse in una percentuale sostanziale di cellule contenute all'interno del volume predeterminato del tessuto bersaglio (generalmente, senza indurre una produzione significativa del polipeptide di interesse nel tessuto adiacente al predeterminato volume o distalmente al tessuto bersaglio). Successivamente a tale

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determinazione, la dose determinata viene introdotta direttamente nel tessuto del soggetto mammifero.

In un caso, la descrizione prevede che i NAV siano rilasciati in più di un'iniezione o mediante iniezioni a dose frazionata.

In un caso, la descrizione può essere trattenuta vicino al tessuto bersaglio utilizzando un piccolo serbatoio di farmaco monouso, microinfusore o pompa osmotica. Esempi non limitativi di pompe patch includono quelle prodotte e/o vendute da BD® (Franklin Lakes, NJ), Insulet Corporation (Bedford, MA), SteadyMedTherapeutics (San Francisco, CA), Medtronic (Minneapolis, MN) (ad esempio, MiniMed), UniLife (York, PA), Valeritas (Bridgewater, NJ) e SpringLeafTherapeutics (Boston, MA). Un esempio non limitativo di pompa osmotica sono quelle prodotte da DURECT® (Cupertino, CA) (ad esempio DUROS® e ALZET ®).

Sommistrazione polmonare

Una composizione farmaceutica può essere preparata, confezionata e/o venduta in una formulazione adatta per la somministrazione polmonare attraverso la cavità buccale. Una tale formulazione può comprendere particelle secche che comprendono il principio attivo e che hanno un diametro nell'intervallo da circa 0,5 nm a circa 7 nm da circa 1 nm a circa 6 nm. Tali composizioni sono opportunamente sotto forma di polveri secche per la somministrazione utilizzando un dispositivo comprendente un serbatoio di polvere secca a cui può essere diretto un flusso di propellente per disperdere la polvere e/o utilizzando un contenitore di erogazione di solvente/polvere autopropellente come un dispositivo comprendente il principio attivo disciolto e/or sospeso in un propellente a basso punto di ebollizione in un contenitore sigillato. Tali polveri comprendono particelle in cui almeno il 98% delle particelle in peso ha un diametro maggiore di 0,5 nm almeno il 95% delle particelle in numero ha un diametro inferiore a 7 nm. In alternativa, almeno il 95% delle particelle in peso ha un diametro maggiore di 1 nm almeno il 90% delle particelle in numero ha un diametro inferiore a 6 nm. Le composizioni in polvere

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secca possono includere un diluente solido in polvere fine come lo zucchero e sono opportunamente fornite in una forma di dose unitaria.

I propellenti a basso punto di ebollizione generalmente includono propellenti liquidi aventi un punto di ebollizione inferiore a 65 °F a pressione atmosferica. Generalmente il propellente può costituire dal 50% al 99,9% (p/p) della composizione e il principio attivo può costituire dallo 0,1% al 20% (p/p) della composizione. Un propellente può inoltre comprendere ingredienti aggiuntivi come un liquido non ionico e/o tensioattivo anionico solido e/o un diluente solido (che può avere una granulometria dello stesso ordine delle particelle che comprendono il principio attivo).

A titolo di esempio non limitativo, i NAV qui descritti possono essere formulati per il rilascio polmonare con i metodi descritti nel brevetto U.S. n. 8,257,685.

Le composizioni farmaceutiche di NAV formulate per il rilascio polmonare possono fornire un principio attivo sotto forma di goccioline di una soluzione e/o sospensione. Tali formulazioni possono essere preparate, confezionate, e/o vendute come soluzioni acquose e/o alcoliche diluite e/o sospensioni, facoltativamente sterili, comprendenti il principio attivo, e possono essere opportunamente somministrate utilizzando qualsiasi dispositivo di nebulizzazione e/o atomizzazione. Tali formulazioni possono inoltre comprendere uno o più ingredienti aggiuntivi inclusi, tuttavia senza limitazioni, un agente aromatizzante come saccarina sodica, un olio volatile, un agente tamponante, un agente tensioattivo, e/o un conservante come il metilidrossibenzoato. Le goccioline fornite da questa via di somministrazione possono avere un diametro medio nell'intervallo da circa 0,1 nm a circa 200 nm.

Le composizioni e le formulazioni qui fornite che possono essere utilizzate per il rilascio polmonare possono inoltre comprendere uno o più tensioattivi. Tensioattivi o componenti tensioattivi adatti per migliorare l'assorbimento delle composizioni dell'invenzione

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includono forme sintetiche e naturali, nonché complete e troncate di proteina A del tensioattivo, proteina B del tensioattivo, proteina C del tensioattivo, proteina D del tensioattivo e Proteina E del tensioattivo, disaturata fosfatidilcolina (diversa dal dipalmitoile), dipalmitoilfosfatidilcolina, fosfatidilcolina, fosfatidilglicerolo, fosfatidilinositolo, fosfatidiletanolammina, fosfatidilserina; acido fosfatidico, ubichinoni, lisofosfatidiletanolamina, lisofosfatidilcolina, palmitoil-lisofosfatidilcolina, deidroepiandrosterone, dolicoli, acido solfatidico, glicerolo-3-fosfato, diidrossiacetone fosfato, glicerolo, glicero-3-fosfocolina, diidrossiacetone, palmitato, citidinadifosfato (CDP) diacilglicerolo, CDP, colina, colina fosfato; così come corpi lamellari naturali e artificiali che sono i veicoli naturali dei componenti di tensioattivo, acidi grassi omega-3, acido polienico, acido polienoico, lecitina, acido palmitinico, copolimeri a blocchi non ionici di etilene o ossidi di propilene, poliossipropilene, monomerico e polimerico, poliossietilene, monomerico e polimerico, poli(vinilammina) con catene laterali destrano e/o alcanoile, Brij 35, Triton X-100 e tensioattivi sintetici ALEC, Exosurf, Survan e Atovaquone, tra gli altri. Questi tensioattivi possono essere usati come tensioattivi singoli o come parte di un tensioattivo a più componenti in una formulazione, o come aggiunte legate in modo covalente alle estremità 5' e/o 3' del componente di acido nucleico di una composizione farmaceutica nel presente contesto.

Somministrazione intranasale, nasale e buccale

Le formulazioni descritte nel presente contesto come utili per il rilascio polmonare sono utili per il rilascio intranasale di una composizione farmaceutica di NAV. Un'altra formulazione adatta per la somministrazione intranasale è una polvere grossolana comprendente il principio attivo e avente una particella media da circa 0,2 a 500 μm. Tale formulazione viene somministrata nel modo in cui si prende il tabacco da fiuto, *vale a dire,* mediante inalazione rapida attraverso il passaggio nasale da un contenitore della polvere tenuto vicino al naso.

Le formulazioni adatte per la somministrazione nasale possono, ad esempio,

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comprendere da circa lo 0,1% (p/p) e fino al 100% (p/p) del principio attivo e possono comprendere uno o più dei principi aggiuntivi descritti nel presente contesto. Una composizione farmaceutica può essere preparata, confezionata, e/o venduta in una formulazione adatta alla somministrazione buccale. Tali formulazioni possono, ad esempio, essere sotto forma di compresse e/o pastiglie realizzate con metodi tradizionali e possono, ad esempio, dallo 0,1% al 20% (p/p) del principio attivo, l'equilibrio comprendente una composizione solubile per via orale e/o degradabile e, facoltativamente, uno o più degli ingredienti aggiuntivi descritti nel presente contesto. In alternativa, le formulazioni adatte per la somministrazione buccale possono comprendere una polvere e/o una soluzione aerosolizzata e/o atomizzata e/o sospensione comprendente il principio attivo. Tali formulazioni in polvere, aerosolizzate e/o aerosolizzate, quando disperse, possono avere una granulometria e/o dimensione delle goccioline media nell'intervallo da circa 0,1 nm a circa 200 nm, e possono inoltre comprendere uno o più degli ingredienti aggiuntivi descritti nel presente contesto.

Una composizione farmaceutica di NAV per somministrazione per inalazione (respiratoria) può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi da utilizzare in composizioni farmaceutiche per la somministrazione per inalazione (respiratoria) include acetone bisolfito di sodio, acetilcisteina, alcol, alcol, disidratato, ammoniaca, apaflurano, acido ascorbico, benzalconio cloruro, carbonato di calcio, anidride carbonica, cetilpiridinio cloruro, clorobutanolo, acido citrico, d&c giallo n. 10, diclorodifluorometano, diclorotetrafluoroetano, disodioedetato, sodio edetato, fd&c giallo n. 6, fluorocloroidrocarburi, gelatina, glicerina, glicina, acido cloridrico, acido cloridrico, diluito, lattosio, lattosio monoidrato, lecitina, lecitina, soia idrogenata, lecitina, semi di soia, lisina monoidrato, mannitolo, mentolo, metilparaben, acido nitrico, azoto, norflurano, acido oleico, polietilenglicole 1000, povidone k25,

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propilenglicole, propilparabene, saccarina, saccarina sodica, biossido di silicio, colloidale, bisolfato di sodio, bisolfito di sodio, cloruro di sodio, citrato di sodio, idrossido di sodio, sodio lauril solfato, sodio metabisolfito, sodio solfato anidro , sodio solfito, sorbitanotrioleato, acido solforico, timolo, biossido di titanio, tricloromonofluorometano, trometamina e ossido di zinco.

Una composizione farmaceutica di NAV per somministrazione nasale può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi per l'uso in composizioni farmaceutiche per somministrazione nasale comprende acido acetico, alcol, disidratato, allil alfa-ionone, destrosio anidro, citrato trisodico anidro, benzalconio cloruro, benzetonio cloruro, alcol benzilico, idrossianisolobutilato, idrossitoluenebutilato, caffeina, anidride carbonica, carbossimetilcellulosa sodica, cellulosa microcristallina, clorobutanolo, acido citrico, acido citrico monoidrato, destrosio, diclorodifluorometano, diclorotetrafluoroetano, disodioedetato, glicerina, glicerolo estere di colofonia idrogenata, acido cloridrico, ipromellosa 2910 (15000 mpa.s), metilcellulosa, metilparaben, azoto, norflurano, acido oleico, petrolato, bianco, alcol feniletilico, polietilenglicole 3350, polietilenglicole 400, poliossil 400 stearato, polisorbato 20, polisorbato 80, fosfato di potassio, monobasico, sorbato di potassio, propilenglicole, propilparaben, sodio acetato, sodio cloruro, sodio citrato e, idrossido di sodio, fosfato di sodio, fosfato di sodio, dibasico, fosfato di sodio, dibasico, anidro, fosfato di sodio, dibasico, diidrato, fosfato di sodio, dibasico, dodecaidrato, fosfato di sodio, dibasico, eptaidrato, fosfato di sodio, monobasico, anidro, fosfato di sodio , monobasico, diidrato, sorbitanotrioleato, sorbitolo, soluzione di sorbitolo, sucralosio, acido solforico, tricloromonofluorometano e citrato trisodico diidrato.

Somministrazione oftalmica e auricolare (otica).

Una composizione farmaceutica di NAV può essere preparata, confezionata e/o venduta in una formulazione adatta per la somministrazione a e/o intorno all'occhio e/o per la

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somministrazione all'orecchio (ad esempio, somministrazione auricolare (otica)). Esempi non limitativi di via di somministrazione per la somministrazione a e/o intorno all'occhio includono retrobulbare, congiuntivale, intracorneale, intraoculare, intravitreale, oftalmica e subcongiuntivale. Tali formulazioni possono, ad esempio, essere sotto forma di gocce oculari comprendenti, ad esempio, una soluzione e/o sospensione del principio attivo allo 0,1/1,0% (p/p) in un eccipiente liquido acquoso o oleoso. Tali gocce possono inoltre comprendere agenti tamponanti, sali, e/o uno o più eventuali ingredienti aggiuntivi descritti nel presente contesto. Altre formulazioni somministrabili oftalmicamente che sono utili includono quelle che comprendono il principio attivo in forma microcristallina e/o in una preparazione liposomiale. Gocce auricolari e/o gocce oculari sono contemplate come rientranti nell'ambito di questa invenzione. Un dispositivo a film sottile multistrato può essere preparato per contenere una composizione farmaceutica da somministrare all'occhio e/o al tessuto circostante.

Una composizione farmaceutica di NAV per somministrazione oftalmica può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi per l'uso in composizioni farmaceutiche per la somministrazione oftalmica comprende acido acetico, alcol, alcol, disidratato, acido alginico, amerchol-cab, idrossido di ammonio, citrato trisodico anidro, antipirina, benzalconio cloruro, benzetonio cloruro, benzododecinio bromuro , acido borico, caffeina, cloruro di calcio, carbomer 1342, carbomer 934p, carbomer 940, carbomeromopolymertype b (allilpentaeritritolo reticolato), carbossimetilcellulosa sodica, olio di ricino, Alcol cetilico, clorobutanolo, clorobutanolo, anidro, colesterolo, acido citrico, acido citrico monoidrato, creatinina, dietanolammina, dietilesilftalato, copolimero di divinilbenzene stirene, disodioedetato, disodioedetato anidro, sodio edetato, copolimero di etilene vinil acetato, gomma di gellano (basso acile), glicerina, gliceril stearato, polietilene ad alta densità, gel di

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idrocarburi, plastificato, cloridrico acido, acido cloridrico, diluito, idrossietilcellulosa, idrossipropia l metilcellulosa 2906, ipromellosa 2910 (15000 mpa.s), ipromellosi, jelene, lanolina, alcoli della lanolina, lanolina anidra, derivati non ionici della lanolina, lauralconio cloruro, lauroilsarcosina, olio minerale leggero, cloruro di magnesio, mannitolo, metilcellulosa (4000 mpa.s.), metilcellulosa, metilparaben, olio minerale, acido nitrico, azoto, nonoxinol-9, ottoxinol-40, ottilfenolo polimetilene, petrolato, petrolato, bianco, Alcol feniletilico, acetato di fenilmercurico, nitrato di fenilmercurico, acido fosforico, cloruro di polidronio, poloxamer 188, poloxamer 407, policarbofili, polietilenglicole 300, polietilenglicole 400, polietilenglicole 8000, poliossietilene - poliossipropilene 1800, poliossil 35 olio di ricino, poliossil 40 olio di ricino idrogenato, poliossil 40 stearato, polipropilenglicole, polisorbato 20, polisorbato 60, polisorbato 80, alcol polivinilico , acetato di potassio, cloruro di potassio, fosfato di potassio, monobasico, sorbato di potassio, povidone k29/32, povidone k30, povido ne k90, povidoni, propilenglicole, propilparaben, carbonato di sodio, sodio acetato, sodio bisolfato, sodio bisolfito, sodio borato, sodio borato decaidrato, sodio carbonato, sodio carbonato monoidrato, sodio cloruro, sodio citrato, sodio idrossido, sodio metabisolfito, sodio nitrato , fosfato di sodio, fosfato di sodio diidrato, fosfato di sodio, dibasico, fosfato di sodio, dibasico, anidro, fosfato di sodio, dibasico, diidrato, fosfato di sodio, dibasico, eptaidrato, fosfato di sodio, monobasico, fosfato di sodio, monobasico, anidro, fosfato di sodio, monobasico , diidrato, fosfato di sodio, monobasico, monoidrato, solfato di sodio, solfato di sodio anidro, solfato di sodio decaidrato, solfito di sodio, tiosolfato di sodio, acido sorbico, monolaurato di sorbitano, sorbitolo, soluzione di sorbitolo, ossiclorocomplesso stabilizzato, acido solforico, thimerosal, biossido di titanio, tocoferolano, citrato trisodico diidrato, tritone 720, trometamina, tiloxapolo e cloruro di zinco.

Una composizione farmaceutica di NAV per la somministrazione retrobulbare può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA)

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statunitense. Un elenco non esaustivo di ingredienti inattivi per l'uso in composizioni farmaceutiche per la somministrazione retrobulbare include acido cloridrico e idrossido di sodio.

Una composizione farmaceutica di NAV per somministrazione intraoculare può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi da utilizzare in composizioni farmaceutiche per la somministrazione intraoculare comprende benzalconio cloruro, calcio cloruro, acido citrico monoidrato, acido cloridrico, magnesio cloruro, alcol polivinilico, potassio cloruro, sodio acetato, sodio cloruro, sodio citrato e sodio idrossido.

Una composizione farmaceutica di NAV per somministrazione intravitreale può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi da utilizzare in composizioni farmaceutiche per somministrazione intravitreale comprende calcio cloruro, carbossimetilcellulosa sodica, cellulosa, microcristallina, ialuronato di sodio, acido cloridrico, magnesio cloruro, magnesio stearato, polisorbato 80, alcol polivinilico, cloruro di potassio, acetato di sodio , sodio bicarbonato, sodio carbonato, sodio cloruro, sodio idrossido, sodio fosfato bibasico eptaidrato, sodio fosfato monobasico monoidrato e trisodio citrato disidratato.

Una composizione farmaceutica di NAV per la somministrazione sottocongiuntivale può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi per l'uso in composizioni farmaceutiche per la somministrazione subcongiuntivale include alcol benzilico, acido cloridrico e idrossido di sodio.

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Una composizione farmaceutica di NAV per somministrazione auricolare può comprendere almeno un ingrediente inattivo. Qualsiasi o nessuno degli ingredienti inattivi utilizzati potrebbe essere stato approvato dalla Food and Drug Administration (FDA) statunitense. Un elenco non esaustivo di ingredienti inattivi da utilizzare in composizioni farmaceutiche per la somministrazione auricolare comprende acido acetico, acetato di alluminio, solfato di alluminio anidro, cloruro di benzalconio, cloruro di benzetonio, alcol benzilico, acido borico, carbonato di calcio, alcol cetilico, clorobutanolo, cloroxilenolo, citrico acido, creatinina, solfato rameico, solfato rameico anidro, disodioedetato, acido edetico, glicerina, gliceril stearato, acido cloridrico, idrocortisone, idrossietilcellulosa, isopropil miristato, acido lattico, lecitina, idrogenato, metilparaben, olio minerale, petrolato, petrolato, bianco, alcol feniletilico, poliossil 40 stearato, poliossil stearato, polisorbato 20, polisorbato 80, alcol polivinilico, metabisolfito di potassio, fosfato di potassio, monobasico, povidone k90f, povidoni, propilenglicole, propilenglicolediacetato, propilparaben, acetato di sodio, bisolfito di sodio, borato di sodio , sodio cloruro, sodio citrato, sodio idrossido, sodio fosfato, di basico, anidro, sodio fosfato, bibasico, eptaidrato, sodio fosfato, monobasico, anidro, sodio solfito, acido solforico e timerosal.

Combinazioni

I NAV possono essere utilizzati in combinazione con uno o più altri agenti terapeutici, profilattici, diagnostici o di imaging. Con "in combinazione con", non si intende implicare che gli agenti debbano essere somministrati contemporaneamente e/o formulati per il rilascio insieme, sebbene questi metodi di rilascio rientrino nell'ambito della presente descrizione. Le composizioni possono essere somministrate contemporaneamente con, prima di o successive a uno o più altre sostanze terapeutiche o procedure mediche desiderate. In generale, ciascun agente sarà somministrato a una dose e/o una programmazione determinata per quell'agente. In alcuni casi, la presente descrizione comprende il rilascio di composizioni farmaceutiche,

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profilattiche, diagnostiche o di imaging in combinazione con agenti che possono migliorare la loro biodisponibilità, ridurre e/o modificare il loro metabolismo, inibire la loro escrezione e/o modificare la loro distribuzione all'interno del corpo.

Le combinazioni possono essere convenientemente presentate per l'uso sotto forma di una formulazione farmaceutica e quindi composizioni farmaceutiche comprendenti una combinazione come definita sopra insieme a un diluente o veicolo farmaceuticamente accettabile rappresentano un ulteriore aspetto della descrizione.

I singoli composti di tali combinazioni possono essere somministrati sia in sequenza sia simultaneamente in formulazioni farmaceutiche separate o combinate. In un caso, i singoli composti verranno somministrati simultaneamente in una formulazione farmaceutica combinata.

Si apprezzerà inoltre che agenti attivi terapeutici, profilattici, diagnostici o di imaging utilizzati in combinazione possono essere somministrati insieme in un'unica composizione o somministrati separatamente in composizioni diverse. In generale, ci si aspetta che gli agenti utilizzati in combinazione siano utilizzati a livelli che non superano i livelli a cui essi sono utilizzati singolarmente. In alcuni casi, i livelli utilizzati in combinazione saranno inferiori rispetto a quelli utilizzati singolarmente. In un caso, le combinazioni, ciascuna o insieme, possono essere somministrate secondo i regimi di dosaggio frazionato qui descritti.

Dosaggio

La presente descrizione fornisce metodi che comprendono la somministrazione dei NAV e in conformità con l'informativa a un soggetto che ne abbia necessità. La quantità esatta necessaria varierà da soggetto a soggetto, a seconda della specie, dell'età e della condizione generale del soggetto, della gravità della patologia, della specifica composizione, della sua modalità di somministrazione, della sua modalità di attività,. Le composizioni secondo la descrizione sono tipicamente formulate in forma di unità di dosaggio per facilità di somministrazione e uniformità di dosaggio. Risulterà chiaro, tuttavia, che l'uso quotidiano totale

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delle composizioni della presente descrizione può essere deciso da parte del medico curante nell'ambito di un affidabile giudizio medico. Lo specifico livello di dose terapeuticamente efficace, profilatticamente efficace, o di imaging appropriato per qualsiasi paziente specifico dipenderà da una varietà di fattori, incluso il disturbo trattato e la gravità del disturbo; l'attività del composto specifico impiegato; la composizione specifica impiegata; l'età, il peso corporeo, lo stato di salute generale, il sesso e l'alimentazione del paziente; il tempo di somministrazione, la via di somministrazione e la velocità di escrezione del composto specifico impiegato; la durata del trattamento; i farmaci utilizzati in associazione o contemporaneamente al composto specifico impiegato; e fattori simili ben noti nelle tecniche mediche.

In alcuni casi, le composizioni secondo la presente descrizione possono essere somministrate a livelli di dosaggio sufficienti per rilasciare da circa 0,0001 mg/kg a circa 100 mg/kg, da circa 0,001 mg/kg a circa 0,05 mg/kg, da circa 0,005 mg /kg a circa 0,05 mg/kg, da circa 0,001 mg/kg a circa 0,005 mg/kg, da circa 0,05 mg/kg a circa 0,5 mg/kg, da circa 0,01 mg/kg a circa 50 mg/kg, da circa 0,1 mg/kg a circa 40 mg/kg, da circa 0,5 mg/kg a circa 30 mg/kg, da circa 0,01 mg/kg a circa 10 mg/kg, da circa 0,1 mg/kg a circa 10 mg/kg, o da circa 1 mg/kg a circa 25 mg/kg, del peso corporeo del soggetto al giorno, una o più volte al giorno, per ottenere l'effetto terapeutico, diagnostico, profilattico o di imaging desiderato (si veda ad esempio l'intervallo di dosi unitarie descritto nella pubblicazione internazionale n. WO2013078199). Il dosaggio desiderato può essere erogato tre volte al giorno, due volte al giorno, una volta al giorno, a giorni alterni, ogni tre giorni, ogni settimana, ogni due settimane, ogni tre settimane o ogni quattro settimane. In determinati casi, il dosaggio desiderato può essere rilasciato usando più somministrazioni (ad esempio due, tre, quattro, cinque, sei, sette, otto, nove, dieci, undici, dodici, tredici, quattordici o più somministrazioni). Quando vengono impiegate somministrazioni multiple, possono essere utilizzati regimi di dosaggio frazionato come quelli qui descritti.

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Secondo la presente descrizione, i NAV possono essere somministrati in regimi a dose frazionata. Come usato qui, una "dose frazionata" è la divisione della singola dose unitaria o della dose giornaliera totale in due o più dosi, ad esempio, due o più somministrazioni della singola dose unitaria. Come usato qui, una "singola dose unitaria" è una dose di qualsiasi terapia somministrata in una dose/in una volta/via singola/punto di contatto singolo, vale a dire, singolo evento di somministrazione. Come usato qui, una "dose giornaliera totale" è una quantità data o prescritta in un periodo di 24 ore. Può essere somministrato come singola dose unitaria. In un caso, i NAV della presente descrizione vengono somministrati a un soggetto in dosi frazionate. I NAV possono essere formulati solo in tampone o in una formulazione qui descritta.

Forme di dosaggio

Una composizione farmaceutica di NAV descritta nel presente contesto può essere formulata in una forma di dosaggio descritta nel presente contesto, come intranasale, intratracheale o iniettabile (ad esempio endovenosa, intraoculare, intravitreale, intramuscolare, intracardiaca, intraperitoneale, sottocutanea).

Forme di dosaggio liquide

Le forme di dosaggio liquide per la somministrazione parenterale includono, ma non sono limitate a, emulsioni, microemulsioni, soluzioni, sospensioni, sciroppi e/o elisir farmaceuticamente accettabili. In aggiunta ai principi attivi, le forme di dosaggio liquide possono comprendere diluenti inerti comunemente utilizzati nella tecnica inclusi,tuttavia senza limitazioni, acqua o altri solventi, agenti solubilizzanti ed emulsionanti quali alcol etilico, alcol isopropilico, etilcarbonato, etilacetato, alcol benzilico, benzilbenzoato, propilenglicole, 1,3-butilenglicole, oli (in particolare oli di semi di cotone, di arachidi, di mais, di germe, di oliva, di ricino e di sesamo), glicerolo, alcol di tetraidrofurfurile, polietilenglicoli ed esteri di acido grasso di sorbitano e loro miscele. In determinati casi per la somministrazione parenterale, le composizioni possono essere miscelate con agenti solubilizzanti come CREMOPHOR®, alcoli,

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oli, oli modificati, glicoli, polisorbati, ciclodestrine, polimeri e/o loro combinazioni.

Iniettabile

Preparazioni iniettabili, ad esempio, sospensioni acquose o oleose iniettabili sterili possono essere formulate secondo la tecnica nota e possono includere agenti disperdenti o umettanti e agenti sospensivanti adatti. I preparati iniettabili sterili possono essere soluzioni iniettabili sterili, sospensioni e/o emulsioni in diluenti e/o solventi parenteralmente accettabili non tossici, ad esempio, come soluzione in 1,3-butandiolo. Tra i veicoli e i solventi accettabili che possono essere impiegati includono, ma non sono limitati a, acqua, soluzione di Ringer, U.S.P. e soluzione isotonica di cloruro di sodio. Oli fissi sterili sono tradizionalmente impiegati come solvente o terreno di sospensione. A questo scopo può essere impiegato qualsiasi olio fisso blando inclusi mono- o digliceridi sintetici. Acidi grassi come l'acido oleico possono essere utilizzati nella preparazione di iniettabili.

Le formulazioni iniettabili possono essere sterilizzate ad esempio mediante filtrazione attraverso un filtro di trattenimento dei batteri e/o incorporando agenti sterilizzanti sotto forma di composizioni solide sterili che possono essere disciolte o disperse in acqua sterile o altro terreno iniettabile sterile prima dell'uso.

Al fine di prolungare l'effetto di un ingrediente attivo, è spesso desiderabile rallentare l'assorbimento del principio attivo dall'iniezione sottocutanea o intramuscolare. Questo può essere compiuto mediante l'uso di una sospensione liquida di materiale cristallino o amorfo con scarsa idrosolubilità. La velocità di assorbimento dei NAV quindi dipende dalla sua velocità di dissoluzione che, a sua volta, può dipendere dalla dimensione dei cristalli e dalla forma cristallina. In alternativa, l'assorbimento ritardato di un NAV somministrato per via parenterale può essere ottenuto dissolvendo o sospendendo i NAV in un veicolo oleoso. Le forme di deposito iniettabili sono realizzate formando matrici di microincapsulamento dei NAV in polimeri biodegradabili come polilattide-poliglicolide. A seconda del rapporto tra NAV e

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polimero e della natura dello specifico polimero impiegato, è possibile controllare la velocità di rilascio dei polinucleotidi. Esempi di altri polimeri biodegradabili includono, ma non sono limitati a, poli(ortoesteri) e poli(anidridi). Formulazioni iniettabili a deposito possono essere preparate intrappolando i NAV in liposomi o microemulsioni che sono compatibili con i tessuti corporei.

Polmonare

Le formulazioni descritte nel presente contesto come utili per il rilascio polmonare possono essere utilizzate anche per il rilascio intranasale di una composizione farmaceutica. Un'altra formulazione adatta per la somministrazione intranasale è una polvere grossolana comprendente il principio attivo e avente una particella media da circa 0,2 μm a 500 μm. Tale formulazione può essere somministrata nel modo in cui si prende il tabacco da fiuto, vale a dire mediante inalazione rapida attraverso il passaggio nasale da un contenitore della polvere tenuto vicino al naso.

Le formulazioni adatte per la somministrazione nasale possono, ad esempio, comprendere da circa lo 0,1% (p/p) e fino al 100% (p/p) del principio attivo e possono comprendere uno o più dei principi aggiuntivi descritti nel presente contesto. Una composizione farmaceutica può essere preparata, confezionata, e/o venduta in una formulazione adatta alla somministrazione buccale. Tali formulazioni possono, ad esempio, essere sotto forma di compresse e/o pastiglie realizzate con metodi tradizionali e possono, ad esempio, contengono circa dallo 0,1% al 20% (p/p) del principio attivo, in cui l'equilibrio può comprendere una composizione solubile per via orale e/o degradabile e, facoltativamente, uno o più degli ingredienti aggiuntivi descritti nel presente contesto. In alternativa, le formulazioni adatte per la somministrazione buccale possono comprendere una polvere e/o una soluzione aerosolizzata e/o atomizzata e/o sospensione comprendente il principio attivo. Tali formulazioni in polvere, aerosolizzate e/o aerosolizzate, quando disperse, possono avere una granulometria e/o

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dimensione delle goccioline media nell'intervallo da circa 0,1 nm a circa 200 nm, e possono inoltre comprendere uno o più degli ingredienti aggiuntivi descritti nel presente contesto.

Considerazioni generali nella formulazione e/o produzione di agenti farmaceutici si possono trovare, ad esempio, inRemington: The Science and Practice of Pharmacy 21a ed., Lippincott Williams & Wilkins, 2005.

Rivestimenti o gusci

Forme di dosaggio solide di compresse, confetti, capsule, pillole e granuli possono essere preparate con rivestimenti e gusci come rivestimenti enterici e altri rivestimenti ben noti nella tecnica della formulazione farmaceutica. Possono facoltativamente comprendere agenti opacizzanti e possono essere di una composizione tale da rilasciare solo l'uno o più principi attivi, o preferenzialmente, in una determinata parte del tratto intestinale, facoltativamente, in un modo ritardato. Esempi di composizioni incorporanti che possono essere utilizzate includono sostanze polimeriche e cere. Composizioni solide di tipo simile possono essere impiegate come riempitivi in capsule di gelatina con riempimento molle e duro utilizzando tali eccipienti come lattosio o zuccheri del latte nonché polietilenglicoli dall'elevato peso molecolare e simili.

Somministrazione multidose e ripetuta

In alcuni casi, i composti di NAV e/o le composizioni della presente descrizione possono essere somministrati in due o più dosi (indicate qui come "somministrazione multidose"). Tali dosi possono comprendere gli stessi componenti o possono comprendere componenti non inclusi in una dose precedente. Tali dosi possono comprendere la stessa massa e/o volume di componenti o una massa e/o volume alterata di componenti rispetto a una dose precedente. In alcuni casi, la somministrazione di dosi multiple può comprendere la somministrazione di dosi ripetute. Come qui utilizzato, il termine "somministrazione a dose ripetuta" si riferisce a due o più dosi somministrate consecutivamente o all'interno di un regime di dosi ripetute comprendente sostanzialmente gli stessi componenti forniti sostanzialmente alla

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stessa massa e/o volume. In alcuni casi, i soggetti possono mostrare una risposta a dose ripetuta. Come qui utilizzato, il termine "risposta a dose ripetuta" si riferisce a una risposta in un soggetto a una dose ripetuta che differisce da quella di un'altra dose somministrata all'interno di un regime di somministrazione a dose ripetuta. In alcuni casi, tale risposta può essere l'espressione di una proteina in risposta a una dose ripetuta comprendente NAV. In tali casi, l'espressione proteica può essere elevata rispetto ad un'altra dose somministrata all'interno di un regime di somministrazione a dosi ripetute o l'espressione proteica può essere ridotta rispetto ad un'altra dose somministrata all'interno di un regime di somministrazione a dosi ripetute. L'alterazione dell'espressione proteica può variare da circa l'1% a circa il 20%, da circa il 5% a circa il 50% da circa il 10% a circa il 60%, da circa il 25% a circa il 75%, da circa il 40% a circa il 100% e/o almeno al 100%. Una riduzione dell'espressione dell'mRNA somministrata come parte di un regime a dose ripetuta, in cui il livello di proteine tradotte dall'RNA somministrato è ridotto di oltre il 40% rispetto a un'altra dose all'interno del regime a dose ripetuta, è qui indicata come " resistenza alla dose ripetuta".

Proprietà delle composizioni farmaceutiche

Le composizioni farmaceutiche di NAV descritte nel presente contesto possono essere caratterizzate da una o più delle seguenti proprietà:

Biodisponibilità

I NAV, quando formulati in una composizione con un agente di rilascio come descritto nel presente contesto, possono mostrare un aumento della biodisponibilità rispetto a una composizione priva di un agente di rilascio come descritto nel presente contesto. Come qui utilizzato, il termine "biodisponibilità" si riferisce alla disponibilità sistemica di una data quantità di NAV somministrata a un mammifero. La biodisponibilità può essere valutata misurando l'area sotto la curva (AUC) o la massima concentrazione sierica o plasmatica (C_{max}) della forma immodificata di un composto dopo la somministrazione del composto a un

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mammifero. L'AUC è una determinazione dell'area sotto la curva che riporta la concentrazione sierica o plasmatica di un composto lungo l'ordinata (asse Y) contro il tempo lungo l'ascissa (asse X). In generale, l'AUC per un particolare composto può essere calcolato utilizzando metodi noti agli esperti del settore e come descritto in G.S. Banker, ModernPharmaceutics, Drugs and the Pharmaceutical Sciences, v. 72, Marcel Dekker, New York, Inc., 1996.

Il valore C_{max} è la concentrazione massima del composto raggiunta nel siero o plasma di un mammifero in seguito alla somministrazione del composto al mammifero. Il valore di C_{max} di un particolare composto può essere misurato utilizzando metodi noti agli esperti del ramo. Le espressioni "aumentare la biodisponibilità" o "migliorare la farmacocinetica," come qui usati indicano che la disponibilità sistemica di un primo NAV, misurata come AUC, $C_{max,}$ o C_{min} in un mammifero è maggiore, quando co-somministrato con un agente di rilascio come qui descritto, rispetto a quando tale co-somministrazione non ha luogo. In alcune forme di realizzazione, la biodisponibilità dei NAV può aumentare di almeno circa il 2%, almeno circa il 5%, almeno circa il 10%, almeno circa il 15%, almeno circa il 20%, almeno circa il 25%, almeno circa il 30%, almeno circa il 35%, almeno circa il 40%, almeno circa il 45%, almeno circa il 50%, almeno circa il 55%, almeno circa il 60%, almeno circa il 65%, almeno circa 70 %, almeno circa il 75%, almeno circa l'80%, almeno circa l'85%, almeno circa il 90%, almeno circa il 95% o circa il 100%.

In alcune forme di realizzazione, le formulazioni liquide di NAV possono avere un'emivita in vivo variabile, richiedendo la modulazione delle dosi per produrre un effetto terapeutico. Per affrontare questo problema, in alcune forme di realizzazione della presente invenzione, le formulazioni di NAV possono essere progettate per migliorare la biodisponibilità e/o l'effetto terapeutico durante somministrazioni ripetute. Tali formulazioni possono consentire il rilascio prolungato di NAV e/o ridurre i tassi di degradazione del NAV da parte delle nucleasi. In alcune forme di realizzazione, sono fornite formulazioni in sospensione

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comprendenti NAV, depositi di olio immiscibili in acqua, tensioattivi e/o co-tensioattivi e/o co-solventi. Combinazioni di oli e tensioattivi possono consentire la formulazione in sospensione con NAV. Il rilascio di NAV in un deposito immiscibile in acqua può essere utilizzato per migliorare la biodisponibilità attraverso il rilascio prolungato di polinucleotidi dal deposito nell'ambiente fisiologico circostante e/o prevenire la degradazione dei polinucleotidi da parte delle nucleasi.

In alcune forme di realizzazione, nanoparticelle cationiche comprendenti combinazioni di cationi bivalenti e monovalenti possono essere formulate con NAV. Tali nanoparticelle possono formarsi spontaneamente in soluzione in un dato periodo (ad esempio ore, giorni, eccetera). Tali nanoparticelle non si formano in presenza di soli cationi bivalenti o in presenza di soli cationi monovalenti. Il rilascio di NAV in nanoparticelle cationiche o in uno o più depositi comprendenti nanoparticelle cationiche può migliorare la biodisponibilità dei NAV agendo come un deposito ad azione prolungata e/o riducendo il tasso di degradazione da parte delle nucleasi.

Finestra terapeutica

I NAV, quando formulati in una composizione con un agente di rilascio come descritto nel presente contesto, possono mostrare un aumento della finestra terapeutica della composizione di NAV somministrata rispetto alla finestra terapeutica della composizione di NAV somministrata priva di un agente di rilascio come descritto nel presente contesto. Come qui utilizzato, "finestra terapeutica" si riferisce all'intervallo di concentrazioni plasmatiche, o all'intervallo di livelli di sostanza terapeuticamente attiva nel sito di azione, con un'alta probabilità di provocare un effetto terapeutico. In alcuni casi, la finestra terapeutica dei NAV quando co-somministrati con un agente di rilascio come descritto nel presente contesto può aumentare di almeno circa il 2%, almeno circa il 5%, almeno circa il 10%, almeno circa il 15%, almeno circa il 20%, almeno circa il 25%, almeno circa il 30%, almeno circa il 35%, almeno

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circa il 40%, almeno circa il 45%, almeno circa il 50%, almeno circa il 55%, almeno circa 60 %, almeno circa il 65%, almeno circa il 70%, almeno circa il 75%, almeno circa l'80%, almeno circa l'85%, almeno circa il 90%, almeno circa il 95% o circa il 100%.

Volume di distribuzione

I NAV, quando formulati in una composizione con un agente di rilascio come descritto nel presente contesto, possono presentare un volume di distribuzione migliorato (V_{dist}), ad esempio, ridotto o mirato, rispetto a una composizione priva di un agente di rilascio come qui descritto. Il volume di distribuzione (Vdist) mette in relazione la quantità del farmaco nell'organismo con la concentrazione del farmaco nel sangue o nel plasma. Come qui utilizzato, il termine "volume di distribuzione" si riferisce al volume di fluido che sarebbe necessario per contenere la quantità totale del farmaco nel corpo alla stessa concentrazione del sangue o del plasma: Vdist è uguale alla quantità di farmaco nel corpo/concentrazione del farmaco nel sangue o nel plasma. Ad esempio, per una dose di 10 mg e una concentrazione plasmatica di 10 mg/L, il volume di distribuzione sarebbe di 1 litro. Il volume di distribuzione riflette la misura in cui il farmaco è presente nel tessuto extravascolare. Un grande volume di distribuzione riflette la tendenza di un composto a legarsi ai componenti tissutali rispetto al legame con le proteine plasmatiche. In un contesto clinico, Vdist può essere utilizzato per determinare una dose di caricamento per raggiungere una concentrazione allo stato stazionario. In alcuni casi, il volume di distribuzione dei NAV quando co-amministrati con un agente di rilascio come descritto nel presente contesto può diminuire di almeno circa il 2%, almeno circa il 5%, almeno circa il 10%, almeno circa il 15%, almeno circa il 20%, almeno circa il 25%, almeno circa il 30%, almeno circa il 35%, almeno circa il 40%, almeno circa il 45%, almeno circa il 50%, almeno circa il 55%, almeno circa 60%, almeno circa il 65%, almeno circa il 70%.

Effetti biologici

In un caso, l'effetto biologico del NAV rilasciato negli animali può essere classificato

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analizzando l'espressione proteica negli animali. L'espressione proteica può essere determinata dall'analisi di un campione biologico raccolto da un mammifero a cui è stato somministrato il NAV della presente invenzione

Rilevamento di polinucleotidi mediante spettrometria di massa

La spettrometria di massa (MS) è una tecnica analitica che può fornire informazioni strutturali e molecolari sulla massa/concentrazione sulle molecole dopo la loro conversione in ioni. Le molecole vengono prima ionizzate per acquisire cariche positive o negative e poi viaggiano attraverso l'analizzatore di massa per arrivare a diverse aree del rivelatore in base al loro rapporto massa/carica (m/z).

La spettrometria di massa viene eseguita utilizzando uno spettrometro di massa che include una sorgente di ioni per ionizzare il campione frazionato e creare molecole cariche per ulteriori analisi. Ad esempio, la ionizzazione del campione può essere eseguita mediante ionizzazione elettrospray (ESI), ionizzazione chimica a pressione atmosferica (APCI), fotoionizzazione, ionizzazione elettronica, bombardamento atomico rapido (FAB)/ionizzazione secondaria liquida (LSIMS), desorbimento/ionizzazione laser assistita da matrice (MALDI), ionizzazione di campo, desorbimento di campo, ionizzazione con termospray/plasmaspray e ionizzazione con fascio di particelle. Il tecnico esperto comprenderà che la scelta del metodo di ionizzazione può essere determinata in base all'analita da misurare, al tipo di campione, al tipo di rivelatore, alla scelta della modalità positiva rispetto a quella negativa, ecc.

Dopo che il campione è stato ionizzato, gli ioni caricati positivamente o negativamente così creati possono essere analizzati per determinare un rapporto massa/carica (vale a dire m/z). Gli analizzatori adatti per determinare i rapporti massa-carica includono analizzatori quadripolari, analizzatori di trappole ioniche e analizzatori del tempo di volo. Gli ioni possono essere rilevati utilizzando diverse modalità di rilevamento. Ad esempio, gli ioni selezionati possono essere rilevati (vale a dire, utilizzando una modalità di monitoraggio selettivo degli ioni

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(SIM)) o, in alternativa, gli ioni possono essere rilevati utilizzando una modalità di scansione, ad esempio il monitoraggio di reazioni multiple (MRM) o il monitoraggio di reazioni selezionate (SRM).

Il monitoraggio delle reazioni multiple mediante cromatografia liquida (LC-MS/MRM) accoppiato alla diluizione marcata con isotopi stabili degli standard peptidici si è dimostrato un metodo efficace per la verifica delle proteine (ad esempio,Keshishian et al., Mol Cell Proteomics 2009 8: 2339-2349; Kuhn et al., ClinChem 2009 55:1108-1117; Lopez et al., ClinChem 2010 56:281-290). A differenza della spettrometria di massa non mirata frequentemente utilizzata negli studi sulla scoperta di biomarcatori, i metodi MS mirati sono modalità di MS basate su sequenze peptidiche che concentrano la piena capacità analitica dello strumento su decine o centinaia di peptidi selezionati in una miscela complessa. Limitando il rilevamento e la frammentazione ai soli peptidi derivati dalle proteine di interesse, la sensibilità e la riproducibilità sono notevolmente migliorate rispetto ai metodi MS discovery-mode. Questo metodo di quantificazione delle proteine con monitoraggio delle reazioni multiple (MRM) basato sulla spettrometria di massa può avere un impatto drammatico sulla scoperta e la quantificazione dei biomarcatori tramite il profilo di espressione proteica rapido, mirato e multiplex dei campioni clinici.

In un caso, un campione biologico che può contenere almeno una proteina codificata da almeno un mRNA modificato della presente descrizione può essere analizzato mediante il metodo di MRM-MS. La quantificazione del campione biologico può inoltre includere, ma non è limitata a, peptidi o proteine marcati con isotopi come standard interni.

Secondo la presente descrizione, il campione biologico, una volta ottenuto dal soggetto, può essere sottoposto a digestione enzimatica. Come usato qui, il termine "digerire" significa rompere in peptidi più corti. Come usato qui, la frase "trattare un campione per digerire proteine" significa manipolare un campione in modo tale da scomporre le proteine in un

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campione. Questi enzimi includono, ma non sono limitati a, tripsina, endoproteinasi Glu-C e chimotripsina. In un caso, un campione biologico che può contenere almeno una proteina codificata da almeno un mRNA modificato della presente descrizione può essere digerito utilizzando enzimi.

In un caso, un campione biologico che può contenere proteine codificate dall'mRNA modificato della presente descrizione può essere analizzato per le proteine utilizzando la ionizzazione elettrospray. La spettrometria di massa a ionizzazione elettrospray (ESI) (ESIMS) utilizza l'energia elettrica per favorire il trasferimento di ioni dalla soluzione alla fase gassosa prima che vengano analizzati mediante spettrometria di massa. I campioni possono essere analizzati utilizzando metodi noti nella tecnica (ad esempio, Ho et al., ClinBiochem Rev. 2003 24(1):3-12). Le specie ioniche contenute nella soluzione possono essere trasferite nella fase gassosa disperdendo uno spruzzo fine di goccioline di carica, evaporando il solvente ed espellendo gli ioni dalle goccioline cariche per generare una nebbia di goccioline altamente cariche. La nebbia di goccioline altamente cariche può essere analizzata utilizzando almeno 1, almeno 2, almeno 3 o almeno 4 analizzatori di massa come, ma non solo, un analizzatore di massa quadripolare. Inoltre, il metodo di spettrometria di massa può includere una fase di purificazione. Come esempio non limitativo, il primo quadripolo può essere impostato per selezionare un singolo rapporto m/z in modo che possa filtrare altri ioni molecolari con un diverso rapporto m/z che possono eliminare procedure di purificazione del campione complicate e dispendiose in termini di tempo prima della MS analisi.

In un caso, un campione biologico che può contenere proteine codificate da mRNA modificato della presente descrizione può essere analizzato per le proteine in un sistema tandem ESIMS (ad esempio, MS/MS). Come esempi non limitativi, le goccioline possono essere analizzate utilizzando una scansione del prodotto (o scansione figlia) una scansione precursore (scansione genitore) una perdita neutra o un monitoraggio di reazioni multiple.

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In un caso, un campione biologico che può contenere proteine codificate da mRNA modificato della presente descrizione può essere analizzato utilizzando la spettrometria di massa a desorbimento/ionizzazione laser assistita da matrice (MALDI) (MALDIMS). MALDI prevede la vaporizzazione e ionizzazione non distruttiva di molecole grandi e piccole, come le proteine. Nell'analisi MALDI, l'analita viene prima co-cristallizzato con un grande eccesso molare di un composto di matrice, che può anche includere, ma non è limitato a, un acido organico debole che assorbe l'ultravioletto. Esempi non limitativi di matrici utilizzate in MALDI sono l'acido α-ciano-4-idrossicinnamico, l'acido 3,5-dimetossi-4-idrossicinnamico e l'acido 2,5-diidrossibenzoico. La radiazione laser della miscela analita-matrice può provocare la vaporizzazione della matrice e dell'analita. Il desorbimento indotto dal laser fornisce elevate rese di ioni dell'analita intatto e consente la misurazione dei composti con elevata precisione. I campioni possono essere analizzati utilizzando metodi noti nella tecnica (ad esempio Lewis, Wei and Siuzdak, Encyclopedia of AnalyticalChemistry 2000:5880-5894). Come esempi non limitativi, gli analizzatori di massa utilizzati nell'analisi MALDI possono includere un tempo di volo lineare (TOF), un riflettore TOF o un analizzatore di massa con trasformata di Fourier.

In un caso, la miscela analita-matrice può essere formata utilizzando il metodo delle goccioline essiccate. Un campione biologico viene miscelato con una matrice per creare una soluzione di matrice satura in cui il rapporto matrice-campione è di circa 5000:1. Un'aliquota (approssimativamente 0,5-2,0 uL) della soluzione di matrice satura viene quindi lasciata essiccare per formare la miscela analita-matrice.

In un caso, la miscela analita-matrice può essere formata utilizzando il metodo a strato sottile. Viene prima formato un film omogeneo di matrice e quindi il campione viene quindi applicato e può essere assorbito dalla matrice per formare la miscela analita-matrice.

In un caso, la miscela analita-matrice può essere formata utilizzando il metodo a strato spesso. Si forma un film omogeneo a matrice con un additivo a matrice di nitrocellulosa. Una

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volta ottenuto lo strato uniforme della matrice di nitrocellulosa, il campione viene applicato e assorbito nella matrice per formare la miscela analita-matrice.

In un caso, la miscela analita-matrice può essere formata utilizzando il metodo sandwich. Viene preparato uno strato sottile di cristalli di matrice come nel metodo dello strato sottile seguito dall'aggiunta di goccioline di acido trifluoroacetico acquoso, il campione e la matrice. Il campione viene quindi assorbito nella matrice per formare la miscela analita-matrice.

VI. Kit e dispositivi

Kit

La descrizione fornisce una varietà di kit per eseguire in modo conveniente e/o efficace i metodi della presente descrizione. Tipicamente i kit comprendono quantità e/o numero di componenti sufficienti per consentire a un utente di eseguire più trattamenti di uno o più soggetti e/o di eseguire più esperimenti.

In un aspetto, la presente descrizione fornisce kit che comprendono le molecole di NAV (inclusi qualsiasi proteina o polinucleotide) della descrizione. In un caso, il kit comprende uno o più antigeni funzionali o loro frammenti funzionali.

I kit possono essere per la produzione di proteine, comprendenti primi polinucleotidi comprendenti una regione traducibile di un antigene. Il kit può inoltre comprendere imballaggio e istruzioni e/o un agente di rilascio per formare una composizione di formulazione. L'agente di rilascio può comprendere una soluzione salina, una soluzione tamponata, un lipidoide o qualsiasi agente di rilascio qui descritto.

In un caso, la soluzione tampone può includere cloruro di sodio, cloruro di calcio, fosfato e/o EDTA. In un altro caso, la soluzione tampone può includere, a titolo esemplificativo, soluzione salina, soluzione salina con calcio 2 mM, saccarosio 5%, saccarosio 5% con calcio 2 mM, mannitolo 5%, mannitolo 5% con calcio 2 mM, Ringer lattato, cloruro di sodio, cloruro di sodio con 2 mM di calcio e mannosio (si veda ad esempio la pubblicazione U.S. n.

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20120258046). In un ulteriore caso, le soluzioni tampone possono essere precipitate o possono essere liofilizzate. La quantità di ciascun componente può essere variata per consentire formulazioni saline o semplici tamponi a concentrazione più elevata coerenti e riproducibili.

I componenti possono anche essere variati per aumentare la stabilità dei polinucleotidi nella soluzione tampone per un periodo di tempo e/o in una varietà di condizioni.

In un aspetto, la presente descrizione fornisce kit per la produzione di proteine, comprendenti: un polinucleotide comprendente una regione traducibile, fornito in una quantità efficace per produrre una quantità desiderata di una proteina codificata dalla regione traducibile quando introdotta in una cellula bersaglio; un secondo polinucleotide comprendente un acido nucleico inibitorio, fornito in una quantità efficace per inibire sostanzialmente la risposta immunitaria innata della cellula; e confezione e istruzioni.

In un aspetto, la presente descrizione fornisce kit per la produzione di proteine, comprendenti un polinucleotide comprendente una regione traducibile, in cui il polinucleotide mostra una degradazione ridotta da parte di una nucleasi cellulare, e confezionamento e istruzioni.

In un aspetto, la presente descrizione fornisce kit per la produzione di proteine, comprendenti un polinucleotide comprendente una regione traducibile, in cui il polinucleotide mostra una degradazione ridotta da parte di una nucleasi cellulare, e una cellula di mammifero adatta per la traduzione della regione traducibile del primo acido nucleico.

Dispositivi

La presente descrizione fornisce dispositivi che possono incorporare RNAV comprendenti polinucleotidi che codificano polipeptidi di interesse, ad esempio codificano polipeptidi antigenici. Questi dispositivi contengono in una formulazione stabile i reagenti per sintetizzare un polinucleotide in una formulazione disponibile per essere somministrata immediatamente a un soggetto che ne abbia necessità, come un paziente umano.

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I dispositivi per la somministrazione possono essere impiegati per rilasciare i NAV della presente descrizione secondo regimi a dosaggio singolo, multi o frazionato qui insegnati. Tali dispositivi vengono insegnati, ad esempio, nella domanda internazionale PCT/US2013/30062 depositata il 9 marzo 2013.

Il metodo e i dispositivi noti nella tecnica per la somministrazione multipla a cellule, organi e tessuti sono contemplati per l'uso insieme ai metodi e alle composizioni qui descritti come esempi della presente descrizione. Questi includono, ad esempio, quei metodi e dispositivi aventi più aghi, dispositivi ibridi che impiegano ad esempio lumi o cateteri nonché dispositivi che utilizzano meccanismi azionati da calore, corrente elettrica o radiazione.

Secondo la presente descrizione, questi dispositivi a somministrazione multipla possono essere utilizzati per rilasciare le dosi singole, multiple o frazionate qui contemplate. Tali dispositivi sono insegnati ad esempio nella domanda internazionale PCT/US2013/30062 depositata il 9 marzo 2013.

In un caso, il NAV viene somministrato per via sottocutanea o intramuscolare tramite almeno 3 aghi in tre diversi siti, facoltativamente adiacenti, contemporaneamente o entro un periodo di 60 minuti (ad esempio, somministrazione a 4, 5, 6, 7, 8, 9 o 10 siti simultaneamente o entro un periodo di 60 minuti).

Metodi e dispositivi che utilizzano cateteri e/o lumi

Metodi e dispositivi che utilizzano cateteri e lumi possono essere impiegati per somministrare i NAV della presente descrizione su un programma di dosaggio singolo, multiplo o frazionato. Tali metodi e dispositivi sono descritti nella domanda internazionale PCT/US2013/30062 depositata il 9 marzo 2013.

Metodi e dispositivi che utilizzano corrente elettrica

Metodi e dispositivi che utilizzano corrente elettrica possono essere impiegati per rilasciare i NAV della presente descrizione secondo i regimi di dosaggio singoli, multipli o

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suddivisi qui insegnati. Tali metodi e dispositivi sono descritti nella domanda internazionale PCT/US2013/30062 depositata il 9 marzo 2013.

VII. DEFINIZIONI

In vari punti della presente specifica, i sostituenti dei composti della presente descrizione sono divulgati in gruppi o in intervalli. È specificamente inteso che la presente descrizione includa ogni singola sottocombinazione dei membri di tali gruppi e intervalli. Ad esempio, il termine “alchile C_{1-6}” è specificamente inteso a descrivere individualmente metile, etile, alchile C_3, alchile C_4, alchile C_5 e alchile C_6. Qui una frase espressione della forma "X facoltativamente sostituito" (ad esempio, alchile facoltativamente sostituito) è intesa essere equivalente a "X, in cui X è sostituito facoltativamente" (ad esempio, "alchile, in cui detto alchile è facoltativamente sostituito"). Non intende significare che la caratteristica "X" *(ad es.* alchile) di *per sé* sia opzionale.

A proposito di: Come usato qui, il termine "circa" significa +/- 10% del valore recitato.

Somministrato in combinazione: Come usato qui, il termine "somministrato in combinazione" o "somministrazione combinata" significa che due o più agenti sono somministrati a un soggetto contemporaneamente o entro un intervallo tale che potrebbe esserci una sovrapposizione di un effetto di ciascun agente sul paziente. In alcuni casi, vengono somministrati entro circa 60, 30, 15, 10, 5 o 1 minuto l'uno dall'altro. In alcuni casi, le somministrazioni degli agenti sono sufficientemente distanziate tra loro in modo da ottenere un effetto combinatorio (ad esempio sinergico).

Adiuvante: Come qui utilizzato, il termine "adiuvante" indica una sostanza che migliora la risposta immunitaria di un soggetto a un antigene. I NAV della presente invenzione possono facoltativamente comprendere uno o più adiuvanti.

Animale: Come qui utilizzato, il termine "animale" si riferisce a qualsiasi membro del regno animale. In alcune forme di realizzazione, "animale" si riferisce agli esseri umani in

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qualsiasi fase dello sviluppo. In alcune forme di realizzazione, "animale" si riferisce ad animali non umani in qualsiasi fase dello sviluppo. In alcune forme di realizzazione, l'animale non umano è un mammifero (ad esempio un roditore, un topo, un ratto, un coniglio, una scimmia, un cane, un gatto, una pecora, un bovino, un primate o un maiale). In alcune forme di realizzazione, gli animali includono, ma non sono limitati a, mammiferi, uccelli, rettili, anfibi, pesci e vermi. In alcune forme di realizzazione, l'animale è un animale transgenico, un animale geneticamente modificato o un clone.

Antigene: Come definito nel presente contesto, il termine "antigene" o "generatore di anticorpi" ("Ag") si riferisce a una composizione, ad esempio una sostanza o un agente che provoca una risposta immunitaria in un organismo, ad esempio provoca una risposta immunitaria dell'organismo a produrre anticorpi contro la sostanza o l'agente in particolare, che provoca una risposta immunitaria adattativa in un organismo. Gli antigeni possono essere qualsiasi sostanza immunogena inclusi, in particolare, proteine, polipeptidi, polisaccaridi, acidi nucleici, lipidi e simili. Antigeni esemplificativi sono derivati da agenti infettivi. Tali agenti possono includere parti o subunità di agenti infettivi, ad esempio rivestimenti, componenti di rivestimento, *ad esempio,* proteine o polipeptidi di rivestimento, componenti di superficie, *ad esempio,* proteine o polipeptidi di superficie, componenti di capsula, componenti della parete cellulare, flagelli, fimbrie e/o tossine o tossoidi) di agenti infettivi, ad esempio batteri, virus e altri microrganismi. Alcuni antigeni, ad esempio lipidi e/o acidi nucleici, sono antigenici, preferibilmente, quando combinati con proteine e/o polisaccaridi.

Antigeni di interesse o antigeni desiderati: Come qui utilizzati, i termini "antigeni di interesse" o "antigeni desiderati" includono quelle proteine e altre biomolecole qui fornite che sono componenti o codificate da polinucleotidi che sono componenti di uno o più NAV.

Approssimativamente: Come qui utilizzato, il termine "approssimativamente" o "circa", applicati a uno o più valori di interesse, si riferiscono a un valore simile a un valore di

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riferimento dichiarato. In alcune forme di realizzazione, il termine "approssimativamente" o "circa" si riferisce a un intervallo di valori che rientrano tra il 25%, 20%, 19%, 18%, 17%, 16%, 15%, 14%, 13%, 12 %, 11%, 10%, 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1% o meno in entrambe le direzioni (maggiore o minore di) del valore di riferimento indicato se non diversamente indicato o altrimenti evidente dal contesto (a meno che tale numero non superi il 100% di un valore possibile).

Associato a: Come qui usati, i termini "associato a", "coniugato", "collegato", "attaccato" e "legato", quando usati in relazione a due o più frazioni, significano che le frazioni sono fisicamente associate o collegate tra loro, direttamente o tramite una o più frazioni aggiuntive che fungono da agente di collegamento, per formare una struttura sufficientemente stabile in modo che le frazioni rimangano fisicamente associate nelle condizioni in cui la struttura viene utilizzata, ad esempio, condizioni fisiologiche. Non è necessario che una "associazione" avvenga strettamente attraverso un legame chimico covalente diretto. Può anche suggerire un legame ionico o idrogeno o una connettività basata sull'ibridazione sufficientemente stabile in modo tale che le entità "associate" rimangano fisicamente associate.

Bifunzionale: Come usato qui, il termine "bifunzionale" si riferisce a qualsiasi sostanza, molecola o frazione che è in grado di o mantiene almeno due funzioni. Le funzioni possono ottenere lo stesso risultato o un risultato diverso. La struttura che produce la funzione può essere la stessa o diversa. Ad esempio, gli RNA modificati bifunzionali della presente invenzione possono codificare un peptide citotossico (una prima funzione) mentre quei nucleosidi che comprendono l'RNA codificante sono, di per sé, citotossici (seconda funzione). In questo esempio, la consegna dell'RNA modificato bifunzionale a una cellula cancerosa produrrebbe non solo un peptide o una molecola proteica che può migliorare o curare il cancro, ma fornirebbe anche un carico utile citotossico di nucleosidi alla cellula in caso di degradazione, invece della traduzione del RNA modificato, si verificano.

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Biocompatibile: Come qui utilizzato, il termine "biocompatibile" significa compatibile con cellule, tessuti, organi o sistemi viventi che presentano un rischio minimo o nullo di lesioni, tossicità o rigetto da parte del sistema immunitario.

Biodegradabile: Come qui utilizzato, il termine "biodegradabile" significa in grado di essere scomposto in prodotti innocui dall'azione degli esseri viventi.

Biologicamente attivo: Come usata qui, la frase "biologicamente attiva" si riferisce a una caratteristica di qualsiasi sostanza che ha attività in un sistema e/o organismo biologico. Ad esempio, una sostanza che quando somministrata a un organismo, ha un effetto biologico su quell'organismo, è considerato essere biologicamente attivo. In particolari forme di realizzazione, un polinucleotide della presente invenzione può essere considerato biologicamente attivo se anche una porzione dei polinucleotidi è biologicamente attiva o imita un'attività considerata biologicamente rilevante.

Cellule staminali tumorali: Come qui utilizzato, le "cellule staminali cancerose" sono cellule che possono subire un auto-rinnovamento e/o una proliferazione e differenziazione anormali per formare un tumore.

Termini chimici: Quanto segue fornisce la definizione di vari termini chimici da "acile" a "tiolo".

Il termine "acile", come qui utilizzato, rappresenta un idrogeno o un gruppo alchile (ad esempio un gruppo aloalchile), come qui definito, che è attaccato al gruppo molecolare progenitore attraverso un gruppo carbonile, come qui definito, ed è esemplificato da formile (vale a dire un gruppo carbossialdeide), acetile, trifluoroacetile, propionile, butanoile e simili. Esempi di gruppi acile non sostituiti includono da 1 a 7, da 1 a 11 o da 1 a 21 atomi di carbonio. In alcune forme di realizzazione, il gruppo alchile è ulteriormente sostituito con 1, 2, 3 o 4 sostituenti come qui descritto.

Esempi non limitativi di gruppi acile facoltativamente sostituiti includono,

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alcossicarbonile, alcossicarbonilacile, arilalcossicarbonile, ariloile, carbamoile, carbossialdeide, (eterociclil) immino e (eterociclil)oile:

Il gruppo "alcossicarbonile", che come usato nel presente contesto, rappresenta un alcossi, come definito nel presente contesto, attaccato al gruppo molecolare genitore attraverso un atomo di carbonile (ad esempio, -C(O)-OR, dove R è H o un gruppo alchile C_{1-6}, C_{1-10}, o C_{1-20} facoltativamente sostituito). Esempi di alcossicarbonile non sostituito includono da 1 a 21 atomi di carbonio (ad esempio, da 1 a 11 o da 1 a 7 atomi di carbonio). In alcune forme di realizzazione, il gruppo alcossi è ulteriormente sostituito con 1, 2, 3 o 4 sostituenti come qui descritto.

Il gruppo "alcossicarbonilacile", che come qui utilizzato, rappresenta un gruppo acile, come qui definito, che è sostituito con un gruppo alcossicarbonile, come qui definito (ad esempio, -C(O)-alchil-C(O)-OR, dove R è un gruppo alchile C_{1-6}, C_{1-10}, o C_{1-20} facoltativamente sostituito). Esempi di alcossicarbonilacile non sostituito includono da 3 a 41 atomi di carbonio (ad esempio, da 3 a 10, da 3 a 13, da 3 a 17, da 3 a 21, o da 3 a 31 atomi di carbonio, come alcossicarbonile C_{1-6}-acile C_{1-6}, alcossicarbonile C_{1-10}-acile C_{1-10}, o alcossicarbonile C_{1-20}-acile C_{1-20}). In alcune forme di realizzazione, ciascun gruppo alcossi e alchile è ulteriormente sostituito indipendentemente con 1, 2, 3 o 4 sostituenti, come descritto qui (ad esempio, un gruppo idrossile) per ciascun gruppo.

Il gruppo "arilalcossicarbonile", che come qui usato, rappresenta un gruppo arilalcossi, come qui definito, attaccato al gruppo molecolare progenitore attraverso un carbonile (ad esempio -C(O)-O-alchil-arile). Esempi di gruppi arilalcossi non sostituiti includono da 8 a 31 atomi di carbonio (ad esempio, da 8 a 17 o da 8 a 21 atomi di carbonio, come arile C_{6-10}-alcossi C_{1-6}-carbonile, arile C_{6-10}-alcossi C_{1-10}-carbonile, o arile C_{6-10}-alcossicarbonile C_{1-20}). In alcune forme di realizzazione, il gruppo arilalcossicarbonile può essere sostituito con 1, 2, 3 o 4 sostituenti come qui definito.

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Il gruppo "ariloile", che come qui usato, rappresenta un gruppo arile, come qui definito, che è attaccato al gruppo molecolare originario attraverso un gruppo carbonile. Esempi di gruppi ariloile non sostituiti hanno da 7 a 11 atomi di carbonio. In alcune forme di realizzazione, il gruppo arile può essere sostituito con 1, 2, 3 o 4 sostituenti come qui definito.

Il gruppo "carbamoile", che come qui utilizzato, rappresenta -C(O)-N(R^{N1})$_2$, dove il significato di ciascun R^{N1} si trova nella definizione di "ammino" qui fornita.

Il gruppo "carbossialdeide", che come qui utilizzato, rappresenta un gruppo acile avente la struttura -CHO.

Il gruppo "(eterociclil)immino", che come qui usato, rappresenta un gruppo eterociclile, come qui definito, attaccato al gruppo molecolare originario attraverso un gruppo immino. In alcune forme di realizzazione, il gruppo eterociclile può essere sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito.

Il gruppo "(eterociclil)oile", che come qui usato, rappresenta un gruppo eterociclile, come qui definito, attaccato al gruppo molecolare originario attraverso un gruppo carbonile. In alcune forme di realizzazione, il gruppo eterociclile può essere sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito.

Il termine "alchile", come qui utilizzato, è comprensivo di gruppi saturi a catena sia lineare sia ramificata da 1 a 20 atomi di carbonio (ad esempio, da 1 a 10 o da 1 a 6), se non diversamente specificato. I gruppi alchile sono esemplificati da metile, etile, n- e iso-propile, n-, sec-, iso- e terz-butile, neopentile e simili, e possono essere facoltativamente sostituiti con uno, due, tre o, nel caso di gruppi alchile di due o più atomi di carbonio, quattro sostituenti indipendentemente scelti dal gruppo costituito da: (1) alcossi C_{1-6}; (2) achilsolfinile C_{1-6}; (3) ammino, come qui definito (ad esempio ammino non sostituito (vale a dire, -NH_2) o un ammino sostituito (vale a dire, -N(R^{N1})$_2$, dove R^{N1} è come definito per ammino); (4) arile C_{6-10}-alcossi C_{1-6}; (5) azido; (6) alogeno; (7) (eterociclile C_{2-9})ossi; (8) idrossi, facoltativamente sostituito con

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un gruppo *O*-protettore; (9) nitro; (10) osso (ad esempio, carbossialdeide o acile); (11) C_{1-7} spirociclile; (12) tioalcossi; (13) tiolo; (14) - $CO_2R^{A'}$, facoltativamente sostituito con un gruppo *O*-protettore e dove $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-20} (ad esempio, alchile C_{1-6}), (b) alchenile C_{2-20} (ad esempio, alchenile C_{2-6}), (c) arile C_{6-10}, (d) idrogeno, (e) alc C_{1-6}-arile C_{6-10}, (f) ammino-alchile C_{1-20}, (g) polietilenglicole di - $(CH_2)_{s2}(OCH_2CH_2)_{s1}(CH_2)_{s3}OR'$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e R' è H o alchile C_{1-20}, e (h) ammino-polietilenglicole di - $NR^{N1}(CH_2)_{s2}(CH_2CH_2O)_{s1}(CH_2)_{s3}NR^{N1}$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e ciascun R^{N1} è, indipendentemente, idrogeno o alchile C_{1-6} facoltativamente sostituito; (15) $-C(O)NR^{B'}R^{C'}$, dove ciascuno tra $R^{B'}$ e $R^{C'}$ è, indipendentemente, scelto dal gruppo costituito da (a) idrogeno, (b) alchile C_{1-6}, (c) arile C_{6-10} e (d) alc C_{1-6}-arile C_{6-10}; (16) $-SO_2R^{D'}$, dove $R^{D'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) alc C_{1-6}-arile C_{6-10} e (d) idrossi; (17) $-SO_2NR^{E'}R^{F'}$, dove ciascuno tra $R^{E'}$ e $R^{F'}$ è, indipendentemente, scelto dal gruppo costituito da (a) idrogeno, (b) alchile C_{1-6}, (c) arile C_{6-10} e (d) alc C_{1-6}-arile C_{6-10}; (18) $-C(O)R^{G'}$, dove $R^{G'}$ è scelto dal gruppo costituito da (a) alchile C_{1-20} (ad esempio, alchile C_{1-6}), (b) alchenile C_{2-20} (ad esempio, alchenile C_{2-6}), (c) arile C_{6-10}, (d) idrogeno, (e) alc C_{1-6}-arile C_{6-10}, (f) ammino-alchile C_{1-20}, (g) polietilenglicole di $-(CH_2)_{s2}(OCH_2CH_2)_{s1}(CH_2)_{s3}OR'$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e R' è H o alchile C_{1-20}, e (h) ammino-polietilenglicole di $-NR^{N1}(CH_2)_{s2}(CH_2CH_2O)_{s1}(CH_2)_{s3}NR^{N1}$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e ciascun

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R^{N1} è, indipendentemente, idrogeno o alchile C_{1-6} facoltativamente sostituito; (19) - $NR^{H'}C(O)R^{I'}$, in cui $R^{H'}$ è scelto dal gruppo costituito da (a1) idrogeno e (b1) alchile C_{1-6}, e $R^{I'}$ è scelto da (a2) alchile C_{1-20} (ad esempio, alchile C_{1-6}), (b2) alchenile C_{2-20} (ad esempio, alchenile C_{2-6}), (c2) arile C_{6-10}, (d2) idrogeno, (e2) alc C_{1-6}-arile C_{6-10}, (f2) ammino-alchile C_{1-20}, (g2) polietleneglicole di - $(CH_2)_{s2}(OCH_2CH_2)_{s1}(CH_2)_{s3}OR'$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e R' è H o alchile C_{1-20}, e (h2) ammino-polietilenglicole di - $NR^{N1}(CH_2)_{s2}(CH_2CH_2O)_{s1}(CH_2)_{s3}NR^{N1}$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e ciascun R^{N1} è, indipendentemente, idrogeno o alchile C_{1-6} facoltativamente sostituito; (20) - $NR^{J'}C(O)OR^{K'}$, in cui $R^{J'}$ è scelto dal gruppo costituito da (a1) idrogeno e (b1) alchile C_{1-6}, e $R^{K'}$ è scelto dal gruppo costituito da (a2) alchile C_{1-20} (ad esempio, alchile C_{1-6}), (b2) alchenile C_{2-20} (ad esempio, alchenile C_{2-6}), (c2) arile C_{6-10}, (d2) idrogeno, (e2) alc C_{1-6}-arile C_{6-10}, (f2) ammino-alchile C_{1-20}, (g2) polietilenglicole di -$(CH_2)_{s2}(OCH_2CH_2)_{s1}(CH_2)_{s3}OR'$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e R' è H o alchile C_{1-20}, e (h2) ammino-polietilenglicole di - $NR^{N1}(CH_2)_{s2}(CH_2CH_2O)_{s1}(CH_2)_{s3}NR^{N1}$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e ciascun R^{N1} è, indipendentemente, idrogeno o alchile C_{1-6} facoltativamente sostituito; e (21) amidina. In alcune forme di realizzazione, ciascuno di questi gruppi può essere ulteriormente sostituito come descritto nel presente contesto. Ad esempio, il gruppo alchilene di un alcarile C_1 può essere ulteriormente sostituito con un gruppo osso per fornire il rispettivo sostituente ariloile.

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Il termine "alchilene", come qui utilizzato, rappresenta un gruppo idrocarburico bivalente saturo derivato da un idrocarburo saturo a catena lineare o ramificata mediante la rimozione di due atomi di idrogeno, ed è esemplificato da metilene, etilene, isopropilene e simili. Il termine "alchile C_{x-y}" e il prefisso "alcC_{x-y}-" rappresentano gruppi alchilene aventi tra x e y atomi di carbonio. Valori esemplificativi per x sono 1, 2, 3, 4, 5 e 6 e valori esemplificativi per y sono 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, o 20 (ad esempio alchilene C_{1-6}, C_{1-10}, C_{2-20}, C_{2-6}, C_{2-10}, o C_{2-20}). In alcune forme di realizzazione, l'alchilene può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito per un gruppo alchile. Allo stesso modo, il suffisso "-ene" aggiunto a qualsiasi gruppo indica che il gruppo è un gruppo bivalente.

Esempi non limitativi di gruppi alchile e alchilene facoltativamente sostituiti includono acilamminoalchile, acilossialchile, alcossialchile, alcossicarbonilalchile, alchilsolfinile, alchilsolfinilalchile, amminoalchile, carbamoilalchile, carbossialchile, carbossiamminoalchile, aloalchile, idrossialchile, perfluoroalchile e solfoalchile:

Il gruppo "acilamminoalchile", che come qui utilizzato, rappresenta un gruppo acile, come qui definito, attaccato a un gruppo ammino che è a sua volta attaccato al gruppo molecolare genitore attraverso un gruppo alchilene, come qui definito (vale a dire, -alchil-$N(R^{N1})$-C(O)-R, dove R è H o un gruppo alchile C_{1-6}, C_{1-10}, o C_{1-20} facoltativamente sostituito (ad esempio aloalchile) e R^{N1} è come qui definito). Esempi di gruppi acilamminoalchile non sostituiti includono da 1 a 41 atomi di carbonio (ad esempio, da 1 a 7, da 1 a 13, da 1 a 21, da 2 a 7, da 2 a 13, da 2 a 21, o da 2 a 41 atomi di carbonio). In alcune forme di realizzazione, il gruppo alchilene è ulteriormente sostituito con 1, 2, 3 o 4 sostituenti come qui descritto, e/o il gruppo ammino è $-NH_2$ o $-NHR^{N1}$, in cui R^{N1} è, indipendentemente, OH, NO_2, NH_2, NR^{N2}_2, SO_2O^{N2}, SO_2R^{N2}, SOR^{N2}, alchile, arile, acile (ad esempio acetile, trifluoroacetile o altri qui descritti), o alcossicarbonilalchile, e ciascun R^{N2} può essere H, alchile o arile.

Il gruppo "acilossialchile", che come utilizzato nel presente contesto, rappresenta un

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gruppo acile, come definito nel presente contesto, attaccato a un atomo di ossigeno che a sua volta è attaccato al gruppo molecolare genitore attraverso un gruppo alchilene (vale a dire, -alchil-OC(O)- R, dove R è H o un gruppo alchile C_{1-6}, C_{1-10}, o C_{1-20} facoltativamente sostituito). Esempi di gruppi acilossialchile non sostituiti includono da 1 a 21 atomi di carbonio (ad esempio, da 1 a 7 o da 1 a 11 atomi di carbonio). In alcune forme di realizzazione, il gruppo alchilene è, indipendentemente, ulteriormente sostituito con 1, 2, 3 o 4 sostituenti come qui descritto.

Il gruppo "alcossialchile", che come qui utilizzato, rappresenta un gruppo alchile che è sostituito con un gruppo alcossi. Esempi di gruppi alcossialchile non sostituiti includono da 2 a 40 atomi di carbonio (ad esempio, da 2 a 12 o da 2 a 20 atomi di carbonio, come alcossi C_{1-6} -alchile C_{1-6}, alcossi C_{1-10}-alchile C_{1-10}, o alcossi C_{1-20}-alchile C_{1-20}). In alcune forme di realizzazione, l'alchile e l'alcossi ciascuno possono essere ulteriormente sostituiti con 1, 2, 3 o 4 gruppi sostituenti come qui definito per il rispettivo gruppo.

Il gruppo "alcossicarbonilalchile", che come qui utilizzato, rappresenta un gruppo alchile, come qui definito, che è sostituito con un gruppo alcossicarbonile, come qui definito (ad esempio, -alchil-C(O)-OR, dove R è un gruppo alchile C_{1-20}, C_{1-10}, o C_{1-6} facoltativamente sostituito). Esempi di alcossicarbonilalchile non sostituito includono da 3 a 41 atomi di carbonio (ad esempio, da 3 a 10, da 3 a 13, da 3 a 17, da 3 a 21, o da 3 a 31 atomi di carbonio, come alcossicarbonileC_{1-6}-alchile C_{1-6}, alcossicarbonile C_{1-10}-alchile C_{1-10}, o alcossicarbonile C_{1-20}-alchile C_{1-20}). In alcune forme di realizzazione, ciascun gruppo alchile e alcossi viene ulteriormente sostituito indipendentemente con 1, 2, 3 o 4 sostituenti come descritto nel presente contesto (ad esempio, un gruppo idrossi).

Il gruppo "alchilsolfinilalchile", che come qui utilizzato, rappresenta un gruppo alchile, come qui definito, sostituito con un gruppo alchilsolfinile. Esempi di gruppi alchilsolfinilalchile non sostituiti sono da 2 a 12, da 2 a 20 o da 2 a 40 atomi di carbonio. In alcune forme di

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realizzazione, ciascun gruppo alchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito.

Il gruppo "amminoalchile", che come qui utilizzato, rappresenta un gruppo alchile, come qui definito, sostituito con un gruppo ammino, come qui definito. L'alchile e l'ammino ciascuno possono essere ulteriormente sostituiti con 1, 2, 3 o 4 gruppi sostituenti come descritto qui per il rispettivo gruppo (ad esempio $CO_2R^{A'}$, dove $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) idrogeno e (d) alc C_{1-6}-arile C_{6-10}, ad esempio carbossi e/o un gruppo *N*-protettore).

Il gruppo "carbamoilalchile", che come qui usato, rappresenta un gruppo alchile, come qui definito, sostituito con un gruppo carbamoile, come qui definito. Il gruppo alchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come descritto qui.

Il gruppo "carbossialchile", che come qui usato, rappresenta un gruppo alchile, come qui definito, sostituito con un gruppo carbossilico, come qui definito. Il gruppo alchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui descritto, e il gruppo carbossilico può essere facoltativamente sostituito con uno o più gruppi *O*-protettori.

Il gruppo "carbossiamminoalchile", che come qui usato, rappresenta un gruppo amminoalchile, come qui definito, sostituito con un carbossi, come qui definito. Il carbossile, l'alchile e l'ammino ciascuno possono essere ulteriormente sostituiti con 1, 2, 3 o 4 gruppi sostituenti come descritto qui per il rispettivo gruppo (ad esempio $CO_2R^{A'}$, dove $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) idrogeno e (d) alc C_{1-6}-arile C_{6-10}, ad esempio carbossi e/o un gruppo *N*-protettore, e/o un gruppo *O*-protettore).

Il gruppo "aloalchile", che come qui usato, rappresenta un gruppo alchile, come qui definito, sostituito con un gruppo alogeno (vale a dire, F, Cl, Br o I). Un aloalchile può essere sostituito con uno, due, tre o, nel caso di gruppi alchile di due o più atomi di carbonio, quattro alogeni. I gruppi aloalchile includono perfluoroalchili (ad esempio, $-CF_3$), $-CHF_2$, $-CH_2F$, $-CCl_3$,

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-CH_2CH_2Br, -$CH_2CH(CH_2CH_2Br)$ CH_3, e -$CHICH_3$. In alcune forme di realizzazione, il gruppo aloalchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come descritto qui per i gruppi alchile.

Il gruppo "idrossialchile", che come qui utilizzato, rappresenta un gruppo alchile, come qui definito, sostituito da uno a tre gruppi idrossi, a condizione che non più di un gruppo idrossi possa essere attaccato a un singolo atomo di carbonio del gruppo alchile, ed è esemplificato da idrossimetile, diidrossipropile e simili. In alcune forme di realizzazione, il gruppo idrossialchile può essere sostituito con 1, 2, 3 o 4 gruppi sostituenti (ad esempio, gruppi O-protettori) come qui definito per un alchile.

Il gruppo "perfluoroalchile", che come qui utilizzato, rappresenta un gruppo alchile, come qui definito, in cui ciascun radicale idrogeno legato al gruppo alchile è stato sostituito da un radicale fluoruro. I gruppi perfluoroalchilesono esemplificati da trifluorometile, pentafluoroetile e simili.

Il gruppo "solfoalchile", che come qui utilizzato, rappresenta un gruppo alchile, come qui definito, sostituito con un gruppo solfo di -SO_3H. In alcune forme di realizzazione, il gruppo alchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui descritto, e il gruppo solfo può essere ulteriormente sostituito con uno o più gruppi O-protettori (ad esempio, come descritto nel presente contesto).

Il termine "alchenile", come qui utilizzato, rappresenta gruppi monovalenti a catena lineare o ramificata di, se non diversamente specificato, da 2 a 20 atomi di carbonio (ad esempio, da 2 a 6 o da 2 a 10 atomi di carbonio) contenenti uno o più doppi legami carbonio-carbonio ed è esemplificato da etenile, 1-propenile, 2-propenile, 2-metil-1-propenile, 1-butenile, 2-butenile e simili. Gli alchenili includono sia gli isomeri cis che trans. I gruppi alchenile possono essere facoltativamente sostituiti con 1, 2, 3 o 4 gruppi sostituenti che sono selezionati, indipendentemente, da ammino, arile, cicloalchile o eterociclile (ad esempio eteroarile), come

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qui definito, o uno qualsiasi dei gruppi sostituenti alchile esemplificativi qui descritti.

Esempi non limitativi di gruppi alchenile facoltativamente sostituiti includono, alcossicarbonilalchenile, amminoalchenile e idrossialchenile:

Il gruppo "alcossicarbonilalchenile", che come qui utilizzato, rappresenta un gruppo alchenile, come qui definito, che è sostituito con un gruppo alcossicarbonile, come qui definito (ad esempio, -alchenil-C(O)-OR, dove R è un gruppo alchile C_{1-20}, C_{1-10}, o C_{1-6} facoltativamente sostituito). Esempi di alcossicarbonilalchenile non sostituito includono da 4 a 41 atomi di carbonio (ad esempio, da 4 a 10, da 4 a 13, da 4 a 17, da 4 a 21, o da 4 a 31 atomi di carbonio, come alcossicarbonile C_{1-6} -alchenile C_{2-6}, alcossicarbonile C_{1-10}-alchenile C_{2-10}, o alcossicarbonile C_{1-20}-alchenile C_{2-20}). In alcune forme di realizzazione, ciascun gruppo alchile, alchenile e alcossi viene ulteriormente sostituito indipendentemente con 1, 2, 3 o 4 sostituenti come descritto nel presente contesto (ad esempio un gruppo idrossi).

Il gruppo "amminoalchenile", che come qui usato, rappresenta un gruppo alchenile, come qui definito, sostituito con un gruppo ammino, come qui definito. L'alchenile e l'ammino ciascuno possono essere ulteriormente sostituiti con 1, 2, 3 o 4 gruppi sostituenti come descritto qui per il rispettivo gruppo (ad esempio $CO_2R^{A'}$, dove $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) idrogeno e (d) alc C_{1-6}-arile C_{6-10}, ad esempio carbossi e/o un gruppo *N*-protettore).

Il gruppo "idrossialchenile", che come qui utilizzato, rappresenta un gruppo alchenile, come qui definito, sostituito da uno a tre gruppi idrossi, a condizione che non più di un gruppo idrossi può essere attaccato a un singolo atomo di carbonio del gruppo alchile, ed è esemplificato da diidrossipropenile, idrossiisopentenile e simili. In alcune forme di realizzazione, il gruppo idrossialchenile può essere sostituito con 1, 2, 3 o 4 gruppi sostituenti (ad esempio gruppi *O*-protettori) come qui definito per un alchile.

Il termine "alchinile", come qui utilizzato, rappresenta gruppi monovalenti a catena

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lineare o ramificata da 2 a 20 atomi di carbonio (ad esempio, da 2 a 4, da 2 a 6, o da 2 a 10 atomi di carbonio) contenenti un triplo legame carbonio-carbonio ed è esemplificato da etinile, 1-propinile e simili. I gruppi alchinile possono essere facoltativamente sostituiti con 1, 2, 3 o 4 gruppi sostituenti che sono selezionati, indipendentemente, da arile, cicloalchile o eterociclile (ad esempio eteroarile), come qui definito, o uno qualsiasi dei gruppi sostituenti alchile esemplificativi qui descritti.

Esempi non limitativi di gruppi alchinile facoltativamente sostituiti includono alcossicarbonilalchinile, amminoalchinile e idrossialchinile:

Il gruppo "alcossicarbonilalchinile", che come qui utilizzato, rappresenta un gruppo alchinile, come qui definito, che è sostituito con un gruppo alcossicarbonile, come qui definito (ad esempio, -alchinil-C(O)-OR, dove R è un gruppo alchile C_{1-20}, C_{1-10}, o C_{1-6} facoltativamente sostituito). Esempi di alcossicarbonilalchinile non sostituito includono da 4 a 41 atomi di carbonio (ad esempio, da 4 a 10, da 4 a 13, da 4 a 17, da 4 a 21, o da 4 a 31 atomi di carbonio, come alcossicarbonile C_{1-6}-C_{2-6} alchinile, alcossicarbonile C_{1-10}-alchinile C_{2-10} o alcossicarbonile C_{1-20}-alchinile C_{2-20}). In alcune forme di realizzazione, ciascun gruppo alchile, alchinile e alcossi viene ulteriormente sostituito indipendentemente con 1, 2, 3 o 4 sostituenti come descritto nel presente contesto (ad esempio, un gruppo idrossi).

Il gruppo "amminoalchinile", che come qui usato, rappresenta un gruppo alchinile, come qui definito, sostituito con un gruppo ammino, come qui definito. L'alchinile e l'ammino ciascuno possono essere ulteriormente sostituiti con 1, 2, 3 o 4 gruppi sostituenti come descritto qui per il rispettivo gruppo (ad esempio $CO_2R^{A'}$, dove $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) idrogeno e (d) alc C_{1-6}-arile C_{6-10}, ad esempio carbossi e/o un gruppo *N*-protettore).

Il gruppo "idrossialchinile", che come qui utilizzato, rappresenta un gruppo alchinile, come qui definito, sostituito da uno a tre gruppi idrossi, a condizione che non più di un gruppo

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idrossi può essere attaccato a un singolo atomo di carbonio del gruppo alchile. In alcune forme di realizzazione, il gruppo idrossialchinile può essere sostituito con 1, 2, 3 o 4 gruppi sostituenti (ad esempio gruppo *O*-protettori) come qui definito per un alchile.

Il termine "ammino", come qui utilizzato, rappresenta —$N(R^{N1})_2$, in cui ciascun R^{N1} è, indipendentemente, H, OH, NO_2, $N(R^{N2})_2$, SO_2OR^{N2}, SO_2R^{N2}, SOR^{N2}, un gruppo *N*-protettore, alchile, alchenile, alchinile, alcossi, arile, alcarile, cicloalchile, alccicloalchile, carbossialchile (ad esempio, facoltativamente sostituito con un gruppo *O*-protettore, come gruppi arilalcossicarbonile facoltativamente sostituiti o qualsiasi descritto nel presente contesto), solfoalchile, acile (ad esempio acetile, trifluoroacetile o altri qui descritti), alcossicarbonilalchile (ad esempio, facoltativamente sostituito con un gruppo *O*-protettore, come gruppi arilalcossicarbonile facoltativamente sostituiti o qualsiasi descritto nel presente contesto), eterociclile (ad esempio eteroarile) o alcheterociclile (ad esempio alcheteroarile), in cui ciascuno di questi gruppi R^{N1} recitati possono essere facoltativamente sostituiti, come qui definito per ciascun gruppo; o due R^{N1} si combinano per formare un eterociclile o un gruppo *N*-protettore, e in cui ciascun R^{N2} è, indipendentemente, H, alchile o arile. I gruppi ammino dell'invenzione possono essere un ammino non sostituito (vale a dire, $-NH_2$) o un ammino sostituito (vale a dire, $-N(R^{N1})_2$). In una forma di realizzazione preferita, l'ammino è - NH_2 o $-NHR^{N1}$, in cui R^{N1} è, indipendentemente, OH, NO_2, NH_2, NR^{N2}_2, SO_2OR^{N2}, SO_2R^{N2}, SOR^{N2}, alchile, carbossialchile, sulfoalchile, acile (ad esempio acetile, trifluoroacetile o altri qui descritti), alcossicarbonilalchile (ad esempio t-butossicarbonilalchile) o arile, e ciascun R^{N2} può essere H, C_{1-20} alchile (ad esempio alchile C_{1-6}), o arile C_{6-10}.

Esempi non limitativi di gruppi ammino facoltativamente sostituiti includono acilammino e carbamile:

Il gruppo "acilammino", che come qui utilizzato, rappresenta un gruppo acile, come qui definito, attaccato al gruppo molecolare genitore attraverso un gruppo ammino, come qui

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definito (vale a dire, -N(R^{N1})-C(O)-R, dove R è H o un gruppo alchile C_{1-6}, C_{1-10}, o C_{1-20} facoltativamente sostituito (ad esempio aloalchile) e R^{N1} è come qui definito). Esempi di gruppi acilammino non sostituiti includono da 1 a 41 atomi di carbonio (ad esempio da 1 a 7, da 1 a 13, da 1 a 21, da 2 a 7, da 2 a 13, da 2 a 21 o da 2 a 41 atomi di carbonio). In alcune forme di realizzazione, il gruppo alchile è ulteriormente sostituito con 1, 2, 3 o 4 sostituenti come qui descritto, e/o il gruppo ammino è -NH_2 o -NHR^{N1}, in cui R^{N1} è, indipendentemente, OH, NO_2, NH_2, NR^{N2}_2, SO_2OR^{N2}, SO_2R^{N2}, SOR^{N2}, alchile, arile, acile (ad esempio acetile, trifluoroacetile o altri qui descritti), o alcossicarbonilalchile, e ciascun R^{N2} può essere H, alchile o arile.

Il gruppo "carbamile", che come qui utilizzato, si riferisce a un gruppo carbammato avente la struttura -$NR^{N1}C(=O)OR$ o -$OC(=O)N(R^{N1})_2$, dove il significato di ciascun R^{N1} si trova nella definizione di "ammino" qui fornita, e R è alchile, cicloalchile, alc-cicloalchile, arile, alcarile, eterociclile (ad esempio eteroarile) o alc-eterociclile (ad esempio alc-eteroarile), come qui definito.

Il termine "amminoacido", come qui descritto, si riferisce a una molecola avente una catena laterale, un gruppo ammino e un gruppo acido (ad esempio, un gruppo carbossilico di -CO_2H o un gruppo solfo di -SO_3H), in cui l'amminoacido è attaccato al gruppo molecolare originario dalla catena laterale, dal gruppo ammino o dal gruppo acido (ad esempio, la catena laterale). In alcune forme di realizzazione, l'amminoacido è attaccato al gruppo molecolare originario mediante un gruppo carbonile, dove la catena laterale o il gruppo ammino è attaccato al gruppo carbonile. Catene laterali esemplificative includono un alchile, arile, eterociclile, alcarile, alc-eterociclile, amminoalchile, carbamoilalchile e carbossialchile facoltativamente sostituiti. Amminoacidi esemplificativi includono alanina, arginina, asparagina, acido aspartico, cisteina, acido glutammico, glutammina, glicina, istidina, idrossinorvalina, isoleucina, leucina, lisina, metionina, norvalina, ornitina, fenilalanina, prolina, pirrolisina, selenocisteina, serina, taurina, treonina, triptofano, tirosina e valina. I gruppi di amminoacidi possono essere

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facoltativamente sostituiti con uno, due, tre o, nel caso di gruppi di amminoacidi di due o più atomi di carbonio, quattro sostituenti scelti indipendentemente dal gruppo costituito da: (1) alcossi C_{1-6}; (2) alchilsolfonile C_{1-6}; (3) ammino, asdefined come definito nel presente contesto (ad esempio, ammino non sostituito (vale a dire, $-NH_2$) o un ammino sostituito (vale a dire, $-N(R^{N1})_2$, dove R^{N1} è come definito per ammino); (4) arile C_{6-10}-alcossi C_{1-6}; (5) azido; (6) alogeno; (7) (eterociclile C_{2-9})ossi; (8) idrossi; (9) nitro; (10) osso (ad esempio, carbossialdeide o acile); (11) spirociclile C_{1-7}; (12) tioalcossi; (13) tiolo; (14) $-CO_2R^{A'}$, dove $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-20} (ad esempio, alchile C_{1-6}), (b) alchenile C_{2-20} (ad esempio, alchenile C_{2-6}), (c) arile C_{6-10}, (d) idrogeno, (e) alc C_{1-6}-arile C_{6-10}, (f) ammino-alchile C_{1-20}, (g) polietilenglicole di $-(CH_2)_{s2}(OCH_2CH_2)_{s1}(CH_2)_{s3}OR'$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e R' è H o alchile C_{1-20}, e (h) ammino-polietilenglicole di $-NR^{N1}(CH_2)_{s2}(CH_2CH_2O)_{s1}(CH_2)_{s3}NR^{N1}$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e ciascun R^{N1} e, indipendentemente, idrogeno o alchile C_{1-6} facoltativamente sostituito; (15) $-C(O)NR^{B'}R^{C'}$, dove ciascuno tra $R^{B'}$ e $R^{C'}$ è, indipendentemente, scelto dal gruppo costituito da (a) idrogeno, (b) alchile C_{1-6}, (c) arile C_{6-10}, e (d) alc C_{1-6}-arile C_{6-10}; (16) $-SO_2R^{D'}$, dove $R^{D'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) alc C_{1-6}-arile C_{6-10}, e (d) idrossi; (17) $-SO_2NR^{E'}R^{F'}$, dove ciascuno tra $R^{E'}$ e $R^{F'}$ è, indipendentemente, scelto dal gruppo costituito da (a) idrogeno, (b) alchile C_{1-6}, (c) arile C_{6-10} e (d) alc C_{1-6}-arile C_{6-10}; (18) $-C(O)R^{G'}$, dove $R^{G'}$ è scelto dal gruppo costituito da (a) alchile C_{1-20} (ad esempio, alchile C_{1-6}), (b) alchenile C_{2-20} (ad esempio, alchenile C_{2-6}), (c) arile C_{6-10}, (d) idrogeno, (e) alc C_{1-6}-arile C_{6-10}, (f) ammino-alchile C_{1-20}, (g) polietilenglicole di $-(CH_2)_{s2}(OCH_2CH_2)_{s1}(CH_2)_{s3}OR'$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero

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intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e R' è H o alchile C_{1-20}, e (h) ammino-polietilenglicole di $-NR^{N1}(CH_2)_{s2}(CH_2CH_2O)_{s1}(CH_2)_{s3}NR^{N1}$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e ciascun R^{N1} è, indipendentemente, idrogeno o alchile C_{1-6} facoltativamente sostituito; (19) - $NR^{H'}C(O)R^{I'}$, in cui $R^{H'}$ è scelto dal gruppo costituito da (a1) idrogeno e (b1) alchile C_{1-6}, e $R^{I'}$ è scelto dal gruppo costituito da (a2) alchile C_{1-20} (ad esempio, alchile C_{1-6}), (b2) alchenile C_{2-20} (ad esempio, alchenile C_{2-6}), (c2) arile C_{6-10}, (d2) idrogeno, (e2) alc C_{1-6}-arile C_{6-10}, (f2) ammino-alchile C_{1-20}, (g2) polietilenglicole di - $(CH_2)_{s2}(OCH_2CH_2)_{s1}(CH_2)_{s3}OR'$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e R' è H o alchile C_{1-20}, e (h2) ammino-polietilenglicole di - $NR^{N1}(CH_2)_{s2}(CH_2CH_2O)_{s1}(CH_2)_{s3}NR^{N1}$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e ciascun R^{N1} è, indipendentemente, idrogeno o alchile C_{1-6} facoltativamente sostituito; (20) - $NR^{J'}C(O)OR^{K'}$, in cui $R^{J'}$ è scelto dal gruppo costituito da (a1) idrogeno e (b1) alchile C_{1-6}, e $R^{K'}$ è scelto dal gruppo costituito da (a2) alchile C_{1-20} (ad esempio, alchile C_{1-6}), (b2) alchenile C_{2-20} (ad esempio, alchenile C_{2-6}), (c2) arile C_{6-10}, (d2) idrogeno, (e2) alc C_{1-6}-arile C_{6-10}, (f2) ammino-alchile C_{1-20}, (g2) polietilenglicole di -$(CH_2)_{s2}(OCH_2CH_2)_{s1}(CH_2)_{s3}OR'$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e R' è H o alchile C_{1-20}, e (h2) ammino-polietilenglicole di - $NR^{N1}(CH_2)_{s2}(CH_2CH_2O)_{s1}(CH_2)_{s3}NR^{N1}$, in cui s1 è un numero intero da 1 a 10 (ad esempio, da 1 a 6 o da 1 a 4), ciascuno tra s2 e s3, indipendentemente, è un numero intero da 0 a 10 (ad esempio, da 0 a 4, da 0 a 6, da 1 a 4, da 1 a 6, o da 1 a 10), e ciascun

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R^{N1} è, indipendentemente, idrogeno o alchile C_{1-6} facoltativamente sostituito; e (21) ammidina. In alcune forme di realizzazione, ciascuno di questi gruppi può essere ulteriormente sostituito come descritto nel presente contesto.

Il termine"arile", come usato qui, rappresenta un sistema ad anello carbociclico mono-, biciclico o multiciclico avente uno o due anelli aromatici ed è esemplificato da fenile, naftile, 1,2-diidronaftile, 1,2,3,4-tetraidronaftile, antracenile, fenantrenile, fluorenile, indanile, indenile e simili, e può essere facoltativamente sostituito con 1, 2, 3, 4 o 5 sostituenti indipendentemente scelti dal gruppo costituito da: (1) acile C_{1-7} (ad esempio, carbossialdeide); (2) alchile C_{1-20} (ad esempio, alchile C_{1-6}, alcossi C_{1-6}-alchile C_{1-6}, alchilsolfinile C_{1-6}-alchile C_{1-6}, ammino-alchile C_{1-6}, azido-alchile C_{1-6}, (carbossialdeide)-alchile C_{1-6}, alogeno-alchile C_{1-6} (ad esempio, perfluoroalchile), idrossi-alchile C_{1-6}, nitro-alchile C_{1-6} o tioalcossi C_{1-6}-alchile C_{1-6}); (3) alcossi C_{1-20} (ad esempio, alcossi C_{1-6}, come perfluoroalcossi); (4) alchilsolfinile C_{1-6}; (5) arile C_{6-10}; (6) ammino; (7) alc C_{1-6}-arile C_{6-10}; (8) azido; (9) cicloalchile C_{3-8}; (10) alc C_{1-6}-cicloalchile C_{3-8}; (11) alogeno; (12) eterociclile C_{1-12} (ad esempio, eteroarile C_{1-12}); (13) (eterociclile C_{1-12})ossi; (14) idrossi; (15) nitro; (16) tioalcossi C_{1-20} (ad esempio, tioalcossi C_{1-6}); (17) $-(CH_2)_qCO_2R^{A'}$, dove q è un numero intero da zero a quattro, e $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) idrogeno, e (d) alc C_{1-6}-arile C_{6-10}; (18) $-(CH_2)_qCONR^{B'}R^{C'}$, dove q è un numero intero da zero a quattro e dove $R^{B'}$ e $R^{C'}$ sono indipendentemente scelti dal gruppo costituito da (a) idrogeno, (b) alchile C_{1-6}, (c) arile C_{6-10}, e (d) alc C_{1-6}-arile C_{6-10}; (19) $-(CH_2)_qSO_2R^{D'}$, dove q è un numero intero da zero a quattro e dove $R^{D'}$ è scelto dal gruppo costituito da (a) alchile, (b) arile C_{6-10} e (c) alc-arile C_{6-10}; (20) $-(CH_2)_qSO_2NR^{E'}R^{F'}$, dove q è un numero intero da zero a quattro e d dove ciascuno tra $R^{E'}$ e $R^{F'}$ è, indipendentemente, scelto dal gruppo costituito da (a) idrogeno, (b) alchile C_{1-6}, (c) arile C_{6-10}, e (d) alc C_{1-6}-arile C_{6-10}; (21) tiolo; (22) arilossi C_{6-10}; (23) cicloalcossi C_{3-8}; (24) arile C_{6-10}-alcossi C_{1-6}; (25) alc C_{1-6}-eterociclile C_{1-12} (ad esempio, alc C_{1-6}-eteroarile C_{1-12}); (26) alchenile C_{2-20}; e (27) alchinile C_{2-20}.

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In alcune forme di realizzazione, ciascuno di questi gruppi può essere ulteriormente sostituito come descritto nel presente contesto. Ad esempio, il gruppo alchilene di un alcarile C_1 o un alcheterociclile C_1 può essere ulteriormente sostituito con un gruppo osso per fornire il rispettivo gruppo sostituente ariloile ed (eterociclil)oile.

Il gruppo "arilalchile", che come qui usato, rappresenta un gruppo arile, come qui definito, attaccato al gruppo molecolare originario attraverso un gruppo alchilene, come qui definito. Esempi di gruppi arilalchile non sostituiti sono da 7 a 30 atomi di carbonio (ad esempio da 7 a 16 o da 7 a 20 atomi di carbonio, come alc C_{1-6}-arile C_{6-10}, alc C_{1-10}-arile C_{6-10}, o alc C_{1-20}-arile C_{6-10}). In alcune forme di realizzazione, l'alchilene e l'arile possono essere ulteriormente sostituiti ciascuno con 1, 2, 3 o 4 gruppi sostituenti come qui definito per i rispettivi gruppi. Altri gruppi preceduti dal prefisso "alc-" sono definiti allo stesso modo, dove "alc" si riferisce a un alchilene C_{1-6}, se non diversamente indicato, e la struttura chimica attaccata è come definita nel presente contesto.

Il termine "azido" rappresenta un gruppo $-N_3$, che può anche essere rappresentato come -N=N=N.

Il termine "biciclico", come qui utilizzato, si riferisce a una struttura avente due anelli, che possono essere aromatici o non aromatici. Le strutture bicicliche includono gruppi spirociclici, come qui definiti, e due anelli che condividono uno o più ponti, dove tali ponti possono includere un atomo o una catena comprendente due, tre o più atomi. Gruppi biciclici esemplificativi includono un gruppo carbociclile biciclico, dove il primo e il secondo anello sono gruppi carbociclile, come qui definito; un gruppo arile biciclico, in cui il primo e il secondo anello sono gruppi arile, come qui definito; gruppi eterociclile biciclici, dove il primo anello è un gruppo eterociclile e il secondo anello è un gruppo carbociclile (ad esempio arile) o eterociclile (ad esempio eteroarile); e gruppi eteroarile biciclici, dove il primo anello è un gruppo eteroarile e il secondo anello è un gruppo carbociclile (ad esempio arile) o eterociclile

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(ad esempio eteroarile). In alcune forme di realizzazione, il gruppo biciclico può essere sostituito con 1, 2, 3 o 4 sostituenti come qui definito per gruppi cicloalchile, eterociclile e arile.

Il termine "boranile", come qui utilizzato, rappresenta —$B(R^{B1})_3$, dove ciascun R^{B1} è, indipendentemente, scelto dal gruppo costituito da H e alchile facoltativamente sostituito. In alcune forme di realizzazione, il gruppo boranile può essere sostituito con 1, 2, 3 o 4 sostituenti come qui definito per alchile.

I termini "carbociclico" e "carbociclile", come qui utilizzati, si riferiscono a una struttura C_{3-12} monociclica, biciclica o triciclica facoltativamente sostituita in cui gli anelli, che possono essere aromatici o non aromatici, sono formati da atomi di carbonio. Le strutture carbocicliche includono gruppi cicloalchile, cicloalchenile, cicloalchinile e arile.

Il termine "carbonile", come usato in questo contesto, rappresenta un gruppo C(O), che può anche essere rappresentato come C=O.

Il termine "carbossi", come usato nel presente contesto, indica -CO_2H.

Il termine "ciano", come usato in questo contesto, rappresenta un gruppo -CN.

Il termine "cicloalchile", come utilizzato nel presente contesto, rappresenta un gruppo idrocarburico ciclico non aromatico monovalente saturo o insaturo da tre a otto atomi di carbonio, se non diversamente specificato, ed è esemplificato da ciclopropile, ciclobutile, ciclopentile, cicloesile, cicloeptile, eptile biciclico e simili. Quando quello che altrimenti sarebbe un gruppo cicloalchile include uno o più doppi legami carbonio-carbonio, il gruppo viene indicato come un gruppo "cicloalchenile". Ai fini della presente invenzione, il cicloalchenile esclude i gruppi arile. Quando quello che altrimenti sarebbe un gruppo cicloalchile include uno o più tripli legami carbonio-carbonio, il gruppo viene indicato come un gruppo "cicloalchinile". Gruppi cicloalchenile esemplificativi includono ciclopentenile, cicloesenile e simili. I gruppi cicloalchile della presente invenzione possono essere facoltativamente sostituiti con: (1) acile C_{1-7} (ad esempio, carbossialdeide); (2) alchile C_{1-20} (ad

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esempio, alchile C_{1-6}, alcossi C_{1-6}-alchile C_{1-6}, alchilsolfinile C_{1-6}-alchile C_{1-6}, ammino-alchile C_{1-6}, azido-alchile C_{1-6}, (carbossialdeide)-alchile C_{1-6}, alogeno-alchile C_{1-6} (ad esempio, perfluoroalchile), idrossi-alchile C_{1-6}, nitro-alchile C_{1-6} o tioalcossi C_{1-6}-alchile C_{1-6}); (3) alcossi C_{1-20} (ad esempio, alcossi C_{1-6}, come perfluoroalcossi); (4) alchilsolfinile C_{1-6}; (5) arile C_{6-10}; (6) ammino; (7) alc C_{1-6}-arile C_{6-10}; (8) azido; (9) cicloalchile C_{3-8}; (10) alc C_{1-6}-cicloalchile C_{3-8}; (11) alogeno; (12) eterociclile C_{1-12} (ad esempio, eteroarile C_{1-12}); (13) (eterociclile C_{1-12})ossi; (14) idrossi; (15) nitro; (16) tioalcossi C_{1-20} (ad esempio, tioalcossi C_{1-6}); (17) $-(CH_2)_qCO_2R^{A'}$, dove q è un numero intero da zero a quattro, e $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) idrogeno, e (d) alc C_{1-6}-arile C_{6-10}; (18) - $(CH_2)_qCONR^{B'}R^{C'}$, dove q è un numero intero da zero a quattro e dove $R^{B'}$ e $R^{C'}$ sono indipendentemente scelti dal gruppo costituito da (a) idrogeno, (b) alchile C_{6-10}, (c) arile C_{6-10}, e (d) alc C_{1-6}-arile C_{6-10}; (19) - $(CH_2)_qSO_2R^{D'}$, dove q è un numero intero da zero a quattro e dove $R^{D'}$ è scelto dal gruppo costituito da (a) alchile C_{6-10}, (b) arile C_{6-10} e (c) alc C_{1-6}-arile C_{6-10}; (20) $-(CH_2)_qSO_2NR^{E'}R^{F'}$, dove q è un numero intero da zero a quattro e d dove ciascuno tra $R^{E'}$ e $R^{F'}$ è, indipendentemente, scelto dal gruppo costituito da (a) idrogeno, (b) alchile C_{6-10}, (c) arile C_{6-10}, e (d) alc C_{1-6}-arile C_{6-10}; (21) tiolo; (22) arilossi C_{6-10}; (23) cicloalcossi C_{3-8}; (24) arile C_{6-10}-alcossi C_{1-6}; (25) alc C_{1-6}-eterociclile C_{1-12} (ad esempio, alc C_{1-6}-eteroarile C_{1-12}); (26) osso; (27) alchenile C_{2-20}; e (28) alchinile C_{2-20}. In alcune forme di realizzazione, ciascuno di questi gruppi può essere ulteriormente sostituito come descritto nel presente contesto. Ad esempio, il gruppo alchilene di un alcarile C_1 o un alcheterociclile C_1 può essere ulteriormente sostituito con un gruppo osso per fornire il rispettivo gruppo sostituente ariloile ed (eterociclil)oile.

Il gruppo "cicloalchilalchile", che come qui utilizzato, rappresenta un gruppo cicloalchile, come qui definito, attaccato al gruppo molecolare originario attraverso un gruppo alchilene, come qui definito (ad esempio, un gruppo alchilene da 1 a 4, da 1 a 6 , da 1 a 10, o da 1 a 20 atomi di carbonio). In alcune forme di realizzazione, l'alchilene e il cicloalchile possono

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essere ulteriormente sostituiti ciascuno con 1, 2, 3 o 4 gruppi sostituenti come qui definito per il rispettivo gruppo.

Il termine "alogeno", come qui utilizzato, rappresenta un alogeno scelto tra bromo, cloro, iodio o fluoro.

Il termine "eteroalchile", come qui utilizzato, si riferisce a un gruppo alchile, come qui definito, in cui uno o due degli atomi di carbonio costituenti sono stati sostituiti ciascuno da azoto, ossigeno o zolfo. In alcune forme di realizzazione, il gruppo eteroalchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come descritto qui per i gruppi alchile. I termini "eteroalchenile" ed eteroalchinile", come qui usati, si riferiscono a gruppi alchenile e alchinile, come qui definiti, rispettivamente, in cui uno o due degli atomi di carbonio costituenti sono stati sostituiti ciascuno da azoto, ossigeno o zolfo. In alcune forme di realizzazione, i gruppi eteroalchenile ed eteroalchinile possono essere ulteriormente sostituiti con 1, 2, 3 o 4 gruppi sostituenti come descritto qui per i gruppi alchile.

Esempi non limitativi di gruppi eteroalchile, eteroalchenile ed eteroalchinile facoltativamente sostituiti includono acilossi, alchenilossi, alcossi, alcossialcossi, alcossicarbonilalcossi, alchinilossi, aminoalcossi, arilalcossi, carbossialcossi, cicloalcossi, aloalcossi, (eterociclil)ossi, perfluoroalcossi, tioalcossi e tioeterociclilalchile:

Il gruppo "acilossi", che come qui usato, rappresenta un gruppo acile, come qui definito, attaccato al gruppo molecolare genitore attraverso un atomo di ossigeno (vale a dire, - O-C(O)-R, dove R è H o ungruppo alchile C_{1-6}, C_{1-10}, o C_{1-20} facoltativamente sostituito). Esempi di gruppi acilossi non sostituiti includono da 1 a 21 atomi di carbonio (ad esempio da 1 a 7 o da 1 a 11 atomi di carbonio). In alcune forme di realizzazione, il gruppo alchile è ulteriormente sostituito con 1, 2, 3 o 4 sostituenti come qui descritto.

Il gruppo "alchenilossi", che come qui utilizzato, rappresenta un sostituente chimico di formula -OR, dove R è un gruppo alchenile C_{2-20} (ad esempio alchenile C_{2-6} o C_{2-10}), se non

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diversamente specificato. Gruppi alchenilossi esemplificativi includono etenilossi, propenilossi e simili. In alcune forme di realizzazione, il gruppo alchenile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito (ad esempio, un gruppo idrossi).

Il gruppo "alcossi", che come qui utilizzato, rappresenta un sostituente chimico di formula -OR, dove R è un gruppo alchile C_{1-20} (ad esempio alchile C_{1-6} o C_{1-10}), se non diversamente specificato. Gruppi alcossi esemplificativi includono metossi, etossi, propossi (ad esempio n-propossi e isopropossi), t-butossi e simili. In alcune forme di realizzazione, il gruppo alchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito (ad esempio, idrossi o alcossi).

Il gruppo "alcossialcossi", che come qui utilizzato, rappresenta un gruppo alcossi che è sostituito con un gruppo alcossi. Esempi di gruppi alcossialcossilici non sostituiti includono da 2 a 40 atomi di carbonio (ad esempio, da 2 a 12 o da 2 a 20 atomi di carbonio, come alcossi C_{1-6}-alcossi C_{1-6}, alcossi C_{1-10}-alcossi C_{1-10}, o alcossi C_{1-20}-alcossi C_{1-20}). In alcune forme di realizzazione, ciascun gruppo alcossi può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito.

Il gruppo "alcossicarbonilalcossi", che come qui utilizzato, rappresenta un gruppo alcossi, come qui definito, che è sostituito con un gruppo alcossicarbonile, come qui definito (ad esempio, -O-alchil-C(O)-OR, dove R è un gruppo alchile C_{1-6}, C_{1-10}, o C_{1-20} facoltativamente sostituito). Esempi di alcossicarbonilalcossi non sostituiti includono da 3 a 41 atomi di carbonio (ad esempio, da 3 a 10, da 3 a 13, da 3 a 17, da 3 a 21, o da 3 a 31 atomi di carbonio, come alcossicarbonile C_{1-6}-alcossi C_{1-6}, alcossicarbonile C_{1-10}-alcossi C_{1-10}, o alcossicarbonile C_{1-20}-alcossi C_{1-20}). In alcune forme di realizzazione, ciascun gruppo alcossi è ulteriormente sostituito indipendentemente con 1, 2, 3 o 4 sostituenti, come descritto qui (ad esempio, un gruppo idrossi).

Il gruppo "alchinilossi", che come qui utilizzato, rappresenta un sostituente chimico di

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formula -OR, dove R è un gruppo alchinile C_{2-20} (ad esempio alchinile C_{2-6} o C_{2-10}), se non diversamente specificato. Gruppi alchinilossi esemplificativi includono etinilossi, propinilossi e simili. In alcune forme di realizzazione, il gruppo alchinile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito (ad esempio un gruppo idrossi).

Il gruppo "amminoalcossi", che come qui usato, rappresenta un gruppo alcossi, come qui definito, sostituito con un gruppo ammino, come qui definito. L'alchile e l'ammino ciascuno possono essere ulteriormente sostituiti con 1, 2, 3 o 4 gruppi sostituenti come descritto qui per il rispettivo gruppo (ad esempio $CO_2R^{A'}$, dove $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) idrogeno e (d) alc C_{1-6}-arile C_{6-10}, ad esempio carbossi).

Il gruppo "arilalcossi", che come usato in questo contesto, rappresenta un gruppo alcarile, come definito nel presente contesto, attaccato al gruppo molecolare originario attraverso un atomo di ossigeno. Esempi di gruppi arilalcossi non sostituiti includono da 7 a 30 atomi di carbonio (ad esempio, da 7 a 16 o da 7 a 20 atomi di carbonio, come arile C_{6-10}-alcossi C_{1-6}, arile C_{6-10}-alcossi C_{1-10}, o arile C_{6-10}-alcossi C_{1-20}). In alcune forme di realizzazione, il gruppo arilalcossi può essere sostituito con 1, 2, 3 o 4 sostituenti come qui definito.

Il gruppo "arilossi", che come qui utilizzato, rappresenta un sostituente chimico di formula -OR', dove R' è un gruppo arile da 6 a 18 atomi di carbonio, se non diversamente specificato. In alcune forme di realizzazione, il gruppo arile può essere sostituito con 1, 2, 3 o 4 sostituenti come qui definito.

Il gruppo "carbossialcossi", che come qui usato, rappresenta un gruppo alcossi, come qui definito, sostituito con un gruppo carbossi, come qui definito. Il gruppo alcossi può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui descritto per il gruppo alchile, e il gruppo carbossi può essere facoltativamente sostituito con uno o più gruppi *O*-protettori.

Il gruppo "cicloalcossi", che come qui utilizzato, rappresenta un sostituente chimico di

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formula -OR, dove R è un gruppo cicloalchile C_{3-8}, come qui definito, se non diversamente specificato. Il gruppo cicloalchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui descritto. Esempi di gruppi cicloalcossi non sostituiti sono da 3 a 8 atomi di carbonio. In alcune forme di realizzazione, il gruppo cicloalchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui descritto.

Il gruppo "aloalcossi", che come qui usato, rappresenta un gruppo alcossi, come qui definito, sostituito con un gruppo alogeno (vale a dire, F, Cl, Br o I). Un aloalcossi può essere sostituito con uno, due, tre o, nel caso di gruppi alchile di due o più atomi di carbonio, quattro alogeni. I gruppi aloalcossi includono perfluoroalcossi (ad esempio, $-OCF_3$), $-OCHF_2$, $-OCH_2F$, $-OCCl_3$, $-OCH_2CH_2Br$, $-OCH_2CH(CH_2CH_2Br)CH_3$, e $-OCHICH_3$. In alcune forme di realizzazione, il gruppo aloalcossi può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come descritto qui per i gruppi alchile.

Il gruppo "(eterociclil)ossi" che come qui usato, rappresenta un gruppo eterociclile, come qui definito, attaccato al gruppo molecolare originario attraverso un atomo di ossigeno. In alcune forme di realizzazione, il gruppo eterociclile può essere sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito.

Il gruppo "perfluoroalcossi", che come qui usato, rappresenta un gruppo alcossi, come qui definito, in cui ciascun radicale idrogeno legato al gruppo alcossi è stato sostituito da un radicale fluoruro. I gruppi perfluoroalcossi sono esemplificati da trifluorometossi, pentafluoroetossi e simili.

Il gruppo "alchilsolfinile", che come qui utilizzato, rappresenta un gruppo alchile attaccato al gruppo molecolare genitore attraverso un gruppo -S(O)-. Gruppi alchilsolfinile esemplificativi sono da 1 a 6, da 1 a 10 o da 1 a 20 atomi di carbonio. In alcune forme di realizzazione, il gruppo alchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui definito.

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Il gruppo "tioarilalchile", che come qui utilizzato, rappresenta un sostituente chimico di formula -SR, dove R è un gruppo arilalchile. In alcune forme di realizzazione, il gruppo arilalchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui descritto.

Il gruppo "tioalcossi" come qui utilizzato, rappresenta un sostituente chimico di formula -SR, dove R è un gruppo alchile, come qui definito. In alcune forme di realizzazione, il gruppo alchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come qui descritto.

Il gruppo "tioeterociclilalchile", che come qui utilizzato, rappresenta un sostituente chimico di formula -SR, dove R è un gruppo eterociclilalchile. In alcune forme di realizzazione, il gruppo eterociclilalchile può essere ulteriormente sostituito con 1, 2, 3 o 4 gruppi sostituenti come descritto nel presente contesto.

Il termine "eteroarile", come qui utilizzato, rappresenta quel sottoinsieme di eterociclili, come qui definito, che sono aromatici: vale a dire contengono $4n+2$ pi elettroni all'interno del sistema ad anello mono- o multiciclico. Esempi di gruppi eteroarile non sostituiti sono da 1 a 12 (ad esempio, da 1 a 11, da 1 a 10, da 1 a 9, da 2 a 12, da 2 a 11, da 2 a 10 o da 2 a 9). In alcune forme di realizzazione, l'eteroarile è sostituito con 1, 2, 3 o 4 gruppi sostituenti come definito per un gruppo eterociclile.

Il termine “eteroarilalchile” si riferisce a un gruppo eteroarile, come qui definito, attaccato al gruppo molecolare originario attraverso un gruppo alchilene, come qui definito. Esempi di gruppi eteroarilalchile non sostituiti sono da 2 a 32 atomi di carbonio (ad esempio da 2 a 22, da 2 a 18, da 2 a 17, da 2 a 16, da 3 a 15, da 2 a 14, da 2 a 13, o da Da 2 a 12 atomi di carbonio, come alc C_{1-6}-eteroarile C_{1-12}, alc C_{1-10}-eteroarile C_{1-12}, o alc C_{1-20}-eteroarile C_{1-12}). In alcune forme di realizzazione, l'alchilene e l'eteroarile possono essere ulteriormente sostituiti ciascuno con 1, 2, 3 o 4 gruppi sostituenti come qui definito per il rispettivo gruppo. I gruppi eteroarilalchile sono un sottoinsieme di gruppi eterociclilalchile.

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Il termine "eterociclile", come utilizzato nel presente contesto, rappresenta un anello a 5, 6 o 7 membri, se non diversamente specificato, contenente uno, due, tre o quattro eteroatomi scelti indipendentemente dal gruppo costituito da azoto, ossigeno e zolfo. L'anello a 5 membri ha da zero a due doppi legami e gli anelli a 6 e 7 membri hanno da zero a tre doppi legami. Esempi di gruppi eterocicle non sostituiti sono da 1 a 12 (ad esempio, da 1 a 11, da 1 a 10, da 1 a 9, da 2 a 12, da 2 a 11, da 2 a 10 o da 2 a 9). Il termine "eterociclile" rappresenta anche un composto eterociclico avente una struttura multiciclica a ponte in cui uno o più atomi di carbonio e/o eteroatomi collegano due membri non adiacenti di un anello monociclico, ad esempio un gruppo chinuclidinile. Il termine "eterociclile" include gruppi biciclici, triciclici e tetraciclici in cui uno qualsiasi degli anelli eterociclici di cui sopra è fuso con uno, due o tre anelli carbociclici, ad esempio un anello arile, un anello cicloesano, un anello cicloesene, un anello ciclopentano, un anello ciclopentene, o un altro anello eterociclico monociclico, come indolile, chinolile, isochinolile, tetraidrochinolile, benzofurile, benzotinile e simili. Esempi di eterociclili fusi includono tropani e 1,2,3,5,8,8a-esaidroindolizina. Eterociclici includono pirrolile, pirrolinile, pirrolidinile, pirazolile, pirazolinile, pirazolidinile, immidazolile, imidazolinile, imidazolidinile, piridile, piperidinile, omopiperidinile, pirazinile, piperazinile, pirimidinile, piridazinile, ossazolile, ossazolidinile, isossazolile, isossazolidiniile, morfolinile, tiomorfolinile, tiazolile, tiazolidinile, isotiazolile, isotiazolidinile, indolile, indazolile, chinolile, isochinolile, chinossalile, diidrochinossalinile, chinazolinile, cinnolinile, ftalazinile, benzimidazolile, benzotiazolile, benzossazolile, benzotiadiazolile, furile, tienile, tiazolidinile, isotiazolile, triazolike, tetrazolile, ossadiazolile (ad esempio, 1,2,3-ossadiazolile), purinile, tiadiazolile (ad esempio 1,2,3-tiadiazolile), tetraidrofuranile, diidrofuranile, tetraidrotinile, diidrotinile, diidroindolile, diidrochinolile, tetraidrochinolile, tetraidroisochinolile, diidroisochinolile, piranile, diidropiranile, ditiazolile, benzofuranile, isobenzofuranile e simili, incluse forme diidro e tetraidro di questi, in cui uno o più doppi legami sono ridotti e sostituiti

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con idrogeni. Ancora altri eterociclili esemplificativi includono: 2,3,4,5-tetraidro-2-osso-ossazolile; 2,3-diidro-2-osso-1H-imidazolile; 2,3,4,5-tetraidro-5-osso-1H-pirazolile (ad esempio, 2,3,4,5-tetraidro-2-fenil-5-osso-1H-pirazolile); 2,3,4,5-tetraidro-2,4-diosso-1H-imidazolile (ad esempio, 2,3,4,5-tetraidro-2,4-diosso-5-metil-5-fenil-1H-imidazolile); 2,3-diidro-2-tiosso-1,3,4-ossadiazolile (ad esempio, 2,3-diidro-2-tiosso-5-fenil-1,3,4-ossadiazolile); 4,5-diidro-5-osso-1*H*-triazolile (ad esempio, 4,5-diidro-3-metil-4-amino 5-osso-1H-triazolile); 1,2,3,4-tetraidro-2,4-diossopiridinile (ad esempio, 1,2,3,4-tetraidro-2,4-diosso-3,3-dietilpiridinile); 2,6-diosso-piperidinile (ad esempio, 2,6-diosso-3-etil-3-fenilpiperidinile); 1,6-diidro-6-ossopiridiminile; 1,6-diidro-4-ossopirimidinile (ad esempio, 2-(metiltio)-1,6-diidro-4-osso-5-metilpirimidin-1-ile); 1,2,3,4-tetraidro-2,4-diossopirimidinile (ad esempio, 1,2,3,4-tetraidro-2,4-diosso-3-etilpirimidinile); 1,6-diidro-6-osso-piridazinile (ad esempio, 1,6-diidro-6-osso-3-etilpiridazinile); 1,6-diidro-6-osso-1,2,4-triazinile (ad esempio, 1,6-diidro-5-isopropil-6-osso-1,2,4-triazinile); 2,3-diidro-2-osso-1H-indolile (ad esempio, 3,3-dimetil-2,3-diidro-2-osso-1*H*-indolile e 2,3-diidro-2-osso-3,3'-spiropropan-1*H*-indol-1-ile); 1,3-diidro-1-osso-2*H*-iso-indolile; 1,3-diidro-1,3-diosso-2*H*-iso-indolile; 1*H*-benzopirazolile (ad esempio, 1-(etossicarbonil)-1*H*-benzopirazolile); 2,3-diidro-2-osso-1*H*-benzimidazolile (ad esempio, 3-etil-2,3-diidro-2-osso-1*H*-benzimidazolile); 2,3-diidro-2-osso-benzossazolile (ad esempio, 5-chloro-2,3-diidro-2-osso-benzossazolile); 2,3-diidro-2-osso-benzossazolile; 2-osso-2H-benzopiranile; 1,4-benzodiossanile; 1,3-benzodiossanile; 2,3-diidro-3-osso,4*H*-1,3-benzotiazinile; 3,4-diidro-4-osso-3*H*-chinazolinile (ad esempio, 2-metil-3,4-diidro-4-osso-3*H*-quinazolinile); 1,2,3,4-tetraidro-2,4-diosso-3*H*-chinazolile (ad esempio, 1-etil-1,2,3,4-tetraidro-2,4-diosso-3*H*-quinazolile); 1,2,3,6-tetraidro-2,6-diosso-7*H*-purinile (ad esempio, 1,2,3,6-tetraidro-1,3-dimetil-2,6-diosso-7 *H* -purinile); 1,2,3,6-tetraidro-2,6-diosso-1 *H* -purinile (ad esempio, 1,2,3,6-tetraidro-3,7-dimetil-2,6-diosso-1 *H* -purinile); 2-ossobenz[*c*,*d*]indolile; 1,1-diosso-2H-naft[1,8-*c*,*d*]isotiazolile; e 1,8-naftilendicarbossamido. Ulteriori eterociclici includono 3,3a,4,5,6,6a-

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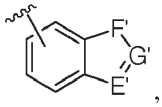
esaidro-pirrolo[3,4-b]pirrolo-(2H)-ile, e 2,5-diazabiciclo[2.2.1]eptan-2-ile, omopiperazinile (o diazepanile), tetraidropiranile, ditiazolile, benzofuranile, benzotinile, ossepanile, tiepanile, azocanile, ossecanile e tiocanile. I gruppi eterociclici includono anche i gruppi della formula



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E' è scelto dal gruppo costituito da -N- e -CH-; F' è scelto dal gruppo costituito da -N=CH-, -NH-CH_2-, -NH-C(O)-, -NH-, -CH=N-, -CH_2-NH-, -C(O)-NH-, -CH=CH-, -CH_2-, -CH_2CH_2-, -CH_2O-, -OCH_2-, -O- e -S-; e G' è scelto dal gruppo costituito da -CH- e -N-. Qualsiasi dei gruppi eterociclile menzionati nel presente documento può essere facoltativamente sostituito con uno, due, tre, quattro o cinque sostituenti scelti indipendentemente dal gruppo costituito da: (1) acile C_{1-7} (ad esempio, carbossialdeide); (2) alchile C_{1-20} (ad esempio, alchile C_{1-6}, alcossi C_{1-6}-alchile C_{1-6}, alchilsolfonile C_{1-6}-alchile C_{1-6}, ammino-C_{1-6} alchile, azido-alchile C_{1-6}, (carbossialdeide)-alchile C_{1-6}, alo-alchile C_{1-6} (ad esempio, perfluoroalchile), idrossi-alchile C_{1-6}, nitro-alchile C_{1-6}, o tioalcossi C_{1-6}-alchile C_{1-6}); (3) alcossi C_{1-20} (ad esempio, alcossi C_{1-6}, come perfluoroalcossi); (4) C_{1-6} alchilsolfinile; (5) arile C_{6-10}; (6) ammino; (7) alc C_{1-6}-arile C_{6-10}; (8) azido; (9) cicloalchile C_{3-8}; (10) alc C_{1-6}-cicloalchile C_{3-8}; (11) alogeno; (12) eterociclile C_{1-12} (ad esempio, eteroarile C_{2-12}); (13) (eterociclile C_{1-12})ossi; (14) idrossi; (15) nitro; (16) tioalcossi C_{1-20} (ad esempio, tioalcossi C_{1-6}); (17) -$(CH_2)_qCO_2R^{A'}$, dove q è un numero intero da zero a quattro, e $R^{A'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, (c) idrogeno, e (d) alc C_{1-6}-arile C_{6-10}; (18) -$(CH_2)_qCONR^{B'}R^{C'}$, dove q è un numero intero da zero a quattro e dove $R^{B'}$ e $R^{C'}$ sono indipendentemente scelti dal gruppo costituito da (a) idrogeno, (b) alchile C_{1-6}, (c) arile C_{6-10}, e (d) alc C_{1-6}-arile C_{6-10}; (19) -$(CH_2)_qSO_2R^{D'}$, dove q è un numero intero da zero a quattro e dove $R^{D'}$ è scelto dal gruppo costituito da (a) alchile C_{1-6}, (b) arile C_{6-10}, e (c) alc C_{1-6}-arile C_{6-10}; (20) -$(CH_2)_qSO_2NR^{E'}R^{F'}$, dove q è un numero intero da zero a quattro e dove ciascuno tra $R^{E'}$ e $R^{F'}$ è, indipendentemente, scelto dal gruppo costituito da (a) idrogeno, (b)

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alchile C_{1-6}, (c) arile C_{6-10}, e (d) alc C_{1-6}-arile C_{6-10}; (21) tiolo; (22) arilossi C_{6-10}; (23) cicloalcossi C_{3-8}; (24) arilalcossi; (25) alc C_{1-6}-C_{1-12} eterociclile (ad esempio, alc C_{1-6}-eteroarile C_{1-12}); (26) osso; (27) (eterociclile C_{1-12})immino; (28) alchenile C_{2-20}; e (29) alchinile C_{2-20}. In alcune forme di realizzazione, ciascuno di questi gruppi può essere ulteriormente sostituito come descritto nel presente contesto. Ad esempio, il gruppo alchilene di un alcarile C_1 o un alcheterociclile C_1 può essere ulteriormente sostituito con un gruppo osso per fornire il rispettivo gruppo sostituente ariloile ed (eterociclil)oile.

Il gruppo "eterociclilalchile", che come qui usato, rappresenta un gruppo eterociclile, come qui definito, attaccato al gruppo molecolare originario attraverso un gruppo alchilene, come qui definito. Esempi di gruppi eterociclilalchile non sostituiti sono da 2 a 32 atomi di carbonio (ad esempio da 2 a 22, da 2 a 18, da 2 a 17, da 2 a 16, da 3 a 15, da 2 a 14, da 2 a 13, o da 2 a 12 atomi di carbonio, come alc C_{1-6}-eterociclile C_{1-12}, alc C_{1-10}-eterociclile C_{1-12} o alc C_{1-20}-eterociclile C_{1-12}). In alcune forme di realizzazione, l'alchilene e l'eterociclile possono essere ulteriormente sostituiti ciascuno con 1, 2, 3 o 4 gruppi sostituenti come qui definito per il rispettivo gruppo.

Il termine "idrocarburo", come qui utilizzato, rappresenta un gruppo costituito solo da atomi di carbonio e idrogeno.

Il termine "idrossi", come usato in questo contesto, rappresenta un gruppo -OH.

Il termine "ammino *N*-protetto", come qui utilizzato, si riferisce a un gruppo ammino, come qui definito, a cui sono attaccati uno o due gruppi *N*-protettori, come qui definiti.

Il termine "gruppo *N*-protettore", come qui utilizzato, rappresenta quei gruppi destinati a proteggere un gruppo ammino da reazioni indesiderabili durante procedure sintetiche. Gruppi *N*-protettori comunemente utilizzati sono descritti in Greene, "Protective Groups in Organic Synthesis," 3^ edizione (John Wiley &Sons, New York, 1999), gruppi *N*-protettori includono acile, ariloile o gruppi carbammile come formile, acetile, propionile, pivaloile, t-butilacetile, 2-

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cloroacetile, 2-bromoacetile, trifluoroacetile, tricloroacetile, ftalile, o-nitrofenossiacetile, α-clorobutirile, benzoile, 4-clorobenzoile, 4-bromobenzoile, 4-nitrobenzoile, e ausiliari chirali come amminoacidi D, L o D, L protetti o non protetti come alanina, leucina, fenilalanina, e simili; gruppi contenenti solfonile come benzensolfonile, p-toluensolfonile, e simili; gruppi formanti carbammato come benzilossicarbonile, p-clorobenzilossicarbonile, p-metossibenzilossicarbonile, p-nitrobenzilossicarbonile, 2-nitrobenzilossicarbonile, p-bromobenzilossicarbonile, 3,4-dimetossibenzilossicarbonile, 3,5-dimetossibenzilossicarbonile, 2,4-dimetossibenzilossicarbonile, 4-metossibenzilossicarbonile, 2-nitro-4,5-dimetossibenzilossicarbonile, 3,4,5-trimetossibenzilossicarbonile, 1-(p-biphenilil)-1-metiletossicarbonile, o,o-dimetil-3,5-dimetossibenzilossicarbonile, benzidrilossi carbonile, t-butilossicarbonile, diisopropilmetossicarbonile, isopropilossicarbonile, etossicarbonile, metossicarbonile, allilossicarbonile, 2,2,2,-tricloroetossicarbonile, fenossicarbonile, 4-nitrofenossicarbonile, fluorenil-9-metossicarbonile, ciclopentilossicarbonile, adamantilossicarbonile, cicloesilossicarbonile, feniltiocarbonile, e simili, gruppi alcarile come benzile, trifenilmetile, benzilossimetile, e simili, e gruppi silile come trimetilsilile, e simili. Gruppi *N*-protettori sono formile, acetile, benzoile, pivaloile, t-butilacetile, alanile, fenilsolfonile, benzile, t-butilossicarbonile (Boc) e benzilossicarbonile (Cbz).

Il termine"nitro", come usato nel presente contesto, rappresenta un gruppo -NO_2.

Il termine "gruppo *O*-protettore", come qui utilizzato, rappresenta quei gruppi destinati a proteggere un gruppo contenente ossigeno (ad esempio fenolo, idrossile o carbonile) da reazioni indesiderabili durante procedure sintetiche. Gruppi *O*-protettori comunemente utilizzati sono descritti in Greene, "Protective Groups in Organic Synthesis", 3^ edizione (John Wiley &Sons, New York, 1999). Gruppi O-protettori esemplificativi includono gruppi acile, ariloile o carbamile, come formile, acetile, propionile, pivaloile, t-butilacetile, 2-cloroacetile, 2-bromoacetile, trifluoroacetile, tricloroacetile, ftalile, o-nitrofenossiacetile, α-clorobutirrile,

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benzoile, 4-clorobenzoile, 4-bromobenzoile, t-butildimetilsilile, tri-*iso*-propilsililossimetile, 4,4'-dimetossitritile, isobutirile, fenossiacetile, 4-isopropilpeenossiacetile, dimetilformammidino e 4-nitrobenzoile; gruppi alchilcarbonile, come acile, acetile, propionile, pivaloile e simili; gruppi arilcarbonile facoltativamente sostituiti, come benzoile; gruppi silile, come trimetilsilile (TMS), tert-butildimetilsilile (TBDMS), tri-iso-propilsililossimetile (TOM), triisopropilsilile (TIPS) e simili; gruppi formanti etere con l'idrossile, tale metile, metossimetile, tetraidropiranile, benzile, p-metossibenzile, tritile e simili; alcossicarbonili, come metossicarbonile, etossicarbonile, isopropossicarbonile, n-isopropossicarbonile, n-butilossicarbonile, isobutilossicarbonile, sec-butilossicarbonile, t-butilossicarbonile, 2-etilesilossicarbonile, cicloesilossicarbonile, metilossicarbonile e simili; gruppi alcossialcossicarbonile, come metossimetossicarbonile, etossimetossicarbonile, 2-metossietossicarbonile, 2-etossietossicarbonile, 2-butossietossicarbonile, 2-metossietossimetossicarbonile, allilossicarbonile, propargilossicarbonile, 2-butenossicarbonile, 3-metil-2-butenossicarbonile e simili; aloalcossicarbonili, come 2-cloroetossicarbonile, 2-cloroetossicarbonile, 2,2,2-tricloroetossicarbonile e simili; gruppi arilalcossicarbonile facoltativamente sostituiti, come benzilossicarbonile, p-metilbenzilossicarbonile, p-metossibenzilossicarbonile, p-nitrobenzilossicarbonile, 2,4-dinitrobenzilossicarbonile, 3,5-dimetilbenzilossicarbonile, p-clorobenzilossicarbonile, p-bromobenzilossi-carbonile, fluorenilmetilossicarbonile e simili; e gruppi arilossicarbonilici eventualmente sostituiti, come fenossicarbonile, p-nitrofenossicarbonile, o-nitrofenossicarbonile, 2,4-dinitrofenossicarbonile, p-metil-fenossicarbonile, m-metilfenossicarbonile, o-bromofenossicarbonile, 3,5-dimetilfenossicarbonile, p-clorofenossicarbonile, 2-cloro-4-nitrofenossi-carbonile e simili); eteri alchilici, arilici e alcarilici sostituiti (ad esempio tritile; metiltiometile; metossimetile; benzilossimetile; silossimetile; 2,2,2,-tricloroetossimetile; tetraidropiranile; tetraidrofuranile; etossietile; 1-[2-(trimetilsilil)etossi]etile; 2-trimetilsililetile; t-butiletere, p-clorofenile, p-

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metossifenile, p-nitrofenile, benzile, p-metossibenzile e nitrobenzile); silileteri (ad esempio trimetilsilile; trietilsilile; triisopropilsilile; dimetilisopropilsilile; t-butildimetilsilile; t-butildifenilsilile; tribenzilsilile; trifenilsilile; e difenilmetilsilile); carbonati (ad esempio metile, metossimetile, 9-fluorenilmetile; etile; 2,2,2-tricloroetile; 2-(trimetilsilil)etile; vinile, allile, nitrofenile; benzile; metossibenzile; 3,4-dimetossibenzile; e nitrobenzile); gruppi carbonile-protettori (ad esempio gruppi acetale e chetale, come dimetilacetale, 1,3-diossolano e simili; gruppi acile; e gruppi ditiano, come 1,3-ditiani, 1,3-ditiolano e simili); gruppi acido carbossilico-protettori (ad esempio gruppi estere, come metil estere, benzil estere, t-butil estere, ortoesteri e simili; e gruppi ossazolina.

Il termine "osso" come usato in questo contesto rappresenta =O.

Il prefisso "perfluoro", come qui utilizzato, rappresenta un gruppo, come qui definito, in cui ciascun radicale idrogeno legato al gruppo alchile è stato sostituito da un radicale fluoruro. Ad esempio, i gruppi perfluoroalchile sono esemplificati da trifluorometile, pentafluoroetile e simili.

Il termine "idrossile protetto", come qui utilizzato, si riferisce a un atomo di ossigeno legato a un gruppo O-protettore.

Il termine "spirociclile", come qui utilizzato, rappresenta un biradicalealchilene C_{2-7}, le cui due estremità sono legate allo stesso atomo di carbonio del gruppo genitore per formare un gruppo spirociclico, e anche un biradicaleeteroalchilene C_{1-6}, le cui due estremità sono legate allo stesso atomo. Il radicale eteroalchilene che forma il gruppo spirociclile può contenere uno, due, tre o quattro eteroatomi scelti indipendentemente dal gruppo costituito da azoto, ossigeno e zolfo. In alcune forme di realizzazione, il gruppo spirociclile include da uno a sette atomi di carbonio, escluso l'atomo di carbonio a cui è attaccato il biradicale. I gruppi spirociclile dell'invenzione possono essere facoltativamente sostituiti con 1, 2, 3 o 4 sostituenti qui forniti come sostituenti facoltativi per gruppi cicloalchile e/o eterociclile.

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Il termine "solfonile", come usato in questo contesto, rappresenta un gruppo $-S(O)_2-$.

Il termine "tiolo", come usato in questo contesto rappresenta un gruppo -SH.

Chimera: Come usato qui, "chimera" è un'entità avente due o più parti o regioni incongrue o eterogenee.

Polinucleotide chimerico: Come usati qui, "polinucleotidi chimerici" sono quei polimeri di acido nucleico aventi porzioni o regioni che differiscono per dimensioni e/o modello di modificazione chimica, posizione di modificazione chimica, percentuale di modificazione chimica o popolazione di modificazione chimica e combinazioni di quanto sopra.

Composto: Come qui utilizzato, il termine "composto" intende includere tutti gli stereoisomeri, gli isomeri geometrici, i tautomeri e gli isotopi delle strutture illustrate.

I composti descritti nel presente contesto possono essere asimmetrici (ad esempio, avere uno o più stereocentri). Tutti gli stereoisomeri, come enantiomeri e diastereomeri, sono intesi se non diversamente indicato. I composti della presente descrizione che contengono atomi di carbonio sostituiti asimmetricamente possono essere isolati in forme otticamente attive o racemiche. Metodi su come preparare forme otticamente attive da materiali di partenza otticamente attivi sono noti nella tecnica, come mediante risoluzione di miscele racemiche o mediante sintesi stereoselettiva. Molti isomeri geometrici di olefine, doppi legami C=N e simili possono anche essere presenti nei composti qui descritti, e tutti questi isomeri stabili sono contemplati nella presente descrizione. Gli isomeri cis e trans geometrici dei composti della presente descrizione sono descritti e possono essere isolati come una miscela di isomeri o come forme isomeriche separate.

I composti della presente descrizione includono anche forme tautomeriche. Le forme tautomeriche derivano dallo scambio di un singolo legame con un doppio legame adiacente e dalla concomitante migrazione di un protone. Le forme tautomeriche includono tautomeri prototropici che sono stati di protonazione isomerici aventi la stessa formula empirica e la stessa

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carica totale. Esempi di tautomeri prototropici includono coppie chetone - enolo, coppie ammide - acido imidico, coppie lattame - lattime, coppie ammide - acido imidico, coppie enammina - immina e forme anulari in cui un protone può occupare due o più posizioni di un sistema eterociclico, come, 1H- e 3H-imidazolo, 1H-, 2H- e 4H-1,2,4-triazolo, 1H- e 2H-isoindolo e 1H- e 2H-pirazolo. Le forme tautomeriche possono essere in equilibrio o stericamente bloccate in una forma mediante opportuna sostituzione.

I composti della presente descrizione includono anche tutti gli isotopi degli atomi presenti nei composti intermedi o finali. "Isotopi" si riferisce ad atomi aventi lo stesso numero atomico ma diversi numeri di massa risultanti da un diverso numero di neutroni nei nuclei. Ad esempio, gli isotopi di idrogeno includono trizio e deuterio.

I composti e i sali della presente descrizione possono essere preparati in combinazione con molecole di solvente o acqua per formare solvati e idrati con metodi di routine.

Conservato: Come qui utilizzato, il termine "conservato" si riferisce a nucleotidi o residui amminoacidici di una sequenza polinucleotidica o di una sequenza polipeptidica, rispettivamente, che sono quelli che si presentano inalterati nella stessa posizione di due o più sequenze che vengono confrontate. I nucleotidi o gli amminoacidi che sono relativamente conservati sono quelli che sono conservati tra le sequenze più correlate rispetto ai nucleotidi o agli amminoacidi che compaiono altrove nelle sequenze.

In alcune forme di realizzazione, si dice che due o più sequenze sono "completamente conservate" se sono identiche al 100% l'una all'altra. In alcune forme di realizzazione, si dice che due o più sequenze sono "altamente conservate" se sono almeno per il 70% identiche, almeno per l’80% identiche, almeno per il 90% identiche, o almeno per il 95% identiche tra loro. In alcune forme di realizzazione, si dice che due o più sequenze sono "altamente conservate" se sono per circa il 70% identiche, circa l'80% identiche, circa il 90% identiche, circa il 95%, circa il 98% o circa il 99% identiche l'una all'altra. In alcune forme di

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realizzazione, si dice che due o più sequenze sono "conservate" se sono identiche almeno al 30%, identiche almeno al 40%, identiche almeno al 50%, identiche almeno al 60%, identiche almeno al 70%, identiche almeno all'80%, identiche almeno al 90% o identiche almeno al 95% tra loro. In alcune forme di realizzazione, si dice che due o più sequenze sono "conservate" se sono per circa il 30% identiche, circa il 40% identiche, circa il 50% identiche, circa il 60% identiche, circa il 70% identiche, circa l'80% identiche, circa il 90% identiche, circa il 95% identiche, circa il 98% identiche o circa il 99% identiche tra loro. La conservazione della sequenza può applicarsi all'intera lunghezza di un polinucleotide o polipeptide o può applicarsi a una sua porzione, regione o caratteristica.

Rilascio controllato: Come qui utilizzato, il termine "rilascio controllato" si riferisce a una composizione farmaceutica o a un profilo di rilascio del composto che si conforma a un particolare schema di rilascio per ottenere un risultato terapeutico.

Ciclico o ciclizzato: Come qui utilizzato, il termine "ciclico" si riferisce alla presenza di un'ansa continua. Le molecole cicliche non devono essere circolari, solo unite per formare una catena ininterrotta di subunità. Le molecole cicliche come l'RNA o mRNA ingegnerizzato della presente descrizione possono essere singole unità o multimeri o comprendere uno o più componenti di una struttura complessa o di ordine superiore.

Citostatico: Come usato qui, "citostatico" si riferisce all'inibizione, riduzione, soppressione della crescita, divisione o moltiplicazione di una cellula *[ad esempio,* una cellula di mammifero *(ad esempio*, una cellula umana)], batterio, virus, fungo, protozoo, parassita, prione, o una loro combinazione.

Citotossico: Come usato qui, "citotossico" si riferisce all'uccisione o alla causa di effetti dannosi, tossici o mortali su una cellula *[ad esempio,* una cellula di mammifero *(ad esempio,* una cellula umana)], batteri, virus, funghi, protozoi, parassiti, prioni o una loro combinazione.

Rilascio: Come qui utilizzato, "rilascio" si riferisce all'atto o al modo di consegnare un

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composto, una sostanza, un'entità, una frazione, un carico o un carico utile.

Agente di rilascio: Come usato qui, "agente di rilascio" si riferisce a qualsiasi sostanza che faciliti, almeno in parte, il rilascio *in vivo* di un polinucleotide nelle cellule bersaglio.

Destabilizzato: Come qui utilizzato, il termine "destabilizzabile", "destabilizzante" o "regione destabilizzante" indica una regione o molecola che è meno stabile di una forma iniziale, di tipo selvatico o nativa della stessa regione o molecola.

Marcatura rilevabile: Come usato qui, "marcatura rilevabile" si riferisce a uno o più marcatori, segnali o frazioni che sono attaccati, incorporati o associati a un'altra entità che viene facilmente rilevata con metodi noti nella tecnica tra cui radiografia, fluorescenza, chemiluminescenza, attività enzimatica, assorbanza e simili. Marcature rilevabili includono radioisotopi, fluorofori, cromofori, enzimi, coloranti, ioni metallici, ligandi come biotina, avidina, streptavidina e apteni, punti quantici e simili. Marcature rilevabili possono essere localizzate in qualsiasi posizione nei peptidi o nelle proteine qui divulgate. Possono essere all'interno degli amminoacidi, dei peptidi o delle proteine, o localizzati ai terminali N o C.

Diastereomero: Come qui utilizzato, il termine "diastereomero" indica stereoisomeri che non sono immagini speculari l'uno dell'altro e non sono sovrapponibili l'uno all'altro.

Digesto: Come qui utilizzato, il termine "digerire" significa scomporre in pezzi o componenti più piccoli. Quando si parla di polipeptidi o proteine, la digestione porta alla produzione di peptidi.

Cellula differenziata: Come qui utilizzato, il termine "cellula differenziata" si riferisce a qualsiasi cellula somatica che non è, nella sua forma nativa, pluripotente. La cellula differenziata comprende anche le cellule parzialmente differenziate.

Differenziazione: Come qui utilizzato, il termine "fattore di differenziazione" si riferisce a un potenziale fattore di alterazione dello sviluppo come una proteina, RNA o una piccola molecola che può indurre una cellula a differenziarsi in un tipo di cellula desiderato.

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Differenziare: Come usato qui, "differenziare" si riferisce al processo in cui una cellula non impegnata o meno impegnata acquisisce le caratteristiche di una cella impegnata.

Distale: Come qui utilizzato, il termine "distale" significa situato lontano dal centro o lontano da un punto o regione di interesse.

Regime di dosaggio: Come qui utilizzato, un "regime di dosaggio" è un programma di somministrazione o un regime di trattamento, profilassi o cure palliative determinato dal medico.

Rapporto del fattore di frazionamento della dose (DSF) del PUD del trattamento con suddivisione della dose diviso per il PUD della dose giornaliera totale o della singola dose unitaria. Il valore è derivato dal confronto dei gruppi di regimi di dosaggio.

Enantiomero: Come qui utilizzato, il termine "enantiomero" indica ogni singola forma otticamente attiva di un composto dell'invenzione, avente una purezza ottica o un eccesso enantiomerico (come determinato da metodi standard nella tecnica) di almeno l'80% (vale a dire almeno il 90 % di un enantiomero e al massimo il 10% dell'altro enantiomero), preferibilmente almeno il 90% e più preferibilmente almeno il 98%.

Incapsulare: Come qui usato, il termine "incapsulare" significa racchiudere, circondare o racchiudere.

Segnale di scissione della proteina codificata: Come qui utilizzato, "segnale di scissione della proteina codificata" si riferisce alla sequenza nucleotidica che codifica per un segnale di scissione proteica.

Ingegnerizzato: Come qui usato, le forme di realizzazione dell'invenzione sono "ingegnerizzate" quando sono progettate per avere una caratteristica o proprietà, sia strutturale che chimica, che varia da una molecola del punto di partenza, di tipo selvatico o nativa.

Quantità efficace: Come qui usato, il termine "quantità efficace" di un agente è quella quantità sufficiente per ottenere risultati benefici o desiderati, ad esempio risultati clinici, e,

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come tale, una "quantità efficace" dipende dal contesto in cui viene applicata. Ad esempio, nel contesto della somministrazione di un agente che tratta il cancro, una quantità efficace di un agente è, ad esempio, una quantità sufficiente per ottenere il trattamento, come definito nel presente contesto, del cancro, rispetto alla risposta ottenuta senza somministrazione dell'agente.

Esosoma: Come qui utilizzato, "esosoma" è una vescicola secreta da cellule di mammifero o un complesso coinvolto nella degradazione dell'RNA.

Espressione: Come usato qui, "espressione" di una sequenza di acido nucleico si riferisce a uno o più dei seguenti eventi: (1) produzione di uno stampo di RNA da una sequenza di DNA *(ad es.,* mediante trascrizione); (2) elaborazione di un trascritto di RNA *(ad es.,* mediante splicing, editing, formazione del cappuccio 5' e/o elaborazione dell'estremità 3'); (3) traduzione di un RNA in un polipeptide o proteina; e (4) modificazione post-traduzionale di un polipeptide o proteina.

Caratteristica: Come qui utilizzato, una "caratteristica" si riferisce a una caratteristica, una proprietà o un elemento distintivo.

Formulazione: Come usato qui, una "formulazione" include almeno un polinucleotide di un NAV e un agente di rilascio.

Frammento: Un "frammento", come usato qui, si riferisce a una porzione. Ad esempio, frammenti di proteine possono comprendere polipeptidi ottenuti digerendo proteine a lunghezza intera isolate da cellule coltivate.

Funzionale: Come usato qui, una molecola biologica "funzionale" è una molecola biologica in una forma in cui mostra una proprietà e/o un'attività da cui è caratterizzata.

Omologia: Come qui utilizzato, il termine "omologia" si riferisce alla relazione complessiva tra molecole polimeriche, *ad esempio* tra molecole di acido nucleico *(ad esempio* molecole di DNA e/o molecole di RNA) e/o tra molecole polipeptidiche. In alcune forme di realizzazione, le molecole polimeriche sono considerate "omologhe" tra loro se le loro sequenze

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sono per almeno il 25%, 30%, 35%, 40%, 45%, 50%, 55%, 60%, 65%, 70 %, 75%, 80%, 85%, 90%, 95% o 99% identiche o simili. Il termine "omologo" si riferisce necessariamente a un confronto tra almeno due sequenze (sequenze polinucleotidiche o polipeptidiche). Secondo l'invenzione, due sequenze polinucleotidiche sono considerate omologhe se i polipeptidi che codificano sono almeno circa il 50%, 60%, 70%, 80%, 90%, 95% o anche il 99% per almeno un tratto di almeno circa 20 amminoacidi. In alcune forme di realizzazione, le sequenze polinucleotidiche omologhe sono caratterizzate dalla capacità di codificare un tratto di almeno 4-5 amminoacidi specificati in modo univoco. Per sequenze polinucleotidiche di lunghezza inferiore a 60 nucleotidi, l'omologia è determinata dalla capacità di codificare un tratto di almeno 4-5 amminoacidi specificati in modo univoco. In accordo con l'invenzione, due sequenze proteiche sono considerate omologhe se le proteine sono per almeno circa il 50%, 60%, 70%, 80% o 90% identiche per almeno un tratto di almeno circa 20 amminoacidi.

Identità: Come utilizzato nel presente contesto, il termine "identità" si riferisce alla correlazione complessiva tra molecole polimeriche, ad esempio, tra molecole polinucleotidiche (ad esempio molecole di DNA e/o molecole di RNA) e/o tra molecole polipeptidiche. Il calcolo dell'identità percentuale di due sequenze di polinucleotide, ad esempio, può essere eseguito allineando le due sequenze a scopo di confronto ottimale (ad esempio è possibile introdurre dei gap in una o entrambe una prima e una seconda sequenza amminoacidica o di acido nucleico per un allineamento ottimale e le sequenze non identiche possono essere ignorate a scopo di confronto). In determinate forme di realizzazione, la lunghezza di una sequenza allineata a scopo di confronto è almeno il 30%, almeno il 40%, almeno il 50%, almeno il 60%, almeno il 70%, almeno l'80%, almeno il 90%, almeno il 95% o il 100% della lunghezza della sequenza di riferimento. I nucleotidi in corrispondenza delle posizioni nucleotidiche corrispondenti vengono poi confrontati. Quando una posizione nella prima sequenza è occupata dallo stesso nucleotide della posizione corrispondente nella seconda sequenza, allora le molecole in corrispondenza di

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quella posizione sono identiche. L'identità percentuale tra le due sequenze è una funzione del numero di posizioni identiche condivise dalle sequenze, prendendo in considerazione il numero di gap e la lunghezza di ciascun gap, che necessita di essere introdotta per l'allineamento ottimale delle due sequenze. Il confronto di sequenze e la determinazione dell'identità percentuale tra due sequenze possono essere eseguiti utilizzando un algoritmo matematico. Ad esempio, l'identità percentuale tra due sequenze nucleotidiche può essere determinata utilizzando metodi come quelli descritti in Computational Molecular Biology, Lesk, AM, ed., Oxford University Press, New York, 1988; Biocomputing: Informatics and Genome Projects, Smith, D. W., a cura di, Academic Press, New York, 1993; Sequence Analysis in MolecularBiology, von Heinje, G., Academic Press, 1987; Computer Analysis of Sequence Data, Parte I, Griffin, A. M., e Griffin, H. G., a cura di, Humana Press, New Jersey, 1994; e Sequence Analysis Primer, Gribskov, M. e Devereux, J., a cura di, M Stockton Press, New York, 1991. Ad esempio, l'identità percentuale tra due sequenze nucleotidiche può essere determinata utilizzando l'algoritmo di Meyers e Miller (CABIOS, 1989, 4:11-17), che è stato incorporato nel programma ALIGN (versione 2.0) utilizzando una tabella di residui di peso PAM120, una penalità di lunghezza di gap di 12 e una penalità di gap di 4. L'identità percentuale tra due sequenze nucleotidiche può in alternativa essere determinata utilizzando il programma GAP nel pacchetto software GCG utilizzando una matrice NWSgapdna.CMP. I metodi comunemente impiegati per determinare l'identità percentuale tra le sequenze includono, ma non sono limitati a quelli descritti in Carillo, H., e Lipman, D., SIAM J Applied Math., 48:1073 (1988); Tecniche per determinare l'identità sono codificate in programmi per computer disponibili al pubblico. Software per computer esemplificativi per determinare l'omologia tra due sequenze includono, ma non sono limitati a, pacchetto di programmi GCG, Devereux, J., et al., Nucleic Acids Research, 12(1), 387 (1984)), BLASTP, BLASTN e FASTA Altschul, SF et al., J. Molec. Biol., 215, 403 (1990)).

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Agente infettivo: Come qui utilizzato, l'espressione "agente infettivo" indica un agente in grado di produrre un'infezione in un organismo, ad esempio in un animale. Un agente infettivo può riferirsi a qualsiasi microrganismo, virus, sostanza infettiva o prodotto biologico che può essere ingegnerizzato come risultato della biotecnologia, o qualsiasi componente naturale o bioingegnerizzato di qualsiasi microrganismo, virus, sostanza infettiva o prodotto biologico, può causare malattia emergente e contagiosa, morte o altro malfunzionamento biologico in un essere umano, animale, pianta o altro organismo vivente.

Inibire l'espressione di un gene: Come usata qui, la frase "inibire l'espressione di un gene" significa provocare una riduzione della quantità di un prodotto di espressione del gene. Il prodotto di espressione può essere un RNA trascritto dal gene (ad esempio, un mRNA) o un polipeptide tradotto da un mRNA trascritto dal gene. Tipicamente una riduzione del livello di un mRNA determina una riduzione del livello di un polipeptide tradotto da esso. Il livello di espressione può essere determinato utilizzando tecniche standard per misurare mRNA o proteine.

Influenza: Come qui utilizzato, "influenza" o "sindrome influenzale" è una malattia infettiva di uccelli e mammiferi causata da virus a RNA della famiglia Orthomyxoviridae, i virus dell'influenza.

Isomero: Come qui utilizzato, il termine "isomero" indica qualsiasi tautomero, stereoisomero, enantiomero o diastereomero di qualsiasi composto dell'invenzione. È riconosciuto che i composti dell’invenzione possono avere uno o più centri chirali e/o doppi legami e, quindi, esistere come stereoisomeri, come isomeri a doppio legame (vale a dire isomeri geometrici E/Z) o diastereomeri [ad esempio, enantiomeri (vale a dire, (+) o (-)) o isomeri cis/trans]. Secondo l’invenzione, le strutture chimiche qui illustrate, e quindi i composti dell’invenzione, comprendono tutti i corrispondenti stereoisomeri, vale a dire sia la forma stereomericamente pura (ad esempio, geometricamente pura, enantiomericamente pura o

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diastereomericamente pura) e enantiomerica e miscele stereoisomeriche, ad esempio racemati. Le miscele enantiomeriche e stereoisomeriche dei composti dell'invenzione possono essere tipicamente risolte nei loro componenti enantiomeri o stereoisomeri mediante metodi ben noti, come la gascromatografia in fase chirale, la cromatografia liquida ad alte prestazioni in fase chirale, la cristallizzazione del composto come un complesso salino chirale, o la cristallizzazione del composto in un solvente chirale. Enantiomeri e stereoisomeri possono anche essere ottenuti da intermedi stereomericamente o enantiomericamente puri, reagenti e catalizzatori mediante metodi sintetici asimmetrici ben noti.

In vitro: Come qui utilizzato, il termine *"in vitro" si* riferisce a eventi che si verificano in un ambiente artificiale, ad esempio in una provetta o in un recipiente di reazione, in una coltura cellulare, in una capsula di Petri, *ecc.,* piuttosto che all'interno di un organismo *(ad esempio,* animali, piante o microbi).

In vivo: Come usato qui, il termine *"in vivo" si* riferisce a eventi che si verificano all'interno di un organismo (ad esempio, animale, pianta o microbi o loro cellule o tessuti).

Isolato: Come qui usato, il termine "isolato" si riferisce a una sostanza o entità che è stata separata da almeno alcuni dei componenti a cui è stata associata (sia in natura che in un ambiente sperimentale). Le sostanze isolate possono avere diversi livelli di purezza in riferimento alle sostanze a cui sono state associate. Sostanze e/o entità isolate possono essere separate da almeno circa il 10%, circa il 20%, circa il 30%, circa il 40%, circa il 50%, circa il 60%, circa il 70%, circa l'80%, circa il 90%, o più degli altri componenti con cui esse sono inizialmente associate. In alcune forme di realizzazione, gli agenti isolati sono puri per più di circa l'80%, circa l'85%, circa il 90%, circa il 91%, circa il 92%, circa il 93%, circa il 94%, circa il 95%, circa il 96%, circa il 97%, circa il 98%, circa il 99%, o più di circa il 99%. Come qui usato, una sostanza è "pura" se è sostanzialmente priva di altri componenti. *Sostanzialmente isolato*: Per "sostanzialmente isolato" si intende che il composto è sostanzialmente separato

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dall'ambiente in cui si è formato o rilevato. La separazione parziale può includere, ad esempio, una composizione arricchita nel composto della presente descrizione. La separazione sostanziale può includere composizioni contenenti almeno circa il 50%, almeno circa il 60%, almeno circa il 70%, almeno circa l'80%, almeno circa il 90%, almeno circa il 95%, almeno circa il 97%, o almeno circa il 99% in peso del composto della presente descrizione, o suo sale. I metodi per isolare i composti e i loro sali sono di routine nella tecnica.

Polinucleotide IVT: Come qui utilizzato, un "polinucleotide IVT" è un polinucleotide lineare che può essere prodotto utilizzando metodi di sintesi enzimatica di trascrizione *in vitro* (IVT).

Linker: Come usato qui, un “linker” si riferisce a un gruppo di atomi, ad esempio 10-1.000 atomi, e può essere costituito da atomi o gruppi come, ma non limitati a, carbonio, ammino, alchilammino, ossigeno, zolfo, solfossido, solfonile, carbonile e immina. Il linker può essere attaccato a un nucleoside o nucleotide modificato sulla base azotata o sulla porzione zuccherina a una prima estremità, e a un carico utile, ad esempio, un agente rilevabile o terapeutico, a una seconda estremità. Il linkerpuò essere di lunghezza sufficiente da non interferire con l'incorporazione in una sequenza di acido nucleico. Il linker può essere utilizzato per qualsiasi scopo utile, come formare multimeri polinucleotidici (ad esempio, attraverso il legame di due o più molecole di polinucleotidi chimerici o polinucleotidi IVT) o coniugati di polinucleotidi, nonché per somministrare un carico utile, come descritto nel presente contesto. Esempi di gruppi chimici che possono essere incorporati nel linkerincludono, ma non sono limitati a, alchile, alchenile, alchinile, ammido, ammino, etere, tioetere, estere, alchilene, eteroalchilene, arile o eterociclile, ciascuno dei quali può essere facoltativamente sostituito, come qui descritto. Esempi di linker includono, ma non sono limitati a, alcani insaturi, polietilenglicoli (ad esempio, unità monomeriche di etilene o propilenglicole, ad esempio dietilenglicole, dipropilenglicole, trietilenglicole, tripropilenglicole, tetraetilenglicole o

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tetraetilenglicole) e polimeri di destrano e loro derivati. Altri esempi includono, ma non sono limitati a, frazioni scindibili all'interno del linker, come, ad esempio, un legame disolfuro (-S-S-) o un legame azo (-N=N-), che può essere scisso utilizzando un agente riducente o fotolisi. Esempi non limitativi di un legame separabile selettivamente includono un legame ammidico che può essere scisso ad esempio mediante l'uso di tris(2-carbossietil)fosfina (TCEP), o altri agenti riducenti, e/o fotolisi, nonché un legame estere può essere scisso ad esempio mediante idrolisi acida o basica.

Sito di legame del microRNA (miRNA): Come qui utilizzato, un sito di legame di microRNA (miRNA) rappresenta una posizione o regione nucleotidica di un trascritto di acido nucleico a cui si lega almeno la regione "seme" di un miRNA.

Modificato: Come usato qui, "modificato" si riferisce a uno stato o struttura cambiata di una molecola dell'invenzione. Le molecole possono essere modificate in molti modi, incluso chimicamente, strutturalmente e funzionalmente. In una forma di realizzazione, le molecole di polinucleotide della presente invenzione sono modificate mediante l'introduzione di nucleosidi e/o nucleotidi non naturali, ad esempio, in relazione ai ribonucleotidi naturali A, U, G e C. Nucleotidi non canonici come le strutture cap non sono considerati "modificati", sebbene differiscano dalla struttura chimica dei ribonucleotidi A, C, G, U.

Muco: Come usato qui, "muco" si riferisce alla sostanza naturale che è viscosa e comprende glicoproteine di mucina.

Presente innatura: Come usato qui, "presente in natura" significa esistente in natura senza aiuti artificiali.

Anticorpo neutralizzante: Come usato qui, un "anticorpo neutralizzante" si riferisce a un anticorpo che si lega al suo antigene e difende una cellula da un antigene o da un agente infettivo neutralizzando o abolendo qualsiasi attività biologica che presenta.

Vertebrato non umano: Come qui utilizzato, un "vertebrato non umano" include tutti i

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vertebrati eccetto l'*Homo sapiens,* comprese le specie selvatiche e domestiche. Esempi di vertebrati non umani includono, ma non sono limitati a, mammiferi, come alpaca, banteng, bisonte, cammello, gatto, bestiame, cervo, cane, asino, gay, capra, cavia, cavallo, lama, mulo, maiale, coniglio, renna, bufalo d'acqua di pecora e yak.

Vaccino ad acido nucleico: Come usato qui, "vaccino ad acido nucleico" o "NAV" o "composizione di NAV" si riferisce a un vaccino o una composizione di vaccino che include un acido nucleico o una molecola di acido nucleico *(ad esempio,* un polinucleotide) che codifica per un antigene (ad esempio, una proteina antigenica o un polipeptide). In casi esemplificativi, un vaccino ad acido nucleico o NAV include un polinucleotide ribonucleico ("RNA"), acido ribonucleico ("RNA") o molecola di acido ribonucleico ("RNA"). Tali casi possono essere indicati come vaccini ad acido ribonucleico ("RNA") (RNAV). In casi preferiti, un vaccino ad acido nucleico o NAV include un polinucleotide di RNA messaggero ("mRNA"), RNA messaggero ("mRNA") o molecola di RNA messaggero ("mRNA") come descritto in dettaglio nel presente contesto. Tali casi possono essere indicati come vaccini a RNA messaggero ("mRNA") (mRNAV). Nel presente contesto i riferimenti a “NAV dell’invenzione” si riferiscono a quelli esposti nelle rivendicazioni allegate.

Fuori bersaglio: Come usato qui, "fuori bersaglio" si riferisce a qualsiasi effetto non intenzionale su uno o più bersaglio, gene o trascritto cellulare.

Cornice di lettura aperta: Come qui utilizzato, il termine "cornice di lettura aperta" o "ORF" si riferisce a una sequenza polinucleotidica continua, ad esempio una sequenza di DNA o una sequenza di RNA (ad esempio una sequenza di mRNA), comprendente un codone di inizio, una regione successiva comprendente una pluralità di codoni di codifica di amminoacidi e un codone di arresto terminale, in cui la regione comprendente la pluralità di codoni di codifica di amminoacidi non contiene codoni di arresto.

Collegato operativamente: Come usato qui, l'espressione "collegato operativamente" si

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riferisce a una connessione funzionale tra due o più molecole, costrutti, trascritti, entità, frazioni o simili.

Facoltativamente sostituito: Qui una frase della forma "X facoltativamente sostituito" (ad esempio, alchile facoltativamente sostituito) è intesa essere equivalente a "X, in cui X è sostituito facoltativamente" (ad esempio, "alchile, in cui detto alchile è facoltativamente sostituito"). Non intende significare che la caratteristica "X" *(ad es.,* alchile) di *per sé* sia opzionale.

Parte: Come qui utilizzato, una "parte" o "regione" di un polinucleotide è definita come qualsiasi porzione del polinucleotide che è inferiore all'intera lunghezza del polinucleotide.

Peptide: Come usato qui, "peptide" è lungo meno di o uguale a 50 amminoacidi, ad esempio, lungo circa 5, 10, 15, 20, 25, 30, 35, 40, 45 o 50 amminoacidi.

Paratopo: Come usato qui, un "paratopo" si riferisce al sito di legame dell'antigene di un anticorpo.

Paziente: Come utilizzato nel presente contesto, "paziente" si riferisce a un soggetto che può cercare o avere bisogno di cure, richiede un trattamento, sta ricevendo un trattamento, riceverà un trattamento o un soggetto che è curato da un professionista qualificato per una particolare malattia o condizione.

Farmaceuticamente accettabile: L'espressione "farmaceuticamente accettabile" viene impiegata nel presente contesto per fare riferimento a quei composti, materiali, composizioni e/o forme di dosaggio che sono, nell'ambito di un valido giudizio medico, adatti all'uso a contatto con i tessuti di esseri umani e animali senza tossicità, irritazione, risposta allergica eccessiva o altro problema o complicanza, proporzionali a un ragionevole rapporto benefici/rischi.

Eccipienti farmaceuticamente accettabili: L'espressione "eccipiente farmaceuticamente accettabile", come usata nel presente contesto, si riferisce a qualsiasi ingrediente diverso dai composti qui descritti (ad esempio, un veicolo in grado di sospendere o dissolvere il composto

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attivo) e avere le proprietà di essere sostanzialmente non tossico e non infiammatorio in un paziente. Gli eccipienti possono includere, ad esempio: antiaderenti, antiossidanti, leganti, rivestimenti, ausili di compressione, disintegranti, coloranti (colori), emollienti, emulsionanti, riempitivi (diluenti), formatori o rivestimenti di film, aromi, fragranze, antiagglomeranti (potenziatori di flusso), lubrificanti, conservanti, stampa inchiostri, assorbenti, agenti sospensivi o disperdenti, dolcificanti e acque di idratazione. Eccipienti esemplificativi includono, ma non sono limitati a: idrossitoluenebutilato (BHT), carbonato di calcio, fosfato di calcio (dibasico), stearato di calcio, croscarmellosio, polivinilpirrolidone reticolato, acido citrico, crospovidone, cisteina, etilcellulosa, gelatina, idrossipropilcellulosa, lattosio, magnesio stearato, maltitolo, mannitolo, metionina, metilcellulosa, metilparabene, cellulosa microcristallina, polietilenglicole, polivinilpirrolidone, povidone, amido pregelatinizzato, propilparabene, retinilpalmitato, sodio carbonato, amido glicolato, sorbitolo, amido (mais), acido stearico, saccarosio, talco, biossido di titanio, vitamina A, vitamina E, vitamina C e xilitolo.

Sali farmaceuticamente accettabili: La presente descrizione include anche sali farmaceuticamente accettabili dei composti qui descritti. Come qui utilizzato, "sali farmaceuticamente accettabili" si riferisce a derivati dei composti divulgati in cui il composto genitore viene modificato convertendo un acido esistente o una frazione di base nella sua forma salina (ad esempio, facendo reagire il gruppo di base libero con un acido organico adatto). Esempi di sali farmaceuticamente accettabili includono, tuttavia senza limitazioni, sali di acidi minerali oppure organici di residui basici quali ammine; sali alcalini oppure organici di residui acidi quali acidi carbossilici e simili. Sali rappresentativi di addizione con acidi comprendono acetato, acido acetico, adipato, alginato, ascorbato, aspartato, benzensolfonato, acido benzensolfonico, benzoato, bisolfato, borato, butirrato, canforato, canfosolfonato, citrato, ciclopentanepropionato, digluconato, dodecosfonato, fosfonato di fosfonato, dodecosfonato, fosfonato di fosfonato glicerofosfato, emisolfato, eptonato, esanoato, idrobromuro, cloridrato,

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idroduro, 2-idrossi-etesolfonato, lattobionato, lattato, laurato, lauril solfato, malato, maleato, malonato, metanesolfonato, 2-naftalato, ossato di nicato, ossato di nitrato di azotato, nicato di sodio , pamoato, pectinato, persolfato, 3-fenilpropionato, fosfato, picrate, pivalato, propionato, stearato, succinato, solfato, tartrato, tiocianato, toluensolfonato, undecanoato, sali di valerato e simili. Sali rappresentativi di metalli alcalini o alcalino terrosi comprendono sodio, litio, potassio, calcio, magnesio e simili, nonché ammonio non tossico, ammonio quaternario e cationi amminici, inclusi, ma non limitati a, ammonio, tetrametilammonio, tetraetilammonio, metilammina, dimetilammina , trimetilammina, trietilammina, etilammina e simili. I sali farmaceuticamente accettabili della presente descrizione includono i sali non tossici convenzionali del composto genitore formato, ad esempio, da acidi inorganici o organici non tossici. I sali farmaceuticamente accettabili della presente descrizione possono essere sintetizzati dal composto genitore che contiene una porzione basica o acida mediante metodi chimici convenzionali. Generalmente, tali sali possono essere preparati facendo reagire le forme libere di acido o di base di questi composti con una quantità stechiometrica della base o dell'acido appropriato in acqua o in un solvente organico o in una miscela dei due; generalmente, terreni non acquosi come etere, etilacetato, etanolo, isopropanolo o acetonitrile sono preferiti. Elenchi di sali adatti si trovano inRemington'sPharmaceutical Sciences, 17a ed., Mack Publishing Company, Easton, Pa., 1985, p. 1418, Sali farmaceutici: Properties, Selection, and Use, P.H. Stahl and C.G. Wermuth (a cura di), Wiley-VCH, 2008, e Berge et al., Journal of Pharmaceutical Science, 66, 1-19 (1977),

Solvato farmaceuticamente accettabile: Il termine "solvato farmaceuticamente accettabile", come qui utilizzato, indica un composto della descrizione in cui le molecole di un solvente adatto sono incorporate nel reticolo cristallino. Un opportuno solvente è fisiologicamente tollerabile al dosaggio somministrato. Ad esempio, i solvati possono essere preparati mediante cristallizzazione, ricristallizzazione o precipitazione da una soluzione che

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include solventi organici, acqua o una loro miscela. Esempi di solventi adatti sono etanolo, acqua (ad esempio mono-, di-, e tri-idrati), N -methylpyrrolidinone (NMP), dimetilsolfossido (DMSO), *N,N*'-dimetilformammide (DMF), *N,N*'-dimetilacetammide (DMAC), 1,3-dimetil-2-imidazolidinone (DMEU), 1,3-dimetil-3,4,5,6-tetraidro-2-(1H)-pirimidinone (DMPU), acetonitrile (ACN), propilenglicole, etilacetato, alcol benzilico, 2-pirrolidone, benzilbenzoato e simili. Quando l'acqua è il solvente, il solvato viene chiamato "idrato".

Farmacocinetica: Come usato qui, "farmacocinetico" si riferisce a una o più proprietà di una molecola o composto in relazione alla determinazione del destino di sostanze somministrate a un organismo vivente. La farmacocinetica è suddivisa in diverse aree tra cui l'entità e la velocità di assorbimento, distribuzione, metabolismo ed escrezione. Questo è comunemente indicato come ADME dove: (A) L'assorbimento è il processo di una sostanza che entra nella circolazione sanguigna; (D) la distribuzione è la dispersione o disseminazione di sostanze nei fluidi e nei tessuti del corpo; (M) il metabolismo (o biotrasformazione) è la trasformazione irreversibile dei composti progenitori in metaboliti figli; e (E) l'escrezione (o eliminazione) si riferisce all'eliminazione delle sostanze dal corpo. In rari casi, alcuni farmaci si accumulano irreversibilmente nei tessuti del corpo.

Fisicochimico: Come qui utilizzato, "fisicochimico" significa o relativo a una proprietà fisica e/o chimica.

Polipeptide per unità di farmaco (PUD): Come qui utilizzato, un PUD o un prodotto per unità di farmaco, è definito come una porzione suddivisa della dose giornaliera totale, solitamente 1 mg, pg, kg, eccetera, di un prodotto (come un polipeptide) misurata nel fluido corporeo o nel tessuto, solitamente definito in concentrazione come pmol/mL, mmol/mL, eccetera diviso per la misura nel fluido corporeo.

Prevenire: Come qui utilizzato, il termine "prevenire" si riferisce a ritardare parzialmente o completamente l'insorgenza di un'infezione, malattia, disturbo e/o condizione;

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ritardare parzialmente o completamente l'insorgenza di uno o più sintomi, caratteristiche o manifestazioni cliniche di una particolare infezione, malattia, disturbo e/o condizione; ritardare parzialmente o completamente l'insorgenza di uno o più sintomi, caratteristiche o manifestazioni di una particolare infezione, malattia, disturbo e/o condizione; ritardare parzialmente o completamente la progressione di un'infezione, una particolare malattia, disturbo e/o condizione; e/o diminuire il rischio di sviluppare patologie associate all'infezione, malattia, disturbo e/o condizione.

Profarmaco: La presente descrizione include anche profarmaci dei composti qui descritti. Come qui usato, "profarmaci" si riferisce a qualsiasi sostanza, molecola o entità che è in una forma che presuppone che quella sostanza, molecola o entità agisca come terapeutico in caso di alterazione chimica o fisica. I profarmaci possono essere legati in modo covalente o sequestrati in qualche modo e che rilasciano o vengono convertiti nella frazione attiva del farmaco prima, dopo o dopo la somministrazione a un soggetto mammifero. I profarmaci possono essere preparati modificando gruppi funzionali presenti nei composti in modo tale che le modificazioni siano scisse, in manipolazione regolare o *in vivo*, nei composti progenitori. I profarmaci includono composti in cui gruppi idrossile, amminico, solfidrile o carbossile sono legati a qualsiasi gruppo che, quando somministrato a un soggetto mammifero, si scinde a formare rispettivamente un gruppo idrossile, amminico, solfidrile o carbossile libero. La preparazione e l'uso dei profarmaci sono discussi inT. Higuchi e V. Stella, "Pro-drugsasNovel Delivery Systems", vol. 14 dell'ACS Symposium Series, e in Bioreversible Carriers in Drug Design, a cura di Edward B. Roche, American Pharmaceutical Association and Pergamon Press, 1987, .

Proliferare: Come usato qui, il termine "proliferare" significa crescere, espandersi o aumentare o far crescere, espandere o aumentare rapidamente. "Proliferativo" significa avere la capacità di proliferare. "Anti-proliferativo" significa avere proprietà contrarie o inopportune alle

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proprietà proliferative.

Profilattico: Come qui utilizzato, "profilattico" si riferisce a un trattamento o corso d'azione utilizzato per prevenire la diffusione della malattia.

Profilassi: Come qui utilizzato, una "profilassi" si riferisce a una misura adottata per mantenere la salute e prevenire la diffusione della malattia. Una "frofilassi immunitaria" si riferisce a una misura per produrre un'immunità attiva o passiva per prevenire la diffusione della malattia.

Sito di scissione delle proteine: Come qui utilizzato, "sito di scissione proteica" si riferisce a un sito in cui la scissione controllata della catena amminoacidica può essere realizzata mediante mezzi chimici, enzimatici o fotochimici.

Segnale di scissione delle proteine: Come qui utilizzato, "segnale di scissione proteica" si riferisce ad almeno un amminoacido che segnala o contrassegna un polipeptide per la scissione.

Proteina di interesse: Come qui utilizzati, i termini "proteine di interesse" o "proteine desiderate" includono quelle fornite nella presente e frammenti, mutanti, varianti e loro alterazioni.

Prossimale: Come qui usato, il termine "prossimale" significa situato più vicino al centro o ad un punto o regione di interesse.

Pseudouridina: Come usato qui, pseudouridina si riferisce all'isomero C-glicoside dell'uridina nucleosidica. Un "analogo della pseudouridina" è qualsiasi modificazione, variante, isoforma o derivato della pseudouridina. Ad esempio, gli analoghi della pseudouridina includono ma non sono limitati a 1-carbossimetil-pseudouridina, 1-propinil-pseudouridina, 1-taurinometil-pseudouridina, 1-taurinometil-4-tio-pseudouridina, 1-metilpseudouridina ($m^1\psi$), 1-metil-4-tio-pseudouridina ($m^1S^4\Psi$), 4-tio-1-metil-pseudouridina, 3-metil-pseudouridina ($m^3\psi$), 2-tio-1-metil-pseudouridina, 1-metil-1-deaza-pseudouridina, 2-tio-1-metil-1-deaza-

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pseudouridina, diidropseudouridina, 2-tio-diidropseudouridina, 2-metossiuridina, 2 -metossi-4-tio-uridina, 4-metossi-pseudouridina, 4-metossi-2-tio-pseudouridina, N1-metil-pseudouridina, 1-metil-3-(3-ammino-3-carbossipropil)pseudouridina ($acp^3\psi$) e 2'-O-metil-pseudouridina (ψm).

Purificato: Come qui usato, "purificare", "purificato", "purificare" significa rendere sostanzialmente puro o chiaro da componenti indesiderati, contaminazione del materiale, mescolanza o imperfezione.

Trasfezione ripetuta: Come qui utilizzato, il termine "trasfezione ripetuta" si riferisce alla trasfezione della stessa coltura cellulare con un polinucleotide una pluralità di volte. La coltura cellulare può essere trasfettata almeno due volte, almeno 3 volte, almeno 4 volte, almeno 5 volte, almeno 6 volte, almeno 7 volte, almeno 8 volte, almeno 9 volte, almeno 10 volte, almeno 11 volte, almeno 12 volte, almeno 13 volte, almeno 14 volte, almeno 15 volte, almeno 16 volte, almeno 17 volte almeno 18 volte, almeno 19 volte, almeno 20 volte, a almeno 25 volte, almeno 30 volte, almeno 35 volte, almeno 40 volte, almeno 45 volte, almeno 50 volte o più.

Campione: Come usato qui, il termine "campione" o "campione biologico" si riferisce a un sottoinsieme dei suoi tessuti, cellule o parti componenti (ad esempio fluidi corporei, inclusi ma non limitati a sangue, muco, fluido linfatico, fluido sinoviale, fluido cerebrospinale, saliva, liquido amniotico, sangue del cordone amniotico, urina, liquido vaginale e sperma). Un campione può inoltre includere un omogenato, lisato o estratto preparato da un intero organismo o un sottoinsieme dei suoi tessuti, cellule o parti componenti, o una frazione o parte di essi, inclusi ma non limitati a, ad esempio, plasma, siero, fluido spinale, fluido linfatico, sezioni esterne della pelle, vie respiratorie, intestinali e genito-urinarie, lacrime, saliva, latte, cellule del sangue, tumori, organi. Un campione si riferisce inoltre a un mezzo, come un brodo nutriente o un gel, che può contenere componenti cellulari, come proteine o molecole di acido nucleico.

Sequenze di segnale: Come usata qui, la frase "sequenze di segnale" si riferisce a una sequenza che può dirigere il trasporto o la localizzazione di una proteina.

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Singola dose unitaria: Come usato qui, una "singola dose unitaria" è una dose di qualsiasi terapia somministrata in una dose/in una volta/via singola/punto di contatto singolo, vale a dire, singolo evento di somministrazione.

Similarità: Come utilizzato nel presente contesto, il termine “similarità” si riferisce alla correlazione complessiva tra molecole polimeriche, ad esempio, tra molecole polinucleotidiche (ad esempio molecole di DNA e/o molecole di RNA) e/o tra molecole polipeptidiche. Il calcolo della somiglianza percentuale di molecole polimeriche tra loro può essere eseguito nello stesso modo di un calcolo dell'identità percentuale tranne per il fatto che il calcolo di somiglianza percentuale prende in considerazione sostituzioni conservative come compreso nella tecnica.

Dose frazionata: Come usato qui, una "dose frazionata" è la divisione della singola dose unitaria o della dose giornaliera totale in due o più dosi.

Stabile: Come usato qui, "stabile" si riferisce a un composto che è sufficientemente robusto per sopravvivere all'isolamento fino a un grado di purezza utile da una miscela di reazione, e preferibilmente in grado di essere formulato in un agente terapeutico efficace.

Stabilizzato: Come qui utilizzato, il termine "stabilizzare", "stabilizzato", "regione stabilizzata" significa rendere stabile o diventare stabile.

Stereoisomero: Come usato in questo contesto, il termine "stereoisomero" si riferisce a tutte le possibili diverse forme isomeriche e conformazionali che un composto può possedere (ad esempio, un composto di qualsiasi formula descritta nel presente contesto), in particolare tutte le possibili forme isomeriche stereochimiche e conformazionali, tutti i diastereomeri, enantiomeri e/o conformeri della struttura molecolare di base. Alcuni composti della presente descrizione possono esistere in diverse forme tautomeriche, tutte queste ultime essendo comprese nell'ambito della presente descrizione.

Soggetto: Come qui utilizzato, il termine "soggetto" o "paziente" si riferisce a qualsiasi organismo a cui può essere somministrata una composizione secondo la descrizione, ad esempio

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per scopi sperimentali, diagnostici, profilattici e/o terapeutici. Soggetti tipici includono animali (ad esempio mammiferi come topi, ratti, conigli, primati non umani ed esseri umani) e/o piante.

Sostanzialmente: Come qui utilizzato, il termine "sostanzialmente" si riferisce alla condizione qualitativa di esibire l'estensione totale o quasi totale o il grado di una caratteristica o proprietà di interesse. Un esperto della tecnica ordinaria nella tecnica biologica comprenderà che fenomeni chimici e biologici raramente, se presenti, vengono completati e/o procedono fino a completezza o raggiungono o evitano un risultato assoluto. Il termine “sostanzialmente” di conseguenza viene utilizzato nel presente contesto per catturare la potenziale mancanza di completezza intrinseca di molti fenomeni biologici e chimici.

Sostanzialmente uguale: Come usato qui in relazione alle differenze di tempo tra le dosi, il termine significa più/meno il 2%.

Sostanzialmente contemporaneamente: Come usato qui e in relazione a una pluralità di dosi, il termine significa entro 2 secondi.

Affetto da: Un individuo che "è affetto da" una malattia, un disturbo e/o una condizione è stato diagnosticato o mostra uno o più sintomi di una malattia, un disturbo e/o una condizione.

Sensibile a: Un individuo che è "suscettibile a" una malattia, disturbo e/o condizione non è stato diagnosticato e/o potrebbe non manifestare sintomi della malattia, disturbo e/o condizione ma ha una propensione a sviluppare una malattia o i suoi sintomi. In alcune forme di realizzazione, un individuo che è suscettibile a una malattia, disturbo e/o condizione (ad esempio cancro) può essere caratterizzato da uno o più dei seguenti: (1) una mutazione genetica associata allo sviluppo della malattia, disturbo e/o condizione; (2) un polimorfismo genetico associato allo sviluppo della malattia, disturbo e/o condizione; (3) aumentata e/o diminuita espressione e/o attività di una proteina e/o acido nucleico associata alla malattia, disturbo e/o condizione; (4) abitudini e/o stili di vita associati allo sviluppo della malattia, disturbo e/o condizione; (5) una storia familiare della malattia, disturbo e/o condizione; e (6) esposizione e/o

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infezione con un microbo associata allo sviluppo della malattia, disturbo e/o condizione. In alcune forme di realizzazione, un individuo suscettibile a una malattia, disturbo e/o condizione svilupperà la malattia, il disturbo e/o la condizione. In alcune forme di realizzazione, un individuo suscettibile a una malattia, disturbo e/o condizione non svilupperà la malattia, il disturbo e/o la condizione.

Rilascio prolungato: Come qui utilizzato, il termine "rilascio prolungato" si riferisce a una composizione farmaceutica o a un profilo di rilascio del composto che si conforma a una velocità di rilascio in un periodo di tempo specifico.

Sintetico: Il termine "sintetico" significa prodotto, preparato e/o fabbricato dalla mano dell'uomo. La sintesi di polinucleotidi o polipeptidi o altre molecole della presente descrizione può essere chimica o enzimatica.

Vaccino: Come usato qui, un vaccino è un composto o una composizione che comprende almeno un polinucleotide codificante almeno un antigene.

Cellule bersagliate: Come qui utilizzato, "cellule bersagliate" si riferisce a una o più cellule di interesse. Le cellule possono essere trovate *in vitro, in vivo, in situ* o nel tessuto o organo di un organismo. L'organismo può essere un animale, preferibilmente un mammifero, più preferibilmente un essere umano e più preferibilmente un paziente.

Agente terapeutico: Il termine "agente terapeutico" si riferisce a qualsiasi agente che, quando somministrato a un soggetto, ha un effetto terapeutico, diagnostico e/o profilattico e/o suscita un desiderato effetto biologico e/o farmacologico.

Quantità terapeuticamente efficace: Come usato qui, il termine "quantità terapeuticamente efficace" indica una quantità di un agente da somministrare (ad esempio, acido nucleico, farmaco, agente terapeutico, agente diagnostico, agente profilattico, *eccet*era) che è sufficiente, quando somministrato a un soggetto che soffre da o suscettibile a un'infezione, malattia, disturbo e/o condizione, per trattare, migliorare i sintomi di, diagnosticare, prevenire

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e/o ritardare l'insorgenza dell'infezione, malattia, disturbo e/o condizione.

Esito terapeuticamente efficace: Come qui utilizzato, il termine "esito terapeuticamente efficace" indica un risultato che è sufficiente in un soggetto affetto da o suscettibile a un'infezione, malattia, disturbo e/o condizione, per trattare, migliorare i sintomi, diagnosticare, prevenire e/o ritardare l'insorgenza dell'infezione, malattia, disturbo e/o condizione.

Dose giornaliera totale: Come usato qui, una "dose giornaliera totale" è una quantità data o prescritta in un periodo di 24 ore. Può essere somministrato come singola dose unitaria.

Fattore di trascrizione: Come qui utilizzato, il termine "fattore di trascrizione" si riferisce a una proteina legante il DNA che regola la trascrizione del DNA in RNA, ad esempio, mediante attivazione o repressione della trascrizione. Alcuni fattori di trascrizione agiscono solo sulla regolazione della trascrizione, mentre altri agiscono di concerto con altre proteine. Alcuni fattori di trascrizione possono sia attivare che reprimere la trascrizione in determinate condizioni. In generale, i fattori di trascrizione legano una o più sequenze bersaglio specifiche molto simili a una sequenza consenso specifica in una regione regolatoria di un gene bersaglio. I fattori di trascrizione possono regolare la trascrizione di un gene bersaglio da solo o in un complesso con altre molecole.

Trasfezione: Come usato qui, il termine "trasfezione" si riferisce a metodi per introdurre acidi nucleici esogeni in una cellula. I metodi di trasfezione includono, ma non sono limitati a, metodi chimici, trattamenti plisici e lipidi o miscele cationici.

Traduzione: Come qui utilizzato, "traduzione" è il processo mediante il quale una molecola polinucleotidica viene elaborata da un ribosoma o un meccanismo simile a un ribosoma, ad esempio, cellulare o artificiale, per produrre un peptide o un polipeptide.

Trascrizione: Come qui utilizzato, "trascrizione" è il processo mediante il quale una molecola di polinucleotide viene elaborata da una polimerasi o altro enzima per produrre un polinucleotide, ad esempio un polinucleotide di RNA.

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Trattamento: Come qui usato, il termine "trattamento" si riferisce ad alleviare parzialmente, completamente, migliorare, potenziare, alleviare, ritardare l'insorgenza, inibire la progressione, ridurre la gravità e/o ridurre l'incidenza di uno o più sintomi o caratteristiche di una particolare infezione, malattia, disturbo e/o condizione. Il trattamento può essere somministrato a un soggetto che non presenta segni di una malattia, infezione, disturbo e/o condizione e/o a un soggetto che presenta solo segni precoci di una malattia, infezione, disturbo e/o condizione allo scopo di ridurre il rischio di sviluppare patologie associate a malattia, infezione, disturbo e/o condizione.

Non modificato: Come qui utilizzato, "non modificato" si riferisce a qualsiasi sostanza, composto o molecola prima di essere modificato in alcun modo. Non modificato può, ma non sempre, fare riferimento al tipo selvaggio o alla forma nativa di una biomolecola. Le molecole possono subire una serie di modifiche in base alle quali ciascuna molecola modificata può fungere da molecola di partenza "non modificata" per una successiva modifica.

Vaccino: Come qui utilizzato, l'espressione "vaccino" si riferisce a un preparato biologico che migliora l'immunità nel contesto di una particolare malattia, disturbo o condizione.

Proteina virale: Come qui utilizzato, la fase "proteina virale" indica qualsiasi proteina originata da un virus.

Equivalenti e ambito

Gli esperti nella tecnica riconosceranno, o saranno in grado di accertare utilizzando non più della sperimentazione di routine, molti equivalenti alle forme di realizzazione specifiche in conformità con la descrizione qui descritta. L'ambito della presente invenzione non è inteso essere limitato alla descrizione di cui sopra, ma piuttosto è come esposto nelle rivendicazioni allegate.

Nelle rivendicazioni gli articoli come “un,” “una,”e “il” può indicare uno o più, salvo

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diversamente indicato, al contrario o altrimenti evidente dal contesto. Le rivendicazioni o le descrizioni che includono “o” tra uno o più elementi di un gruppo sono considerati soddisfatti se uno, più di uno, o tutti gli elementi del gruppo sono presenti, impiegati in o altrimenti rilevanti in un dato prodotto o processo salvo diversamente indicato al contrario o altrimenti evidente dal contesto. L’invenzione include forme di realizzazione in cui un elemento del gruppo è esattamente presente in, impiegato in o altrimenti rilevante per un dato prodotto o processo. L’invenzione include forme di realizzazione in cui più di uno o tutti i membri del gruppo sono presenti, impiegati in o altrimenti rilevanti per un dato prodotto o processo.

Si noti inoltre che il termine "comprendente" è inteso come aperto e consente ma non richiede l'inclusione di elementi o passaggi aggiuntivi. Quando il termine "comprendente" è usato nel presente contesto, anche il termine "costituito da" viene così compreso e descritto.

Laddove siano indicati gli intervalli, sono inclusi gli endpoint. Inoltre, si deve comprendere che, se non diversamente indicato o altrimenti evidente dal contesto e dalla comprensione di un'abilità ordinaria nella tecnica, i valori che sono espressi come intervalli possono assumere qualsiasi valore specifico o sottointervallo all'interno degli intervalli dichiarati in diverse forme di realizzazione dell’invenzione, al decimo dell'unità del limite inferiore dell'intervallo, a meno che il contesto non stabilisca chiaramente diversamente.

Le intestazioni delle sezioni e delle tabelle non intendono essere limitative.

ESEMPI

Esempio 1. Produzione di polinucleotidi

Secondo la presente invenzione, la produzione di polinucleotidi e/o parti o regioni di essi può essere realizzata utilizzando i metodi insegnati in USSN 61/800,049 depositata il 15 marzo 2013 intitolato "Manufacturing Methods for Production of RNA Transcripts".

I metodi di purificazione possono includere quelli insegnati nella domanda di brevetto provvisoria U.S. n. 61/799,872, domanda di brevetto provvisoria U.S. n. 61/794,842, domanda

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di brevetto provvisoria U.S. 61/800,326.

I metodi di rilevamento e caratterizzazione dei polinucleotidi possono essere eseguiti come insegnato nella domanda di brevetto provvisoria U.S. n. 61/799,780 e domanda di brevetto provvisoria U.S. n. 61/798,945.

La caratterizzazione dei polinucleotidi dell'invenzione può essere realizzata utilizzando una procedura scelta dal gruppo costituito da mappatura dei polinucleotidi, sequenziamento con trascrittasi inversa, analisi della distribuzione di carica e rilevamento di impurità di RNA, in cui caratterizzare comprende determinare la sequenza del trascritto dell'RNA, determinare la purezza del trascritto dell'RNA o determinazione dell'eterogeneità della carica del trascritto dell'RNA. Tali metodi sono insegnati, ad esempio, nella domanda di brevetto provvisoria U.S. n. 61/799,905 e nella domanda di brevetto provvisoria U.S. n. 61/800,110.

Esempio 2. Sintesi chimerica di polinucleotidi

Introduzione

Secondo la presente invenzione, due regioni o parti di un polinucleotide chimerico possono essere unite o legate usando la chimica del trifosfato.

Secondo questo metodo, una prima regione o parte di 100 nucleotidi o meno viene sintetizzata chimicamente con un monofosfato 5' e 3'desOH terminale o OH bloccato. Se la regione è più lunga di 80 nucleotidi, può essere sintetizzata come due filamenti per la ligazione.

Se la prima regione o parte viene sintetizzata come regione o parte non modificata in modo posizionale utilizzando la trascrizione in vitro (IVT), può seguire la conversione del monofosfato 5' con successivo capping del terminale 3'.

I gruppi protettori del monofosfato possono essere scelti tra quelli noti nella tecnica.

La seconda regione o parte del polinucleotide chimerico può essere sintetizzata utilizzando la sintesi chimica o i metodi IVT. I metodi IVT possono includere una RNA polimerasi che può utilizzare un primer con un cap modificato. In alternativa, un cap contenente

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fino a 130 nucleotidi può essere sintetizzato chimicamente e accoppiato alla regione o parte dell'IVT.

Si noti che per i metodi di ligazione, la ligazione con la DNA T4 ligasi, seguita dal trattamento con DNAsi, dovrebbe evitare prontamente la concatenazione.

Non è necessario che l'intero polinucleotide chimerico sia prodotto con una catena principale fosfato-zucchero. Se una delle regioni o parti codifica per un polipeptide, allora è preferibile che tale regione o parte comprenda una catena principale fosfato-zucchero.

La ligazione viene quindi eseguita utilizzando qualsiasi chimica di clic nota, chimica di orthoclick, solulink o altre sostanze chimiche bioconiugate note agli esperti del settore.

Via sintetica

Il polinucleotide chimerico è realizzato utilizzando una serie di segmenti di partenza. Tali segmenti includono:

(a) Segmento 5' con cap e protetto comprendente un normale 3'OH (SEG. 1)

(b) segmento 5'trifosfato che può includere la regione codificante di un polipeptide e comprendente un normale 3'OH (SEG. 2)

(c) segmento 5' monofosfato per l'estremità 3' del polinucleotide chimerico (ad esempio la coda) comprendente cordicepina o nessun 3'OH (SEG. 3)

Dopo la sintesi (chimica o IVT), il segmento 3 (SEG. 3) viene trattato con cordicepina e poi con pirofosfatasi per creare il 5'monofosfato.

Il segmento 2 (SEG. 2) viene quindi ligato a SEG. 3 utilizzando RNA ligasi. Il polinucleotide ligato viene quindi purificato e trattato con pirofosfatasi per scindere il difosfato. Il costrutto SEG.2-SEG. 3 trattato viene quindi purificato e il SEG. 1 è legato al terminale 5'. Può essere eseguita un'ulteriore fase di purificazione del polinucleotide chimerico.

Laddove il polinucleotide chimerico codifica per un polipeptide, i segmenti legati o uniti possono essere rappresentati come: 5'UTR (SEG. 1), cornice di lettura aperta o ORF (SEG.

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2) e 3'UTR+PoliA (SEG. 3).

I rendimenti di ogni passaggio possono arrivare fino al 90-95%.

Esempio 3: PCR per la produzione di cDNA

Le procedure PCR per la preparazione del cDNA vengono eseguite utilizzando 2x KAPA HIFI™HotStartReadyMix di KapaBiosystems (Woburn, MA). Questo sistema include 2x KAPA ReadyMix12,5 µl; Primer idiretto (10 uM) 0,75 µl; Primer inverso (10 uM) 0,75 µl; cDNA stampo; 100 ng; e dH_20 diluito a 25,0 µl. Le condizioni di reazione sono a 95 °C per 5 min e 25 cicli di 98 °C per 20 sec, poi 58 °C per 15 sec, poi 72 °C per 45 sec, poi 72 °C per 5 min poi 4 °C al termine.

Il primer inverso della presente descrizione incorpora una poli-T_{120} (SEQ ID NO: 2283) per una poli-A_{120} (SEQ ID NO: 2282) nell'mRNA. Altri primer inversi con tratti di poli(T) più o meno lunghi possono essere utilizzati per regolare la lunghezza della coda di poli(A) nell'mRNA polinucleotidico.

La reazione viene purificata utilizzando il Micro Kit PURELINK™ PCR di Invitrogen (Carlsbad, CA) secondo le istruzioni del produttore (fino a 5 µg). Reazioni più grandi richiederanno una pulizia utilizzando un prodotto con una capacità maggiore. Dopo la pulizia, il cDNA viene quantificato utilizzando il NANODROP™ e analizzato mediante elettroforesi su gel di agarosio per confermare che il cDNA è della dimensione prevista. Il cDNA viene quindi sottoposto all'analisi di sequenziamento prima di procedere alla reazione di trascrizione *in vitro.*

Esempio *4.*Trascrizione *in vitro* (IVT)

La reazione di trascrizione *in vitro* genera polinucleotidi contenenti polinucleotidi uniformemente modificati. Tali polinucleotidi uniformemente modificati possono comprendere una regione o parte dei polinucleotidi dell'invenzione. La miscela di nucleotide trifosfato (NTP) in ingresso viene prodotta internamente utilizzando NTP naturali e non naturali.

Una tipica *reazione di trascrizione in vitro* include quanto segue:

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1	cDNA stampo	1,0 µg
2	Tampone di trascrizione 10x (400 mM Tris-HCl pH 8,0, 190 mM $MgCl_2$, 50 mM DTT, 10 mMSpermidina)	2,0 µL
3	NTP personalizzati (25 mM ciascuno)	7,2 µL
4	Inibitore dell'RNasi	20 U
5	T7 RNA polimerasi	3000 U
6	dH_20	Fino a 20,0 µl e
7	Incubazione a 37 °C per 3 ore-5 ore.	

La miscela IVT grezza può essere conservata a 4 °C durante la notte per essere pulita il giorno successivo. 1 U di DNasi priva di RNasi viene quindi utilizzata per digerire lo stampo originale. Dopo 15 minuti di incubazione a 37 °C, l'mRNA viene purificato utilizzando il kit MEGACLEAR™ di Ambion (Austin, TX) seguendo le istruzioni del produttore. Questo kit può purificare fino a 500 pg di RNA. Dopo la pulizia, l'RNA viene quantificato utilizzando il NanoDrop e analizzato mediante elettroforesi su gel di agarosio per confermare che l'RNA è della dimensione corretta e che non si è verificata alcuna degradazione dell'RNA.

Esempio 5. Capping enzimatico

Il capping di un polinucleotide viene eseguito come segue dove la miscela include: RNA IVT 60 pg-180 pg ed dH_20 fino a 72 µL, La miscela viene incubata a 65 °C per 5 minuti per denaturare l'RNA e quindi trasferita immediatamente in ghiaccio.

Il protocollo prevede quindi la miscelazione di 10x Capping Buffer (0,5 M Tris-HCl (pH 8,0), 60 mMKCl, 12,5 mM $MgCl_2$) (10,0 µl); 20 mM GTP (5,0 µl); S-Adenosil Metionina 20 mM (2,5 µl); Inibitore dell'RNasi (100 U); 2'-O-metiltransferasi (400U); Enzima di capping di vaccinia (Guanililtransferase) (40 U); dH_20 (Fino a 28 µl); e incubazione a 37 °C per 30 minuti per 60 pg di RNA o fino a 2 ore per 180 pg di RNA.

Il polinucleotide viene quindi purificato utilizzando il kit MEGACLEAR™ di Ambion (Austin, TX) seguendo le istruzioni del produttore. Dopo la pulizia, l'RNA viene quantificato utilizzando il NANODROP™ (ThermoFisher, Waltham, MA) e analizzato mediante elettroforesi

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su gel di agarosio per confermare che l'RNA è della dimensione corretta e che non si è verificata alcuna degradazione dell'RNA. Il prodotto dell'RNA può anche essere sequenziato eseguendo una PCR a trascrizione inversa per generare il cDNA per il sequenziamento.

Esempio 6. Reazione di coda Poli-A

Senza una poli-T nel cDNA, è necessario eseguire una reazione di scodamento poli-A prima di pulire il prodotto finale. Questo viene fatto mescolando Capped IVT RNA (100 µl), Inibitore della RNasi (20 U); 10x tampone di coda (0,5 M Tris-HCl (pH 8,0), 2,5 M NaCl, 100 mM $MgCl_2$)(12,0 µl), 20 mM ATP (6,0 µl); poli-A polimerasi (20 U); dH_20 fino a 123,5 µl e incubazione a 37 °C per 30 min. Se la coda di poli-A è già nel trascritto, la reazione di coda può essere saltata per procedere direttamente alla pulizia con il kit MEGACLEAR™ di Ambion (Austin, TX) (fino a 500 µg). La poli-A polimerasi è preferibilmente un enzima ricombinante espresso nel lievito.

Si dovrebbe comprendere che la processività o l'integrità della reazione di coda di poliA può non sempre risultare in una coda di poliA della dimensione esatta. Quindi code di poliA di circa 40-200 nucleotidi (SEQ ID NO: 2284), ad esempio circa 40, 50, 60, 70, 80, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 150-165, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164 o 165 rientrano nell'ambito dell'invenzione.

Esempio 7. Cap 5' naturali e analoghi di cap 5'

Il 5'-capping del polinucleotide può essere completato in concomitanza durante la reazione di trascrizione *in vitro* utilizzando i seguenti analoghi chimici di cap dell'RNA per generare la struttura cap della 5'-guanosina secondo i protocolli del produttore: 3'-O-Me-m7G(5')ppp(5') G [il capARCA]; G(5')ppp(5')A; G(5')ppp(5')G; m7G(5')ppp(5')A; m7G(5')ppp(5')G (New EnglandBioLabs, Ipswich, MA). Il 5'-capping dell'RNA modificato può essere completato post-trascrizionalmente utilizzando un enzima di capping del virus Vaccinia per generare la struttura "Cap 0": m7G(5')ppp(5')G (New EnglandBioLabs, Ipswich, MA). La

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struttura di Cap 1 può essere generata utilizzando sia l'enzima di capping del virus Vaccinia che una 2'-O metil-transferasi per generare: m7G(5')ppp(5')G-2'-O-metile. La struttura Cap 2 può essere generata dalla struttura Cap 1 seguita dalla 2'-O-metilazione del 5'-terzultimo nucleotide usando una 2'-O metil-transferasi. La struttura Cap 3 può essere generata dalla struttura Cap 2 seguita dalla 2'-O-metilazione del 5'-preterzultimo nucleotide usando una 2'-O metil-transferasi. Gli enzimi sono preferibilmente derivati da una fonte ricombinante.

Quando trasfettati in cellule di mammifero, gli mRNA modificati hanno una stabilità compresa tra 12-18 ore o più di 18 ore, ad esempio 24, 36, 48, 60, 72 o più di 72 ore.

Esempio 8. Saggi di capping

A. Saggio di espressione proteica

I polinucleotidi codificanti per un polipeptide, contenente uno qualsiasi dei cap qui illustrati possono essere trasfettati in cellule a concentrazioni uguali. 6, 12, 24 e 36 ore dopo la trasfezione la quantità di proteine secrete nel terreno di coltura può essere analizzata mediante ELISA. I polinucleotidi sintetici che secernono livelli più elevati di proteine nel mezzo corrisponderebbero a un polinucleotide sintetico con una struttura Cap con maggiore competenza di traduzione.

B. Sintesi dell'analisi della purezza

I polinucleotidi che codificano per un polipeptide, contenenti uno qualsiasi dei cap qui illustrati possono essere confrontati per la purezza usando l'elettroforesi su gel di agarosio-urea denaturante o l'analisi HPLC. I polinucleotidi con una singola banda consolidata mediante elettroforesi corrispondono al prodotto di purezza superiore rispetto ai polinucleotidi con più bande o bande striate. I polinucleotidi sintetici con un singolo picco HPLC corrisponderebbero anche a un prodotto di purezza superiore. La reazione di capping con una maggiore efficienza fornirebbe una popolazione di polinucleotidi più pura.

C. Analisi delle citochine

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I polinucleotidi codificanti per un polipeptide, contenente uno qualsiasi dei cap qui illustrati possono essere trasfettati in cellule a concentrazioni multiple. A 6, 12, 24 e 36 ore dopo la trasfezione, la quantità di citochine proinfiammatorie come TNF-alfa e IFN-beta secrete nel terreno di coltura può essere saggiata mediante ELISA. I polinucleotidi che determinano la secrezione di livelli più elevati di citochine pro-infiammatorie nel mezzo corrisponderebbero a polinucleotidi contenenti una struttura capimmunoattivante.

D. Efficienza della reazione di capping

I polinucleotidi codificanti per un polipeptide, contenente uno qualsiasi dei cap qui illustrati possono essere analizzati per l'efficienza della reazione di capping mediante LC-MS dopo il trattamento con nucleasi. Il trattamento con nucleasi dei polinucleotidi con cap produrrebbe una miscela di nucleotidi liberi e la struttura cap 5'-5-trifosfato con cap rilevabile mediante LC-MS. La quantità di prodotto con cap sugli spettri LC-MS può essere espressa come percentuale di polinucleotide totale dalla reazione e corrisponderebbe all'efficienza della reazione di capping. La struttura di cap con una maggiore efficienza della reazione di capping avrebbe una maggiore quantità di prodotto di cap mediante LC-MS.

Esempio 9. Elettroforesi su gel di agarosio di RNA modificato o prodotti di PCR RT

Singoli polinucleotidi (200-400 ng in un volume di 20 µL) o prodotti della PCR retrotrascritti (200-400 ng) vengono caricati in un pozzetto su un E-Gel di agarosio non denaturante all'1,2% (Invitrogen, Carlsbad, CA) e ciclati per 12-15 minuti secondo il protocollo del produttore.

Esempio 10. Quantificazione dell'RNA modificato Nanodrop e dati spettrali UV

I polinucleotidi modificati in tampone TE (1 pl) vengono utilizzati per le letture dell'assorbanza UV Nanodrop per quantificare la resa di ciascun polinucleotide da una reazione di sintesi chimica o trascrizione *in vitro*.

Esempio 11. Formulazione di mRNA modificato utilizzando lipidoidi

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I polinucleotidi sono formulati per esperimenti *in vitro* mescolando i polinucleotidi con il lipidoide in un rapporto prestabilito prima dell'aggiunta alle cellule. La formulazione *in vivo* può richiedere l'aggiunta di ingredienti extra per facilitare la circolazione in tutto il corpo. Per testare la capacità di questi lipidoidi di formare particelle adatte a lavoro *in vivo*, un processo di formulazione standard utilizzato per le formulazioni siRNA-lipidoidi può essere utilizzato come punto di partenza. Dopo la formazione della particella, il polinucleotide viene aggiunto e lasciato integrarsi con il complesso. L'efficienza di incapsulamento è determinata utilizzando un saggio di esclusione del colorante standard.

Esempio 12. Metodo di screening per l'espressione proteica

A. Ionizzazione elettrospray

Un campione biologico che può contenere proteine codificate da un polinucleotide somministrato al soggetto viene preparato e analizzato secondo il protocollo del produttore per la ionizzazione elettrospray (ESI) utilizzando 1, 2, 3 o 4 analizzatori di massa. Un campione biologico può anche essere analizzato utilizzando un sistema di spettrometria di massa ESI tandem.

I modelli di frammenti proteici, o proteine intere, vengono confrontati con controlli noti per una data proteina e l'identità viene determinata per confronto.

B. Desorbimento/ionizzazione laser assistito da matrice

Un campione biologico che può contenere proteine codificate da uno o più polinucleotidi somministrati al soggetto viene preparato e analizzato secondo il protocollo del produttore per il desorbimento/ionizzazione laser assistita da matrice (MALDI).

I modelli di frammenti proteici, o proteine intere, vengono confrontati con controlli noti per una data proteina e l'identità viene determinata per confronto.

C. Cromatografia liquida-Spettrometria di massa-Spettrometria di massa

Un campione biologico, che può contenere proteine codificate da uno o più

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polinucleotidi, può essere trattato con un enzima tripsina per digerire le proteine contenute all'interno. I peptidi risultanti vengono analizzati mediante cromatografia liquida-spettrometria di massa-spettrometria di massa (LC/MS/MS). I peptidi sono frammentati nello spettrometro di massa per produrre modelli diagnostici che possono essere abbinati a database di sequenze proteiche tramite algoritmi informatici. Il campione digerito può essere diluito per ottenere 1 ng o meno di materiale di partenza per una data proteina. I campioni biologici contenenti un semplice tampone di fondo (es. acqua o sali volatili) possono essere digeriti direttamente in soluzione; sfondi più complessi (ad es. detergente, sali non volatili, glicerolo) richiedono un'ulteriore fase di pulizia per facilitare l'analisi del campione.

I modelli di frammenti proteici, o proteine intere, vengono confrontati con controlli noti per una data proteina e l'identità viene determinata per confronto.

Esempio 13. Ciclizzazione e/o concatemerizzazione

Secondo la presente invenzione, un polinucleotide può essere ciclizzato, o concatemerizzato, per generare una molecola competente per la traduzione per assistere le interazioni tra le proteine leganti poli-A e le proteine leganti l'estremità 5'. Il meccanismo di ciclizzazione o concatemerizzazione può avvenire attraverso almeno 3 differenti vie: 1) chimico, 2) enzimatico e 3) ribozima catalizzato. Il legame 5'-/3' appena formato può essere intramolecolare o intermolecolare.

Nella prima via, l'estremità 5' e l'estremità 3' dell'acido nucleico contengono gruppi chimicamente reattivi che, quando vicini, formano un nuovo legame covalente tra l'estremità 5' e l'estremità 3' della molecola. L'estremità 5' può contenere un gruppo reattivo NHS-estere e l'estremità 3' può contenere un nucleotide 3'-ammino-terminato in modo tale che in un solvente organico il nucleotide 3'-ammino-terminato sull'estremità 3' di una molecola di mRNA sintetico subirà un attacco nucleofilo sulla porzione 5'-NHS-estere formando un nuovo legame 5'-/3'-ammidico.

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Nella seconda via, l'RNA ligasi T4 può essere utilizzata per collegare enzimaticamente una molecola di acido nucleico 5'-fosforilato al gruppo 3'-idrossile di un acido nucleico formando un nuovo legame fosforodiestere. In una reazione di esempio, 1 µg di una molecola di acido nucleico viene incubato a 37 °C per 1 ora con 1-10 unità di T4 RNA ligasi (New EnglandBiolabs, Ipswich, MA) secondo il protocollo del produttore. La reazione di ligazione può avvenire in presenza di un polinucleotide diviso con capacità di appaiamento delle basi con entrambe le regioni 5' e 3' in giustapposizione per assistere la reazione di ligazione enzimatica.

Nella terza via, l'estremità 5' o 3' dello stampo di cDNA codifica per una sequenza ribozima ligasi tale che durante la *trascrizione in vitro*, la molecola di acido nucleico risultante può contenere una sequenza ribozima attiva in grado di legare il 5'-estremità di una molecola di acido nucleico all'estremità 3' di una molecola di acido nucleico. Il ribozima ligasi può essere derivato dal Gruppo I Introne, Gruppo I Introne, Delta Virus dell'epatite, ribozima a forcina o può essere selezionato da SELEX (evoluzione sistematica di ligandi per arricchimento esponenziale). La reazione della ribozima ligasi può richiedere da 1 a 24 ore a temperature comprese tra 0 e 37 °C.

Esempio 14. Polinucleotidi antigenici

I polinucleotidi utilizzati negli studi qui di seguito che codificano per alcuni antigeni di agenti infettivi o loro varianti sono mostrati nella Tabella 28.

Tabella 28. Polinucleotidi antigenici (vaccino a RNA)

Numero di costrutto	ID gene	Descrizione	ORF SEQ ID NO	mRNA SEQ ID NO	Proteina SEQ ID NO	Costrutto
1	120552	Ferritina HA PR8 influenza	2042	2115	2188	HAPR8_Ferritin_Hs3
2	120553	Ferritina HA 1999NC influenza	2043	2116	2189	HA1999NC_Ferritin_Hs3

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Numero di costrutto	ID gene	Descrizione	ORF SEQ ID NO	mRNA SEQ ID NO	Proteina SEQ ID NO	Costrutto
3	125387	Antigene HA H5N1	2044	2117	2190	H5N1_HA_NIBRG-14
4	125388	Antigene HA PR8 H1N1 con MT 5U/3U	2045	2118	2191	CurevacPR8HA_MT5U_Hs3U
5	135929	Antigeni HA dell'influenza	2046	2119	2192	HA_A/Mallard/Netherlands/12/2000_H7 N3_Hs3U
6	135930	Antigeni HA dell'influenza	2047	2120	2193	HA_A/Puerto Rico/8/1934_H1N1_ Hs3U
7	135931	Antigeni HA dell'influenza	2048	2121	2194	HA_A/VietNam/850/2009_H1N1_Hs3U
8	135932	Antigeni HA dell'influenza	2049	2122	2195	HA_ A/New Calcedonia/20/99_H1N1_Hs3U
9	135933	Antigeni HA dell'influenza	2050	2123	2196	HA_A/Vietnam/1203/2004_H5N1_Hs3U
10	135934	Antigeni HA dell'influenza	2051	2124	2197	HA_A/Hong Kong/1073/99_H9N 2_Hs3U
11	135935	Antigeni HA dell'influenza	2052	2125	2198	HA_A/Wisconsin/67/2005_H3N2_Hs3U
12	135936	Antigeni HA dell'influenza	2053	2126	2199	HA_A/Hong Kong/1/1968_H3N2 _Hs3U
13	136473	antigene HA dell'influenza	2054	2127	2200	A/duck/ Anhui/SC702/2013(H7N9)_Hs3U
14	136754	Antigene C diff	2055	2128		Cdiff_toxinA.truc_n Myc.cFLAG_Hs3U
15	136755	Antigene C diff	2056	2129		Cdiff_toxinB.truc_n Myc.cFLAG_Hs3U
16	136756	Antigene C diff	2057	2130		Cdiff_cdtA.truc_nMyc.cFLAG_Hs3U
17	136757	Antigene C diff	2058	2131		Cdiff_cdtB,truc_nMyc.cFLAG_Hs3U
18	120554	Dengue ceppo 2 dominio 3 ferritina	2059	2132		DEN2_DIII_Ferritin_Hs3

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Numero di costrutto	ID gene	Descrizione	ORF SEQ ID NO	mRNA SEQ ID NO	Proteina SEQ ID NO	Costrutto
19	120555	Dengue ceppo 3 dominio 3 ferritina	2060	2133		DEN3_DIII_Ferritin_Hs3
20	120556	Dengue ceppo 4 dominio 3 ferritina	2061	2134		DEN4_DIII_Ferritin_Hs3
21	120557	dengue ceppo 1-4 Dominio 3	2062	2135		Dengue_TDIII_Hs3
22	121542	Dengue ceppo 1 dominio 3 ferritina	2063	2136		DEN1_DIII_Ferritina_Corr_Hs3
23	131502	Dengue 2, ceppo D2Y98P, antigene transmembrana PrME	2064	2137	2201	DEN2_D2Y98P_Pr ME_Hs3
24	131503	Dengue 2, ceppo D2Y98P, antigenePrME secreto	2065	2138	2202	DEN2_D2Y98P_Pr ME80_Hs3
25	131507	Dengue 2, ceppo D2Y98P, antigene secreto da PrME con ScFv di bersagliamento dendritico contro DEC205 topo	2066	2139	2203	DEN2_D2Y98P_Pr ME80_ScFv.aDEC205.FLAG_Hs3
26	136358	Antigene dello stafilococco aureo	2067	2140	2204	SpA_sec.D.wt.nXpress.cHA_VKsp_Hs3 U
27	136359	Antigene dello stafilococco aureo	2068	2141	2205	SpA_infra.D.kkaa.nFLAG.cMyc_Hs3U
28	136360	Antigene dello stafilococco aureo	2069	2142	2206	SpA_mem.D.kkaa.nFLAG.cMyc _CD28mem_Hs3U
29	136361	Antigene dello stafilococco aureo	2070	2143	2207	SpA_sec.D.kkaa.nFLAG.cMyc_VKsp_Hs3U
30	136362	Antigene dello stafilococco aureo	2071	2144	2208	SpA_infra.D.wt.nXpress.cHA_Hs3U
31	136363	Antigene dello stafilococco aureo	2072	2145	2209	SpA_mem.D.wf.nXpress.cHA_CD28me m_Hs3U
32	136364	Antigene dello stafilococco aureo	2073	2146	2210	SpA_sec.D.wt_VKsp
33	136758	Antigene MRSAIsdA	2074	2147	2211	MRSA_IsdA.truc_nMyc.cFLAG_Hs3U

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Numero di costrutto	ID gene	Descrizione	ORF SEQ ID NO	mRNA SEQ ID NO	Proteina SEQ ID NO	Costrutto
34	136759	Antigene MRSAIsdB	2075	2148	2212	MRSA_IsdB.truc_nMyc.cFLAG_Hs3U
35	136763	Antigene MRSA SDRD	2076	2149	2213	MRSA_sdrd.truc_nMyc.cFLAG_Hs3U
36	136764	Antigene MRSA SDRE	2077	2150	2214	MRSA_sdre.truc_nMyc.cFLAG_Hs3U
37	136765	Antigene MRSA MECA	2078	2151	2215	MRSA_mecA.truc_nMyc.cFLAG_Hs3U
38	139325	Antigene MRSA SDRD	2079	2152	2216	MRSA_sdrd.contigl._FLAG_Hs3U
39	139326	Antigene MRSA SDRD	2080	2153	2217	MRSA_sdrd.Config2._FLAG_Hs3U
40	139327	Antigene MRSA SDRE	2081	2154	2218	MRSA_sdre.Config1._FLAG_Hs3U
41	139328	Antigene MRSA SDRE	2082	2155	2219	MRSA_sdre.Config2._FLAG_Hs3U
42	140470	Antigene MRSA ISDA	2083	2156	2220	MRSA_IsdA.fl_ FLAG_Hs3U
43	139277	Antigene MRSA MECA	2084	2157	2221	MRSA_mecA.fl._FLAG_Hs3U
44	136747	Antigene ETEC	2085	2158		ETEC.eltA(S63K/R192G/L211A)_nMyc.cFLAG_Hs3U
45	136748	Antigene ETEC	2086	2159		ETEC.eltB_nMyc.cFLAG_Hs3U
46	136749	Antigene ETEC	2087	2160		ETEC.Sta3(A14Q)_nMyc.cFLAG_Hs3U
47	136750	Antigene ETEC	2088	2161		ETEC.efpA._nMyc.cFLAG_Hs3U
48	136751	Antigene ETEC	2089	2162		ETEC.etpB._nMyc.cFLAG_Hs3U
49	136752	Antigene ETEC	2090	2163		ETEC.EafA_nMyc.cFLAG_Hs3U

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Numero di costrutto	ID gene	Descrizione	ORF SEQ ID NO	mRNA SEQ ID NO	Proteina SEQ ID NO	Costrutto
50	136753	Antigene ETEC	2091	2164		ETEC_cssA_nMyc.cFLAG_Hs3U
51	136747	Antigene ETEC	2092	2165		ETEC.eltA(S63K/R192G/L211A)_nMyc.cFLAG_Hs3U
52	142544	Antigene ETEC	2093	2166		ETEC.etpB.fl_FLAG_Hs3U
53	136749	Antigene ETEC	2094	2167		ETEC.Sfa3(A14Q)_nMyc.cFLAG_Hs3U
54	136753	Antigene ETEC CSSA	2095	2168		ETEC_cssA_nMyc.cFLAG_Hs3U
55	139323	Antigene ETEC EATA	2096	2169		ETEC_EatA.contig1._FLAG_Hs3U
56	139324	Antigene ETEC EATA	2097	2170		ETEC_EatA.contig2._FLAG_Hs3U
57	139321	Antigene ETEC EPTA	2098	2171		ETEC_eptA.contig1._FLAG_Hs3U
58	139322	Antigene ETEC ETPA	2099	2172		ETEC_etpA.contig2._FLAG_Hs3U
59	136760	Antigene della tubercolosi	2100	2173	2222	TB_Ag85A_nMyc.cFLAG_Hs3U
60	136761	Antigene della tubercolosi	2101	2174	2223	TB_Ag85B_nMyc.cFLAG_Hs3U
61	136762	Antigene della tubercolosi	2102	2175	2224	TB_TB10.4_nMyc.cFLAG_Hs3U
62	136335	Tossina del colera B	2103	2176		CholeraToxB.H78A.FLAG_VKsp_Hs3U
63	144097	vaccino antigene HA Influenza (nanoscaffold)	2104	2177	2225	PR8HA.Stalk.pscaff old_Hs3U
64	144094	vaccino antigene HA Influenza (splitcore)	2105	2178	2226	PR8HA.stalk.HbCore.monoRNA_Hs3U
65	144095	vaccino antigene HA Influenza (splitcore)	2106	2179	2227	PR8HA.stalk.HbCoreC.RKR_Hs3U

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Numero di costrutto	ID gene	Descrizione	ORF SEQ ID NO	mRNA SEQ ID NO	Proteina SEQ ID NO	Costrutto
66	144096	vaccino antigene HA Influenza (splitcore)	2107	2180	2228	PR8HA.stalk.HbCoreN.RKR_Hs3U
67	144098	vaccino antigene HA Influenza; aglicosilato	2108	2181	2229	PR8HA.headless.Stalk.ugly(N76D/N270 D)_Hs3U
68	144099	vaccino antigene HA Influenza; aglicosilato	2109	2182	2230	PR8HA.headless.Stalk.ugly(N27D/N28D /N40D/N76D/N270D)_Hs3U
69	150088	Vaccino MERS CoV proteina spike (epitopo V5 con tag)	2110	2183	2231	MERS-CoV_ProteinS/EMC/2012.V5_Hs3U
70	139276	Antigene IsdB MRSA vaccino	2111	2184	2232	MRSA_IsdB.fl._FL AG_Hs3U
71	149385	Immunità passiva MERS-Co V	2112	2185		DPPIV.Fc_HS3U
72	150092	Vaccino HEV71 (antigene policistronico contenente VP1 VP2 e VP3) ciascuno separato da un sito di scissione della furina RKR	2113	2186	2233	HEV71.VP1.2.3.VP 5_HS3U
73	144093	vaccino antigene HA Influenza	2114	2187	2234	PR8HA.Stalk_Hs3U
74		Vaccino Klebsiella pneumoniae: cefotaxime, ceftazidima e altre cefalosporine ad ampio spettro.			2235	Beta-lattamasi SHV-2
75		Vaccino PsaA SP Streptococcuspneumoniae adesina superficiale Frammento A (22-309)			2236	Adesina superficiale pneumococcica A
76		Vaccino Pseudomonas aeruginosa ampC beta-lattamasi			2237	Pseudomonas tipo 2 Cefalosporinasi
77		Vaccino Pseudomonas aeruginosa VIM-2, una metallo-beta-lattamasi che			2238	Beta-lattamasi classe B VIM-2

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Numero di costrutto	ID gene	Descrizione	ORF SEQ ID NO	mRNA SEQ ID NO	Proteina SEQ ID NO	Costrutto
		idrolizza i carbapenemi				
78		Vaccino Pseudomonas aeruginosa, LCR-1 idrolizza la meticillina.			2239	Beta-lattamasi LCR-1
79		Vaccino Staphaureus tossina-1 Sindrome da shock tossico			2240	Staphaureus TSST1
80		Vaccino Staphaureus tossina PVL			2241	Staphaureus tossina PVL
81		vaccino Streptococcuspneumoniae Tossoide della pneumolisina			2242	Tossoide della pneumolisina
82		Lunghezza intera con mutazioni di W433F, D385N e C428G			2243	StreptococcuspneumoniaeppaC

Gli antigeni aggiuntivi, inclusi gli antigeni di tipo selvatico e ingegnerizzati, sono illustrati nelle Tabelle 29 e 30.

NAV pan-influenzali

In una forma di realizzazione, la regione "testa HA" di uno o più ceppi di virus dell'influenza viene rimossa lasciando solo lo stelo o la regione transmembrana. Questa regione o più regioni, se selezionate, vengono quindi utilizzate come immunogeno per lo screening della risposta ottimale a una provocazione virale. Pertanto, un'ampia neutralizzazione potrebbe essere ottenuta contro più ceppi o una risposta multipla a un ceppo. Il vaccino risultante rappresenterebbe un vaccino pan-influenzale.

Inoltre, un vaccino pan-influenzale potrebbe anche essere combinato con qualsiasi potenziatore immunitario qui descritto.

I polinucleotidi utilizzati negli studi nel presente contesto che codificano per determinati

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

antigeni di agenti infettivi o loro varianti possono essere formulati in una qualsiasi delle formulazioni qui descritte inclusi gli LNP e possono essere somministrati per via intradermica (ID) o intramuscolare (IM) o per qualsiasi via adatta.

Nella Tabella 29 sono descritte le regioni HA, le regioni transmembrana e citoplasmatiche di diversi ceppi influenzali da utilizzare nel protocollo di generazione della vaccinazione dello stelo appena descritto.

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Tabella 29. Antigeni di tipo selvatico codificati dai polinucleotidi di NAV

Virus	Ceppo	Sequenza AA diHA a lunghezza intera	HA1	HA2	TM	CY
H1N1	A/PR8/34	(SEQ IE NO: 2244) MKANL.VLLCALAAADADTICIGY HANNSTDTVDTVLEKNVTVTHSV NLLEDSHNGKLCRLKGIAPLQLG KCNIAGWLLGNPECDPLLPVRS WSYIVETPNSENGICYPGDFIDY EELREQLSSVSSFERFEIFPKES SWPNHNTNGVTAACSHEGKSSF YRNLLWLTEKEGSYPKLKNSYV NKKGKEVLVLWGIHHPPNSKEQ QNLYQNENAYVSVVTSNYNRRF TPEIAERPKVRDQAGRMNYYWT LLKPGDTIIFEANGNLIAPMYAFA LSRGFGSGIITSNASMHECNTKC QTPLGAINSSLPYQNIHPVTIGEC PKYVRSAKLRMVTGLRNNPSIQS RGLFGAIAGFIEGGWTGMIDGW YGYHHQNEQGSGYAADQKSTQ NAINGITNKVNTVIEKMNIQFTAV GKEFNKLEKRMENLNKKVDDGF LDIWTYNAELLVLLENERTLDFH DSNVKNLYEKVKSQLKNNAKEIG NGCFEFYHKCDNECMESVRNGT YDYPKYSEESKLNREKVDGVKL ESMGVYQILAIYSTVASSLVLLVSL GAISFWMCSNGSLQCRICI	(SEQ ID NO: 2245) MKANLLVLLCALAA ADADTICIGYHANNS TDTVDTVLEKNVTV THSVNLLEDSHNGK LCRLKGIAPLQLGK CNIAGWLLGNPECD PLLPVRSWSYIVET PNSENGICYPGDFI DYEELREQLSSVSS FERFEIFPKESSWP NHNTNGVTAACSH EGKSSFYRNLLWLT EKEGSYPKLKNSYV NKKGKEVLVLWGIH HPPNSKEQQNLYQ NENAYVSVVTSNYN RRFTFEIAERPKVR DQAGRMNYYWTLL KPGDTIIFEANGNLI APMYAFALSRGFGS GIITSNASMHECNTK CQTPLGAINSSLPY QNIHPVTIGECPKYV RSAKLRMVTGLRNN PSIQSR	(SEQ ID NO: 2246) GLFGAIAGFIEG GWTGMIDGWYG YHHQNEQGSGY AADQKSTQNAIN GITNKVNTVIEKM NIQFTAVGKEFN KLEKRMENLNKK VDDGFLDIWTYN AELLVLLENERTL DFHDSNVKNLYE KVKSQLKNNAKE IGNGCFEFYHKC DNECMESVRNG TYDYPKYSEESK LNREKVDGVKLE SMGIYQ	(SEQ ID NO: 2247) ILAIYS TVASS LVLLV SLGAI	(SEQ ID NO: 2248) SFWMC SNGS.Q CRICI

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H1N1	A/New Caledonia/20/ 1999	(SEQ ID NO: 2249) MKAKLVLLCTFTATYADTICIGY HANNSTDTVDTVLEKNVTVTHSV NLLEDSHNGKLCLLKGIAPLQLG NCSVAGWILGNPECELLISKESW SYIVETPNPENGTCYPGYFADYE ELREQLSSVSSFERFEIFPKESS WPNHTVTGVSASCSHNGKSSFY RNLLWLTGKNGLYPNLSKSYVN NKEKEVLVLWGVHHPPNIGNQR ALYHTENAYVSVVSSHYSRRFTP EIAKRPKVRDQEGRINYYWTLLE PGDTIIFEANGNLIAPWYAFALSR GFGSGIITSNAPMDECDAKCQTP QGAINSSLPFQNVHPVTIGECPK YVRSAKLRMVTGLRNIPSIQSRG LFGAIAGFIEGGWTGMVDGWYG YHHQNEQGSGYAADQKSTQNAI NGITNKVNSVIEKMNTQFTAVGK EFNKLERRMENLNKKVDDGFLDI WTYNAELLVLLENERTLDFHDSN VKNLYEKVKSQLKNNAKEIGNGC FEFYHKCNNECMESVKNGTYDY PKYSEESKLNREKIDGVKLESMG VYQILAIYSTVASSLVLLVSLGAIS FWMCSNGSLQCRICI	(SEQ ID NO: 2250) MKAKLLVLLCTFTAT YADT CIGYHANNST DTVDTVLEKNVTVT HSVNLLEDSHNGKL CLLKGIAPLQLGNC SVAGWILGNPECEL LISKESWSYIVETPN PENGTCYPGYFADY EELREQLSSVSSFE RFEIFPKESSWPNH TVTGVSASCSHNGK SSFYRNLLWLTGKN GLYPNLSKSYVNNK EKEV_VLWGVHHPP NIGNQRALYHTENA YVSVVSSHYSRRFT PEIAKRPKVRDQEG RINYYWTLLEPGDTI IFEANGNLIAPWYAF ALSRGFGSGIITSNA PMDECDAKCQTPQ GAINSSLPFQNVHP VTIGECPKYVRSAK LRMVTGLRNIPSIQS R	(SEQ ID NO: 2251) GLFGAIAGFIEG GWTGMVDGWY GYHHQNEQGSG YAADQKSTQNAI NGITNKVNSVIEK MNTQFTAVGKE FNKLERRMENLN KKVDDGFLDIWT YNAELLVLLENE RTLDFHDSNVKN LYEKVKSQLKNN AKEIGNGCFEFY HKCNNECMESV KNGTYDYPKYSE ESKLNREKIDGV KLESMGVYQ	(SEQ ID NO: 2252) ILAIYS TVASS LVLLV SLGAI	(SEQ ID NO: 2253) SFWMC SNGS.Q CRICI

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H10N8	A/JX346/201 3	(SEQ ID NO: 2254) MYKIVVIIALLGAVKGLDKICLGHH AVANGTVKTLTNEQEEVTNATE TVESTGINRLCMKGRKHKDLGN CHPIGMLIGTPACDLHLTGMWDT LIERENAIAYCYPGATVNVEALR QKIMESGGINKISTGFTYGSSINS AGTTRACMRNGGNSFYAELKWL VSKSKGQNFPQTTNTYRNTDTA EHLIMWGIHHPSSTQEKNDLYGT QSLSISVGSSTYRNNFVPVVGAR PQVNGQSGRIDFHWTLVQPGDN ITFSHNGGLIAPSRVSKLIGRGLG IQSDAPIDNNCESKCFWRGGSIN TRLPFQNLSPRTVGQCPKYVNR RSLMLATGMRNVPELIQGRGLF GAIAGFLENGWEGMVDGWYGF RHQNAQGTGQAADYKSTQAAID QITGKLNRLVEKTNTEFESIESEF SEIEHQIGNVINWTKDSITDIWTY QAELLVAMENQHTIDMADSEML NLYERVRKQLRQNAEEDGKGCF EIYHACDDSCMESIRNNTYDHSQ YREEALLNRLNINPVTLSSGYKDI ILWFSFGASCFVLLAVVMGLFFF CLKNGNMRCTICI	(SEQ ID NO: 2255) MYKIVVIIALLGAVK GLDKICLGHHAVAN GTIVKTLTNEQEEVT NATETVESTGINRL CMKGRKHKDLGNC HPIGMLGTPACDLH LTGMWDTLIERENAI AYCYPGATVNVEAL RQKIMESGGINKIST GFTYGSSINSAGTT RACMRNGGNSFYA ELKWLVSKSKGQNF PQTTNTYRNTDTAE HLIMWGIHHPSSTQ EKNDLYGTQSLSIS VGSSTYRNNFVPVV GARPQVNGQSGRI DFHWTLVQPGDNIT FSHNGGLIAPSRVS KLIGRGLGIQSDAPI DNNCESKCFWRGG SINTRLPFQNLSPRT VGQCPKYVNRRSL MLATGMRNVPELIQ G	(SEQ ID NO: 2256) RGLFGAIAGFLE NGWEGMVDGW YGFRHQNAQGT GQAADYKSTQA AIDQITGKLNRLV EKTNTEFESIESE FSEIEHQIGNVIN WTKDSITDIWTY QAELLVAMENQ HTIDMADSEMLN LYERVRKQLRQ NAEEDGKGCFEI YHACDDSCMESI RNNTYDHSQYR EEALLNRLNINPV TLSSGYKDIIL	(SEQ ID NO: 2257) WFSFG ASCFV LLAVV MGLFF F	(SEQ ID NO 2258) CLKNGN MRCTICI

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H7N9	A/Anhui/1/20 13	(SEQ ID NO: 2259) MNTQILVFALIAIIPTNADKICLGH HAVSNGTKVNTLTERGVEVVNA TETVERTNIPRICSKGKKTVDLG QCGLLGTITGPPQCDQFLEFSAD LIIERREGSDVCYPGKFVNEEAL RQILRESGGIDKEAMGFTYSGIR TNGATSACRRSGSSFYAEMKWL LSNTDNAAFPQMTKSYKNTRKS PALIVWGIHHSVSTAEQTKLYGS GNKLVTVGSSNYQQSFVPSPGA RPQVNGQSGRIDFHWLMLNPND TVTFSFNGAFIAPDRASFLRGKS KQRSLLLATGMKNVPEIPKGRGL FGAIAGFIENGWEGLIDGWYGFR HQNAQGEGTAADYKSTQSAIDQI TGKLNRLIEKTNQQFELIDNEFNE VEKQIGNVINWTRDSITEVWSYN AELLVAMENQHTIDLADSEMDKL YERVKRQLRENAEEDGTGCFEIF HKCDDDCMASIRNNTYDHSKYR EEAMQNRIQIDPVKLSSGYKDVIL WFSFGASCFILAIVMGLVFICVK NGNMRCTICI	(SEQ ID NO: 2260) MNTQILVFALIAIIPT NADKICLGHHAVSN GTKVNTLTERGVEV VNATETVERTNIPRI CSKGKKTVDLGQC GLLGTITGPPQCDQ FLEFSADLIIERREG SDVCYPGKFVNEEA LRQILRESGGIDKEA MGFTYSGIRTNGAT SACRRSGSSFYAE MKWLLSNTDNAAFP QMTKSYKNTRKSPA LIVWGIHHSVSTAE QTKLYGSGNKLVTV GSSNYQQSFVPSP GARFQVNGQSGRI DFHWLMLNPNDTV TFSFNGAFIAPDRA SFLRGKSMGIQSGV QVDANCEGDCYHS GGTIISNLPFQNIDS RAVGKCPRYVKQR SLLLATGMKNVPEIP KG	(SEQ ID NO: 2261) RGLFGAIAGFIEN GWEGLIDGWYG FRHQNAQGEGT AADYKSTQSAID QITGKLNRLIEKT NQQFELIDNEFN EVEKQIGNVINW TRDSITEVWSYN AELLVAMENQHT IDLADSEMDKLY ERVKRQLRENA EEDGTGCFEIFH KCDDDCMASIRN NTYDHSKYREEA MQNRIQIDPVKL SSGYKDVIL	(SEQ ID NO: 2262) WFSFG ASCFIL LAIVM GLVFI	(SEQ ID NO: 2263) CVKNGN MRCTICI

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H7N9	. A/Jiangsu/2/ 2013(H242)	(SEQ ID NO: 2264) MNTQILVFALIAIIPTNADKICLGH HAVSNGTKVNTLTERGVEVVNA TETVERTNIPRICSKGKMTVDLG QCGLLGTITGPPQCDQFLEFSAD LIERREGSDVCYPGKFVNEEAL RQILRESGGIDKEAMGFTYSGIR TNGATSACRRSGSSFYAEMKWL LSNTDNAAFPQMTKSYKNTRKS PALIVWGIHHSVSTAEQTKLYGS GNKLVTVGSSNYQQSFVPSPGA RPQVNGLSGRIDFHWLMLNPND TVTFSFNGAFIAPDRASFLRGKS MGIQSGVQVDANCEGDCYHSG GTIISNLPFQNIDSRAVGKCPRYV KQRSLLLATGMKNVPEIPKGRGL FGAIAGFIENGWEGLIDGWYGFR HQNAQGEGTAADYKSTQSAIDQI TGKLNRLIEKTNQQFELIDNEFNE VEKQIGNVINWTRDSITEVWSYN AELLVAMENQHTIDLADSEMDKL YERVKRQLRENAEEDGTGCFEIF HKCDDDCMASIRNNTYDHSKYR eEAMQNRIQIDPVKLSSGYKDVIL WFSFGASCFILLAIVMGLVFICVK NGNMRCTICI	(SEQ ID NO: 2265) MNTQILVFALIAIIPT NADKICLGHHAVSN GTKVNTLTERGVEV VNATETVERTNIPRI CSKGKMTVDLGQC GLLGTITGPPQCDQ FLEFSADLIIERREG SDVCYPGKFVNEEA LRQILRESGGIDKEA MGFTYSGIRTNGAT SACRRSGSSFYAE MKWLLSNTDNAAFP QMTKSYKNTRKSPA LIVWGIHHSVSTAE QTKLYGSGNKLVTV GSSNYQQSFVPSP GARFQVNGLSGRID FHWLMLNPNDTVTF SFNGAFIAPDRASFL RGKSMGIQSGVQV DANCEGDCYHSGG TIISNLPFQNIDSRAV GKCPRYVKQRSLLL ATGMKNVPEIPKG	(SEQ ID NO: 2266) RGLFGAIAGFIEN GWEGLIDGWYG FRHQNAQGEGT AADYKSTQSAID QITGKLNRLIEKT NQQFELIDNEFN EVEKQIGNVINW TRDSITEVWSYN AELLVAMENQHT IDLADSEMDKLY ERVKRQLRENA EEDGTGCFEIFH KCDDDCMASIRN NTYDHSKYRELA MQNRIQIDPVKL SSGYKDVIL	(SEQ ID NO: 2267) WFSFG ASCFIL LAIVM GLVFI	(SEQ ID NO: 2268) CVKNGM MRCTICI

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Nella tabella, TM sta per transmembrana e CY sta per citoplasmatico.

Seguendo la strategia di generazione del vaccino di cui sopra, gli antigeni ingegnerizzati possono anche essere utilizzati per sviluppare vaccini pan-influenzali. Tali costrutti sono mostrati nella Tabella 30.

Ing. Ines Sangiacomo
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Tabella 30. Antigeni ingegnerizzati codificati dai polinucleotidi di NAV

Virus	Ceppo	Configurazione	Ingegnerizzazione proteica	Sequenza a lunghezza intera	SEQ ID NO.
H1N1	PR8/34	HA (PR8)-Ferritina	proteina di fusione dell'antigene HA con ferritina (H pylori) per formare nanoscaffold, secreta	MKANLLVLLCALAAADADTICIGYHANNSTDTVDTV LEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLGK CNIAGWLLGNPECDPLLPVRSWSYIVETPNSENGI CYPGDFIDYEELREQLSSVSSFERFEIFPKESSWP NHNTNGVTAACSHEGKSSFYRNLLWLTEKEGSYP KLKNSYVNKKGKEVLVLWGIHHPPNSKEQQNLYQ NENAYVSVVTSNYNRRFTPEIAERPKVRDQAGRM NYYWTLLKPGDTIIFEANGNLIAPMYAFALSRGFGS GIITSNASMHECNTKCQTPLGAINSSLPYQNIHPVT IGECPKYVRSAKLRMVTGLRNNPSIQSRGLFGAIA GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQK STQNAINGITNKVNTVIEKMNIQFTAVGKEFNKLEK RMENLNKKVDDGFLDIWTYNAELLVLLENERTLDF HDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKC DNECMESVRNGTYDYPKYSEESKLNREKVDSGG DIIKLLNEQVNKEMQSSNLYMSMSSWCYTHSLDG AGLFLFDHAAEEYEHAKKLIIFLNENNVPVQLTSISA PEHKFEGLTQIFQKAYEHEQHISESINNIVDHAIKSK DHA"FNFLQWYVAEQHEEEVLFKDILDKIELIGNEN HGL"LADQYVKGIAKSRKS	2269

Virus	Ceppo	Configurazione	Ingegnerizzazione proteica	Sequenza a lunghezza intera	SEQ ID NO.
H1N1	A/New Caledonia/20/1999 (1999 NC)	HA(NC1999)-Ferritina	proteina di fusione dell'antigene HA con ferritina (H pylori) per formare nanoscaffold, secreta	MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTV LEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLGN CSVAGWILGNPECELLISKESWSYIVETPNPENGT CYPGYFADYEELREQLSSVSSFERFEIFPKESSWP NHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYP NLSKSYVNNKEKEVLVLWGVHHPPNIGNQRALYH TENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRIN YYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS GIITSNAPMDECDAKCQTPQGAINSSLPFQNVHPV TIGECPKYVRSAKLRMVTGLRNIPQIRETRGLFGAI AGFIEGGWTGMVDGWYGYHHQNEQGSGYAADQ KSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKL ERRMENLNKKVDDGFLDIWTYNAELLVLLENERTL DFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYH KCNNECMESVKNGTYDYPKYSEESKLNREKIDSG GDIIKLLNEQVNKEMQSSNLYMSMSSWCYTHSLD GAGLFLFDHAAEEYEHAKKLIIFLNENNVPVQLTSI SAPEHKFEGLTQIFQKAYEHEQHISESINNIVDHAIK SKDHATFNFLQWYVAEQHEEEVLFKDILDKIELIGN ENHGLYLADQYVKGIAKSRKSGS	2270
H1N1	PR8/34	HA1(-) antigene HA solo stelo	Antigene HA senza testa (solo stelo), transmembrana,	MKANLLVLLCALAAADADTICIGYHANNSTDTVDTV LEKNVTVTHSVNLLEDSHNGKLCGGGGCNTKCQT PLGAINSSLPYQNIHPVTIGECPKYVRSAKLRMVT GLRNIPSIQSRGLFGAIAGFIEGGWTGMIDGWYGY HHQNEQGSGYAADQKSTQNAINGITNKVNTVIEK MNIQFTAVGKEFNKLEKRMENLNKKVDDGFLDIW TYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLK NNAKEIGNGCFEFYHKCDNECMESVRNGTYDYPK YSEESKLNREKVDGVKLESMGIYQILAIYSTVASSL VLLVSLGAISFWMCSNGSLQCRICI	2271

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Virus	Ceppo	Configurazione	Ingegnerizzazione proteica	Sequenza a lunghezza intera	SEQ ID NO.
H1N1	PR8/34	Antigene HA Monoglicosilato HA1(-) solo stelo	Antigene HA senza testa (solo stelo), transmembrana, monglicosilato da N76D, N270D	MKANLLVLLCALAAADADTICIGYHANNSTDTVDTV LEKNVTVTHSVNLLEDSHNGKLCGGGGCNTKCQT PLGKIDSSLPYQNIHPVTIGECPKYVRSAKLRMVT GLRNIPSIQSRGLFGAIAGFIEGGWTGMIDGWYGY HHQNEQGSGYAADQKSTQNAINGITNKVNTVIEK MNIQFTAVGKEFNKLEKRMENLNKKVDDGFLDIW TYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLK NNAKEIGNGCFEFYHKCDNECMESVRDGTYDYPK YSEESKLNREKVDGVKLESMGIYQILAIYSTVASSL VLLVSLGAISFWMCSNGSLQCRICI	2272
H1N1	PR8/34	Antigene HA aglicosilato HA1(-) solo stelo	Antigene HA senza testa (solo stelo), transmembrana, aglicosilato da N27D, N28D, N40D, N76D, N279D	MKANLLVLLCALAAADADTICIGYHADDSTDTVDTV LEKDVTVTHSVNLLEDSHNGKLCGGGGCNTKCQT PLGKIDSSLPYQNIHPVTIGECPKYVRSAKLRMVT GLRNIPSIQSRGLFGAIAGFIEGGWTGMIDGWYGY HHQNEQGSGYAADQKSTQNAINGITNKVNTVIEK MNIQFTAVGKEFNKLEKRMENLNKKVDDGFLDIW TYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLK NNAKEIGNGCFEFYHKCDNECMESVRDGTYDYPK YSEESKLNREKVDGVKLESMGIYQILAIYSTVASSL VLLVSLGAISFWMCSNGSLQCRICI	2273

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Virus	Ceppo	Configurazione	Ingegnerizzazione proteica	Sequenza a lunghezza intera	SEQ ID NO.
H1N1	PR8/34	HA1(-) stelo HA - ferritina	Antigene HA senza testa (solo stelo) fuso con nanoscaffold di ferritina, secreto	MKANLLVLLCALAAADADTICIGYHANNSTDTVDTV LEKNVTVTHSVNLLEDSHNGKLCGGGGCNTKCQT PLGAINSSLPYQNIHPVTIGECPKYVRSAKLRMVT GLRNIPSIQSRGLFGAIAGFIEGGWTGMIDGWYGY HHQNEQGSGYAADQKSTQNAINGITNKVNTVIEK MNIQFTAVGKEFNKLEKRMENLNKKVDDGFLDIW TYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLK NNAKEIGNGCFEFYHKCDNECMESVRNGTYDYPK YSEESKLNREKVDSGGDIIKLLNEQVNKEMQSSNL Y MSMSSWCYTHSLDGAGLFLFDHAAEEYEHAKKLII FLNENNVPVQLTSISAPEHKFEGLT QIFQKAYEHEQHISESINNIVDHAIKSKDHATFNFL QWYVAEQHEEEVLFKDILDKIELI GNENHGLYLADQYVKGIAKSRKSGS	2274

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Esempio 15. Studio sull'influenza - Antigene dell'emoagglutinina (HA) H1N1

Il presente studio è stato progettato in due fasi, la prima per testare l'immunogenicità dei vaccini a mRNA codificanti HA dall'Influenza A/PR/8 (H1N1) nei topi e la seconda per testare l'efficacia dei vaccini antinfluenzali candidati nei topi contro una provocazione letale con l'influenza (INFV) A/PR/8/34 (H1N1). Il disegno dello studio è delineato nella Tabella 31. Il polinucleotide di NAV utilizzato nello studio era il costrutto 4 della Tabella 28 (ORF SEQ ID NO: 2045, mRNA SEQ ID NO: 2118).

Nella fase I di questo studio, i topi sono stati vaccinati alla settimana 0 e 3 per via endovenosa (EV), intramuscolare (IM) o intradermica (ID). Un gruppo è rimasto non vaccinato e a uno è stato somministrato l'antigene PR8 inattivato. Il siero è stato raccolto da ciascun topo nelle settimane 1, 3 (pre-dose) e 5. I prelievi individuali sono stati testati per l'attività anti-HA tramite il saggio di neutralizzazione virale e l'inibizione dell'HA (HAI) da tutti e tre i punti temporali e i campioni raggruppati solo dalla settimana 5 sono stati testati mediante Western blot utilizzando A/PR/8/34 (H1N1).

Fase II

Poiché è stata raggiunta la risposta immunitaria desiderata (titolo HAI > 40), è stata eseguita la fase II dello studio. Nella fase II, i topi sono stati sottoposti a provocazione con una dose letale ($10xLD_{90}$; ~100 unità formanti placche; PFU) di A/PR/8/34 (H1N1) tramite instillazione intranasale (IN). I topi sono stati monitorati per peso, salute e sopravvivenza per 14 giorni.

Questo studio ha testato l'immunogenicità dei vaccini mRNA che codificano per HA dall'influenza A/PR/8 (H1N1) nei topi. Lo studio ha utilizzato 12 gruppi di cinque topi femmina BALB/c. I topi sono stati vaccinati alla settimana 0 e 3 per via intranasale (controllo positivo), endovenosa, intramuscolare o intradermica. Un gruppo non è stato vaccinato e uno ha ricevuto somministrazione dell'antigene PR8 inattivato tramite vaccinazione intranasale.

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Questo studio ha testato se i vaccini ad acido ribonucleico candidati e le formulazioni potrebbero proteggere i topi dall'infezione letale da influenza A/PR/8/34 (H1N1). I topi utilizzati erano topi BALB/c femmina di 6-8 settimane in gruppi di 10. I topi sono stati vaccinati nelle settimane 0 e 3 per via IM, ID o EV. Il siero di topo è stato testato per microneutralizzazione e HAI. I topi sono stati quindi sottoposti a provocazione con ~ 1 LD_{90} di influenza A/PR/8/34 (H1N1) alla settimana 7 somministrata per via intranasale (IN). L'endpoint era il giorno 13 dopo l'infezione, la morte o l'eutanasia. Gli animali che mostravano una malattia grave determinata da una perdita di peso superiore al 30%, estrema letargia o paralisi sono stati sottoposti a eutanasia. La temperatura e i pesi sono stati rilevati giornalmente.

La formulazione di LNP consisteva in un lipide cationico, lipide non cationico, lipide PEG e lipide strutturale nei rapporti 50:10:1,5:38,5. Il lipide cationico era DLin-KC2-DMA (50 mol%), il lipide non cationico era DSPC (10 mol%), il lipide PEG era PEG-DOMG (1,5 mol%) e il lipide strutturale era il colesterolo (38,5 mol%).

Il siero è stato raccolto da ciascun topo nelle settimane 1, 3 (pre-dose) e 5. I prelievi individuali sono stati testati per l'attività anti-HA tramite il saggio di neutralizzazione virale e l'inibizione dell'HA (HAI) da tutti e tre i punti temporali (singoli animali) e i campioni raggruppati solo dalla settimana 5 sono stati testati mediante Western blot utilizzando A/PR/8 Influenza inattivato (H1N1).

Protocollo standard per l'infezione intranasale dei topi

Topi BALB/c femmine di 6-8 settimane di età sono stati alloggiati in gruppi di 5 topi. I topi sono stati messi in quarantena nel sito dello studio (Noble Life Sciences, Gaithersburg, MD) per almeno 3 giorni prima dell'inizio dello studio. Cibo e acqua sono stati forniti ad libitum.

I gruppi di topi sottoposti a provocazione con INFV sono stati infettati tramite inoculazione intranasale (IN) con ~ 10xLD90 in 100 pL di INFV in PBS sotto anestesia leggera

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(isoflurano). Dopo l'infezione, i topi sono stati rimessi nelle loro gabbie per l'osservazione e il successivo dosaggio.

Microneutralizzazione

Il protocollo di microneutralizzazione era il protocollo standard per la microneutralizzazione dell'influenza, come pubblicato dall'Organizzazione Mondiale della Sanità, il 6 dicembre 2010 e delineato dal Collaborating Center for Surveillance, Epidemiology and Control of Influenza dell'OMS, Centers for Disease Control and Prevention, Atlanta, Stati Uniti.

Diagnosi sierologica delle infezioni da virus dell'influenza mediante inibizione dell'emoagglutinazione.

Il protocollo standard per l'inibizione dell'emoagglutinazione può essere trovato nella pubblicazione WHO Influenza Manual, WHO/CDS/CSR/NCS/2002.5 Rev. 1, a pagina 37,

In breve, il protocollo è il seguente.

Procedura

I. Trattamento dei sieri

1. Identificazione di isolati dell'Influenza mediante emoagglutinazione.

2. Adsorbire i sieri per rimuovere le agglutinine non specifiche come descritto sopra.

II. Standardizzazione dei globuli rossi

Standardizzare i globuli rossi secondo la procedura nelle procedure riconosciute nel settore.

III. Titolazione HA degli antigeni di controllo

Seguendo la procedura per la titolazione degli antigeni di controllo sopra indicata.

IV. Preparazione di antigeni standardizzati per test HAI e "retrotitolazione"

Ciascun antigene di controllo deve essere standardizzato per contenere 4 unità di HA/25 µl, 8 unità di HA/50 µl.

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Nota: Quattro unità di HA vengono aggiunte al test in 25 µl perché i calcoli dell'unità di HA si basano su un volume di 50 µl.

V. Test di HAI per la diagnosi sierologica

1. Marcare le piastre di microtitolazione appropriate.

2. Aggiungere 25 µl di PBS ai pozzetti da B a H (B1 - H12) di ciascuna colonna numerata.

3. Aggiungere 50 µl di ciascun siero trattato (1:10) nel primo pozzetto appropriato (A1 - A12) della colonna numerata.

4. Preparare diluizioni seriali doppie dei sieri trattati trasferendo 25 µl dal primo pozzetto delle colonne numerate 1-12 ai pozzetti successivi. Scartare gli ultimi 25 µl dopo la riga H.

5. Aggiungere 25 µl di antigene standardizzato a tutti i pozzetti (A1 - H12) in un set di sieri trattati.

6. Aggiungere 25 µl di PBS invece dell'antigene al set di sieri trattati per i controlli di siero (A1 - H12).

7. Mescolare il contenuto delle piastre agitando su un vibratore meccanico per 10 secondi o agitando le piastre manualmente.

8. Coprire le piastre e incubare a temperatura ambiente (da 22 a 25oC) per 30-45 min.

9. Addizionare 50 µl di globuli rossi standardizzati a tutti i pozzetti. Mescolare come prima.

10. Coprire le piastre e lasciare che i globuli rossi si depositino a temperatura ambiente (da 22 a 25 C) per il tempo appropriato in base ai globuli rossi utilizzati.

11. Registrare i titoli HAI.

Gli antigeni di controllo positivi e gli antisieri corrispondenti dovrebbero fornire risultati coerenti rispetto ai test precedenti. Un aumento di quattro volte del titolo tra il siero

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acuto e quello convalescente è considerato diagnosticamente positivo per quel tipo/sottotipo di influenza.

Western Blot

Il siero dai prelievi eseguiti su topi vaccinati alla settimana 5 è stato raggruppato e diluito 1:1000 per l'analisi in Western blot. L'antigene PR8 inattivato è stato separato tramite SDS-PAGE e sondato con i sieri raggruppati. Segnali positivi sono stati osservati nei gruppi 2-7 e 12, con i segnali più alti osservati nei gruppi 4-7 e 12.

500 ng per corsia di antigene PR8 inattivato sono stati separati tramite SDS- su gel bis-tris al 10%. La proteina è stata trasferita su membrane di polivinilidenedifluoruro (PVDF) e le membrane sono state bloccate con latte e sondate con una diluizione 1:1000 di sieri raggruppati da ciascun gruppo dai prelievi della settimana 5.

L'anticorpo è stato rilevato con diluizione 1:3000 di fosfatasi alcalina (AP) anti-topo di capra

Osservazione dei topi

I topi sono stati osservati per 13 giorni dopo l'infezione (14 giorni in totale, 0-13 giorni dopo l'infezione).

I topi sono stati pesati quotidianamente su una scala Ohause e i pesi sono stati registrati.

Tutti gli animali avevano chip impiantati almeno 3 giorni prima della sfida del virus che monitorava la temperatura corporea. Le temperature sono state registrate giornalmente.

La sopravvivenza e lo stato di salute di ciascun topo sono state valutate una volta al giorno.

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Tabella 31. Progetto di studio

Gruppo	Ceppo di topo	Vaccino (n=5 topi/gruppo) rilasciato settimana 0, 3	Dosaggio/Via	Letture
1	**Femmina BALB/c, 6-8 settimane di età**	N/A	N/A	Gli animali che mostrano una malattia grave saranno sottoposti a eutanasia. Campioni di siero raccolti nelle settimane 1, 3 e 5. Siero analizzato tramite Western blot (campioni raggruppati della settimana 5), saggio di neutralizzazione virale (tutti gli individui) e HAI (tutti gli individui).
2		Non modificato	LNP EV, 0,4 mg/kg	
3		N1-metil pseudouridina/5-metil citosina		
4		Non modificato	IM, LNP 0,4 mg/kg	
5		N1-metil pseudouridina /5-metil citosina		
6		Non modificato	ID, LNP 0,4 mg/kg	
7		N1-metil pseudouridina /5-metil citosina		
8		Non modificato	ID, 80 ug con lipoplex (Lipofectamine2000)	
9		N1-metil pseudouridina/5-metil citosina		
10		Non modificato	ID, 80 ug mRNA nudo	
11		N1-metil pseudouridina /5-metil citosina		
12		Controllo	IN, virus PR8 inattivato	

Nella tabella valgono le seguenti abbreviazioni; IM, intramuscolare; ID, Intradermica; IN, intranasale; EV, endovenoso; LNP, nanoparticella lipidica

Tabella 32. Titoli HAI medi

ID campione	Settimana 1	Settimana 3	Settimana 5
Naïve	8	7	7
Non modificato; LNP EV, 0,4 mg/kg	8	28	635
N1-metil pseudouridina/5-metil citosina; LNP EV, 0,4	25	139	2004

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ID campione	Settimana 1	Settimana 3	Settimana 5
mg/kg			
Non modificato; LNP IM, 0,4 mg/kg	22	63	2560
N1-metil pseudouridina/5-metil citosina; LNP IM, 0,4 mg/kg	60	482	2803
Non modificato; LNP ID, 0,4 mg/kg	39	279	3796
N1-metil pseudouridina/5-metil citosina; LNP ID, 0,4 mg/kg	114	965	10152
Non modificato; 80 ug con lipoplex (Lipofectamine 2000)	7	17	197
N1-metil pseudouridina/5-metil citosina; 80 ug con lipoplex (Lipofectamine 2000)	7	20	28
Non modificato; ID, 80 ug mRNA nudo	7	7	61
N1-metil pseudouridina/5-metil citosina; ID, 80 ugdi mRNA nudo	7	16	133
Antigene PR8 di controllo	14	14	441

Inibizione dell'emoagglutinazione

L'inibizione dell'emoagglutinazione (HAI) è stata misurata in campioni di sieri di topo nelle settimane 1, 3 e 5 dopo la vaccinazione. Dopo la settimana 1, entrambi i gruppi 5 e 7 hanno mostrato titoli HAI superiori a 40, rispettivamente a 60 e 114. Nella settimana 3, i gruppi 3-7 hanno mostrato un'attività di HAI superiore a 40, con il gruppo 7 più alto a 965. Nella settimana 5, tutti i gruppi tranne 1 (ingenuo) e 9 hanno mostrato un'attività di HAI superiore a 40, con il gruppo 7 >10.000.

Si noti che 1:40 è predittivo di efficacia. Un titolo HAI >40 è ritenuto necessario per proteggere da una provocazione letale dell'influenza.

I dati hanno mostrato che il recupero al 100% dalla provocazione letale dell'influenza con rapida insorgenza di titoli anticorpali protettivi dopo 1 settimana e titoli anticorpali elevati, ovvero 50 volte rispetto all'mRNA non modificato e 20 volte rispetto al vaccino proteico. Inoltre, è stato mostrato che per i vaccini a base di acido ribonucleico dell'invenzione è richiesta una dose efficace di mRNA molto più bassa, vale a dire dieci volte inferiore all'mRNA non

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modificato. (Figura 10).

Microneutralizzazione

Diluizioni doppie di sieri di topo sono state aggiunte a 100 TCID50/ml di virus in piastre da 96 pozzetti. Dopo 24 ore di incubazione, a ciascun pozzetto sono state aggiunte 1,5x104 cellule renali canine Madin-Darby. Dopo un'incubazione di -20 ore a 37 °C, il virus è stato rilevato e valutato con un anticorpo anti-NP e letto a 490 nm. Nessuna attività di neutralizzazione è stata rilevata con i campioni della settimana 1 (segnale <50; limite inferiore di rilevamento). Entro la settimana 3, i topi nei gruppi 5 e 7 hanno mostrato un'attività neutralizzante tra 79 e 250 (gruppo 5) e 250 (gruppo 7). Nessuno degli altri gruppi ha mostrato alcuna attività neutralizzante. Alla settimana 5, i gruppi 2-4 hanno mostrato un'attività neutralizzante elevata tra 789 e 2493, con il gruppo 7 che mostrava attività neutralizzante di 2494 e ~25.000. Il gruppo di controllo di topi, vaccinati con PR8 inattivato, ha mostrato attività neturalizzante in 3 topi su 5 e variava tra 79 e 250. I dati sono mostrati nelle Tabelle 33-35.

Tabella 33. Settimana 1 microneutralizzazione

ID campione	Topo 1	Topo 2	Topo 3	Topo 4	Topo 5
Naïve	<50*	<50	<50	<50	<50
Non modificato; LNP EV, 0,4 mg/kg	<50	<50	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; LNP EV, 0,4 mg/kg	<50	<50	<50	<50	<50
Non modificato; LNP IM, 0,4 mg/kg	<50	<50	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; LNP IM, 0,4 mg/kg	<50	<50	<50	<50	<50
Non modificato; LNP ID, 0,4 mg/kg	<50	<50	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; LNP ID, 0,4 mg/kg	<50	<50	<50	<50	<50
Non modificato; 80 ug con lipoplex (Lipofectamine 2000)	<50	<50	<50	<50	<50
N1-metil pseudouridina /5-metil citosina; 80 ug con lipoplex (Lipofectamine 2000)	<50	<50	<50	<50	<50

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ID campione	Topo 1	Topo 2	Topo 3	Topo 4	Topo 5
Non modificato; ID, 80 ug mRNA nudo	<50	<50	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; ID, 80 ugdi mRNA nudo	<50	<50	<50	<50	<50
Antigene PR8 di controllo	<50	<50	<50	<50	<50
*I titoli di "<50" indicano titoli al di sotto del Limite di rilevamento (1:50)					

Tabella 34. Settimana 3 microneutralizzazione

ID campione	Topo 1	Topo 2	Topo 3	Topo 4	Topo 5
Naïve	<50*	<50	<50	<50	<50
Non modificato; LNP EV, 0,4 mg/kg	<50	<50	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; LNP EV, 0,4 mg/kg	<50	<50	<50	<50	<50
Non modificato; LNP IM, 0,4 mg/kg	<50	<50	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; LNP IM, 0,4 mg/kg	79	79	79	250	250
Non modificato; LNP ID, 0,4 mg/kg	<50	<50	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; LNP ID, 0,4 mg/kg	250	250	250	250	250
Non modificato; 80 ug con lipoplex (Lipofectamine 2000)	<50	<50	<50	<50	<50
N1-metil pseudouridina /5-metil citosina; 80 ug con lipoplex (Lipofectamine 2000)	<50	<50	<50	<50	<50
Non modificato; ID, 80 ug mRNA nudo	<50	<50	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; ID, 80 ugdi mRNA nudo	<50	<50	<50	<50	<50
Antigene PR8 di controllo	<50	<50	<50	<50	<50
*I titoli di "<50" indicano titoli al di sotto del Limite di rilevamento (1:50)					

Tabella 35. Settimana 5 microneutralizzazione

ID campione	Topo 1	Topo 2	Topo 3	Topo 4	Topo 5
Naive	<50*	<50	<50	<50	<50
Non modificato; LNP EV, 0,4 mg/kg	2493	789	789	<50	250
N1-metil pseudouridina/5-metil citosina; LNP EV, 0,4	789	789	2493	789	2493

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ID campione	Topo 1	Topo 2	Topo 3	Topo 4	Topo 5
mg/kg					
Non modificato; LNP IM, 0,4 mg/kg	789	789	2493	789	2493
N1-metil pseudouridina/5-metil citosina; LNP IM, 0,4 mg/kg	789	2493	2493	789	789
Non modificato; LNP ID, 0,4 mg/kg	<50	<50	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; LNP ID, 0,4 mg/kg	7877	7877	24892	2493	7877
Non modificato; 80 ug con lipoplex (Lipofectamine 2000)	<50	<50	<50	<50	79
N1-metil pseudouridina /5-metil citosina; 80 ug con lipoplex (Lipofectamine 2000)	<50	<50	<50	<50	<50
Non modificato; ID, 80 ug mRNA nudo	<50	79	<50	<50	<50
N1-metil pseudouridina/5-metil citosina; ID, 80 ugdi mRNA nudo	<50	<50	<50	<50	<50
Antigene PR8 di controllo	250	79	<50	<50	250
*I titoli di "<50" indicano titoli al di sotto del Limite di rilevamento (1:50)					

Sopravvivenza

Tutti i topi sono stati sottoposti a provocazione con una dose letale (10xLD90) di INFV A/PR/8/34 alla settimana 7 dopo la vaccinazione. I topi sono stati osservati per morbilità e mortalità fino a 14 giorni. Tutti i topi vaccinati hanno mostrato una sopravvivenza del 100%, rispetto al gruppo naive (gruppo 1), che non era stato vaccinato. 12 gruppi di 5 topi sono stati sottoposti a provocazione tramite instillazione IN con ~ 100 PFU di INFV A/PR/8/34 (H1N1). I topi sono stati osservati ogni giorno per 14 giorni per salute, morbilità e mortalità. Tutti gli animali tranne quelli non vaccinati, che sono morti intorno al giorno 7, sono sopravvissuti allo studio di 14 giorni.

Dati di perdita di peso

Perdita di peso e salute dei topi sottoposti a provocazione con A/PR/8/34. 12 gruppi di 5 topi sono stati sfidati tramite instillazione IN con ~100 PFU di INFV A/PR/8/34 (H1N1). I topi sono stati osservati ogni giorno per 14 giorni per salute, morbilità e mortalità.

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Tutti i topi vaccinati hanno mostrato una sopravvivenza del 100%, sebbene alcuni gruppi abbiano mostrato una perdita di peso. Il gruppo non vaccinato ha mostrato una sopravvivenza dello 0% ed è morto nei giorni 6 e 7, dopo l'infezione. Sebbene siano state osservate differenze nella perdita di peso nei topi vaccinati sottoposti a provocazione, non è possibile trarre conclusioni sulla sua significatività. Il gruppo vaccinato con NAV aventi N1 metilpseudouridina/5-metil citosina con mRNA nudo ha mostrato punteggi di salute di "2" nei giorni 2 e 3 dopo l'infezione, ma è tornato "sano" per il resto dello studio. I gruppi vaccinati con NAV aventi N1 metilpseudouridina/5-metilcitosina ID 80 ug con lipofecatmine 2000 (LF2000) e N1metilpseudouridina e 5-metilcitosina LNP ID hanno entrambi mostrato punteggi di salute di "2" nei giorni 5 e 6 dopo l'infezione che sono continuati per la durata dello studio. La formulazione di LNP consisteva in un lipide cationico, lipide non cationico, lipide PEG e lipide strutturale nei rapporti 50:10:1,5:38,5. Il lipide cationico era DLin-KC2-DMA (50 mol%), il lipide non cationico era DSPC (10 mol%), il lipide PEG era PEG-DOMG (1,5 mol%) e il lipide strutturale era il colesterolo (38,5 mol%).

Tutti i gruppi hanno generalmente mantenuto il peso tra il 90 e il 110% del peso originale a eccezione del gruppo non vaccinato. Questi animali erano a circa il 70% del loro peso originale entro il giorno 6. Il punteggio sulla salute era secondo la Tabella 36.

Tabella 36. Grafico del punteggio di salute

Punteggio	Iniziale	Descrizione	Aspetto	Mobilità	Atteggiamento
1	H	Sano	Pelo liscio, occhi luminosi	Attivo, correndo, scavando	Vigile
2	SR	Leggermente arruffato	Manto leggermente arruffato (di solito solo intorno alla testa e al collo	Attivo, correndo, scavando	Vigile
3	R	Arruffato	Manto	Attivo, correndo,	Vigile

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Punteggio	Iniziale	Descrizione	Aspetto	Mobilità	Atteggiamento
			arruffato su tutto il corpo. Un aspetto "bagnato".	scavando	
4	s	Malato	Manto molto arruffato. Occhi leggermente chiusi, scavati	Camminando, ma non correndo	Lievemente letargico
5	VS	Molto malato (eutanasia)	Manto molto arruffato, occhi chiusi e scavati	Movimento lento o nullo; tornerà in posizione eretta se messo sul fianco	Estremamente letargico
6	E	Eutanasia	Manto molto arruffato, occhi chiusi scavati; moribondo richiede eutanasia umana	Movimento nullo o incontrollabile; movimento spastico. Non tornerà in posizione verticale eretta	Completamente inconsapevole o in notevole difficoltà
7	D	Deceduto	--	--	--

Esempio 16. Studio dell'MRSA (Esempio di riferimento)

Gli antigeni dell'MRSA che possono essere codificati dai vaccini ad acido ribonucleico includono SpA, SpAKKAA, IsdA, IsdB, SDRD, SDRE, TSST-1, PVL, a-HL, NMD-1 e SCCmec. Il disegno dello studio è mostrato nella Tabella 37. In questi studi è stato utilizzato il costrutto numero 27 della Tabella 28.

A. Test per l'efficacia dei vaccini ad acido ribonucleico modificati nel modello di provocazione della polmonite da *Staph. aureus* nei topi

Questo studio testerà l'efficacia del vaccino ad acido ribonucleico codificante per MRSA Ag808 in topi BALB/c. Lo studio utilizza 15 gruppi di 15 topi femmina BALB/c (225 in totale. I topi vengono vaccinati alla settimana 0 e 3 per via intradermica (ID) o intramuscolare

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(IM) con una formulazione di LNP comprendente DLin-KC2-DMA ("KC2") o DLin-MC3-DMA ("MC3"). La formulazione KC2 LNP consisteva in un lipide cationico (DLin-KC2-DMA, 50 mol%), lipide non cationico (DSPC, 10 mol%), lipide PEG (PEG-DOMG 1,5 mol%) e un lipide strutturale (colesterolo, 38,5 mol%). La formulazione MC3 LNP consisteva in un lipide cationico (DLin-MC3-DMA, 50 mol%), lipide non cationico (DSPC, 10 mol%), lipide PEG (PEG-DOMG 1,5 mol%) e un lipide strutturale (colesterolo, 38,5 mol%). Un gruppo non è vaccinato e uno a cui è stato somministrato un antigene di controllo positivo. Prima della provocazione, ai topi verranno eseguiti prelievi dalla vena caudae nelle settimane 1, 3 e 5 e i campioni di siero verranno conservati per analisi successive. I topi saranno sottoposti a provocazione con MRSA (ceppo Newman) a ~1xLD90 tramite inoculazione intranasale (IN) alla settimana 5. I topi saranno monitorati per la morbilità utilizzando un punteggio di salute assegnato in base a un sistema di punteggio standard, perdita di peso e mortalità e l'endpoint è il giorno 14 dopo l'infezione, la morte o l'eutanasia. Gli animali che mostrano una malattia grave determinata da una perdita di peso superiore al 30%, estrema letargia o paralisi saranno sottoposti a eutanasia. I topi saranno trattenuti fino alla settimana 7, per svolgere lavoro aggiuntivo con gli animali (ad esempio ulteriori vaccinazioni, prelievi o provocazione infettiva).

B. Test per l'efficacia dei vaccini ad acido ribonucleico modificati con N1-metilpseudouridina nella provocazione della peritonite da Staphylococcusaureus

Questo studio ha testato l'efficacia del vaccino ad acido ribonucleico codificante per MRSA Ag808 in topi BALB/c. Lo studio ha utilizzato 15 gruppi di 15 topi femmina BALB/c (270 topi in totale. I topi sono stati vaccinati alla settimana 0 e 3 per via intradermica (ID) o intramuscolare (IM) con una formulazione d LNP comprendente DLin-KC2-DMA ("KC2") o DLin-MC3-DMA ("MC3"). La formulazione KC2 LNP consisteva in un lipide cationico (DLin-KC2-DMA, 50 mol%), lipide non cationico (DSPC, 10 mol%), lipide PEG (PEG-DOMG 1,5 mol%) e un lipide strutturale (colesterolo, 38,5 mol%). La formulazione MC3 LNP consisteva

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in un lipide cationico (DLin-MC3-DMA, 50 mol%), lipide non cationico (DSPC, 10 mol%), lipide PEG (PEG-DOMG 1,5 mol%) e un lipide strutturale (colesterolo, 38,5 mol%). Un gruppo non è stato vaccinato e uno ha ricevuto un antigene di controllo positivo. Prima della provocazione, ai topi sono stati eseguiti prelievi dalla vena caudae nelle settimane 1, 3 e 5 e i campioni di siero sono stati conservati per analisi successive. I topi che sono stati sottoposti a provocazione tramite instillazione intranasale hanno ricevuto una dose di provocazione prevista di 2e8 CFU/topo (effettiva dopo la retrotitolazione era di 3,3e8/topo) e i topi che sono stati sottoposti a provocazione tramite infezione ervia IP hanno ricevuto una prevista 1e7 CFU/topo (effettiva dopo la retrotitolazione 6.7e6 CFU/topo). I topi sono stati monitorati per la morbilità utilizzando un punteggio di salute assegnato in base a un sistema di punteggio standard, perdita di peso e mortalità e l'endpoint è il giorno 14 dopo l'infezione, la morte o l'eutanasia. Gli animali che mostravano una malattia grave determinata da una perdita di peso superiore al 30%, estrema letargia o paralisi sono stati sottoposti a eutanasia.

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Tabella 37. Progetto di studio

Gruppo (n=15)	Antigene	Dosaggio	Via	Chimica	Formulazione	Somministrazione	Campioni
1	N/A	N/A	N/A	N/A	NaCl	Vaccinazione nelle settimane 0 e 3	Prelievo dalla vena caudale nelle settimane 1, 3 e 5; conservati per analisi future
2	MRSA Ag808	0,4 mg/kg	ID	N1metil - pseudouridina	LNP; KC2		
3		0,08 mg/kg					
4		0,016 mg/kg					
5		0,4 mg/kg	IM				
6		0,08 mg/kg					
7		0,016 mg/kg					
8		0,4 mg/kg	ID		LNP; MC3		
9		0,08 mg/kg					
10		0,016 mg/kg					
11		0,4 mg/kg	IM				

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Gruppo (n=15)	Antigene	Dosaggio	Via	Chimica	Formulazione	Somministrazione	Campioni
12		0,08 mg/kg					
13		0,016 mg/kg					
14	Batteri inattivati	TBD	TBD	N/A	TBD		
15	Batteri inattivati	TBD	TBD	N/A	TBD		

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I topi vaccinati e sottoposti a provocazione per via IP con il 3% di mucina di maiale hanno mostrato una sopravvivenza dello 0% entro 24 ore dalla provocazione. I topi vaccinati e sottoposti a provocazione tramite instillazione IN hanno mostrato tra il 6 e il 33% di sopravvivenza e tempi di sopravvivenza mediani tra 2 e 3 giorni. L'efficacia non è stata dimostrata né con il costrutto del vaccino a RNA testato né con i controlli (batteri inattivati e controllo delle proteine) in nessuno dei due modelli di provocazione, suggerendo che il modello non era adeguato per testare i costrutti. Il gruppo vaccinato con il veicolo ha mostrato una sopravvivenza del 20% e un tempo di sopravvivenza mediano di 3 giorni. Senza essere vincolati dalla teoria, si ritiene che la gravità del modello di infezione da MRSA precludesse il rilevamento dell'efficacia del vaccino. Altri modelli possono essere testati per determinare l'efficacia.

Esempio 17. Studio sulla dengue: Immunogenicità del vaccino a RNA su virus dengue nei topi

Questo studio fornisce un'analisi preliminare dell'immunogenicità di un vaccino a acido nucleico mRNA utilizzando un antigene di sierotipo 2 del virus dengue (DENV) in topi BALB/c. Lo studio utilizza 44 gruppi di 10 topi BALB/c femmine (5) e maschi (5) (440 in totale, 6-8 settimane di età all'inizio dello studio, si veda la Tabella 38 per il riepilogo del disegno). In questo studio, i numeri di costrutto utilizzati sono indicati e trovati nella Tabella 28.

I topi sono stati vaccinati nelle settimane 0 e 3 per via intramuscolare (IM) o intradermica (ID). Un gruppo è rimasto non vaccinato e a uno sono state somministrate 10^5 unità formanti placche (PFU) di isolato di DENV2, D2Y98P vivo tramite iniezione endovenosa (EV) come controllo positivo. Il siero è stato raccolto da ciascun topo nelle settimane 1, 3 e 5; i prelievi nelle settimane 1 e 3 erano campioni in vita (prelievi da vena caudale o sottomandibolari) e la settimana 5 sarà un prelievo terminale (intracardiaca). I singoli campioni di siero sono stati conservati a -80 °C fino all'analisi mediante saggio di

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neutralizzazione o microneutralizzazione. I campioni raggruppati di ciascun gruppo nei punti temporali della settimana 5 sono stati testati mediante Western blot per la reattività con il lisato virale.

Tabella 38. Disegno sperimentale dettagliato (trattamento, letture)

Gruppo	**Ceppo di topo**	**Vaccino (n=10, femmine) topi/gruppo) rilasciato nelle settimane 0 e 3**	**Chimica**	**Formulazione/ Via**	**Dose**	**Letture**
1	Femmina BALB/c, 6-8 settimane di età	N/A		N/A	N/A	Campioni di siero raccolti nelle settimane 1, 3 e 5. Siero analizzato tramite Western blot
2		DEN2Y98 - PrME (costrutto 23 dalla Tabella 28)	N1-metilpseudouridina/ 5-metil citosina	ID	0,4 mg/kg in LNP	
3				IM		
4				ID	0,08 mg/kg in LNP	
5				IM		
6				ID	0,016 mg/kg in LNP	
7				IM		
8			N1-metilpseudouridina	ID	0,4 mg/kg in LNP	
9				IM		
10				ID	0,08 mg/kg in LNP	
11				IM		
11				ID	0,016 mg/kg in LNP	
12				IM		
13		DEN2Y98 - PrME80 (costrutto 24 da	N1-metilpseudouridina/ 5-metil	ID	0,4 mg/kg in LNP	
14				IM		
15				ID	0,08 mg/kg	
16		Tabella 28)	citosina	IM	in LNP	
17				ID	0,016	

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Gruppo	**Ceppo di topo**	**Vaccino (n=10, femmine) topi/gruppo) rilasciato nelle settimane 0 e 3**	**Chimica**	**Formulazione/ Via**	**Dose**	**Letture**
18				IM	mg/kg in LNP	
19			N1-metilpseudouridina	ID	0,4 mg/kg in LNP	
20				IM		
21				ID	0,08 mg/kg in LNP	
22				IM		
23				ID	0,016 mg/kg in LNP	
24				IM		
25		DEN2Y98 - PrME80-DC (costrutto 25 dalla Tabella 28)	N1-metilpseudouridina/ 5-metil citosina	ID	0,4 mg/kg in LNP	
26				IM		
27				ID	0,08 mg/kg in LNP	
28				IM		
29				ID	0,016 mg/kg in LNP	
30				IM		
31			N1-metilpseudouridina	ID	0,4 mg/kg in LNP	
32				IM		
33				ID	0,08 mg/kg in LNP	
34				IM		
35				ID	0,016 mg/kg in LNP	
36				IM		
37		DEN2-DIII-Ferritina (costrutto 18 dalla	N1-metilpseudouridina	ID	0,4 mg/kg in LNP	
38				IM		
39				ID	0,08	

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Gruppo	**Ceppo di topo**	**Vaccino (n=10, femmine) topi/gruppo) rilasciato nelle settimane 0 e 3**	**Chimica**	**Formulazione/ Via**	**Dose**	**Letture**
40		Tabella 28)		IM	mg/kg in LNP	
41				ID	0,016 mg/kg in LNP	
42				IM		
43		Controllo, virus vivo D2Y98P	--	EV	10^5 PFU	

Il segnale è stato rilevato nei gruppi 5, 15, 39 e 44 (controllo del virus vivo) da una banda che è apparsa tra 50 e 60 kDa nei dati del Western blot. I dati suggeriscono che un vaccino a mRNA per un singolo antigene virale di dengue può produrre anticorpi negli studi preliminari.

Esempio 18. Vaccino ad acido ribonucleico contro la tubercolosi: Approccio combinatorio di adiuvanti e antigeni (Esempio di riferimento)

L'obiettivo dello studio è identificare un vaccino multivalente e multiadiuvante efficace in diversi stadi di malattie della tubercolosi. L'esperimento iniziale valuta 12 antigeni con 8 adiuvanti di citochine in tre modelli di stadio della malattia. Gli antigeni codificati dai polinucleotidi dell'invenzione includono Ag85A (Rv3804c), Ag85B (Rv1886c), TB10.4 (Rv0288), ESAT6 (Rv3785), Rv2660L, Rv3619, Rv1813c, Rv3620c, Rv2608, Rv1196, Rv0125 e/o MT401. Gli adiuvanti delle citochine bersaglio includono GM-CSF, IL-17, IFNg, IL-15, IL-2, IL-21, Anti-PD1/2 e/o lattoferrina.

Esempio 19. Studio sull'enterovirus umano (HEV68 e HEV71).

Sono stati identificati diversi antigeni chiave da utilizzare nella generazione di vaccini. Questi includono: (i) loop VP1 BC/DE di tutti e tre i lignaggi HEV68 e (ii) VP1+ VP2 di

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HEV71. Il polinucleotide di RNAV da utilizzare nella generazione di vaccini dall'antigene HEV71 è il costrutto 72 della Tabella 28 (ORF SEQ ID NO: 2113, mRNA SEQ ID NO: 2186).

Esempio 20. Studio MERS-CoV.

Poiché MERS-CoV lega le cellule tramite DPP4Fc, il trattamento per MERS-CoV può includere un mRNA che codifica per DPP4-Fc con o senza sito di legame MERS-CoA e siti di legame mutante per la segnalazione del diabete e dominio di legame del recettore troncato della proteina Spike MERS-CoV. Si veda PLoS One. 2013; 8(12): e81587). Questo vaccino fungerebbe da esca per il virus in quanto attirerà il MERS-CoV.

Un altro vaccino chiave per MERS-CoV è identificato come un mRNA che codifica per la Glucoproteina Spike MERS-CoV come antigene. La sequenza proteica è data qui (SEQ ID NO: 2275).

SEQ ID NO. 2275:

mihsvfllmflltptesyvdvgpdsiksacievdiqqtffdktwprpidvskadgiiypqgrtysniti
tyqglfpyqgdhgdmyvysaghatgttpqklfvanysqdvkqfangfvvrigaaanstgtviispst
satirkiypafmlgssvgnfsdgkmgrffnhtlvllpdgcgtllrafycileprsgnhcpagnsytsfat
yhtpatdcsdgnynrnaslnsfkeyfnlrnctfmytynitedeilewfgitqtaqgvhlfssryvdlyg
gnmfqfatlpvydtikyysiiphsirsiqsdrkawaafyvyklqpltflldfsvdgyirraidcgfndls
qlhcsyesfdvesgvysvssfeakpsgsvveqaegvecdfspllsgtppqvynfkrlvftncnynlt
kllslfsvndftcsqispaaiasncysslildyfsyplsmksdlsvssagpisqfnykqsfsnptclilat
vphnlttitkplkysyinkcsrllsddrtevpqlvnanqyspcvsivpstvwedgdyyrkqlsplegg
gwlvasgstvamteqlqmgfgitvqygtdtnsvcpklefandtkiasqlgncveyslygvsgrgvf
qnctavgvrqqrfvydayqnlvgyysddgnyyclracvsvpvsviydketkthatlfgsvacehis
stmsqysrstrsmlkrrdstygplqtpvgcvlglvnsslfvedcklplgqslcalpdtpstltprsvrsv
pgemrlasiafnhpiqvdqlnssyfklsiptnfsfgvtqeyiqttiqkvtvdckqyvcngfqkceqllr
eygqfcskinqalhganlrqddsvrnlfasvkssqsspiipgfggdfnltllepvsistgsrsarsaiedl
lfdkvtiadpgymqgyddcmqqgpasardlicaqyvagykvlpplmdvnmeaaytssllgsiag
vgwtaglssfaaipfaqsifyrlngvgitqqvlsenqkliankfnqalgamqtgftttneafhkvqda
vnnnaqalsklaselsntfgaisasigdiiqrldvleqdaqidrlingrlttlnafvaqqlvrsesaalsaq
lakdkvnecvkaqskrsgfcgqgthivsfvvnapnglyfmhvgyypsnhievvsayglcdaanp
tnciapvngyfiktnntrivdewsytgssfyapepitslntkyvapqvtyqnistnlpppllgnstgidf
qdeldeffknvstsipnfgsltqinttlldltyemlslqqvvkalnesyidlkelgnytyynkwpwyi
wlgfiaglvalalcvffilcctgcgtncmgklkcnrccdryeeydlephkvhvh

Esempio 21: Studi *in vitro* su H10N8

Studi in vitro sulla traducibilità dell'mRNA dell'emoagglutinina H10 sono stati condotti in cellule HeLa.

L'analisi Western blot ha rivelato che l'HA è espresso nelle cellule HeLa dopo la trasfezione con il NAV a mRNA che codifica per la proteina HA del ceppo H10N8 del virus dell'influenza.

Esempio 22: Studio sull'influenza — Dosaggio e formulazioni

Un vaccino a mRNA codificante per la proteina HA del ceppo H1N1 del virus dell'influenza è stato testato a varie dosi e in varie formulazioni per la capacità di stimolare una risposta immunitaria nei topi.

L'efficacia di diverse dosi e formulazioni è stata valutata nei topi. I titoli HAI dei topi determinati il giorno 35 dopo la vaccinazione il giorno 0 e il giorno 21 con mRNA codificante HA del virus H1N1 sono mostrati nella Figura 11. I titoli erano più alti a dosi di 10 µg di mRNA/topo (400 µg di mRNA/kg) con entrambe le formulazioni KC2 e MC3 somministrate ID o IM (Tabella 39).

Tabella 39: Titoli di inibizione dell'emoagglutinina nei topi a seguito di vaccinazione con diverse dosi e formulazioni di mRNA codificante per la proteina emoagglutinina del vaccino contro il virus H1N1

N. gruppo (n=10 per gruppo)	Via di vaccinazione nei giorni 0 e 21	Vaccino	Formulazione	Dose (µg/topo)	Titolo HAI medio ± SD
1	N/A	Assente	PBS	0	0
2	ID	H1N1/C1	KC2	10	1792 ± 661
3				2	1088 ± 309
4				0,4	272 ± 152

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N. gruppo (n=10 per gruppo)	Via di vaccinazione nei giorni 0 e 21	Vaccino	Formulazione	Dose (µg/topo)	Titolo HAI medio ± SD
5				0,08	52 ± 44
6	ID	H1N1/ C0	KC2	10	992 ± 648
7				2	692 ± 743
8				0,4	140 ± 78
9				0,08	35 ± 31
10	ID	H1N1/ C0	MC3	10	1600 ± 867
11				2	1152 ± 588
12				0,4	290 ± 254
13				0,08	37 ± 25
14	IM	H1N1/ C0	MC3	10	1664 ± 1422
15				2	1056 ± 641
16				0,4	800 ± 346
17				0,08	180 ± 105
18	INGRESSO	Virus PR8 inattivato	PBS	20 µL	96±47
19	ID	H1N1/G2/C1	PBS	50	11 ± 3

G0 = generazione 0, vale a dire nucleotidi canonici non modificati; G2 = Generazione 2 dei nucleotidi modificati; G5 = Generazione 5 dei nucleotidi modificati (destinati allo sviluppo clinico).
C0 = CAP0; C1 = CAP1 (destinato allo sviluppo clinico)
N/A: Non applicabile.
IN: intranasale: ID: Intradermica; IM: intramuscolare

Esempio 23: Studio sull'influenza — Esordio dell'immunità - Sopravvivenza e HAI

Questo studio ha valutato l'efficacia di un vaccino a mRNA codificante per l'influenza

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A/PR/8 (H1N1) in topi femmina BALB/c a seguito di una provocazione letale con il virus dell'influenza A/PR/8. Gruppi di animali sono stati vaccinati e sottoposti a provocazione dopo la settimana 1, 2, 3 o 4. Il siero è stato raccolto da ciascun topo un giorno prima della provocazione. I prelievi individuali sono stati testati per l'inibizione dell'emoagglutinazione utilizzando l'influenza A/PR/8 (H1N1). I gruppi di controllo includevano topi non vaccinati e topi vaccinati con il virus PR8 inattivato come controllo positivo. Questi animali sono stati sottoposti a provocazione in parallelo con i gruppi vaccinati con il vaccino a mRNA. La provocazione è stata eseguita con una dose letale (100 PFU) di A/PR/8/34 (H1N1) tramite instillazione intranasale. Gli animali sono stati monitorati per la morbilità utilizzando un punteggio di salute assegnato in base a un sistema di punteggio standard, perdita di peso e mortalità. Tutti i topi che hanno ricevuto il vaccino a mRNA hanno mostrato una sopravvivenza del 100% e una minima perdita di peso corporeo (Figura 12A-12D). Alla settimana 1 dopo la vaccinazione, i titoli di inibizione dell'emoagglutinazione dei topi che hanno ricevuto il vaccino a mRNA e dei topi che hanno ricevuto il vaccino di controllo positivo erano simili. Tuttavia, alle settimane 2, 3 e 4 dopo la vaccinazione, i topi che hanno ricevuto il vaccino a mRNA hanno mostrato titoli medi più elevati rispetto ai topi che hanno ricevuto il vaccino di controllo positivo (Figura 13).

Gruppi di 15 topi femmine BALB/c (6-8 settimane di età) sono stati vaccinati nella settimana 0 con: mRNA incapsulato in LNP alla dose di 0,4 mg/kg mediante iniezione ID; virus PR8 inattivato somministrato IN; o veicolo.

Nelle settimane 1, 2, 3 e 4 dopo la vaccinazione, gli animali sono stati inoculati con il virus dell'influenza A/PR/8/34 in leggera anestesia. Gli animali hanno ricevuto 100 µL del virus diluito in PBS a una concentrazione finale di 1 × 103 PFU/mL tramite instillazione IN.

Sono state eseguite valutazioni della salute e sono stati registrati i pesi ogni giorno per 14 giorni (giorni 0-13 dopo l'infezione). La sopravvivenza e la salute sono state valutate

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utilizzando il sistema di punteggio mostrato nella Tabella 36.

Tutti gli animali avevano chip impiantati almeno 3 giorni prima della sfida del virus che monitorava la temperatura corporea. Le temperature sono state registrate giornalmente. Un giorno prima di ogni provocazione, sono stati raccolti campioni di siero e il siero è stato analizzato in un saggio di HAI.

Le curve di sopravvivenza sono presentate nella Figura 15. Gli animali sono stati monitorati per la sopravvivenza per 14 giorni. L'analisi log-rank è stata eseguita in GraphPadPrism v6.

I topi vaccinati con vaccino a mRNA o PR8 inattivato hanno mostrato tutti una sopravvivenza del 100%, mentre i topi non vaccinati hanno mostrato una sopravvivenza compresa tra lo 0 e il 40% (Tabella 40). Non sono state rilevate riduzioni significative del peso corporeo dei topi trattati.

Tabella 40: Percentuale e sopravvivenza media dei topi dopo vaccinazione e provocazione con il virus dell'influenza A/PR/8/34

Gruppo (n=15 per gruppo)		% di sopravvivenza	Sopravvivenza media (Giorni)	Significatività per controllo relativo del veicolo (valori p)
Veicolo	Settimana 1	10	8	N/A
	Settimana 2	40	10	N/A
	Settimana 3	0	9	N/A
	Settimana 4	6,67	9	N/A
Virus PR8 inattivato	Settimana 1	100	Non definita	<0,0001
	Settimana 2	100	Non definita	0,0004

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	Settimana 3	100	Non definita	<0,0001
	Settimana 4	100	Non definita	<0,0001
Vaccino a mRNA incapsulato in LNP	Settimana 1	100	Non definita	<0,0001
	Settimana 2	100	Non definita	0,0004
	Settimana 3	100	Non definita	<0,0001
	Settimana 4	100	Non definita	<0,0001

I titoli HA medi sono mostrati nella Figura 13 e nella Tabella 41.

Tabella 41. Titoli medi di inibizione dell'emoglutinazione (± SD) dei topi dopo la vaccinazione e provocazione con il virus dell'influenza A/PR/8/34

Vaccinazione nella settimana 0	**Provocazione con il virus dell'influenza A/PR/8/34**			
	Settimana 1	**Settimana 2**	**Settimana 3**	**Settimana 4**
Veicolo	0	**0**	0	0
Virus PR8 inattivato	25 ± 47	19 ± 26	37 ± 39	43 ± 30
Vaccino a mRNA	25 ± 17	203 ± 138	379 ± 178	363 ± 154

I valori sono la media ± SD (deviazione standard)

Questi dati dimostrano che i topi vaccinati con il vaccino a mRNA a una dose di 0,4 mg/kg ID o il virus PR8 inattivato hanno mostrato una sopravvivenza del 100% dopo la provocazione con il virus dell'influenza A/PR/8/34 nelle settimane 1, 2, 3 o 4, indicando che il vaccino trasmetteva protezione contro l'infezione da virus dell'influenza A/PR/8/34 nelle condizioni di questo studio. L'attività di HAI è rimasta bassa nelle settimane da 1 a 4 per gli animali vaccinati con il virus PR8 inattivato. I topi vaccinati con mRNA hanno mostrato titoli

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HAI medi bassi nella settimana 1 dopo la provocazione, ma titoli aumentati rispettivamente nelle settimane 2, 3 e 4.

Esempio 24: Valutazione delle risposte delle cellule T H1 e H7-specifiche nel vaccino antinfluenzale

I topi sono stati immunizzati ID alla settimana 0 e 3 con il vaccino a mRNA che codifica per la proteina HA del virus dell'influenza H1N1 o H7N9 e gli splenociti sono stati raccolti nella settimana 5. Le cellule T sono state stimolate per 16-18 ore con una libreria di peptidi di HA (15 meri di una proteina a lunghezza intera) che riproduce la sequenza di H1 o H7. La stimolazione non specifica delle cellule T è stata eseguita utilizzando PMA + ionomicina. IFNγELISpot è stato utilizzato per identificare la colorazione per IFNγ. I linfociti B sono stati stimolati con una libreria di peptidi (15meri di una proteina a lunghezza intera) che riproduce la sequenza di H1 o H7. La stimolazione delle cellule B policlonali è stata eseguita utilizzando R848+rIL-2. ELISpot per cellule B è stato utilizzato per identificare la colorazione per IgG antigene-specifiche.

I risultati di IFNγELISpot hanno dimostrato un aumento della secrezione di IFNγ da parte delle cellule T dopo la stimolazione con peptidi H1 o H7 (Figure 14A e 14B). Non è stata osservata una maggiore secrezione di IFNγ nelle cellule T stimolate con PMA+ionomicina (Figura 14C). I risultati hanno dimostrato che le risposte dei linfociti T sono antigene-specifiche.

I risultati di ELISpot delle cellule B hanno dimostrato la secrezione di IgG alla stimolazione delle cellule B con l'antigene completo, ma non con i peptidi H1/H7 (Figure 15A-15D). Era prevedibile la mancanza di stimolazione con la libreria di peptidi perché una risposta di IgG è stimolata tramite antigeni MHCII, che tendono a essere più lunghi dell'antigene MHCI necessario per la stimolazione di una risposta dei linfociti T.

Esempio 25: Valutazione della risposta delle cellule T e B H1, H7 e H10-specifiche contro i

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vaccini influenzali negli splenociti di topo

Le risposte delle cellule T e B specifiche per l'influenza sono state valutate dopo la somministrazione di vaccini a mRNA (NAV) che codificano per le proteine emoagglutinina H1, H10 e H7. In breve, 36 gruppi di 5 topi BALB/c femmine di 6-8 settimane di età sono stati vaccinati con varie dosi per via intradermica (ID) il giorno 0. Sette settimane dopo la vaccinazione, i animali sono stati sacrificati e le milze sono state raccolte. Gli splenociti sono stati valutati mediante IFNγELISpot; Colorazione intracellulare di citochine (ICS) per marcatori CD3, CD4, CD8, CD45, CCR7, CD44, CD25, IL-2 IFNγ e TNFα; e mediante ELISpot a cellule B.

Analisi IFNγELISpot

Gli splenociti di gruppi di topi a cui era stato somministrato H10N8/N1-metil pseudouridina /C0 sono stati valutati per la produzione di IFNγ specifica per H1, H7 e H10 mediante IFNγELISpot. I topi naïve non hanno prodotto una risposta misurabile della citochina IFNγ, mentre le risposte IFNγELISpot specifiche del peptide H10 sono state rilevate nei topi vaccinati per via intradermica con H10N8/N1-metil pseudouridina /C0. L'entità di queste risposte è risultata dipendente dalla dose del vaccino somministrato. Gli splenociti stimolati dal peptide non hanno prodotto risposte ELISpotIFNγ specifiche per H1 o H7 rilevabili. Tutti i gruppi hanno prodotto risposte IFNγELISpot dopo stimolazione con PMA+ionomicina (controllo positivo).

Le risposte IFNγELISpot specifiche per il peptide H1 sono state rilevate da splenociti isolati da topi a cui erano stati somministrati H1N1/G2/C1, H1N1/G2/C0 (formulazione MC3) o H1N1/G2/C0 (formulazione KC2) per via intradermica, nonché da splenociti di topi a cui era stato somministrato H1N1/G2/C0 (formulazione MC3) per via intramuscolare.

Le risposte IFNγELISpot specifiche per il peptide H7 sono state rilevate da splenociti isolati da topi a cui era stato somministrato H7N9/G2/C0 per via intradermica o intramuscolare.

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Gli splenociti di topi di controllo che avevano ricevuto H1N1/G2/C1/PBS non hanno mostrato risposta alla stimolazione peptidica.

Analisi ELISpot delle cellule B

In breve, le risposte IgG e IgM specifiche per H1 sono state rilevate in diversi gruppi di topi vaccinati con diverse formulazioni di vaccino H1. Risposte IgG e IgM specifiche per H7 e H10 sono state anche suscitate nei topi vaccinati con H7N9/N1-metil pseudouridina /C0- e H10N8/N1-metil pseudouridina /C0, rispettivamente.

Risultati della colorazione delle citochine intracellulari

La colorazione intracellulare delle citochine e l'analisi citofluorimetrica hanno indicato che le risposte delle citochine Th1 specifiche per H1 (IFNγ, TNFα, IL-2) erano indotte sia a 16-18 ore che a 48 ore nei linfociti T CD4+ e T CD8+ in seguito alla stimolazione degli splenociti da topi vaccinati con H1 con corrispondente peptide o proteina.

Inoltre, nelle cellule T CD4+ e CD8+ sono state rilevate anche risposte del peptide H7 e H-10 e delle proteine Th1 (IFNγ, TNFα, IL-2). Sono state osservate risposte specifiche per H7 nei gruppi vaccinati con formulazioni di vaccino H7 e risposte specifiche per H10 sono state osservate nei gruppi vaccinati con formulazioni di vaccino H10.

Esempio 26: Valutazione della risposta delle cellule T e B H7 e H10-specifiche contro i vaccini influenzali negli splenociti di topo - Decorso temporale

Le risposte delle cellule T e B specifiche per l'influenza sono state valutate dopo la somministrazione di vaccini a mRNA (NAV) che codificano per le proteine emoagglutinina H10 e H7. In breve, 27 gruppi di 5 topi BALB/c femmine di 6-8 settimane di età (135 topi in totale) sono stati vaccinati con varie dosi per via intradermica (ID) il giorno 0 mostrato nella Tabella 42. Nei giorni 7, 21 e 84 gruppi di 5 animali sono stati sacrificati e sono stati raccolti campioni di sangue e milza.

La milza di topo è stata analizzata utilizzando IFNγ ELISPOT, IgG ELISPOT (per le

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risposte delle cellule B) e colorazione di citochine intracellulari (ICS). I campioni di siero sono stati analizzati per l'inibizione dell'emoagglutinazione (HAI) trattando prima con l'enzima di distruzione del recettore (RDE) per inattivare gli inibitori non specifici dell'emoagglutinazione (falsi positivi) presenti nei sieri. Successivamente, i sieri trattati con RDE sono stati adsorbiti utilizzando globuli rossi (RBC) per rimuovere l'agglutinina non specifica (falsi negativi). I sieri trattati diluiti in serie (diluizioni 2 volte) sono stati pre-incubati con una quantità standardizzata di antigene influenzale ricombinante prima che i globuli rossi fossero aggiunti alla miscela. L'inibizione dell'emoagglutinazione indica la presenza di anticorpi specifici per HA. Il siero di topo anti-H10 in pool è stato utilizzato come controllo positivo e ha mostrato titoli HAI entro l'intervallo dei dati osservati in precedenza.

Dopo aver ricevuto una singola dose di NAV a mRNA il giorno 0, i titoli HAI non sono stati rilevati al giorno 7 (Tabella 42), ma sono stati rilevati al giorno 21 (Tabella 43) e hanno continuato ad aumentare fino al giorno 84 (Tabella 44). I titoli del giorno 84 erano da 2 volte a 15 volte superiori a quelli del giorno 21 (Figure 15 e 16).

La somministrazione della formulazione H10N8/N1-metil pseudouridina/C1 MC3 ha comportato titoli HAI più elevati rispetto ai titoli HAI indotti dalla formulazione H10N8/N1-metil pseudouridina/C0 MC3 (Figura 17). La formulazione MC3 LNP consisteva in un lipide cationico (DLin-MC3-DMA, 50 mol%), lipide non cationico (DSPC, 10 mol%), lipide PEG (PEG-DOMG 1,5 mol%) e un lipide strutturale (colesterolo, 38,5 mol%).

La somministrazione della formulazione H10N8/N1-metil pseudouridina /C1 MC3 a 10 pg/dose ha ottenuto i titoli HAI più elevati, mentre i titoli HAI dopo la somministrazione di 2,0 pg/dose e 0,4 pg/dose sono simili tra loro (Figura 16).

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Tabella 42: Titoli HAI contro H10 e H7 al giorno 7

Vaccino a mRNA una volta al giorno 0 tramite iniezione ID	Dose per topo (µg)	Gruppo (N=5)	Titoli HAI di sieri di topo Giorno 0 (10-11-2014) = giorno di vaccinazione 0 Giorno 7 (17-11-2014) = prelievi terminali gruppi 1-9								
			M1	M2	M3	M4	M5	Media		Stdev	
H10N8/N1-metil pseudouridina /C1, formulazione MC3	**10**	**1**	<10	<10	<10	<10	<10	<	**10**	N/A	Titoli HAI contro la proteina H10
	2	**2**	<10	<10	<10	<10	<10	<	**10**	N/A	
	0,4	**3**	<10	<10	<10	<10	<10	<	**10**	N/A	
H10N8/N1-metil pseudouridina /C0, formulazione MC3	**10**	**4**	<10	<10	<10	<10	<10	<	**10**	N/A	
	2	**5**	<10	<10	<10	<10	<10	<	**10**	N/A	
	0,4	**6**	<10	<10	<10	<10	<10	<	**10**	N/A	
PBS	**0**	**7**	<10	<10	<10	<10	<10	<	**10**	N/A	
PBS	**0**	**7**	<10	<10	<10	<10	<10	<	**10**	N/A	Titoli HAI contro la proteina H7
H7N9/C0	**10**	**8**	<10	<10	<10	<10	<10	<	**10**	N/A	
H7N9/C1	**10**	**9**	<10	<10	<10	<10	<10	<	**10**	N/A	

Tabella 43: Titoli HAI contro H10 e H7 al giorno 21

Vaccino a mRNAna una volta al giorno 0 tramite iniezione ID	Dose per topo (µg)	Gruppo (N=5)	Titoli HAI di sieri di topo Giorno 21 (01-12-2014) = prelievi terminali gruppo 10-18								
			M1	M2	M3	M4	M5	Media		Stdev	
H10N8/N1-metil pseudouridina/C1, formulazione MC3	10	10	160	320	640	80	160		272	223	Titoli HAI contro la proteina H10
	2	11	40	80	40	80	160		80	49	
	0,4	12	80	160	40	80	80		88	44	
H10N8/N1-metil pseudouridina/C0, formulazione MC3	10	13	160	40	80	20	40		68	56	
	2	14	20	20	10	10	20		16	5	
	0,4	15	20	10	40	20	80		34	28	
PBS	0	16	<10	<10	<10	<10	<10	<	10	N/A	
PBS	0	16	<10	<10	<10	<10	<10	<	10	0	Titoli HAI contro la proteina H7
H7N9/C0	10	17	40	10	10	20	20		26	13	
H7N9C1	10	18	160	160	160	320	80		176	88	

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Tabella 44: Titoli HAI contro H10 e H7 al giorno 84

Vaccino a mRNA una volta al giorno 0 tramite iniezione ID	Dose per topo (µg)	Gruppo (N=5)	Titoli HAI di sieri di topo Giorno 84 (02-02-2015) = prelievi terminali gruppi 19-27								
			M1	M2	M3	M4	M5	Media		Stdev	
H10N8/N1-metil pseudouridina /C1, formulazione MC3	**10**	**19**	160	320	320	1280	640		**544**	447	Titoli HAI contro la proteina H10
	2	**20**	320	320	640	160	320		**352**	175	
	0,4	**21**	640	320	160	320	640		**416**	215	
H10N8/N1-metil pseudouridina /C0, formulazione MC3	**10**	**22**	160	320	320	320	320		**288**	72	
	2	**23**	320	320	160	80	320		**240**	113	
	0,4	**24**	40	320	320	320	80		**216**	143	
PBS	**0**	**25**	<10	<10	<10	<10	<10	<	**10**	N/A	
PBS	**0**	**25**	<10	<10	<10	<10	<10	<	**10**	N/A	Titoli HAI contro la proteina H7
H7N9/C0	**10**	**26**	20	40	80	20	<10	≤	**40**	28	
H7N9/C1	**10**	**27**	640	320	320	160	80		**304**	215	

Esempio 27: Analisi dell'emoagglutinina anti-H10 in primati non umani - Studio sull'intervallo di dosaggio

Gruppi di macachi cinomolghi sono stati vaccinati con varie dosi di NAV codificante formulazioni H10 HA/LNP (50 pg/dose, 200 pg/dose, 400 pg/dose), NAV codificante H10 HA/LNP somministrato con il dispositivo 3M o NAV di controllo codificante H10 HA/PBS. Campioni di siero sono stati prelevati dalle scimmie settimanalmente e valutati per l'inibizione dell'emoagglutinina (Tabella 45, Figura 19).

Tabella 45: Titoli HAI contro la proteina H10

	Titoli HAI contro la proteina H10 (A/Jiangxi-Donghu/346/2013)								
	ID macaco cinomolgo	Pre-trattamento	Settimana 1	Settimana 2	Settimana 3	Settimana 4	Settimana 5	Settimana 6	Settimana 9
Gruppo 1 (50 µg)	1001	10	40	20	20	320	1280	1280	5120
	1002	20	20	40	40	640	2560	2560	10240
	1003	<10	<10	40	80	640	2560	2560	10240
	Media	**<13**	**<23**	**33**	**47**	**533**	**2133**	**2133**	**8533**

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	Titoli HAI contro la proteina H10 (A/Jiangxi-Donghu/346/2013)								
	ID macaco cinomolgo	Pre-trattamento	Settimana 1	Settimana 2	Settimana 3	Settimana 4	Settimana 5	Settimana 6	Settimana 9
Gruppo 2 (200 µg)	2001	<10	<10	10	40	640	5120	2560	10240
	2002	20	20	20	40	640	2560	2560	10240
	2003	<10	40	20	40	320	5120	5120	10240
	Media	**<13**	**<23**	**17**	**40**	**533**	**4267**	**3413**	**10240**
Gruppo 3 (400 µg)	3001	20	<10	40	80	1280	5120	10240	20480
	3002	<10	40	40	160	640	5120	5120	20480
	3003	<10	20	80	160	1280	10240	20480	40960
	Media	**<13**	**<23**	**53**	**133**	**1067**	**6827**	**11947**	**27307**
Gruppo 4 (dispositivo vaccinale)	4001	<10	40	<10	20	40	80	80	160
	4002	<10	40	<10	<10	40	160	160	160
	4003	20	40	<10	10	40	80	80	160
	Media	**<13**	**40**	**<10**	**<13**	**40**	**107**	**107**	**160**
Gruppo 5 (PBS)	5001	<10	20	80	320	1280	5120	5120	10240
	5002	<10	20	40	160	1280	5120	5120	10240
	5003	<10	40	40	80	1280	5120	5120	20480
	Media	**<10**	**27**	**53**	**187**	**1280**	**5120**	**5120**	**13653**
		Controllo positivo del saggio: Pool anti-H10 di 9 sieri murini M1, M2, M3, del gruppo 1, N1-metilpseudouridina ($m^1\Psi$) e 5-metil citidina, gruppo 3 del giorno di studio 14 titolo HAI = 160				Controllo positivo del saggio: Pool anti H-10 di 9 sieri murini M1, M2, M3 del gruppo 1, N1-metil pseudouridina ($m^1\Psi$) e 5-metil citidina, gruppo 3 del giorno di studio 14 titolo HAI = 80			

Esempio 28: Determinazione del tempo all'insorgenza dell'immunità utilizzando un vaccino per H7N9 in un modello di furetto

Il tempo di insorgenza dell'immunità (misurato dai titoli anticorpali e dalla riduzione dei titoli virali a seguito di provocazione) di un vaccino antinfluenzale A/Anhui/1/2013 (H7N9) è stato valutato in un modello di furetti di infezione influenzale. In breve, venti gruppi di 8 furetti ciascuno sono stati vaccinati il giorno 0 con il vaccino NAV a mRNA per H7N9 alla dose di 10

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pg, 50 pg o 200 pg, un vaccino per vH7N9 privo del cap di 14 kDa a una dose di 200 pg, o PBS controllo per via intradermica. Cinque dei 20 gruppi hanno ricevuto una seconda vaccinazione (un richiamo) per determinare se una seconda dose aumentasse la protezione. Gli animali sono stati quindi esposti al virus dell'influenza A/Anhui/1/2013 (H7N9) per via intranasale. Il disegno dello studio è mostrato nella Tabella 45:

Tabella 45. Progetto di studio

Gruppo n.	**Dose di vaccino**	**Giorno della vaccinazione**	**N. di animali**	**Giorno della provocazione**	**Giorno dei prelievi di sangue**
1	H7N9/N1-metil pseudouridina /C1/MC3, 200 µg	0	8	7	0, 7
2	H7N9/N1-metil pseudouridina /C1/MC3, 50 µg	0	8	7	0, 7
3	H7N9/N1-metil pseudouridina /C1/MC3, 10 µg	0	8	7	0, 7
4	PBS	0	8	7	0, 7
5	H7N9/MC3 (-14 kDaCap) 200 µg	0	8	7	0 ,7
6	H7N9/N1-metil pseudouridina /C1/MC3, 200 µg	0	8	21	0, 21
7	H7N9/N1-metil pseudouridina /C1/MC3, 50 µg	0	8	21	0, 21
8	H7N9/N1-metil pseudouridina /C1/MC3, 10 µg	0	8	21	0, 21
9	PBS	0	8	21	0, 21
10	H7N9/MC3 (-14 kDaCap) 200 µg	0	8	21	0, 21
11	H7N9/N1-metil pseudouridina /C1/MC3, 200 µg	0	8	49	0, 49

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Gruppo n.	Dose di vaccino	Giorno della vaccinazione	N. di animali	Giorno della provocazione	Giorno dei prelievi di sangue
12	H7N9/N1-metil pseudouridina /C1/MC3, 50 µg	0	8	49	0, 49
13	H7N9/N1-metil pseudouridina /C1/MC3, 10 µg	0	8	49	0, 49
14	PBS	0	8	49	0, 49
15	H7N9/MC3 (-14 kDaCap) 200 pg	0	8	49	0, 49
16	H7N9/N1-metil pseudouridina /C1/MC3, 200 µg	4, 25	8	53	4, 25, 53
17	H7N9/N1-metil pseudouridina /C1/MC3, 50 µg	4, 25	8	53	4, 25, 53
18	H7N9/N1-metil pseudouridina /C1/MC3, 10 µg	4, 25	8	53	4, 25, 53
19	PBS	4, 25	8	53	4, 25, 53
20	H7N9/MC3 (-14 kDaCap) 200 µg	4, 25	8	53	4, 25, 53

Poiché H7N9 non induce una malattia letale nei furetti, l'endpoint primario era la carica virale nei tessuti (principalmente polmone) 3 giorni dopo la provocazione, come determinato da TCID50 (dose infettiva di coltura tissutale al 50%). Oltre ai titoli virali, il sangue è stato raccolto prima della vaccinazione e immediatamente prima della provocazione per determinare i titoli anticorpali specifici dell'influenza, come determinato mediante i saggi di inibizione dell'emoagglutinazione (HAI) e di microneutralizzazione (MN).

I dati sull'omogenato polmonare mostrano che una singola vaccinazione a qualsiasi concentrazione ha comportato una riduzione dei titoli virali, con un tempo di insorgenza dell'immunità prima di 7 giorni dopo la vaccinazione (Tabella 46). Vi è stata una riduzione di 1

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log in tutti i gruppi di vaccini sottoposti a provocazione 7 giorni dopo la vaccinazione. Ciò è migliorato per i gruppi che hanno ricevuto provocazione 21 giorni dopo la vaccinazione in modo dose-dipendente a una riduzione di 3, 2 e 1 log rispettivamente per i gruppi da 200, 50 e 10 pg (Figura 20). Ciò è ulteriormente migliorato per i gruppi che hanno ricevuto provocazione 49 giorni dopo la vaccinazione a una riduzione di 4, 2 e 3 log rispettivamente per i gruppi da 200, 50 e 10 pg. Una differenza statisticamente significativa è stata osservata rispetto al gruppo di controllo con PBS a 7 giorni dopo la vaccinazione nei gruppi da 10 e 200 pg ($p < 0,05$). Il gruppo con dose di 50 pg tendeva anche a ridurre i titoli virali polmonari, ma presentava differenze statisticamente significative rispetto al gruppo con PBS solo quando veniva somministrato un richiamo. Ciò era probabilmente dovuto all'occasionale campione periferico ad alto titolo virale, che ha aumentato la variabilità in questo gruppo.

Tabella 46: Carica virale (medie geografiche del gruppo TCID50)

	Lavaggio nasale			**Omogenato polmonare**		
	Giorno 7	**Giorno 21**	**Giorno 49**	**Giorno 7**	**Giorno 21**	**Giorno 49**
H7N9/N1-metil pseudouridina /C1/MC3 200 µg	$3,7 \times 10^3$	$3,1 \times 10^3$	$3,3 \times 10^4$	$3,0 \times 10^3$	$4,6 \times 10^1$	$8,0 \times 10^0$
H7N9/N1-metil pseudouridina /C1/MC3 50 µg	$2,4 \times 10^3$	$1,6 \times 10^4$	$6,7 \times 10^4$	$2,0 \times 10^3$	$5,9 \times 10^2$	$9,7 \times 10^2$
H7N9/N1-metil pseudouridina /C1/MC3 10 µg	$3,7 \times 10^3$	$8,1 \times 10^2$	$1,0 \times 10^5$	$2,3 \times 10^3$	$2,9 \times 10^3$	$6,2 \times 10^1$
PBS	$6,0 \times 10^3$	$2,9 \times 10^3$	$1,7 \times 10^5$	$3,8 \times 10^4$	$3,2 \times 10^4$	$2,1 \times 10^4$
H7N9/MC3 (cap —14 kDa) 200 µg	$1,4 \times 10^4$	$1,5 \times 10^3$	$3,6 \times 10^5$	$7,9 \times 10^3$	$1,6 \times 10^3$	$4,8 \times 10^2$
t 158 è il limite inferiore di rilevamento del saggio $TCID_{50}$ con lavaggio nasale. A tutti i valori LLOQ inferiori è stato assegnato un valore di 79 per produrre i valori geomedi per il lavaggio nasale. 15,8 è il limite inferiore di rilevamento del saggio $TCID_{50}$ su omogenato polmonare. A tutti i valori LLOQ inferiori è stato assegnato un valore di 8 per produrre i valori geomedi per il lavaggio nasale.						

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Non è stato osservato alcun beneficio statistico dalla vaccinazione di richiamo rispetto a una singola vaccinazione, ma ciò è probabilmente dovuto alla riduzione di 2-4 log dei titoli polmonari virali entro 49 giorni osservata in entrambi i gruppi di vaccinazione singola e di 2 vaccinazioni (richiamo) (Tabella 47).

Tabella 47: Carica virale polmonare (medie geografiche del gruppo TCID50) - con richiamo vs. senza richiamo

	Giorno 49 senza richiamo	**Giorno 49 con richiamo al Giorno 21**
Vaccino da 200 µg	$8{,}0 \times 10^0$	$8{,}0 \times 10^0$
Vaccino da 50 µg	$9{,}7 \times 10^2$	$8{,}0 \times 10^0$
Vaccino da 10 µg	$6{,}2 \times 10^1$	$1{,}1 \times 10^2$
PBS	$2{,}1 \times 10^4$	$2{,}2 \times 10^4$
Vettore di vaccino vuoto	$4{,}8 \times 10^2$	$8{,}0 \times 10^0$
† 15,8 è il limite inferiore di rilevamento del saggio $TCID_{50}$ su omogenato polmonare. A tutti i valori LLOQ inferiori è stato assegnato un valore di 8 per produrre i valori geomedi per il lavaggio nasale.		

Il siero è stato raccolto da ciascun animale immediatamente prima della vaccinazione e della provocazione e analizzato mediante saggio di HAI. Come si vede dalla Tabella 48, un aumento dose-dipendente era visibile 7 giorni dopo la vaccinazione e i titoli aumentavano nel tempo. Il vaccino da 200 pg con cap 14 kDa ha fornito un titolo al di sopra dello sfondo, tra il la risposta del vaccino da 10 pg e PBS. I gruppi che hanno ricevuto una seconda vaccinazione hanno mostrato un aumento dose-dipendente di 3 8 volte dei titoli anticorpali dopo la seconda vaccinazione. Il vaccino da 200 pg con cap 14 kDa ha anche mostrato un aumento di circa 2 volte dei titoli anticorpali dopo la seconda vaccinazione. In tutti i casi, un aumento statisticamente significativo rispetto al campione di sangue pre-vaccinazione è stato osservato per la prima volta 21 giorni dopo la vaccinazione ($p < 0{,}05$).

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Tabella 48: Risultati del titolo anticorpale HAI

		Geomedia			
Coorte	**Trattamento**	**Giorno 0**	**Giorno 7**	**Giorno 21**	**Giorno 49**
1	Vaccino da 200 µg	5,00t	5,45	N/At	N/A
1	Vaccino da 50 µg	5,00	6,48	N/A	N/A
1	Vaccino da 10 µg	5,00	5,94	N/A	N/A
1	PBS	5,00	5,00	N/A	N/A
1	Vettore di vaccino vuoto	5,00	5,45	N/A	N/A
2	Vaccino da 200 µg	5,00	N/A	43,62	N/A
2	Vaccino da 50 µg	5,00	N/A	25,94	N/A
2	Vaccino da 10 µg	5,00	N/A	25,94	N/A
2	PBS	5,00	N/A	5,00	N/A
2	Vettore di vaccino vuoto	5,00	N/A	9,35	N/A
3	Vaccino da 200 µg	5,00	N/A	N/A	61,69
3	Vaccino da 50 µg	5,00	N/A	N/A	33,64
3	Vaccino da 10 µg	5,00	N/A	N/A	25,94
3	PBS	5,00	N/A	N/A	5,00
3	Vettore di vaccino vuoto	5,00	N/A	N/A	18,34
4	Vaccino da 200 µg	5,00	N/A	59,93	480,67
4	Vaccino da 50 µg	5,00	N/A	29,97	195,85
4	Vaccino da 10 µg	5,00	N/A	40,00	97,92
4	PBS	5,00	N/A	5,00	5,45
4	Vettore di vaccino vuoto	5,94	N/A	5,96	36,68

† Ten è il limite inferiore di rilevamento del saggio di HAI. A tutti <10 è stato assegnato un valore di 5 per produrre i valori geomedi.
+NA = Non applicabile.

I campioni di siero sono stati anche analizzati mediante il saggio MN. Come mostrato nella Tabella 49, l'aumento del titolo MN è stato osservato già 7 giorni dopo la vaccinazione e ha continuato ad aumentare fino a 49 giorni dopo la vaccinazione. I titoli erano più alti nel

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gruppo del vaccino da 200 pg ed erano simili nei gruppi da 50 e 10 pg. Per i gruppi di dose di vaccino da 50 e 200 pg, è stato osservato un aumento statisticamente significativo entro 7 giorni dalla vaccinazione ($p < 0,05$). Per i gruppi di dose di vaccino da 10 pg, l'aumento significativo non è stato osservato fino a 21 giorni dopo la vaccinazione ($p < 0,05$). Il vaccino da 200 pg con cap 14 kDa ha fornito un titolo al di sopra dello sfondo, che era statisticamente significativo entro 49 giorni dalla vaccinazione ($p < 0,05$) ed era inferiore ai titoli per i gruppi da 50 e 10 pg. I gruppi che hanno ricevuto una seconda vaccinazione hanno registrato un aumento dei titoli di 3,0-4,5 volte dopo la seconda vaccinazione. Il vaccino da 200 pg con cap 14 kDa ha anche mostrato un aumento di circa 1,5 volte dei titoli dopo la seconda vaccinazione.

Tabella 49: Risultati del titolo anticorpale MN

		Geomediat			
Coorte	**Trattamento**	**Giorno 0**	**Giorno 7**	**Giorno 21**	**Giorno 49**
1	H7N9/N1-metil pseudouridina /C1/MC3 200 µg Vaccino	15,00	33,67	N/At	N/A
1	H7N9/N1-metil pseudouridina /C1/MC3 50 µg Vaccino	17,38	42,29	N/A	N/A
1	H7N9/N1-metil pseudouridina /C1/MC3 10 µg Vaccino	21,21	25,94	N/A	N/A
1	PBS	19,58	18,47	N/A	N/A
1	H7N9/MC3 (-14 kDaCap) 200 ug	17,43	20,03	N/A	N/A
2	H7N9/N1-metil pseudouridina /C1/MC3 200 µg Vaccino	14,69	N/A	92,41	N/A
2	H7N9/N1-metil pseudouridina /C1/MC3 50 µg Vaccino	17,49	N/A	42,50	N/A
2	H7N9/N1-metil pseudouridina /C1/MC3 10 µg Vaccino	15,07	N/A	43,48	N/A
2	PBS	17,89	N/A	13,60	N/A
2	H7N9/MC3 (-14 kDaCap) 200 µg	18,52	N/A	17,43	N/A
3	H7N9/N1-metil pseudouridina /C1/MC3 200 µg Vaccino	15,51	N/A	N/A	160,08
3	H7N9/N1-metil pseudouridina	13,16	N/A	N/A	89,80

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		Geomediat			
Coorte	**Trattamento**	**Giorno 0**	**Giorno 7**	**Giorno 21**	**Giorno 49**
	/C1/MC3 50 µg Vaccino				
3	H7N9/N1-metil pseudouridina /C1/MC3 10 µg Vaccino	13,12	N/A	N/A	77,51
3	PBS	12,70	N/A	N/A	10,68
3	H7N9/MC3 (-14 kDaCap) 200 µg	10,33	N/A	N/A	46,21
4	H7N9/N1-metil pseudouridina /C1/MC3 200 µg Vaccino	10,33	N/A	63,44	697,88
4	H7N9/N1-metil pseudouridina /C1/MC3 50 µg Vaccino	10,68	N/A	29,99	273,04
4	H7N9/N1-metil pseudouridina /C1/MC3 10 µg Vaccino	10,68	N/A	31,97	232,65
4	PBS	12,01	N/A	11,03	10,68
4	H7N9/MC3 (—14 kDaCap) 200 µg	11,78	N/A	16,47	69,06

† 20 è il limite inferiore di rilevamento del saggio MN. A tutti < 20 è stato assegnato un valore di 10 per produrre i valori geomedi.
‡ N/A = Non applicabile.

Abbastanza sorprendentemente, i costrutti di vaccino dell'invenzione hanno ridotto i titoli virali nei polmoni quando esposti al virus solo 7 giorni dopo la vaccinazione. Aumenti statisticamente significativi del titolo anticorpale misurati mediante HAI e MN sono stati rilevati già 7 giorni dopo la vaccinazione. Una seconda vaccinazione (vale a dire, un richiamo) ha aumentato i titoli anticorpali, ma non ha ridotto statisticamente il titolo virale, poiché una singola vaccinazione ha eliminato tutti i virus nella maggior parte degli animali. Il vaccino con cap -14 kDa a 200 pg/animale ha fornito una protezione inferiore rispetto al vaccino completo da 10 pg, ma ha ridotto la carica virale nel polmone e aumentato i titoli anticorpali, entrambi rispetto al controllo PBS.

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Rivendicazioni

1. Vaccino ad acido nucleico, comprendente:

uno o più polinucleotidi di RNA messaggero (mRNA) aventi una cornice di lettura aperta codificante per almeno un polipeptide antigenico di agente infettivo, in cui l'agente infettivo è un ceppo di influenza A o di influenza B o combinazioni di essi,

in cui l'uno o più polinucleotidi di mRNA comprendono almeno una modificazione chimica, in cui l'almeno una modificazione chimica è scelta dal gruppo costituito da pseudouridina, N1-metilpseudouridina, 2-tiouridina, 4-tiouridina, 5-metilcitosina, 2-tio-1-metil-1-deaza-pseudouridina, 2-tio-1-metil-pseudouridina, 2-tio-5-aza-uridina, 2-tio-diidropseudouridina, 2-tio-diidrouridina, 2-tio-pseudouridina, 4-metossi-2-tio-pseudouridina, 4-metossi-pseudouridina, 4-tio-1-metil-pseudouridina, 4-tio-pseudouridina, 5-aza-uridina, diidropseudouridina, 5-metossiuridina, e 2'-O-metiluridina, e

in cui l'uno o più polinucleotidi di mRNA sono formulati in una nanoparticella di lipide cationico avente un rapporto molare di 20-60% di lipide cationico, 0,5-15% di lipide modificato con PEG, 25-55% di sterolo e 5-25% di lipide non cationico.

2. Il vaccino della rivendicazione 1, in cui (a) il vaccino ad acido nucleico è multivalente; e/o (b) la cornice di lettura aperta dell'uno o più polinucleotidi di mRNA codifica per almeno 2, 3, 4, 5, 6, 7, 8, 9 o 10, 15, 20, o 50 polipeptidi antigenici.

3. Il vaccino della rivendicazione 1 o della rivendicazione 2, in cui il lipide cationico è un lipide cationico ionizzabile, il lipide non cationico è un lipide neutro, e lo sterolo è un colesterolo.

4. Il vaccino di una qualsiasi delle rivendicazioni 1-3, in cui l'agente infettivo è un virus scelto dal gruppo costituito da H1N1, H3N2, H7N9 e H10N8.

5. Il vaccino di una qualsiasi delle rivendicazioni 1-4, in cui almeno l'80%, ad esempio il 100%, dell'uracile nella cornice di lettura aperta ha una modificazione chimica, facoltativamente in cui la modificazione chimica è N1-metil pseudouridina.

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6. Il vaccino di una qualsiasi delle rivendicazioni 1-5, per l'uso come un agente terapeutico o profilattico.

7. Il vaccino di una qualsiasi delle rivendicazioni 1-5 per l'uso in un metodo per prevenire o trattare un'infezione virale dell'influenza, il metodo comprendendo la somministrazione del vaccino a un soggetto.

8. Il vaccino per l'uso della rivendicazione 6 o della rivendicazione 7, in cui il vaccino viene somministrato in un evento di singola somministrazione o in due o più dosi.

9. Il vaccino per l'uso di una qualsiasi delle rivendicazioni 6-8, in cui il vaccino viene somministrato mediante iniezione intramuscolare (IM) o intradermica (ID).

* * * *

Seguono n° 86 tavole di disegno.

Si dichiara che la presente traduzione è conforme al testo originale in lingua inglese.

Brescia, 6 febbraio 2025

In Fede,

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

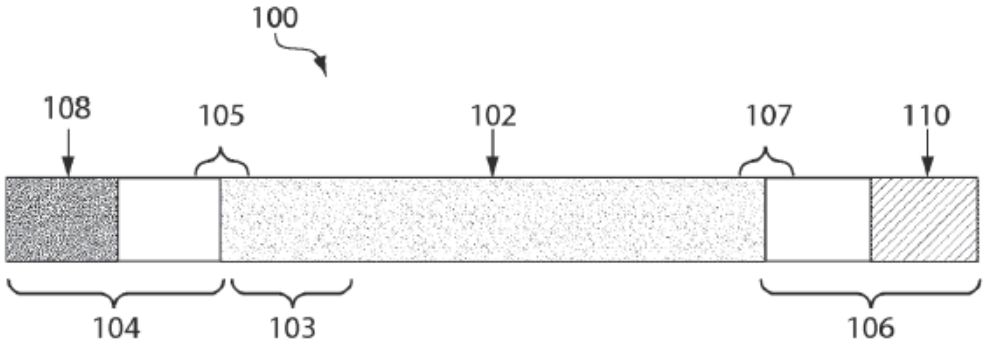

FIGURA 1A

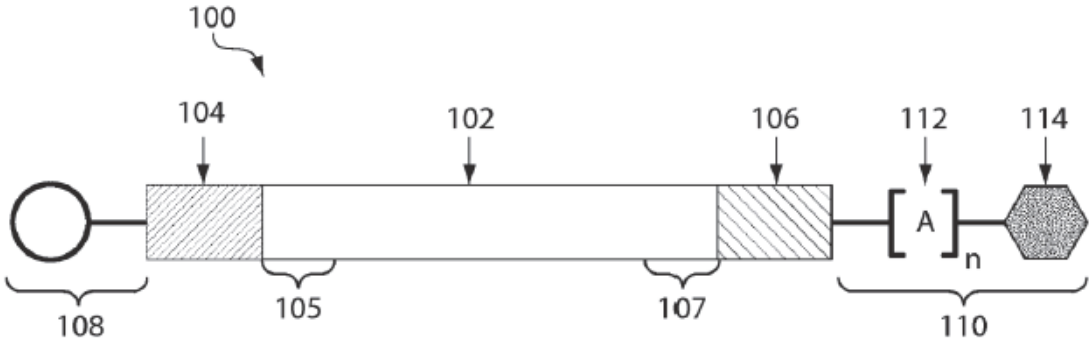

FIGURA 1B

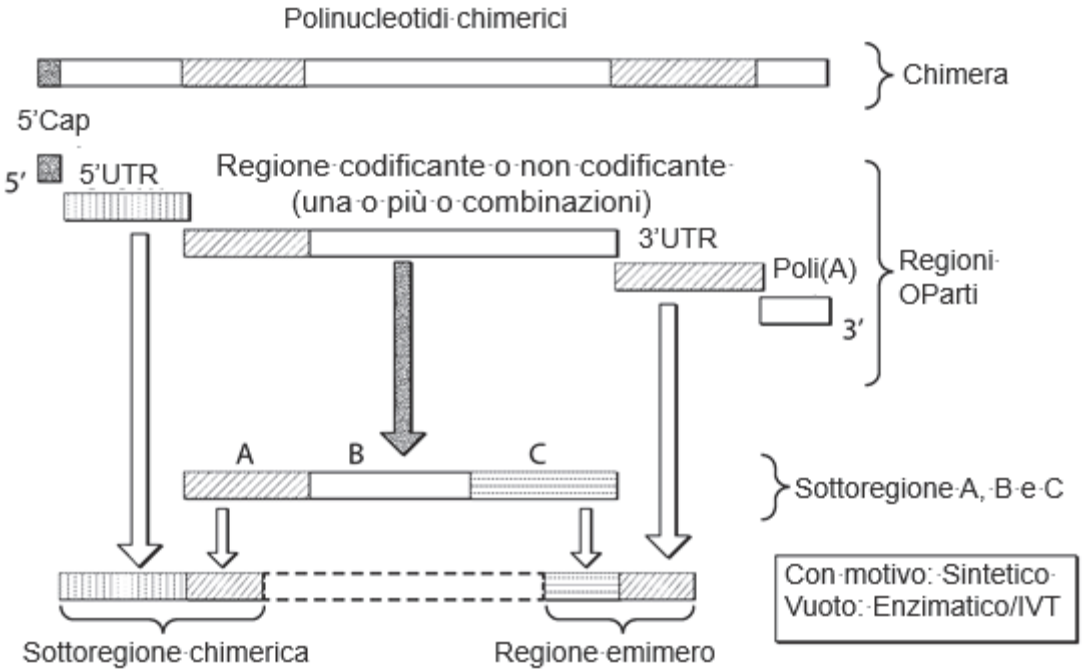
Polinucleotidi chimerici
Chimera
5'Cap
5'
5'UTR
Regione codificante o non codificante
(una o più o combinazioni)
3'UTR
Poli(A)
3'
Regioni
OParti
A
B
C
Sottoregione A, B e C
Con motivo: Sintetico
Vuoto: Enzimatico/IVT
Sottoregione chimerica
Regione emimero

FIGURA 2

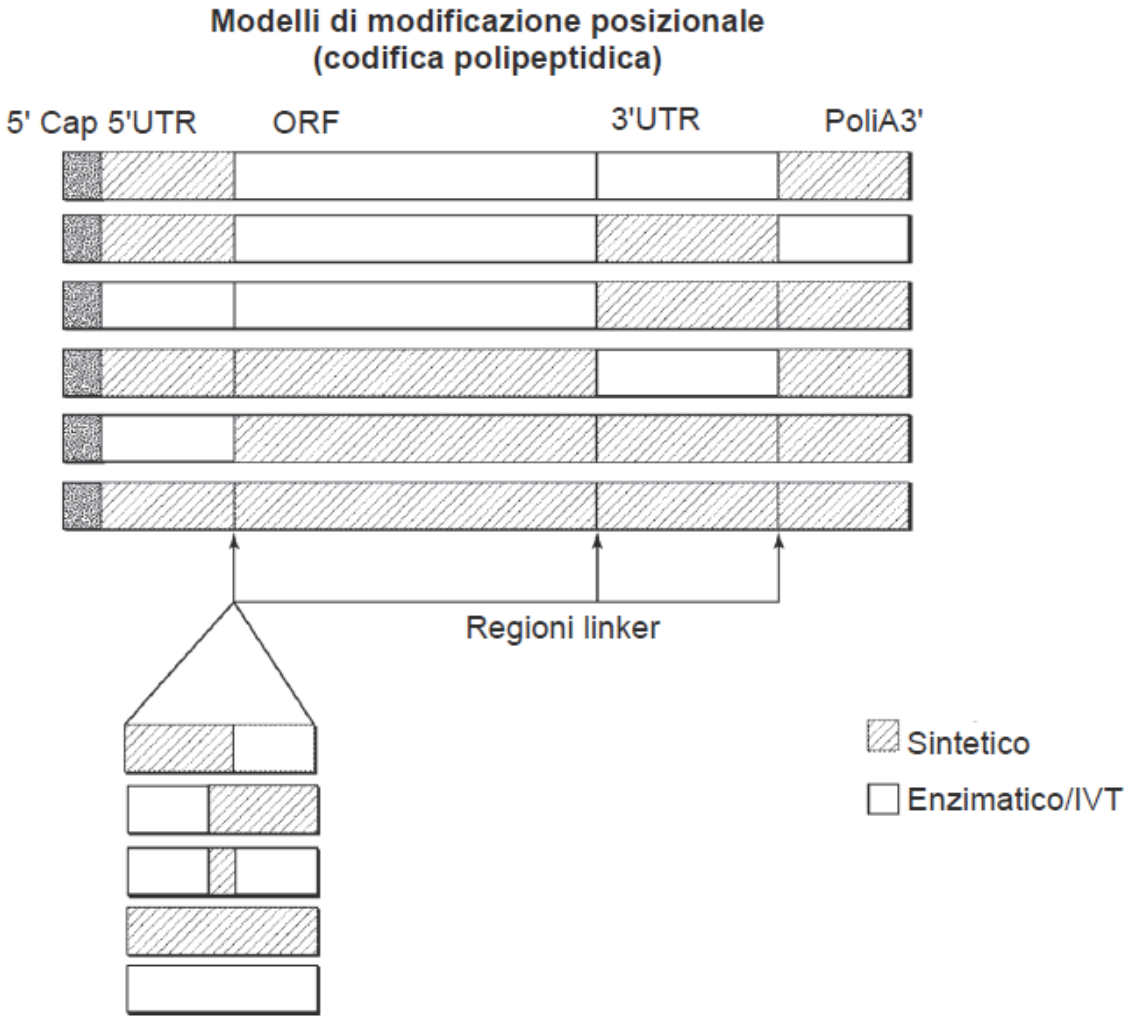
Modelli di modificazione posizionale
(codifica polipeptidica)
5' Cap 5'UTR
ORF
3'UTR
PoliA3'
Regioni linker
Sintetico
Enzimatico/IVT

FIGURA 3

Modelli di modificazione posizionale

A	(L)	B	(L)	C	(L)

5′[NNNNN$_n$]$_x$ L1 [NNNNNNNNNNNN$_o$]$_y$ L2 [XXXXXXXXXXXX$_p$]$_z$ L3 3′

5′[NNNNN$_n$]$_x$ L1 [XXXXXXXXXXXXXXX$_o$]$_y$ L2 [XXXXXXXXXXXX$_p$]$_z$ L3 3′

5′[XXXXXX$_n$]$_x$ L1 [XXXXXXXXXXXXXXX$_o$]$_y$ L2 [XXXXXXXXXXX$_p$]$_z$ L3 3′

5′[NNNNN$_n$]$_x$ L1 [NNNNNNNNNNNN$_o$]$_y$ L2 [XXXXXXXXXXXX$_p$]$_z$ L3 3′

A, B, C- Regione o parte del polinucleotide chimerico
N-nucleoside
n, o, p-numero di nucleosidi
x, y, z-numero di regioni
X-Nucleoside posizionamento selettivo
L-linker (facoltativo)

FIGURA 4

Terminali 3' bloccati o strutturati

A	(L)	B	(L)	C	(L)

5′[NNNN$_n$]$_x$ L1 [NNNNNNNNNNNN$_o$]$_y$ L2 [XXXXXXXXXXXX$_p$]$_z$ L3 3′

5′[NNNN$_n$]$_x$ L1 [NNNNNNNNNNNN$_o$]$_y$ L2 [XXXXXXXXXXXX$_p$]$_z$ K 3′

5′[NNNN$_n$]$_x$ L1 [NNNNNNNNNNNN$_o$]$_y$ L2 [XXXXX**XX**XXXXXXXXX X$_X$

3′ [XXXXXXXXXXX X

5′[NNNNN$_n$]$_x$ L1 [NNNNNNNNNNNN$_o$]$_y$ L2 [XXXX**XXX**XXXXXXXX L L =L3

3′ XXXXXXXXXX L L

5′[NNNNN$_n$]$_x$ L1 [NNNNNNNNNNNN$_o$]$_y$ L2 [XXXX**XXX**XXXXXXXX L L =L3

X X XXXXXXXXXX L L

X X XXXXXXXXXX 3′

A, B, C- Regione o parte del polinucleotide chimerico
N-nucleoside
n, o, p-numero di nucleosidi
x, y, z-numero di regioni
X-Nucleoside posizionamento selettivo
K-Frazione o coniugato non nucleosidico
L-linker (opzionale)

FIGURA 5

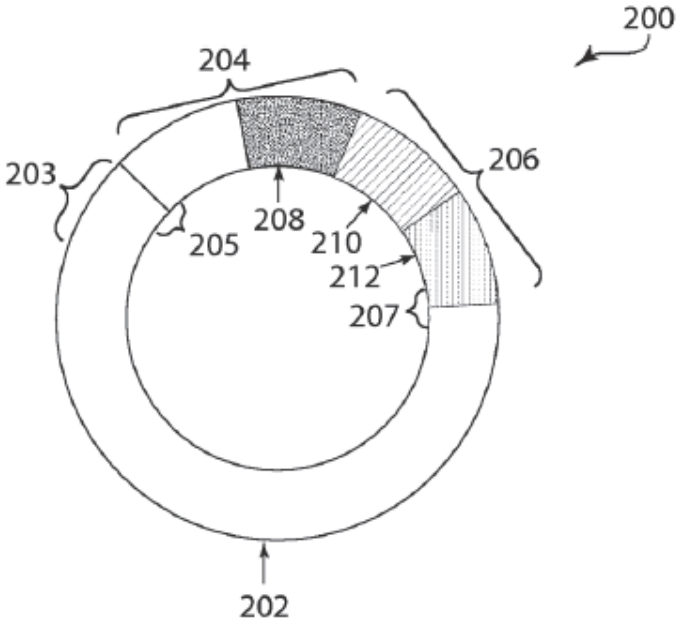

FIGURA 6A

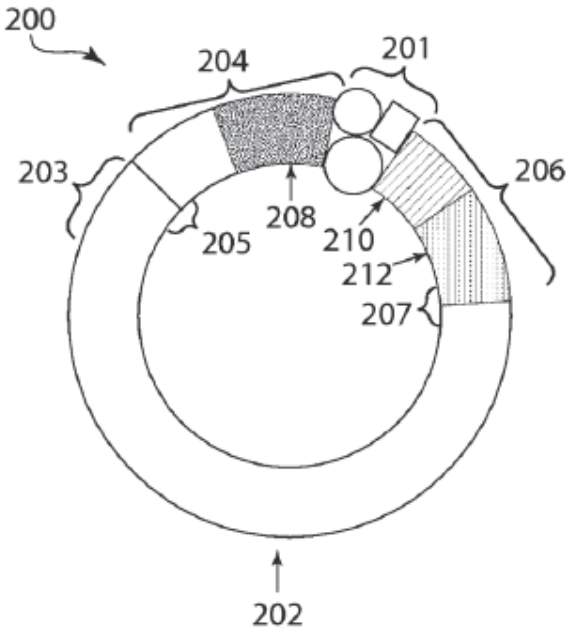

FIGURA 6B

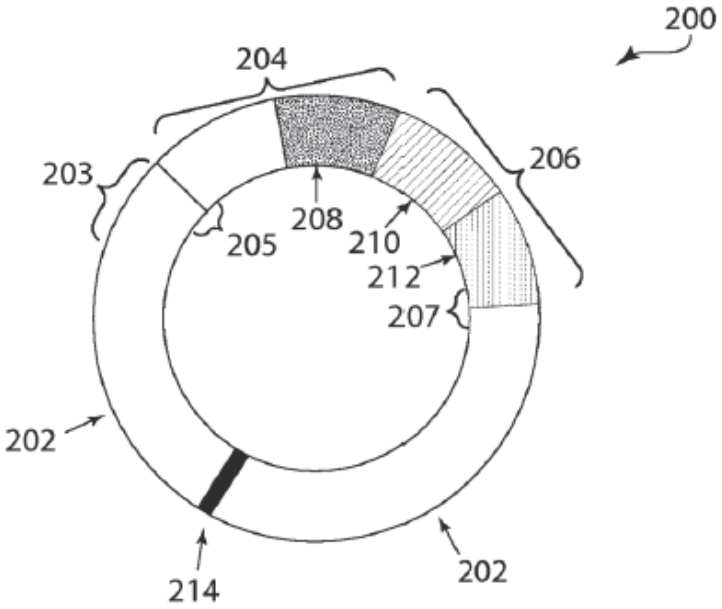

FIGURA 7A

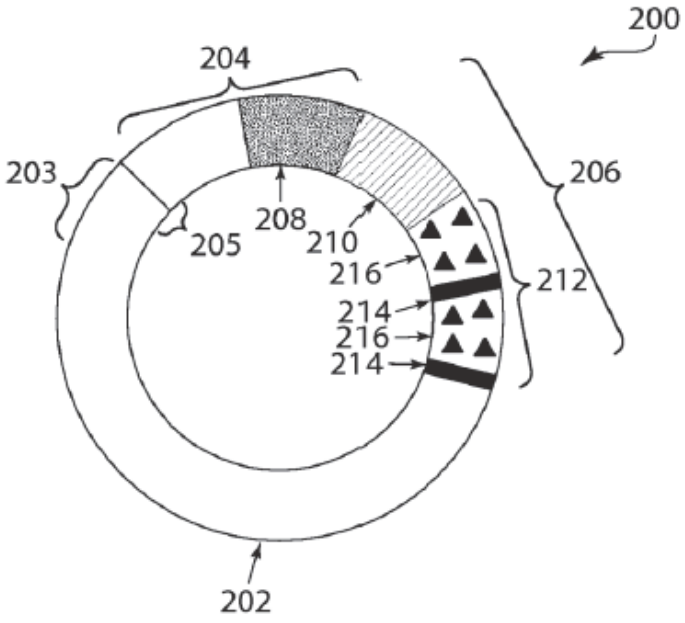

FIGURA 7B

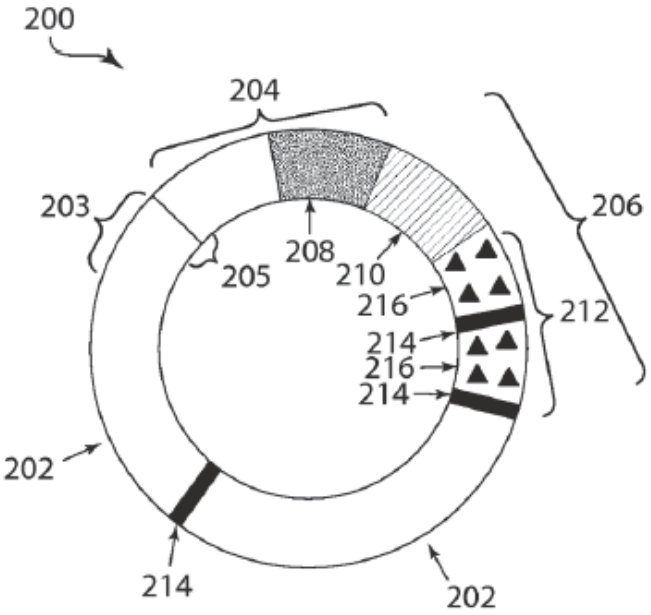

FIGURA 8A

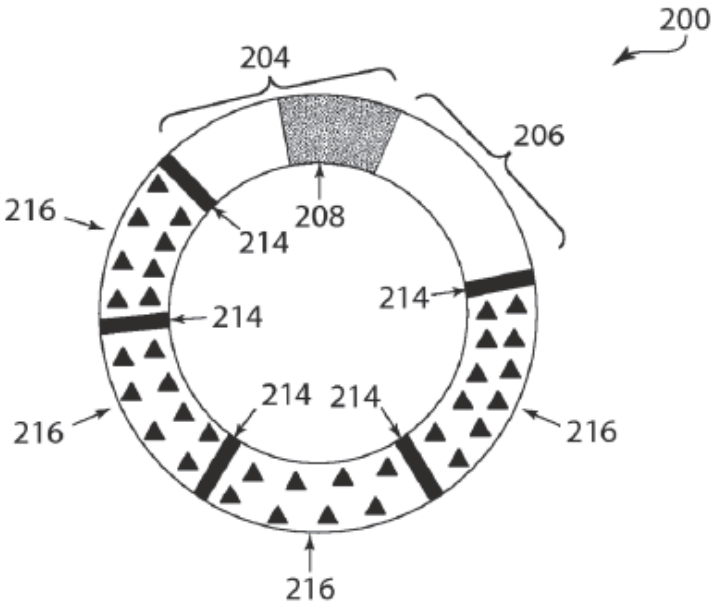

FIGURA 8B

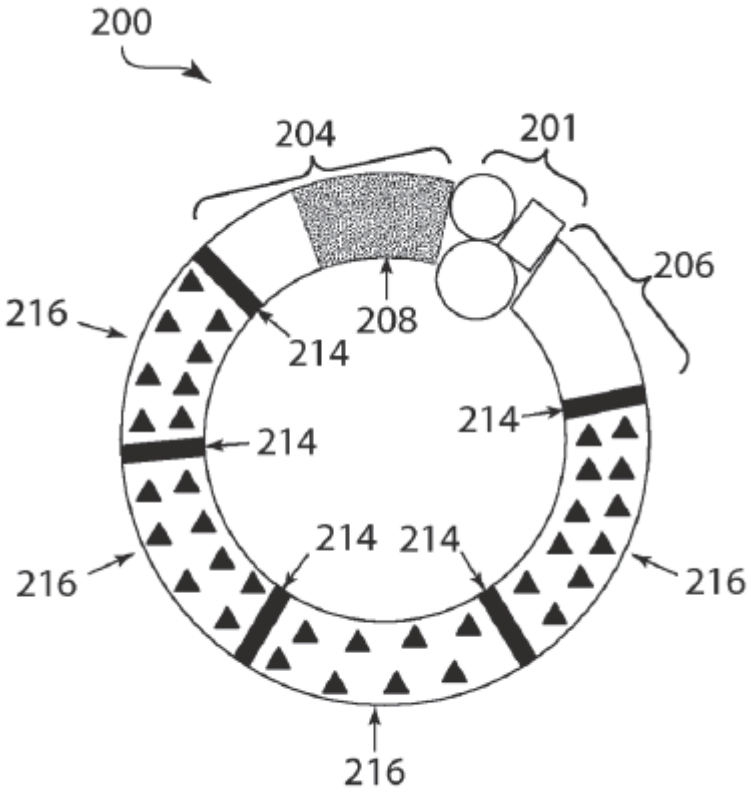

FIGURA 9

Dosaggio e valutazione clinica

	Controllo	Vaccino proteico	mRNA H1N1IM	mRNA H1N1ID	Controllo positivo
Dose di mRNA	–	–	8-10µg	8-10µg	80µg
Punteggio salute	7	2	1	2	2
Perdita di peso	>25%	10%	<6%	8-10%	8-10%
media	100%	0%	0%	0%	0%

Titoli di neutralizzazione di HA

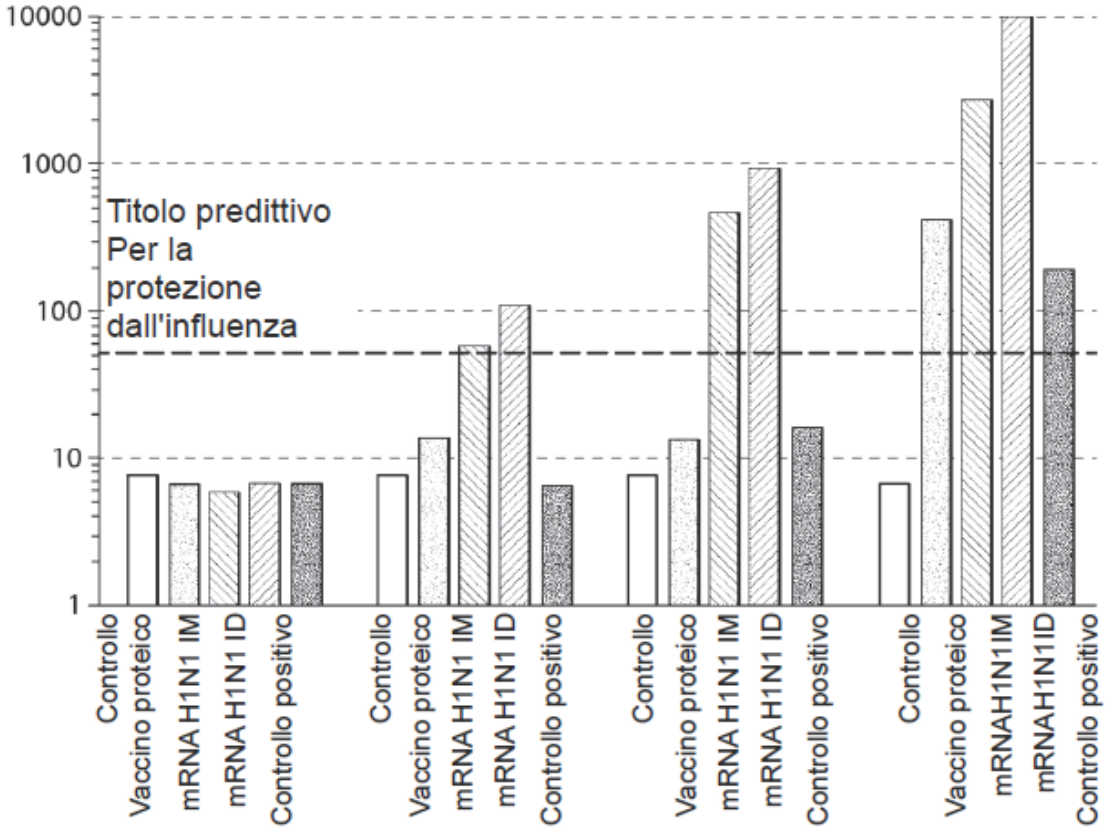

FIGURA 10

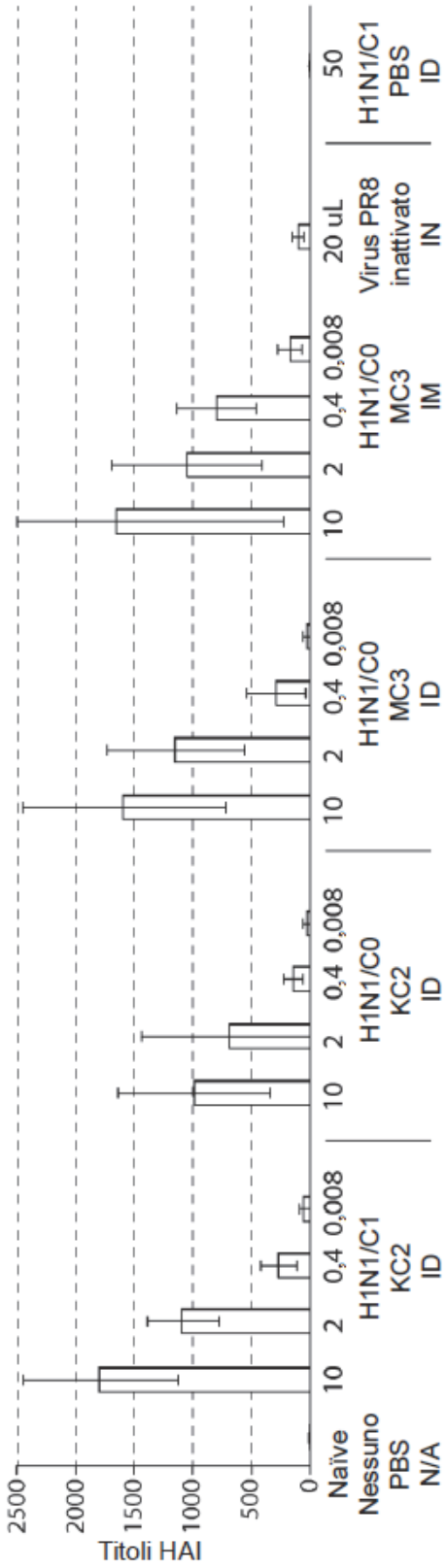

FIGURA 11

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

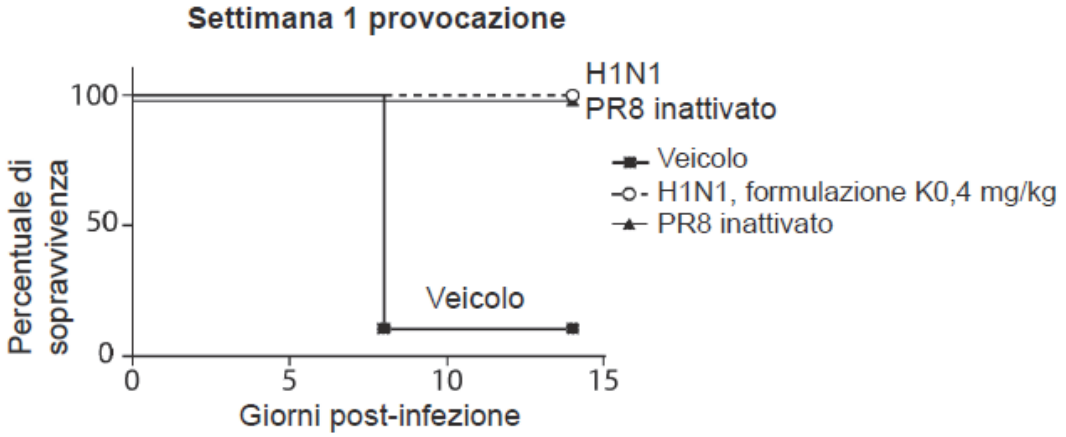

FIGURA 12A

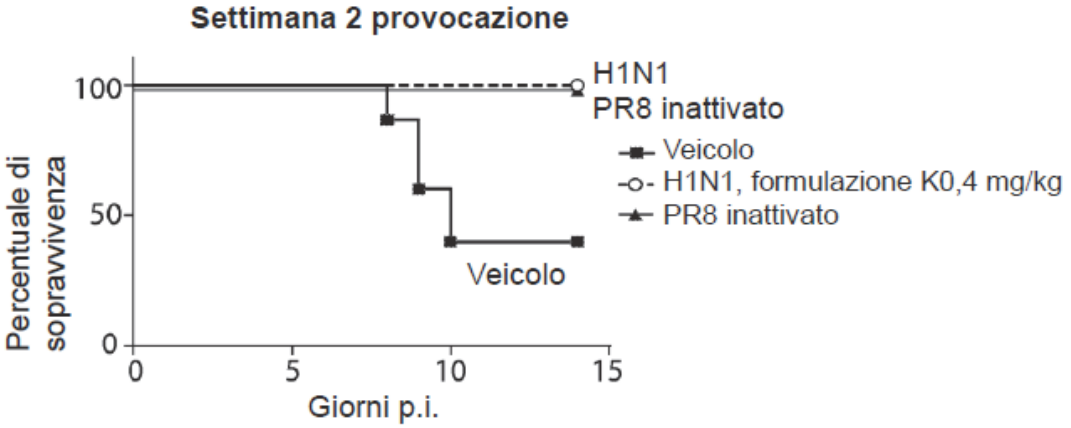

FIGURA 12B

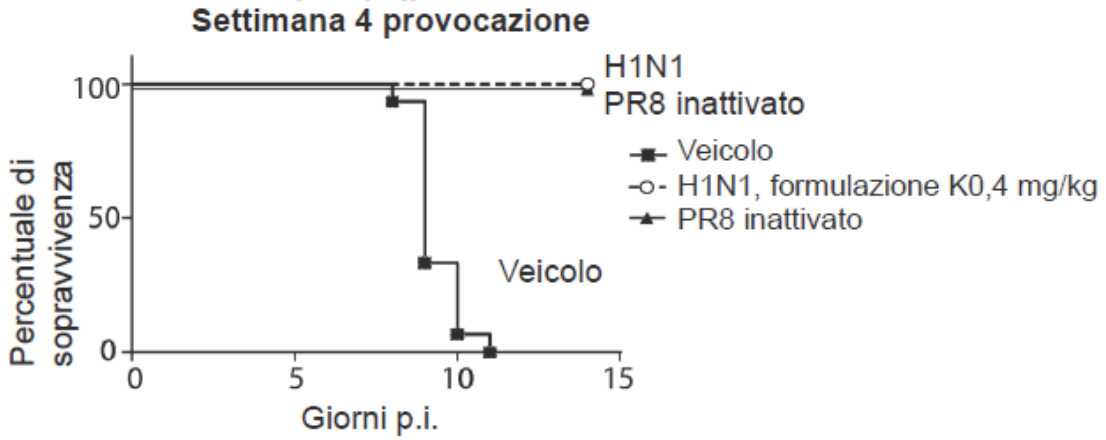

FIGURA 12C

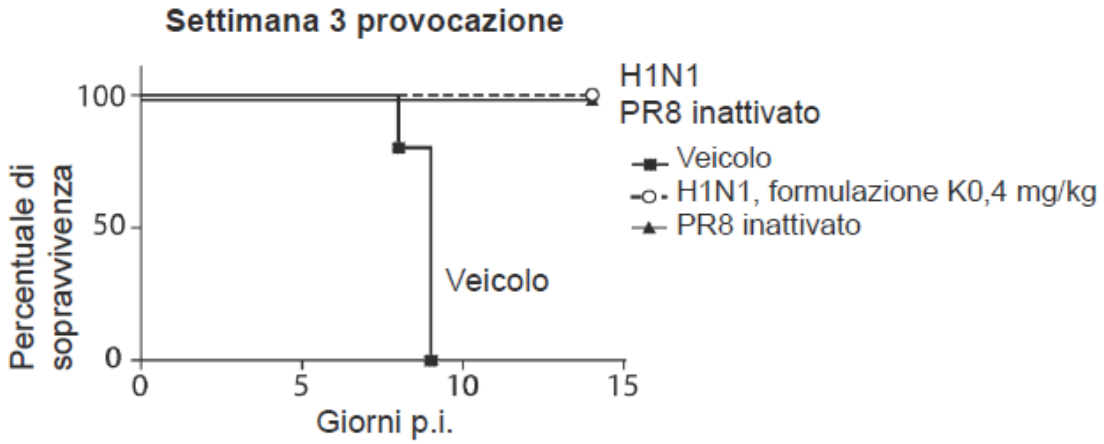

FIGURA 12D

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

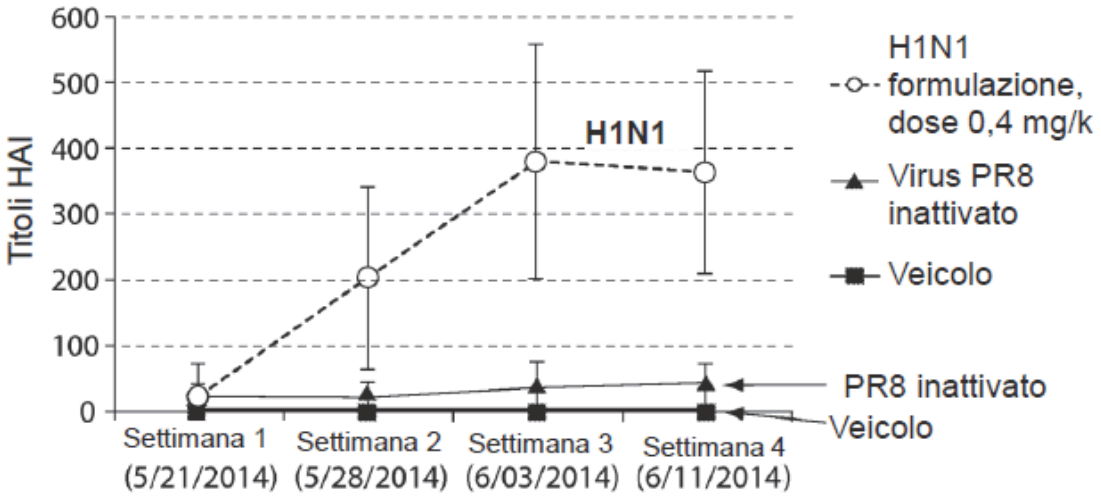

FIGURA 13

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

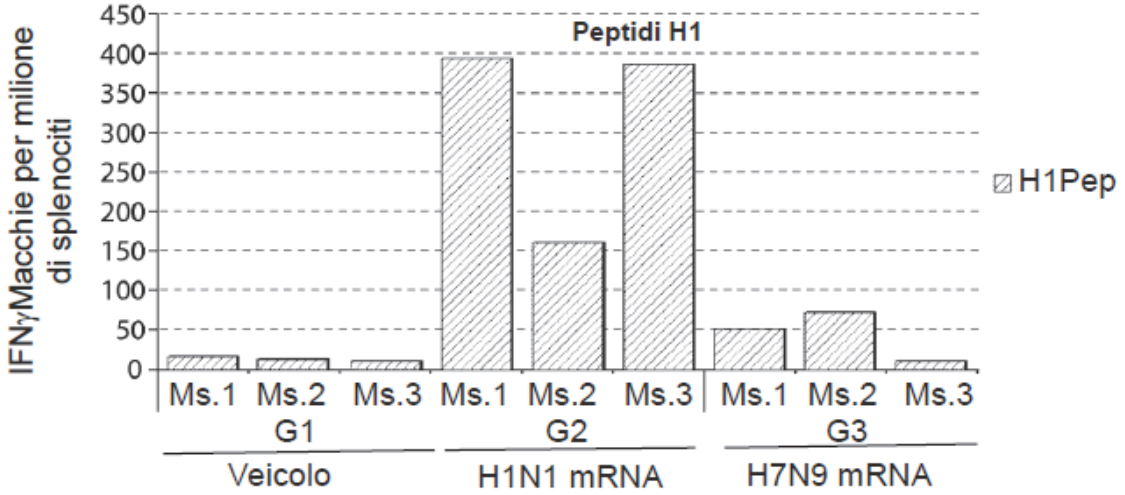

FIGURA 14A

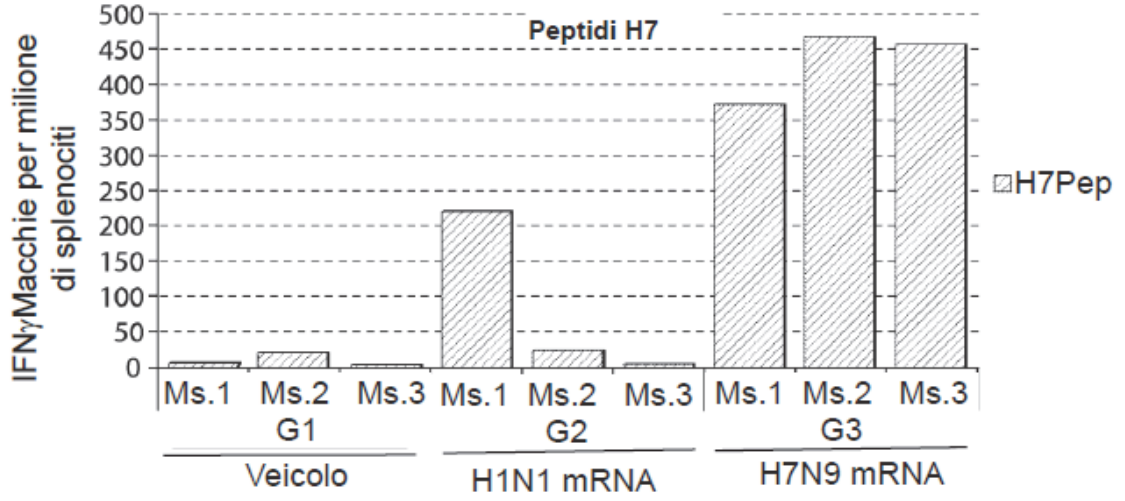

FIGURA 14B

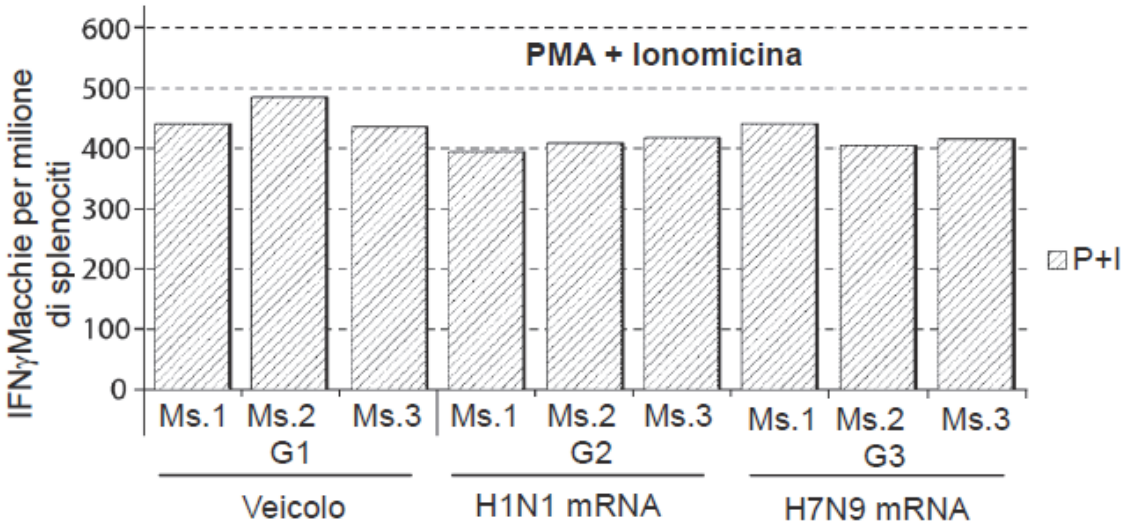
PMA + Ionomicina
IFNγMacchie per milione di splenociti
600
500
400
300
200
100
0
P+I
Ms.1 Ms.2 Ms.3 Ms.1 Ms.2 Ms.3 Ms.1 Ms.2 Ms.3
G1
G2
G3
Veicolo
H1N1 mRNA
H7N9 mRNA

FIGURA 14C

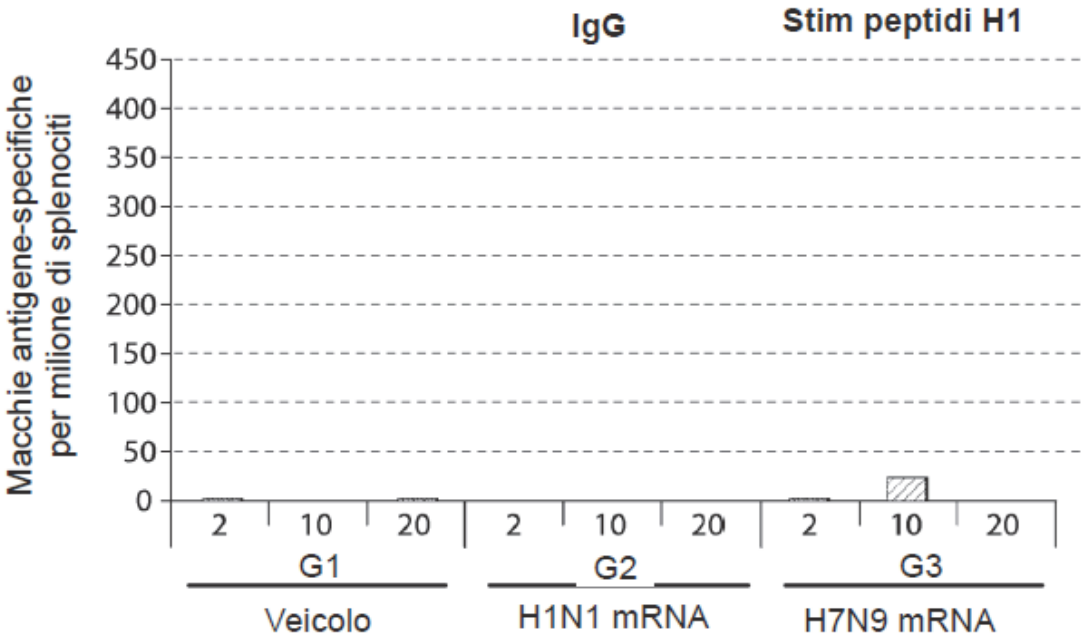

FIGURA 15A

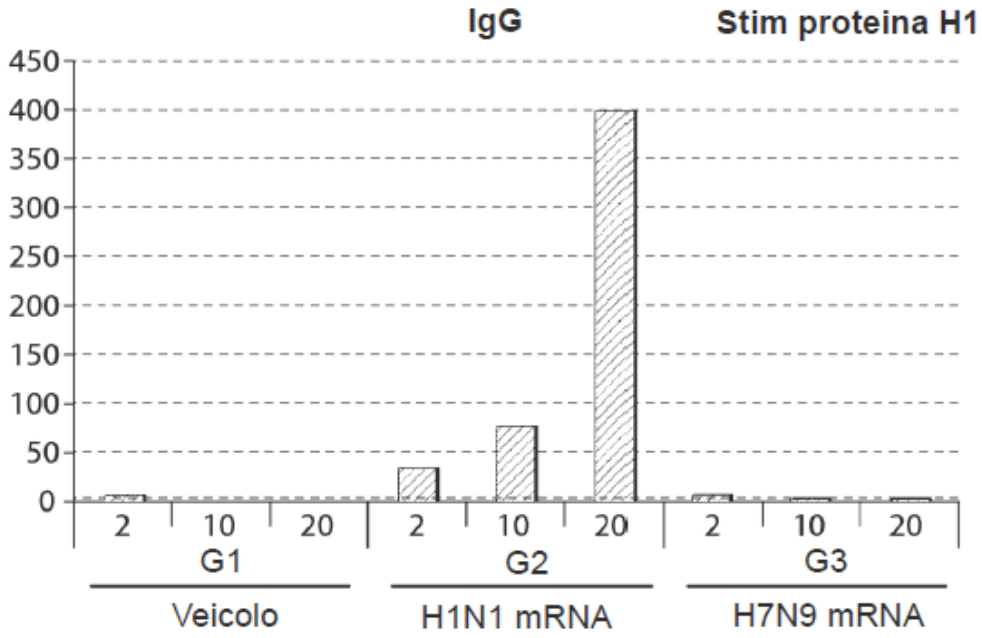

FIGURA 15B

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

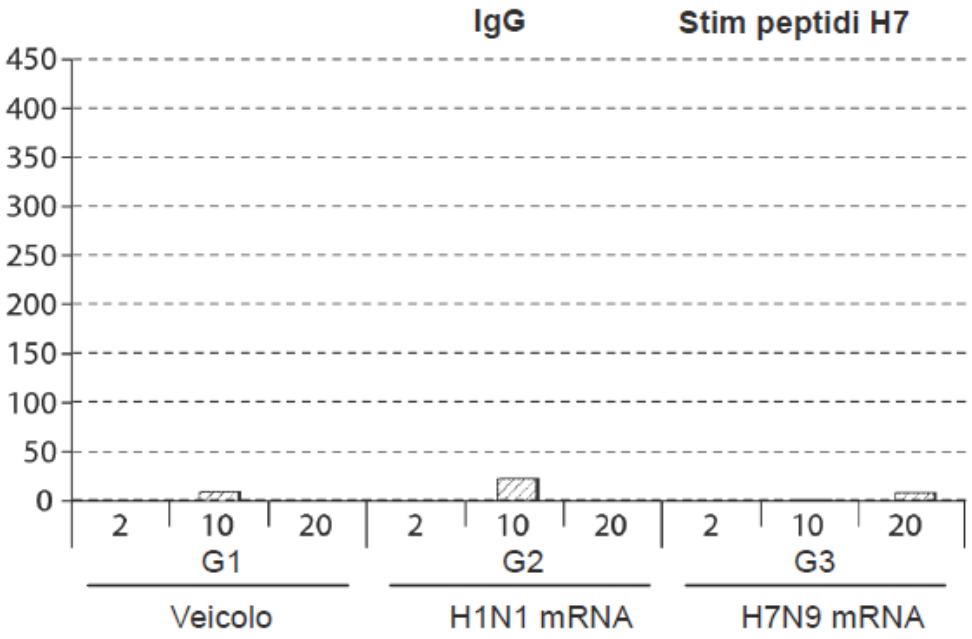

FIGURA 15C

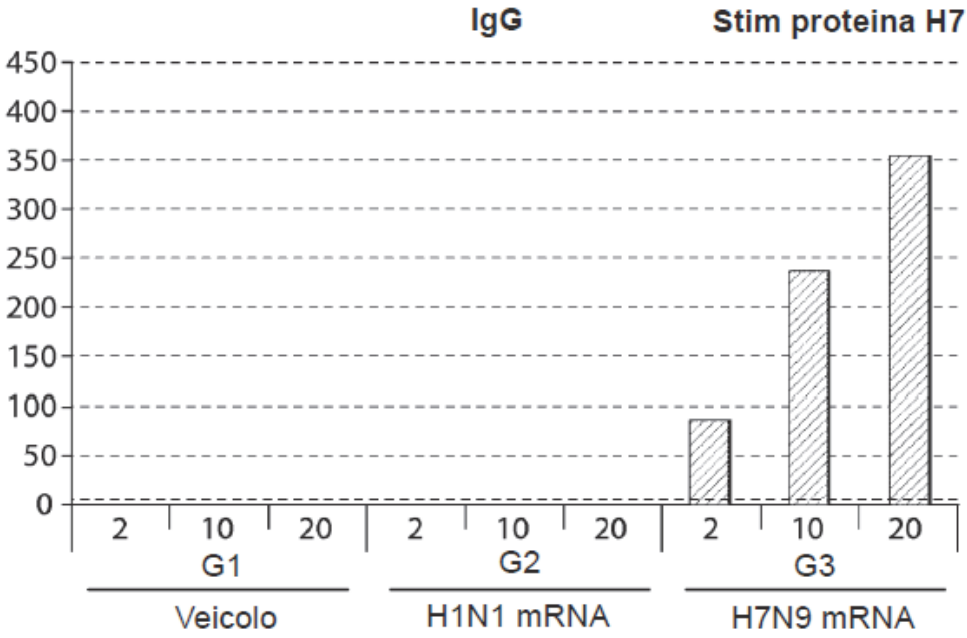

FIGURA 15D

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

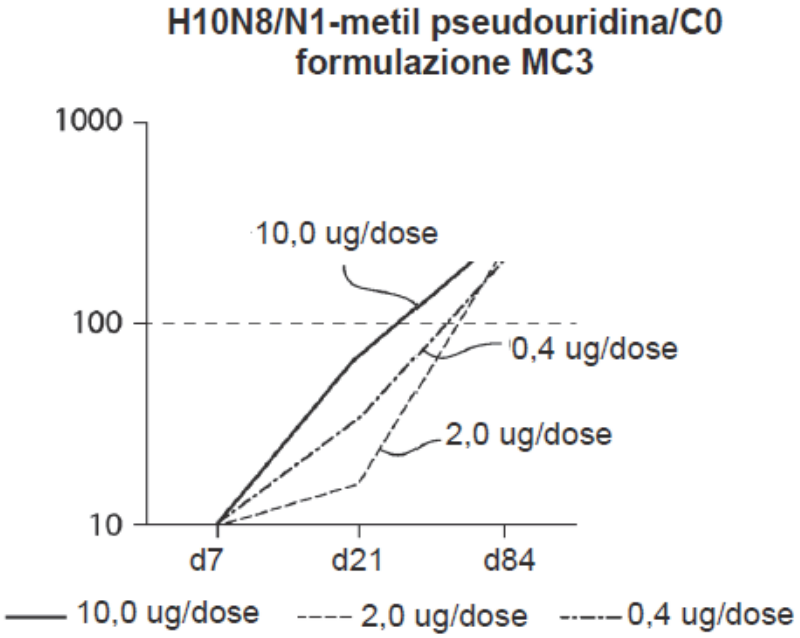

FIGURA 16

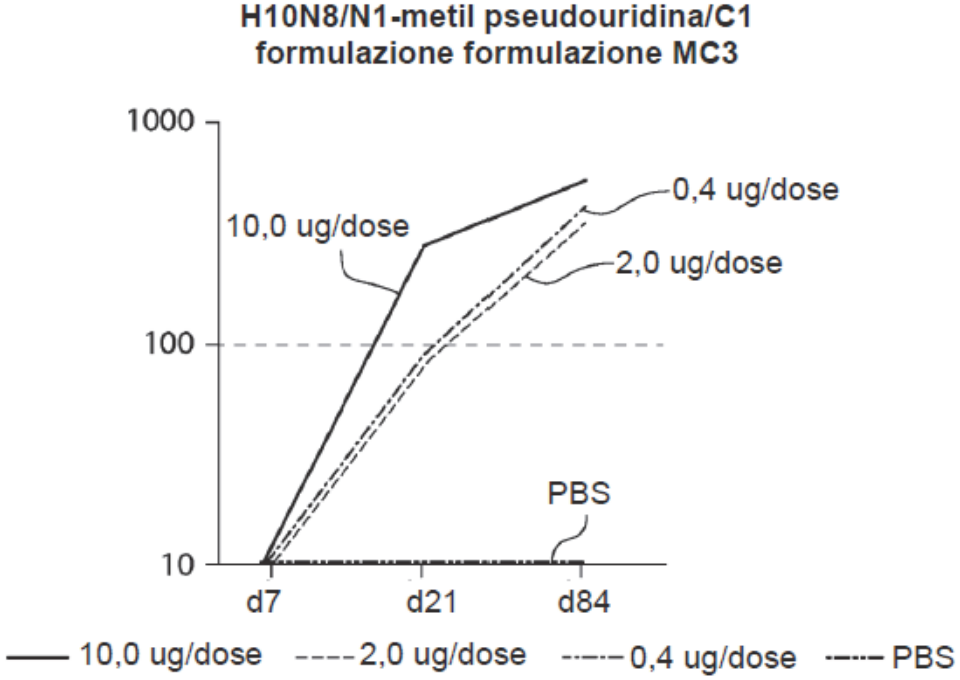

FIGURA 17

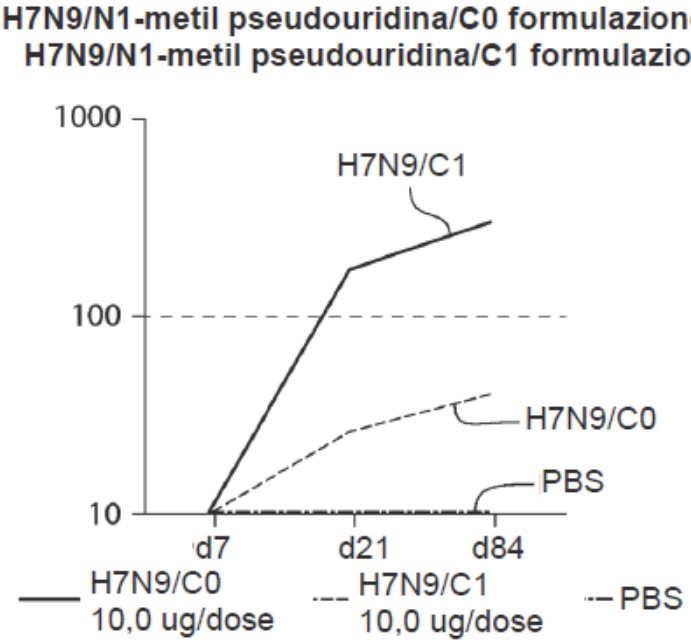

FIGURA 18

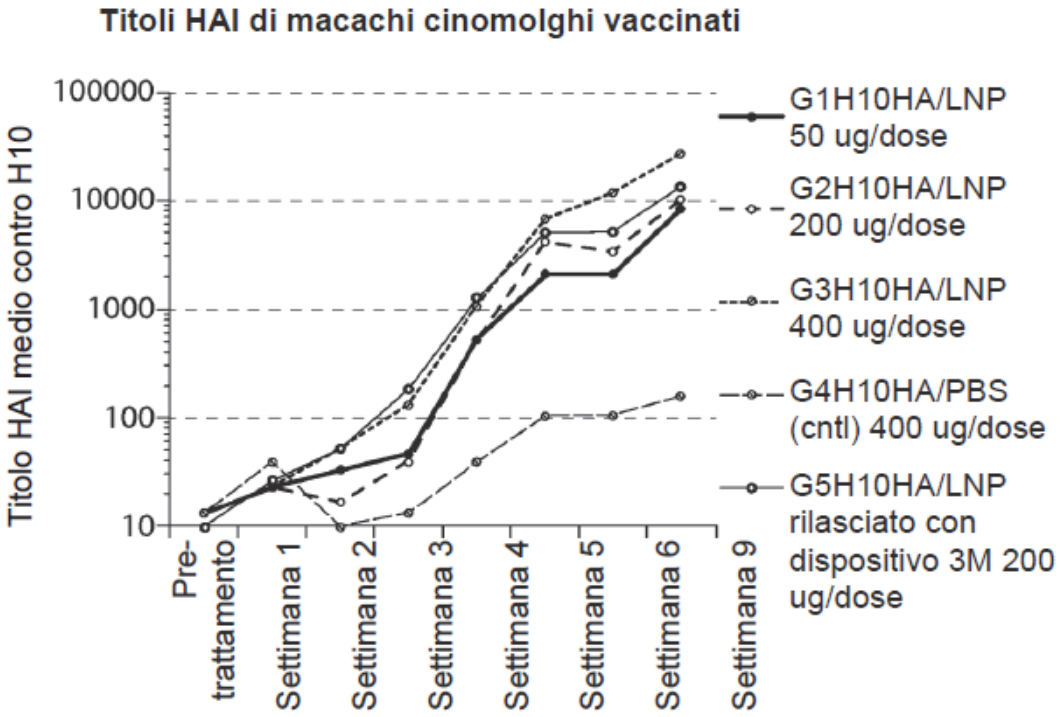

FIGURA 19

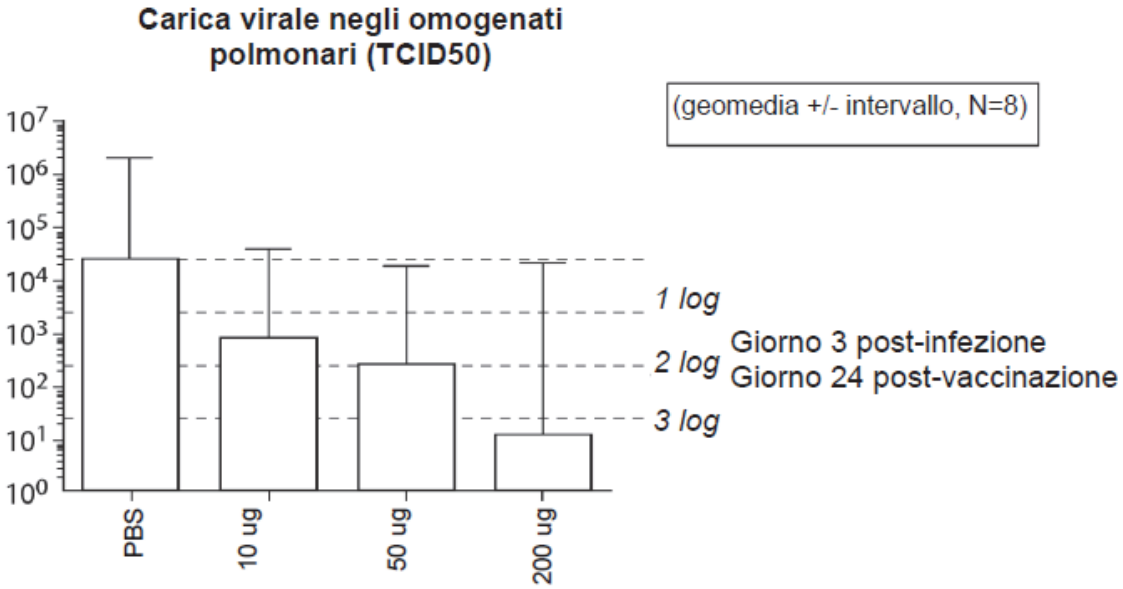

FIGURA 20

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

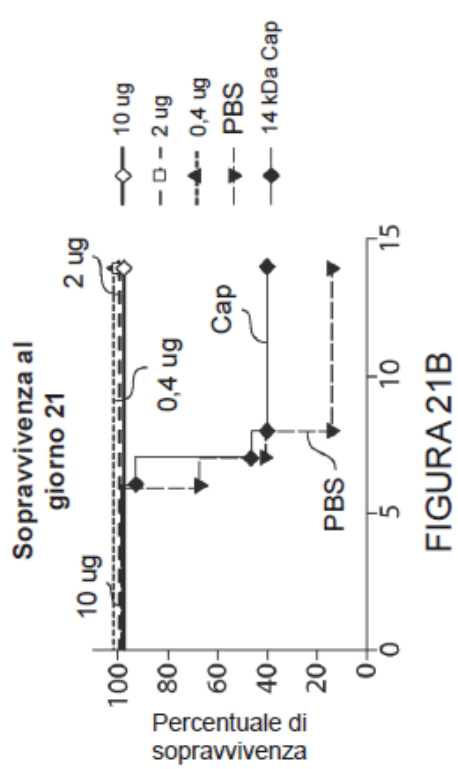

FIGURA 21B

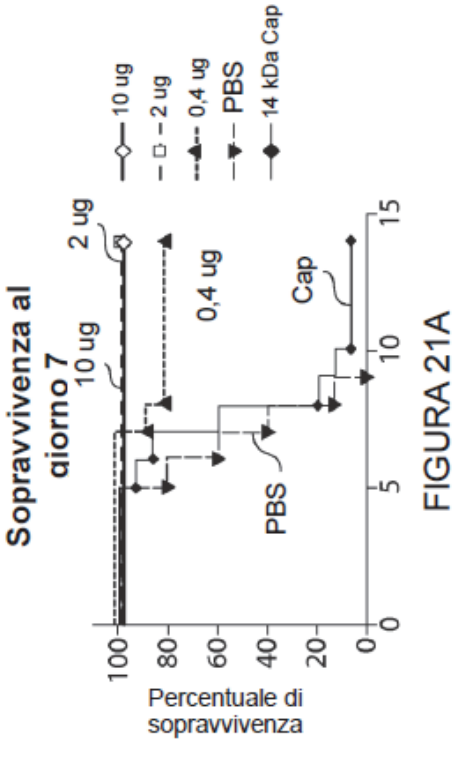

FIGURA 21A

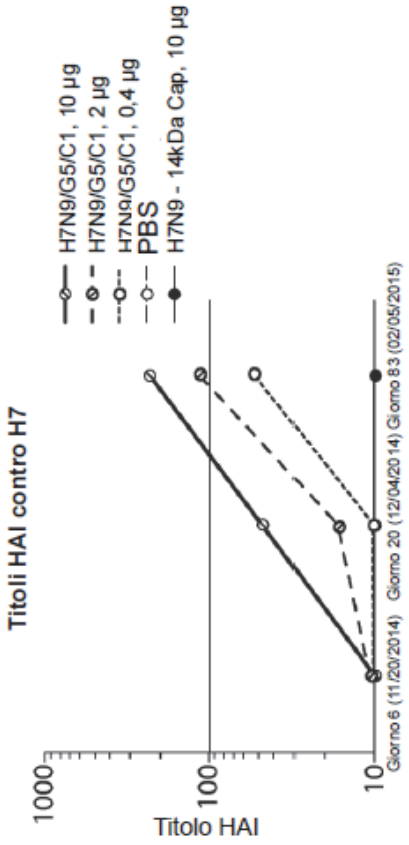

FIGURA 21D

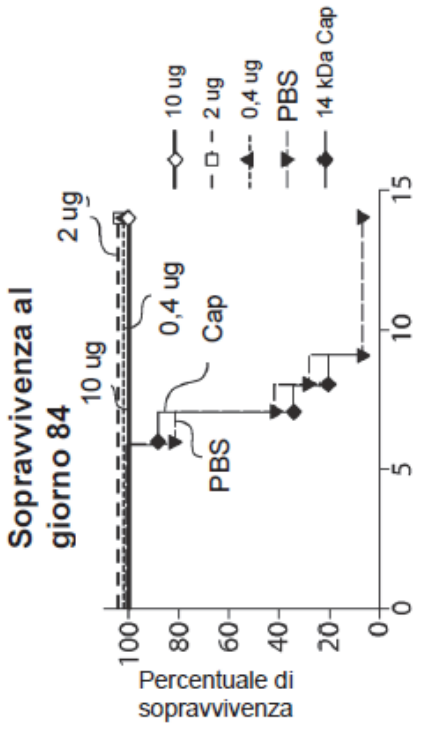

FIGURA 21C

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

```
Posizioni da 1 a  60
    Sequenza consenso                MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRIC
ACX53683   A/goose/Czech Republic/1848-K9/2009(H7N9)  ..I.....V.....................................................V....
ADN34727   A/goose/Czech Republic/1848-T14/2009(H7N9)  ..I.....V.....................................................V....
CAY39406   A/Anas crecca/Spain/1460/2008(H7N9)  .........V.....................................................V....
AHZ39686   A/Anhui/DEWH72-01/2013(H7N9)  ..............................................................................
AHZ39710   A/Anhui/DEWH72-03/2013(H7N9)  ..............................................................................
AHZ39746   A/Anhui/DEWH72-06/2013(H7N9)  ..............................................................................
AHM24224   A/Beijing/3/2013(H7N9)  ..............................................................................
AHD25003   A/Guangdong/02/2013(H7N9)  ..............................................................................
AHH25185   A/Guangdong/04/2013(H7N9)  ..............................................................................
AGI60301   A/Hangzhou/1/2013(H7N9)  ..............................................................................
AGK84857   A/Hangzhou/2/2013(H7N9)  ..............................................................................
AHF20528   A/Hong Kong/470129/2013(H7N9)  ..............................................................................
AGY41893   A/Huizhou/01/2013(H7N9)  ..............................................................................
AGO51387   A/Jiangsu/2/2013(H7N9)  ..............................................................................
AGJ73503   A/Nanjing/1/2013(H7N9)  ..............................................................................
AGR85026   A/Nanjing/2/2013(H7N9)  ..............................................................................
AGR84954   A/Nanjing/6/2013(H7N9)  ..............................................................................
AHK10800   A/Shanghai/01/2014(H7N9)  ..............................................................................
AGL44438   A/Shanghai/02/2013(H7N9)  ..............................................................................
AGL33692   A/Shanghai/4655T/2013(H7N9)  ==============================================================
AGL33693   A/Shanghai/4659T/2013(H7N9)  ==============================================================
AGI60292   A/Shanghai/4664T/2013(H7N9)  ..............A...............................................
AGM53887   A/Shanghai/4701T/2013(H7N9)  ==============================================================
AGM53886   A/Shanghai/4842T/2013(H7N9)  ==============================================================
AGM53883   A/Shanghai/5083T/2013(H7N9)  ==============================================================
AGM53884   A/Shanghai/5180T/2013(H7N9)  ==============================================================
AGM53885   A/Shanghai/5240T/2013(H7N9)  ==============================================================
AGN82600   A/Shanghai/CN01/2013(H7N9)  ==============================================================
AHF20568   A/Shanghai/CN02/2013(H7N9)  ..............................................................................
AGN82612   A/Shanghai/JS01/2013(H7N9)  ..............................................................................
AID70634   A/Shanghai/Mix1/2014(H7N9)  ..............................................................................
AHJ57411   A/Shanghai/PD-01/2014(H7N9)  ..............................................................................
AHJ57418   A/Shanghai/PD-02/2014(H7N9)  ..............................................................................
AJJ96841   A/Shenzhen/SP139/2014(H7N9)  ..............................................................................
```

FIGURA 22-1

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

```
AJJ91909  A/Shenzhen/SP26/2014(H7N9)  ..................................................
AJJ91945  A/Shenzhen/SP38/2014(H7N9)  ......A.............................................
AJJ91885  A/Shenzhen/SP4/2014(H7N9)   ..................................................
AJJ91957  A/Shenzhen/SP44/2014(H7N9)  ..................................................
AJJ91969  A/Shenzhen/SP48/2014(H7N9)  ..................................................
AJJ95596  A/Shenzhen/SP58/2014(H7N9)  ......A...........................................
AJJ95632  A/Shenzhen/SP62/2014(H7N9)  ..................................................
AJJ95620  A/Shenzhen/SP75/2014(H7N9)  ..................................................
AGR84942  A/Suzhou/5/2013(H7N9)       ..................................................
AGL43637  A/Taiwan/1/2013(H7N9)       ..................................................
AGL95088  A/Taiwan/S02076/2013(H7N9)  ------.............................................
AGL95098  A/Taiwan/T02081/2013(H7N9)  -----..............................................
AGN69474  A/Wuxi/1/2013(H7N9)         ..................................................
AGN69462  A/Wuxi/2/2013(H7N9)         ..................................................
AGR84990  A/Wuxi/3/2013(H7N9)         ..................................................
AGR84978  A/Wuxi/4/2013(H7N9)         ..................................................
AGO02477  A/Xuzhou/1/2013(H7N9)       ..................................................
AGU02230  A/Zhejiang/DTID-ZJU05/2013(H7N9)  -----.....................................G.....
AGU02233  A/Zhejiang/DTID-ZJU08/2013(H7N9)  ------....................................G.....F...
AHA11500  A/Zhejiang/DTID-ZJU10/2013(H7N9)  --.....................................
AIN76383  A/Zhejiang/LS01/2014(H7N9)  .....V..........................................
AGR85002  A/Zhenjiang/1/2013(H7N9)     ..................................................
ADK71137  A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)  ......ALIACML.GAKG.....A.....I.....TA..KK..
ADK71148  A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)  ......ALIACML.GAKG.....A.....I...X....TA..KK..
ABS89409  A/blue-winged teal/Ohio/566/2006(H7N9)  ......ALIACML.GAKG.....A.....I.....TA..KK..
AJJ95048  A/chicken/Dongguan/1009/2014(H7N9)  ..................................................
AJJ94134  A/chicken/Dongguan/1051/2014(H7N9)  ........L.....................................
AJJ94158  A/chicken/Dongguan/1075/2014(H7N9)  ..................................................
AJJ95572  A/chicken/Dongguan/1100/2014(H7N9)  ..................................................
AJJ94182  A/chicken/Dongguan/1177/2014(H7N9)  ..................................................
AJJ95171  A/chicken/Dongguan/1314/2014(H7N9)  ..................................................
AJJ94254  A/chicken/Dongguan/1374/2014(H7N9)  ..................................................
AJJ95227  A/chicken/Dongguan/1382/2014(H7N9)  ..................................................
AJJ95251  A/chicken/Dongguan/1401/2014(H7N9)  ..................................................
AJJ94356  A/chicken/Dongguan/1456/2014(H7N9)  ..................................................
AJJ94396  A/chicken/Dongguan/1494/2014(H7N9)  ..................................................
AJJ95346  A/chicken/Dongguan/1548/2014(H7N9)  ..................................................
AJJ93857  A/chicken/Dongguan/169/2014(H7N9)   ..................................................
AJJ95382  A/chicken/Dongguan/1690/2014(H7N9)  ..................................................
```

FIGURA 22-2

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

```
AJJ93869  A/chicken/Dongguan/173/2014(H7N9)  ..................................................
AJJ93881  A/chicken/Dongguan/189/2014(H7N9)  ..................................................
AJJ94606  A/chicken/Dongguan/191/2014(H7N9)  ..................................................
AJJ90661  A/chicken/Dongguan/2912/2013(H7N9)  ..................................................
AJJ90951  A/chicken/Dongguan/3544/2013(H7N9)  ..................................................
AJJ91155  A/chicken/Dongguan/4037/2013(H7N9)  ..................................................
AJJ92031  A/chicken/Dongguan/4064/2013(H7N9)  ..................................................
AJJ91993  A/chicken/Dongguan/4119/2013(H7N9)  ..................................................
AJJ93907  A/chicken/Dongguan/449/2014(H7N9)  ..................................................
AJJ93931  A/chicken/Dongguan/536/2014(H7N9)  ..................................................
AJJ93943  A/chicken/Dongguan/568/2014(H7N9)  ..................................................
AJJ94754  A/chicken/Dongguan/748/2014(H7N9)  ..................................................
AJJ94838  A/chicken/Dongguan/835/2014(H7N9)  ..................................................
AJJ94862  A/chicken/Dongguan/843/2014(H7N9)  ..................................................
AJJ94886  A/chicken/Dongguan/851/2014(H7N9)  ......A...........................................
AJJ94910  A/chicken/Dongguan/874/2014(H7N9)  ..................................................
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)  ..................................................
AJJ91402  A/chicken/Huzhou/4045/2013(H7N9)  ..................................................
AJJ91476  A/chicken/Huzhou/4076/2013(H7N9)  ..................................................
AJJ93051  A/chicken/Jiangxi/10573/2014(H7N9)  ..............V...................................
AJJ96552  A/chicken/Jiangxi/12206/2014(H7N9)  ..................................................
AJJ96684  A/chicken/Jiangxi/13207/2014(H7N9)  ..................I...............................
AJJ96720  A/chicken/Jiangxi/13220/2014(H7N9)  ..................................................
AJJ96732  A/chicken/Jiangxi/13223/2014(H7N9)  ..................................................
AJJ97267  A/chicken/Jiangxi/13252/2014(H7N9)  ..................................................
AJJ97291  A/chicken/Jiangxi/13493/2014(H7N9)  ..................................................
AJJ96889  A/chicken/Jiangxi/13496/2014(H7N9)  ..................................................
AJJ96901  A/chicken/Jiangxi/13502/2014(H7N9)  ..................................................
AJJ97331  A/chicken/Jiangxi/13512/2014(H7N9)  ..................................................
AJJ96925  A/chicken/Jiangxi/13513/2014(H7N9)  ..................................................
AJJ97373  A/chicken/Jiangxi/13521/2014(H7N9)  ..................................................
AJJ97443  A/chicken/Jiangxi/13530/2014(H7N9)  ..................................................
AJJ97582  A/chicken/Jiangxi/14023/2014(H7N9)  ..................................................
AJJ97697  A/chicken/Jiangxi/14517/2014(H7N9)  ..................................................
AJJ97709  A/chicken/Jiangxi/14518/2014(H7N9)  ..............A...................................
AJJ97745  A/chicken/Jiangxi/14554/2014(H7N9)  ..................................................
AJJ97899  A/chicken/Jiangxi/15524/2014(H7N9)  ..................................................
AJJ96817  A/chicken/Jiangxi/9513/2014(H7N9)  ..............V...................I.....
AJJ93027  A/chicken/Jiangxi/9558/2014(H7N9)  ..............V...................I.....
```

FIGURA 22-3

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

```
AGR49399  A/chicken/Jiangxi/SD001/2013(H7N9)                                                
```

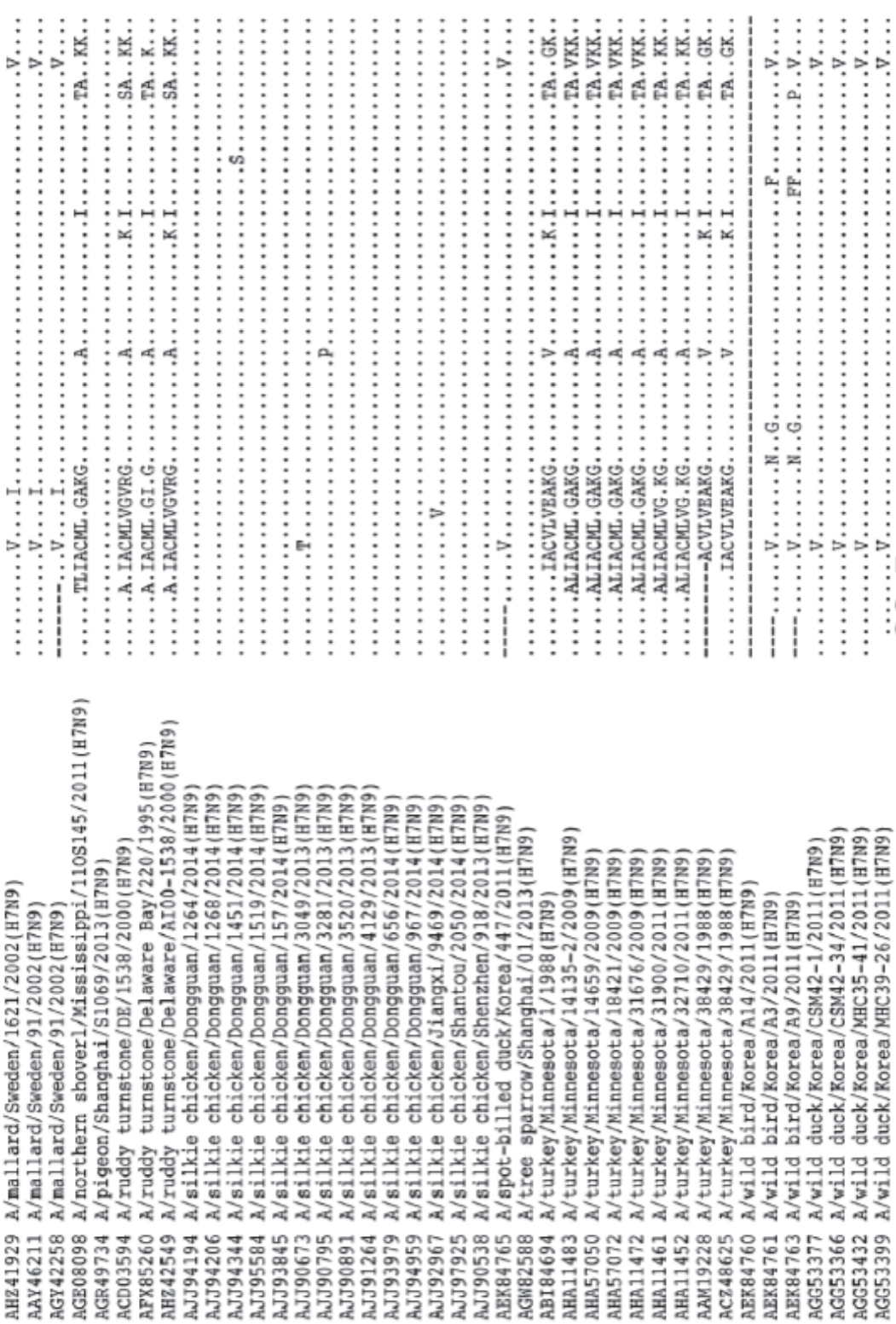

FIGURA 22-5

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-6

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

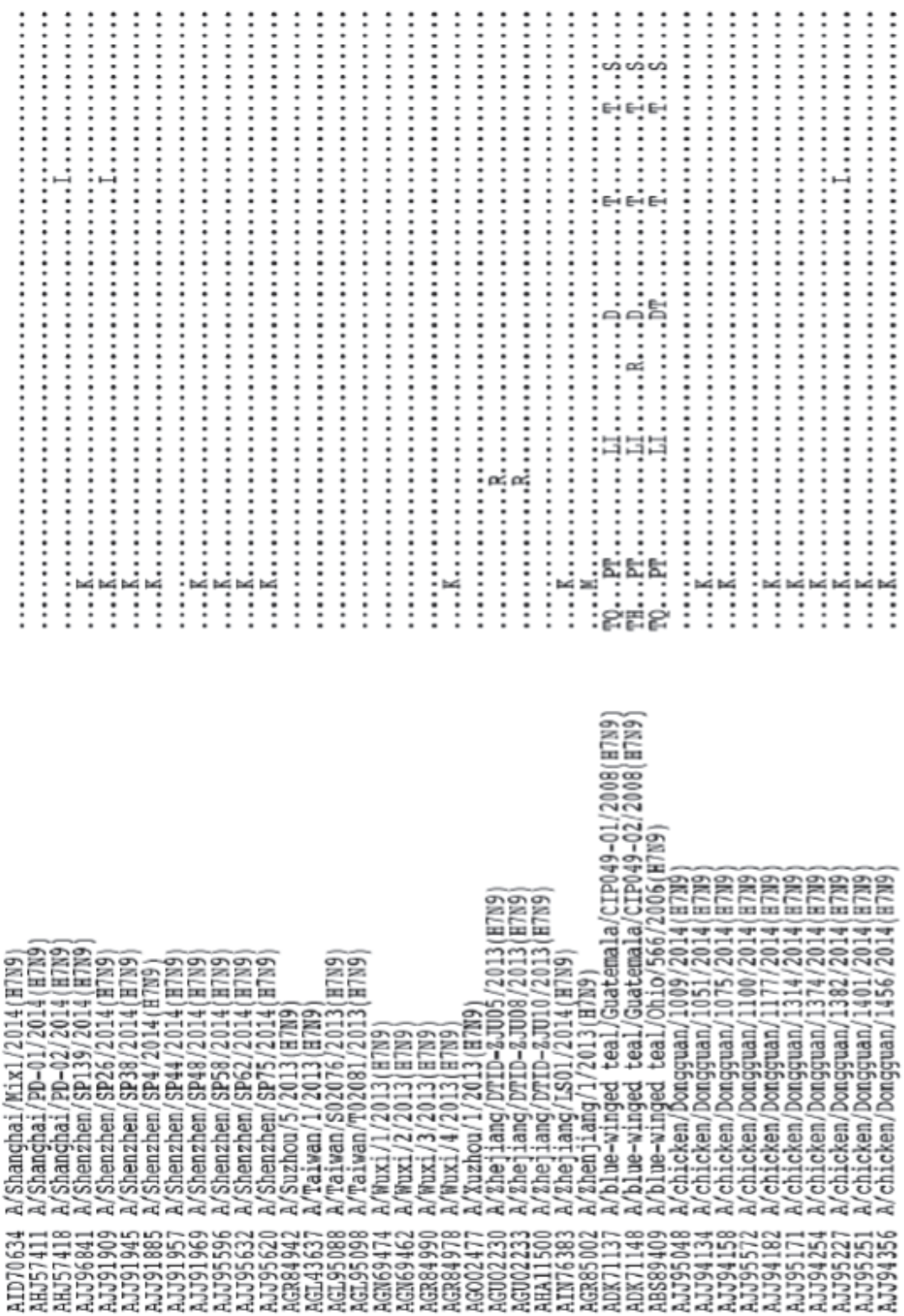

FIGURA 22-7

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-8

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-9

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-10

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-11

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-12

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-13

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

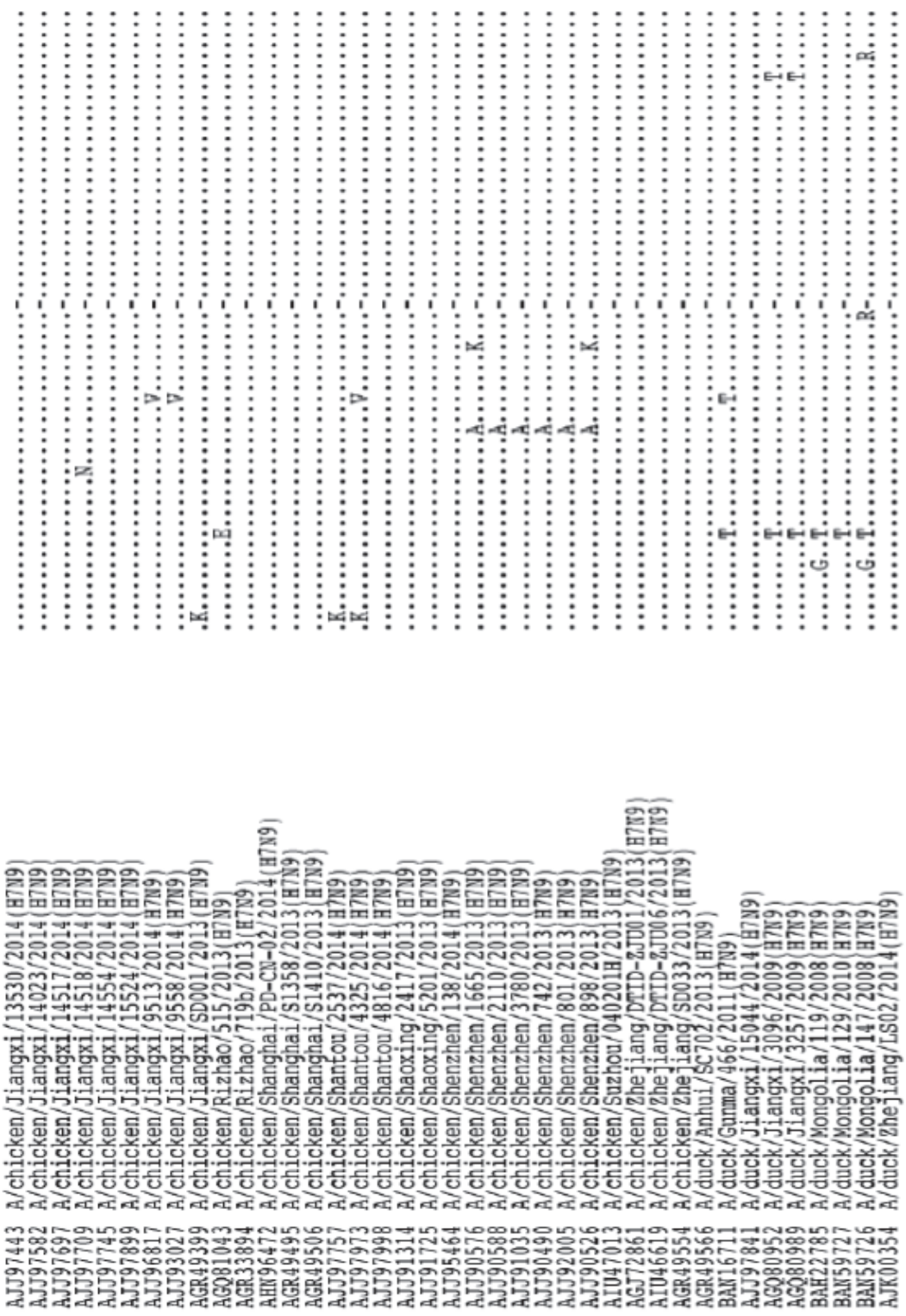

FIGURA 22-14

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

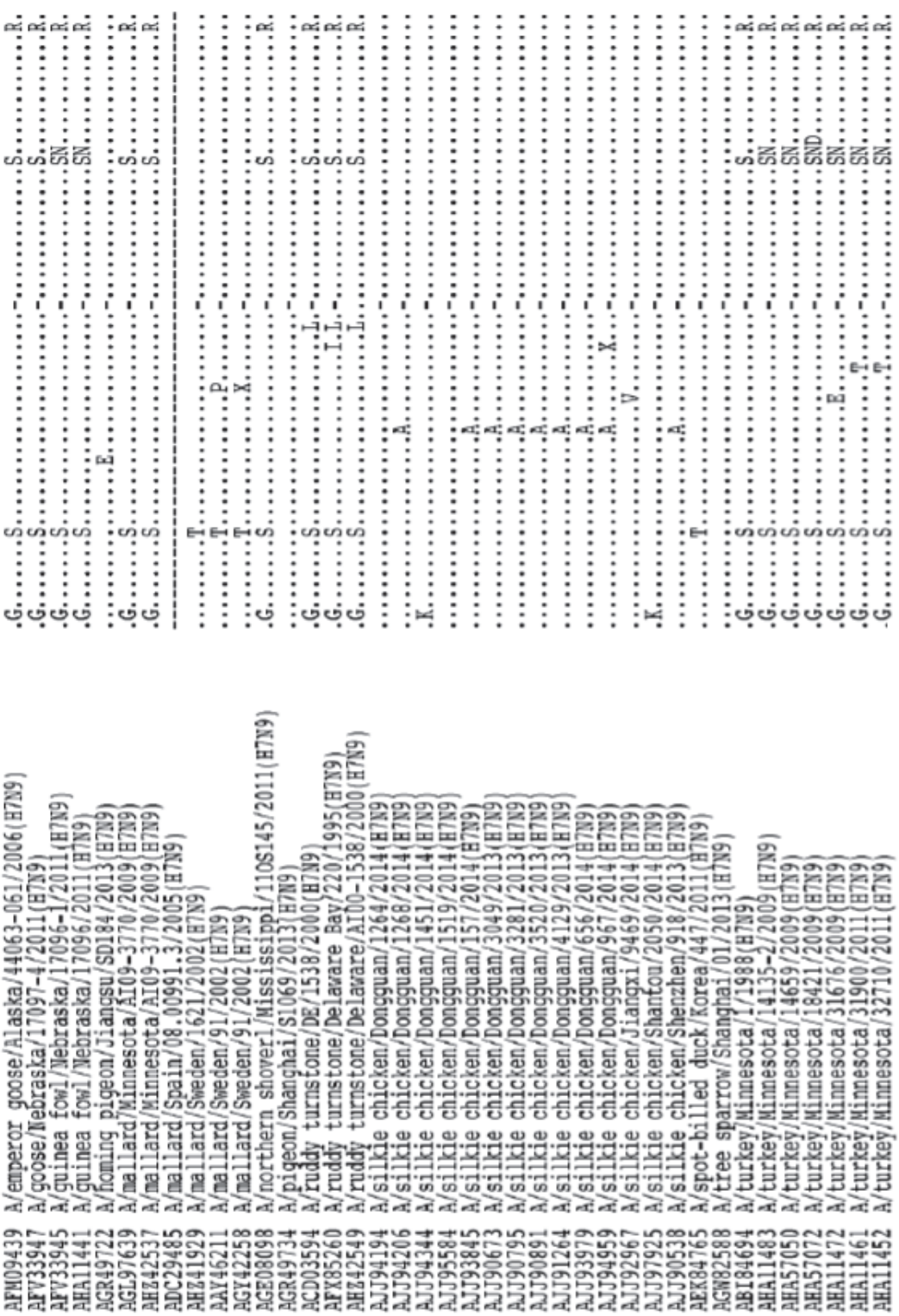

FIGURA 22-15

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

AAM19228 A/turkey/Minnesota/38429/1988(H7N9)
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)
AEK84760 A/wild bird/Korea/A14/2011(H7N9)
AEK84761 A/wild bird/Korea/A3/2011(H7N9)
AEK84763 A/wild bird/Korea/A9/2011(H7N9)
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)
AGG53432 A/wild duck/Korea/MEC35-41/2011(H7N9)
AGG53399 A/wild duck/Korea/MEC39-26/2011(H7N9)
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)
Posizioni da 181 a 240
Sequenza consenso
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)
AHW24224 A/Beijing/3/2013(H7N9)
AHD25003 A/Guangdong/02/2013(H7N9)
AHH25185 A/Guangdong/04/2013(H7N9)
AGI60301 A/Hangzhou/1/2013(H7N9)
AGK84857 A/Hangzhou/2/2013(H7N9)
AHP20528 A/Hong Kong/470129/2013(H7N9)
AGY41893 A/Huizhou/01/2013(H7N9)
AGO51387 A/Jiangsu/2/2013(H7N9)
AGJ73503 A/Nanjing/1/2013(H7N9)
AGR85026 A/Nanjing/2/2013(H7N9)
AGR84954 A/Nanjing/6/2013(H7N9)
AHK10800 A/Shanghai/01/2014(H7N9)
AGL44438 A/Shanghai/02/2013(H7N9)
AGL33692 A/Shanghai/4655T/2013(H7N9)
AGL33693 A/Shanghai/4659T/2013(H7N9)
AGI60292 A/Shanghai/4664T/2013(H7N9)
.G.....S.....I.....T-.....S.....R.
.G.....S.....T-.....S.....R.

.....T..A.N..K..PPI..K.-....K.....K.....
.....T..A...K...PPI..K.-....K.....K.....
.....T..L.....-.....
.....T..L.....-.....
.....T.....-.....
.....T.....-.....
.....T.....-.....
.....T.....-.....
.....E.T.....-.....
.....T.....-.....
.....-.....
TRKSPALIVWGIHHSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRI
...D....I.....G.T.....S.I.....Q....
...D....I.....G.T.....S.I.....Q....
...D....I.....G.T.....S.I.....Q....
.....
.....
.....
.....E.....
.....
.....

FIGURA 22-17

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-18

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

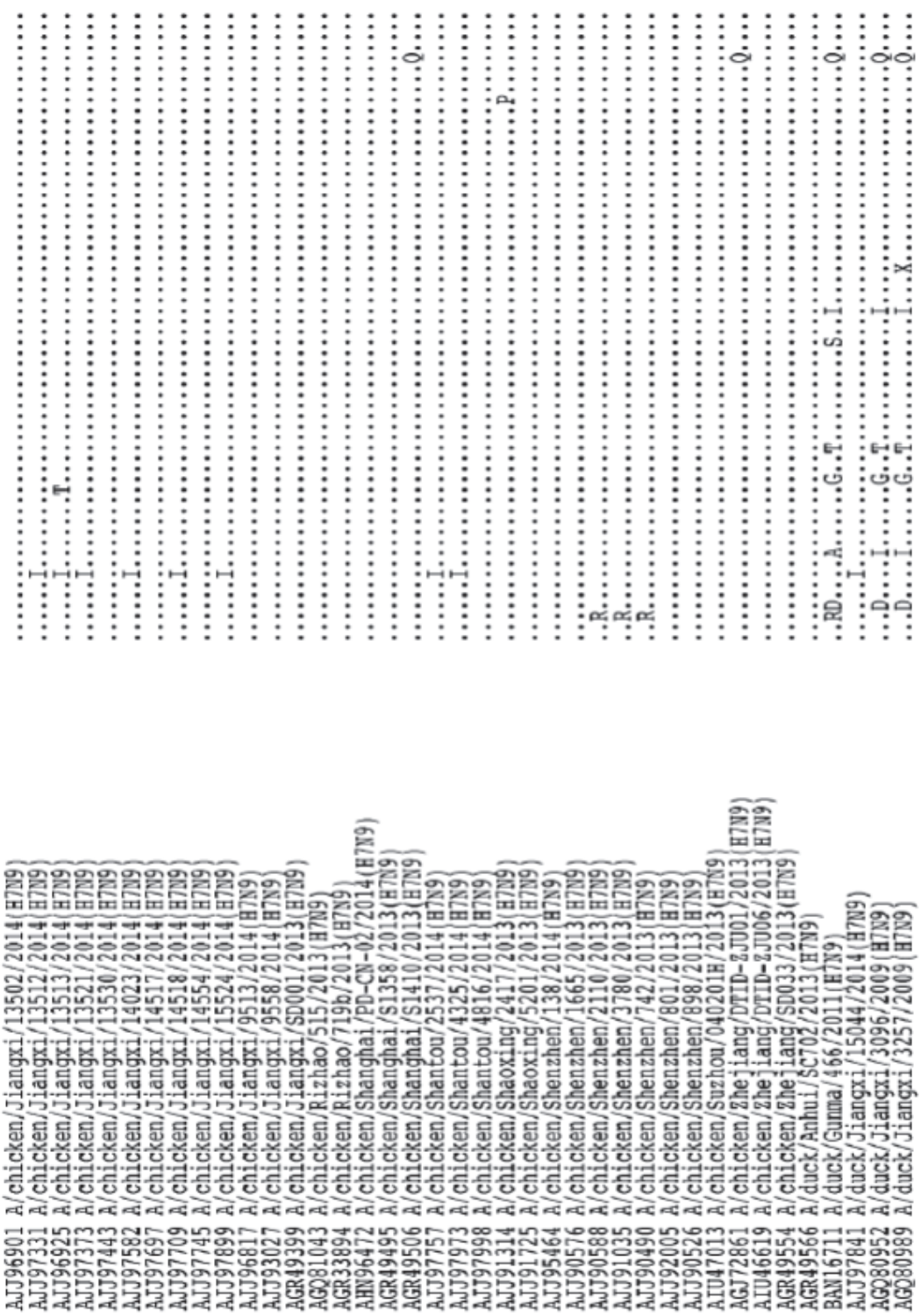

FIGURA 22-19

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

```
BAH22785 A/duck/Mongolia/119/2008(H7N9)          ...D....I.....G.T.....I.....Q....
BAN59727 A/duck/Mongolia/129/2010(H7N9)          ...D....I.....G.T.....S..I.....Q....
BAN59726 A/duck/Mongolia/147/2008(H7N9)          ...D....I.....G.T.....I.....Q....
AJX00354 A/duck/Zhejiang/LS02/2014(H7N9)         ...D....I.....G.T.....I.....L...Q....
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9) P.NK....I..V...G.AT.....I.....K.....T.....Q....
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)     P.NK.....V...A.AT.....S..I.....K.....T.....Q....
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9) P.NK.....V...G.AT.....S..I.....K.....T.....Q....
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9) P.NK.....V...G.AT.....S..I.....K.....T.....Q....
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9) .....
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9) P.NK....I..V...G.AT.....I.....K.....T.....Q....
AHI42537 A/mallard/Minnesota/AI09-3770/2009(H7N9) P.NK....I..V...G.AT.....I.....K.....T.....Q....
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)   ----------------------------------------------------
AHI41929 A/mallard/Sweden/1621/2002(H7N9)        ..ND....I.....G.T.....I.....Q....
AAY46211 A/mallard/Sweden/91/2002(H7N9)          ..ND....I.....G.T.....I.....Q....
AGY42258 A/mallard/Sweden/91/2002(H7N9)          ..ND....I.....G.T.....I.....Q....
AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9) P.NK....I..V...G.AT.....I.....K.....T.....Q....
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)      .....
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)    P.NK....I..V...G.AN.....I.....K.....T.....Q....
AFX85260 A/ruddy turnstone/Delaware Bay/22D/1995(H7N9) P.NK....I..V...G.AN.....I.....K.....T.....Q....
AHI42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9) P.NK....I..V...G.AN.....I.....K.....T.....Q....
AJJ94194 A/silkie chicken/Dongguan/1264/2014(H7N9) .....
AJJ94206 A/silkie chicken/Dongguan/1268/2014(H7N9) .....
AJJ94344 A/silkie chicken/Dongguan/1451/2014(H7N9) .....I.....
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9) .....
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9) .....
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9) .....
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9) .....
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9) ...X.....
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9) .....
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9) .....
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9) .....
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9) .....
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9) .....I.....
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9) .....
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9) ..RD.....G..T.....S..I.....Q....
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)   .....
ABI84694 A/turkey/Minnesota/1/1988(H7N9)         P.NK.....G..T.....I.....K.....T.....Q....
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)   P.DK....I..V...G.AT.....I.....K.....T.....Q....
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)     P.DK....I..V...G.AT.....I.....K.....T.....Q....
```

FIGURA 22-20

```
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)      P.DK....I..V...G.AT.....................I.....K.....T.....Q....
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)      P.DK....I..V...G.AT.....................I.....K.....T.....Q....
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)      P.NK.....V...G.AT.....................S.I.....K.....T.....Q....
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)      P.NK.....V...G.AT.....................S.I.....K.....T.....Q....
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)      P.NK.....................G.T.....................I.E.K.....T.....E....
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)      P.NK.....................G.T.....................I.....K.....T.....Q....
AEK84760 A/wild bird/Korea/A14/2011(H7N9)         ----------------------------------------------------------------------
AEK84761 A/wild bird/Korea/A3/2011(H7N9)          ..RN.....................G..TK.....I.SN.I.....................Q....
AEK84763 A/wild bird/Korea/A9/2011(H7N9)          I.RD.....................G..TK..N...I.SN.I.....................Q....
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)     ..RD.....................G.ST.....................S.I.....................Q....
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)    ..RD.....................G.ST.....................S.I.....................Q....
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)    ..RD.....................G..T.....................S.I.....................Q....
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)    ..RD.....................G..T.....................S.I.....................Q....
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)     ..RD.....................G..T.....................S.I.....................Q....
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)     ..RD.....................G..T.....................S.I.....................Q....
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)     ...D....I.....G..T.....................S.I.....................Q....
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)    ...D....I.....G..T.....................S.I.....................Q....
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)   ..........................................................................

Posizioni da  141 a  300                          DFHKLMKLNPNDTVTPSFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIIS
  Sequenza consenso                               ..........................................K.....................................
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9) ..........................................K.....................................
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9) ..........................................K.....................................
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)      ..........................................................................
AHE39686 A/Anhui/DEWH72-01/2013(H7N9)            ..........................................................................
AHE39710 A/Anhui/DEWH72-03/2013(H7N9)            ..........................................................................
AHE39746 A/Anhui/DEWH72-06/2013(H7N9)            ..........................................................................
AHM24224 A/Beijing/3/2013(H7N9)                  ..........................................................................
AHD25003 A/Guangdong/02/2013(H7N9)               ..........................................................................
AHH25185 A/Guangdong/04/2013(H7N9)               ..........................................................................
AGI60301 A/Hangzhou/1/2013(H7N9)                 ..........................................................................
AGK84857 A/Hangzhou/2/2013(H7N9)                 ..........................................................................
AHF20528 A/Hong Kong/470129/2013(H7N9)           ..........................................................................
AGY41893 A/Huizhou/01/2013(H7N9)                 ..........................D.........................................................
AGO51387 A/Jiangsu/2/2013(H7N9)                  ..........................................................................
AGJ73503 A/Nanjing/1/2013(H7N9)                  ..........................................................................
AGR85026 A/Nanjing/2/2013(H7N9)                  ..........................................................................
AGR84954 A/Nanjing/6/2013(H7N9)                  ..........................................................................
AHK10800 A/Shanghai/01/2014(H7N9)                ..........................................................................
```

FIGURA 22-21

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

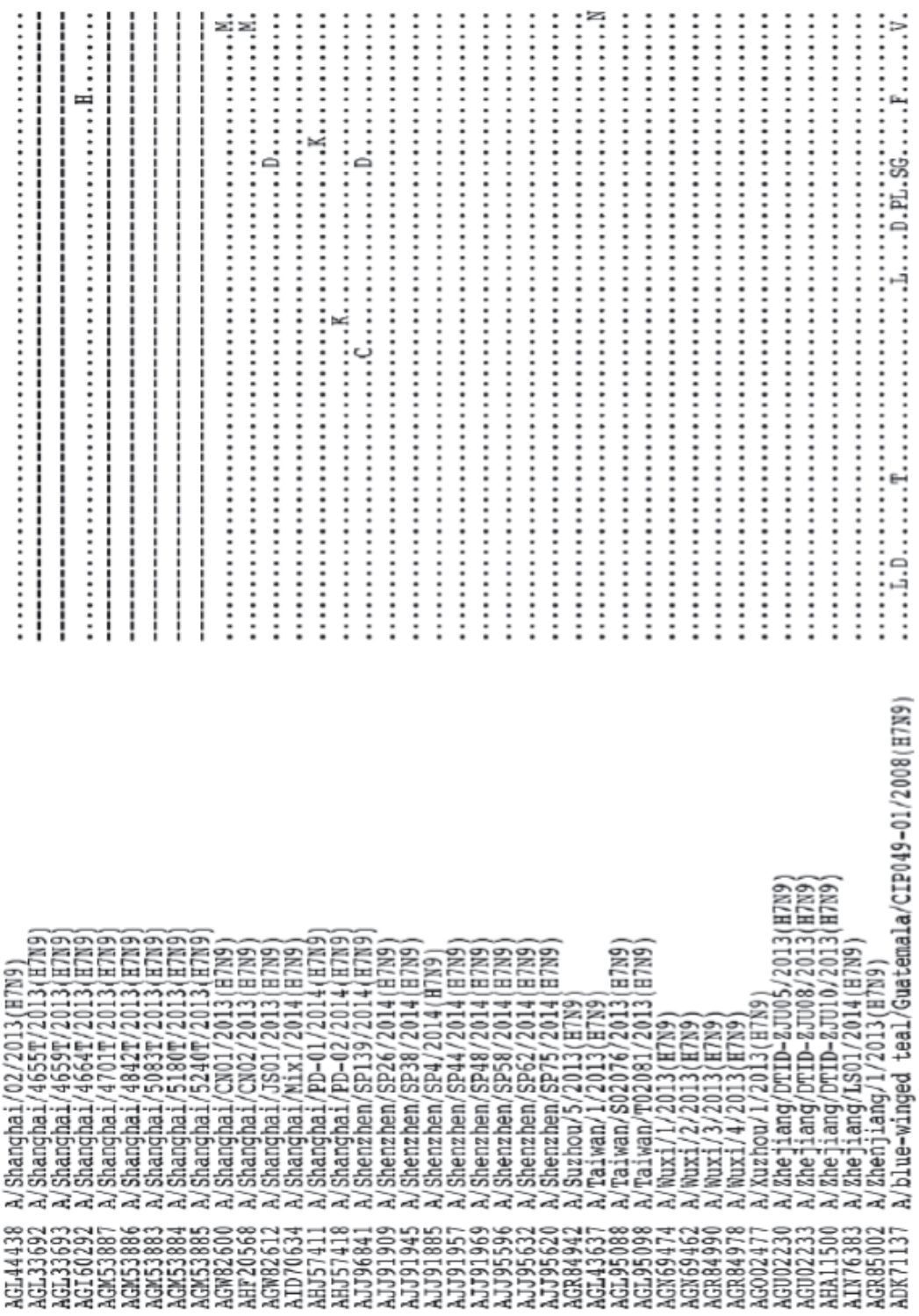
AGL44438 A/Shanghai/02/2013(H7N9)
AGL33692 A/Shanghai/4655T/2013(H7N9)
AGL33693 A/Shanghai/4659T/2013(H7N9)
AGI60292 A/Shanghai/4664T/2013(H7N9)
AGM53887 A/Shanghai/4701T/2013(H7N9)
AGM53886 A/Shanghai/4842T/2013(H7N9)
AGM53883 A/Shanghai/5083T/2013(H7N9)
AGM53884 A/Shanghai/5180T/2013(H7N9)
AGM53885 A/Shanghai/5240T/2013(H7N9)
AGW82600 A/Shanghai/CW01/2013(H7N9)
AHF20568 A/Shanghai/CW02/2013(H7N9)
AGW82612 A/Shanghai/JS01/2013(H7N9)
AID70634 A/Shanghai/Nlx1/2014(H7N9)
AHJ57411 A/Shanghai/PD-01/2014(H7N9)
AHJ57418 A/Shanghai/PD-02/2014(H7N9)
AJJ96841 A/Shenzhen/SP139/2014(H7N9)
AJJ91909 A/Shenzhen/SP26/2014(H7N9)
AJJ91945 A/Shenzhen/SP38/2014(H7N9)
AJJ91885 A/Shenzhen/SP4/2014(H7N9)
AJJ91957 A/Shenzhen/SP44/2014(H7N9)
AJJ91969 A/Shenzhen/SP48/2014(H7N9)
AJJ95596 A/Shenzhen/SP58/2014(H7N9)
AJJ95632 A/Shenzhen/SP62/2014(H7N9)
AJJ95620 A/Shenzhen/SP75/2014(H7N9)
AGR84942 A/Suzhou/5/2013(H7N9)
AGL43637 A/Taiwan/1/2013(H7N9)
AGL95088 A/Taiwan/S02076/2013(H7N9)
AGL95098 A/Taiwan/T02081/2013(H7N9)
AGN69474 A/Wuxi/1/2013(H7N9)
AGN69462 A/Wuxi/2/2013(H7N9)
AGR84990 A/Wuxi/3/2013(H7N9)
AGR84978 A/Wuxi/4/2013(H7N9)
AGO02477 A/Xuzhou/1/2013(H7N9)
AGU02230 A/Zhejiang/DTID-ZJU05/2013(H7N9)
AGU02233 A/Zhejiang/DTID-ZJU08/2013(H7N9)
AHA11500 A/Zhejiang/DTID-ZJU10/2013(H7N9)
AIN76383 A/Zhejiang/LS01/2014(H7N9)
AGR85002 A/Zhejiang/1/2013(H7N9)
ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)

FIGURA 22-22

```
ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)      .....L.D.....T.....L....D.PL.SG.....F.....V.
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)                 .....L.D.....T.....F.E.L.V..D.PL.SG.....F.....V.
AJU95048 A/chicken/Dongguan/1009/2014(H7N9)                     ..............................................
AJU94134 A/chicken/Dongguan/1051/2014(H7N9)                     ..........................D...................
AJU94158 A/chicken/Dongguan/1075/2014(H7N9)                     .....................E........................
AJU95572 A/chicken/Dongguan/1100/2014(H7N9)                     ..............................................
AJU94182 A/chicken/Dongguan/1177/2014(H7N9)                     ..............................................
AJU95171 A/chicken/Dongguan/1314/2014(H7N9)                     .....................N.....E...................
AJU94254 A/chicken/Dongguan/1374/2014(H7N9)                     .....................E........................
AJU95227 A/chicken/Dongguan/1382/2014(H7N9)                     .....................E........................
AJU95251 A/chicken/Dongguan/1401/2014(H7N9)                     ..............................................
AJU94356 A/chicken/Dongguan/1456/2014(H7N9)                     .....................E........................
AJU94396 A/chicken/Dongguan/1494/2014(H7N9)                     ..............................................
AJU95346 A/chicken/Dongguan/1548/2014(H7N9)                     ..............................................
AJU93857 A/chicken/Dongguan/169/2014(H7N9)                      ..........................I...........D.......
AJU95382 A/chicken/Dongguan/1690/2014(H7N9)                     ..........................I...........D.......
AJU93869 A/chicken/Dongguan/173/2014(H7N9)                      ..............................................
AJU93881 A/chicken/Dongguan/189/2014(H7N9)                      ..............................................
AJU94606 A/chicken/Dongguan/191/2014(H7N9)                      ..............................D...............
AJU90661 A/chicken/Dongguan/2912/2013(H7N9)                     ..............................................
AJU90951 A/chicken/Dongguan/3544/2013(H7N9)                     ..............................................
AJU91155 A/chicken/Dongguan/4037/2013(H7N9)                     ..............................................
AJU92031 A/chicken/Dongguan/4064/2013(H7N9)                     ..............................................
AJU91993 A/chicken/Dongguan/4119/2013(H7N9)                     ..............................................
AJU93907 A/chicken/Dongguan/449/2014(H7N9)                      .....................E........................
AJU93931 A/chicken/Dongguan/536/2014(H7N9)                      ..............................D...............
AJU93943 A/chicken/Dongguan/568/2014(H7N9)                      ..............................................
AJU94754 A/chicken/Dongguan/748/2014(H7N9)                      ..............................................
AJU94838 A/chicken/Dongguan/835/2014(H7N9)                      ..............................................
AJU94862 A/chicken/Dongguan/843/2014(H7N9)                      ..............................................
AJU94886 A/chicken/Dongguan/851/2014(H7N9)                      ..............................................
AJU94910 A/chicken/Dongguan/874/2014(H7N9)                      ..............................................
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)                      ..............................................
AJU91402 A/chicken/Huzhou/4045/2013(H7N9)                       ..............................................
AJU91476 A/chicken/Huzhou/4076/2013(H7N9)                       ..............................R...............
AJU93051 A/chicken/Jiangxi/10573/2014(H7N9)                     ..............................................
AJU96552 A/chicken/Jiangxi/12206/2014(H7N9)                     ..............................................
AJU96684 A/chicken/Jiangxi/13207/2014(H7N9)                     ..............................................
AJU96720 A/chicken/Jiangxi/13220/2014(H7N9)                     ..............................R...............
```

FIGURA 22-23

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

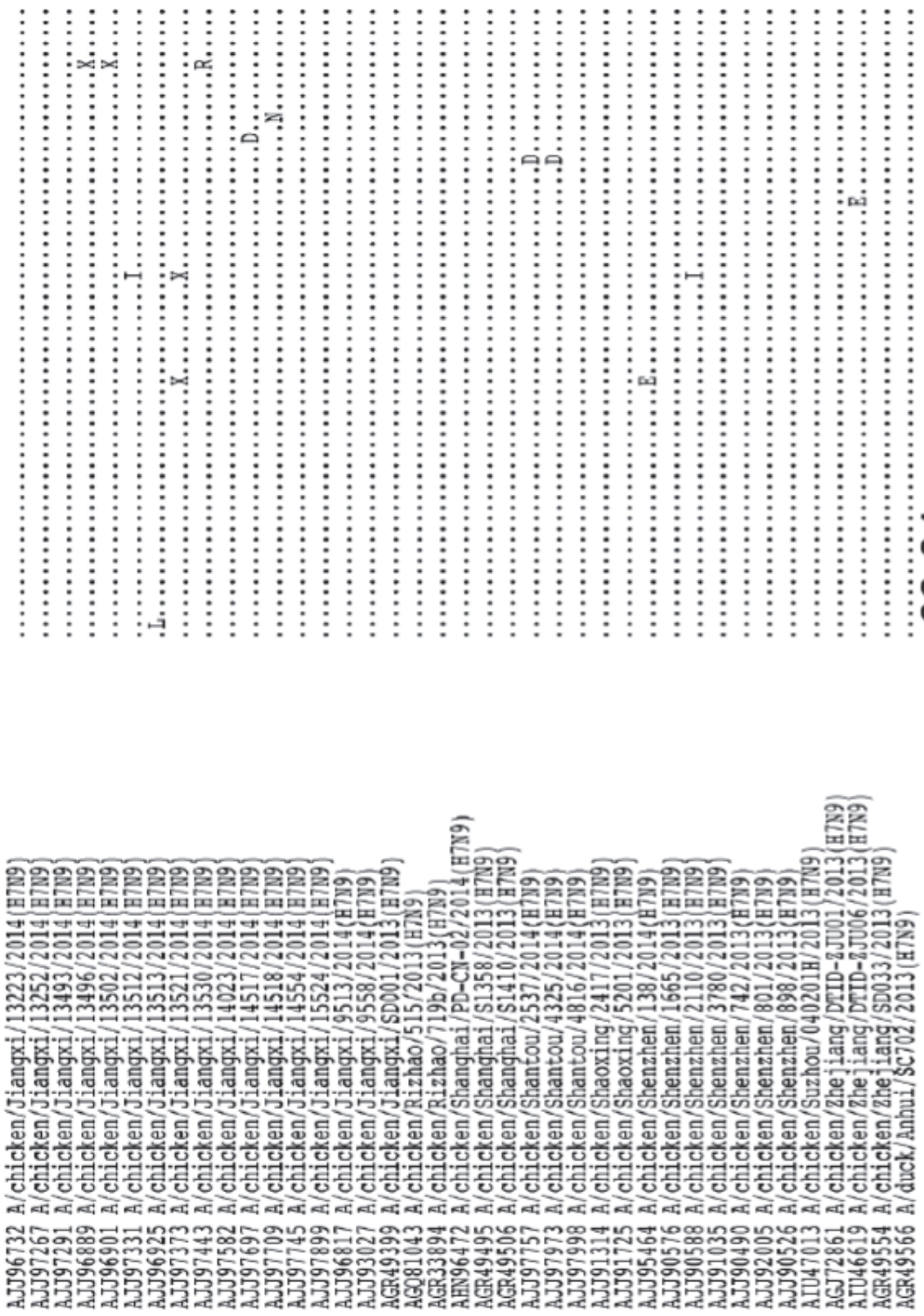

FIGURA 22-24

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

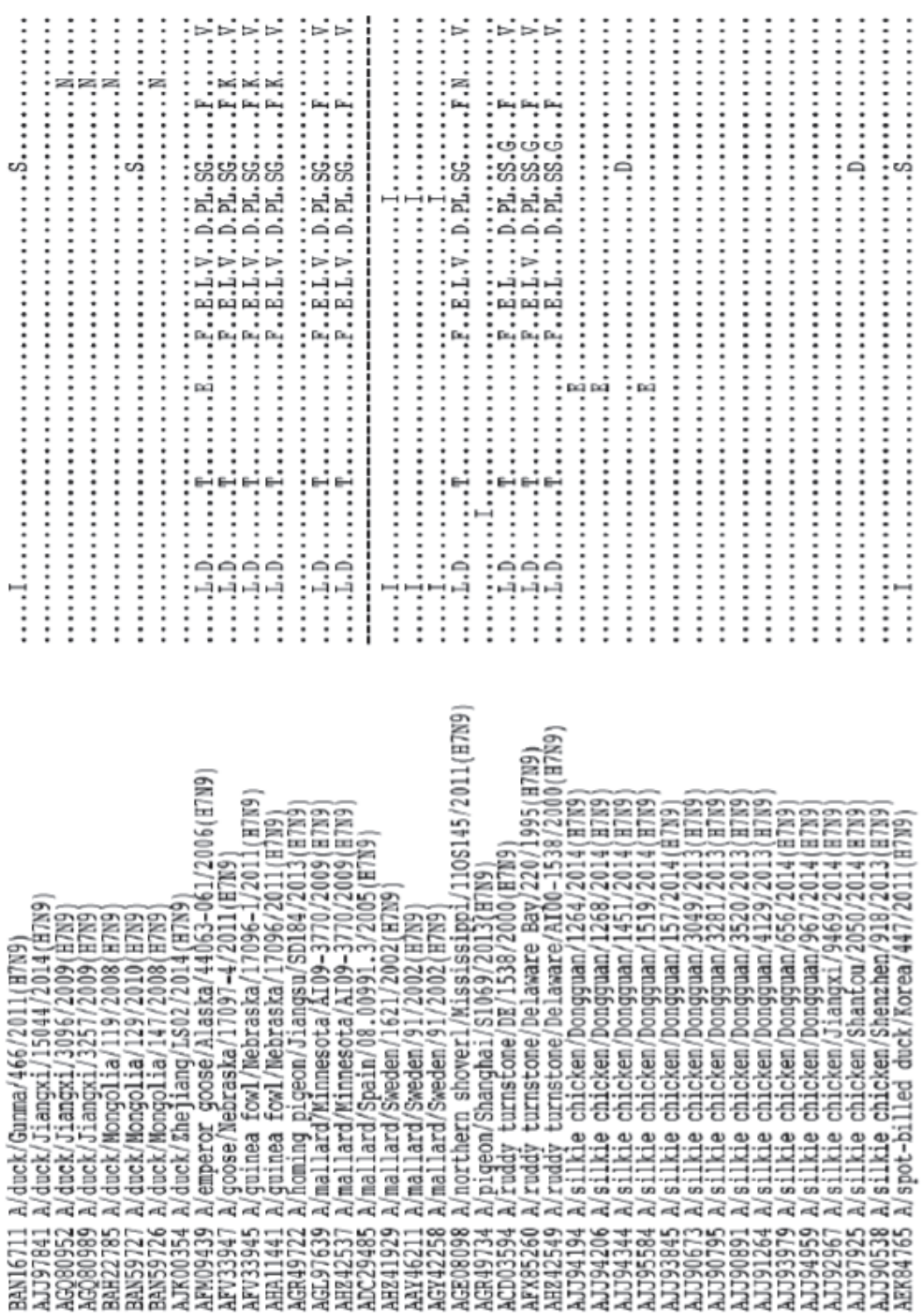

FIGURA 22-25

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

```
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)
ABI84694 A/turkey/Minnesota/1/1988(H7N9)
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)
AAN19228 A/turkey/Minnesota/38429/1988(H7N9)
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)
AEK84760 A/wild bird/Korea/A14/2011(H7N9)
AEK84761 A/wild bird/Korea/A3/2011(H7N9)
AEK84763 A/wild bird/Korea/A9/2011(H7N9)
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)
AEN98291 A/wild duck/Mongolia/1-241/2008(H7N9)
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)

Posizioni da  301 a  360
  Sequenza consenso
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)
AHN24224 A/Beijing/3/2013(H7N9)
AHD25003 A/Guangdong/02/2013(H7N9)
AHH25185 A/Guangdong/04/2013(H7N9)
AGI60301 A/Hangzhou/1/2013(H7N9)
AGK84857 A/Hangzhou/2/2013(H7N9)
AHF20528 A/Hong Kong/470129/2013(H7N9)
AGY41893 A/Huizhou/01/2013(H7N9)
AGD51387 A/Jiangsu/2/2013(H7N9)
```

```
....................................................................
....ML.D.....T.....................FK.E.L.V..D.PL.SS.G...F.....V.
....L.D.....T.....................P..E.L.V..D.PL.SG.....P.....V.
....L.D.....T.....................F..E.L.V..D.PL.SG.....P.....V.
....L.D.....T.....................P..E.L.V..D.PL.SG.....P.....V.
....L.D.....T.....................P..E.L.V..D.PL.SG.....P.....V.
....L.D.....T.....................F..E.L.V..D.PL.SG.....P.....V.
....L.D.....T.....................F..E.L.V..D.PL.SG.....P.K...V.
....L.D.....T.....................F..E.L.V..D.PL.SG.....P.K...V.
...ML.D.....T.....................FK.E.L.V..D.PL.SS.G...P.....V.
...ML.D.....T.....................FK.E.L.V..D.PL.SS.G...P.....V.
____________________P...________________S.....................
....I.....P.....................S.....................
....I.....I.....................S.....................
....I.....I.....................S.....................
....I.....I
```

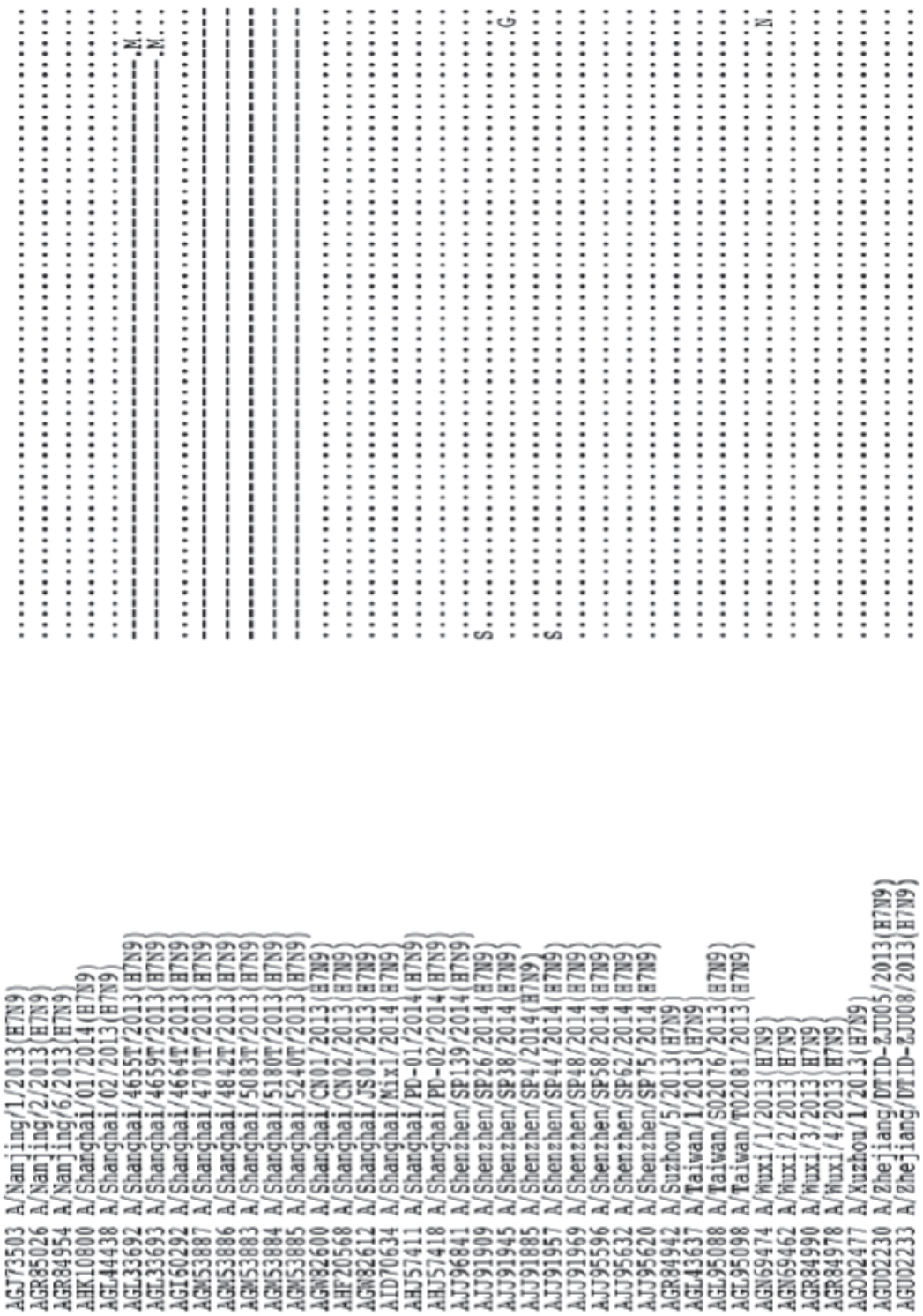

FIGURA 22-27

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

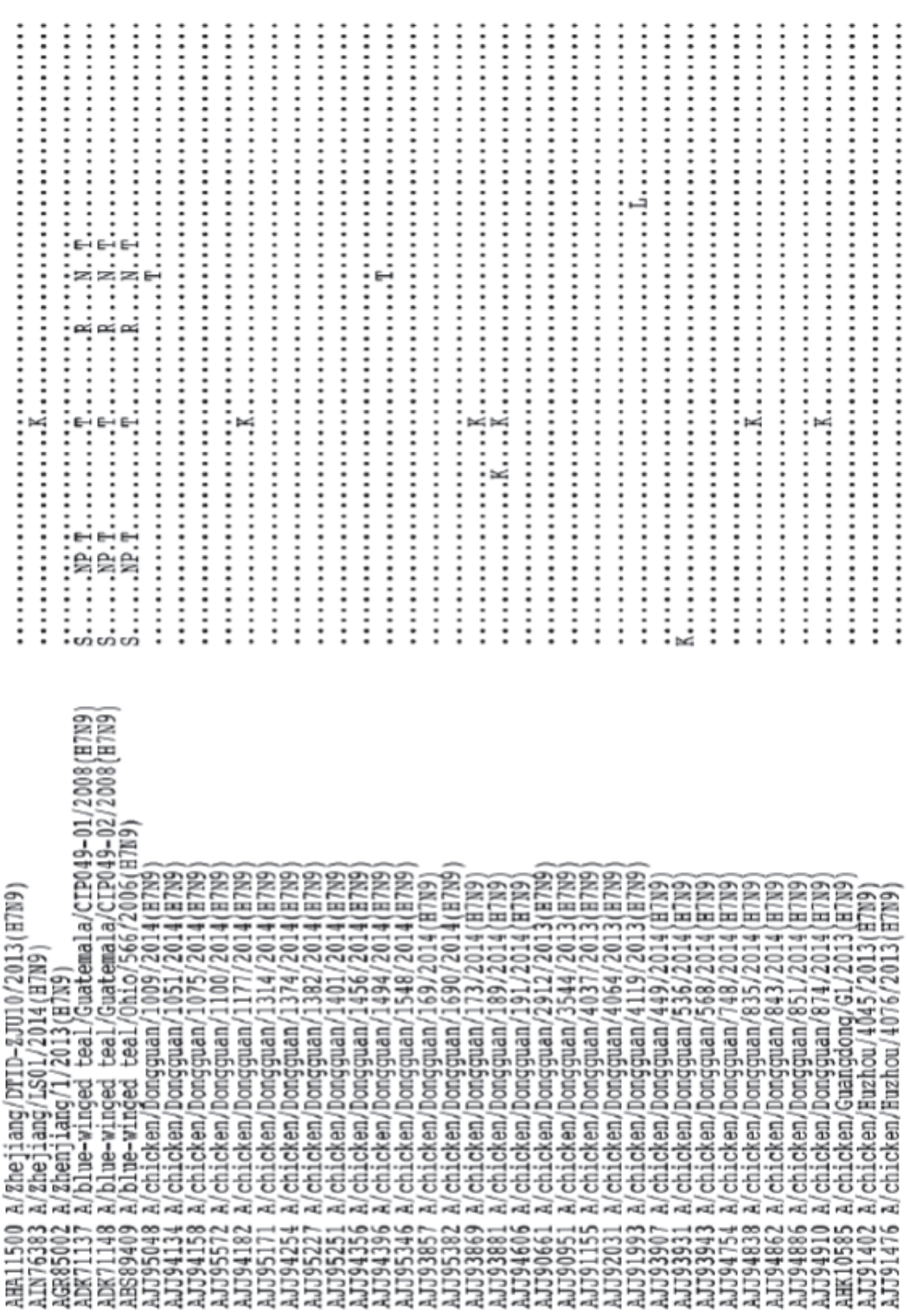
AEH11500 A/Zhejiang/DTID-ZJU10/2013(H7N9)
AIN76383 A/Zhejiang/LS01/2014(H7N9)
AGM85002 A/Zhenjiang/1/2013(H7N9)
ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)
ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)
AJU95048 A/chicken/Dongguan/1009/2014(H7N9)
AJU94134 A/chicken/Dongguan/1051/2014(H7N9)
AJU94158 A/chicken/Dongguan/1075/2014(H7N9)
AJU95572 A/chicken/Dongguan/1100/2014(H7N9)
AJU94182 A/chicken/Dongguan/1177/2014(H7N9)
AJU95171 A/chicken/Dongguan/1314/2014(H7N9)
AJU94254 A/chicken/Dongguan/1374/2014(H7N9)
AJU95227 A/chicken/Dongguan/1382/2014(H7N9)
AJU95251 A/chicken/Dongguan/1401/2014(H7N9)
AJU94356 A/chicken/Dongguan/1456/2014(H7N9)
AJU94396 A/chicken/Dongguan/1494/2014(H7N9)
AJU95346 A/chicken/Dongguan/1548/2014(H7N9)
AJU93857 A/chicken/Dongguan/169/2014(H7N9)
AJU95382 A/chicken/Dongguan/1690/2014(H7N9)
AJU93869 A/chicken/Dongguan/173/2014(H7N9)
AJU93881 A/chicken/Dongguan/189/2014(H7N9)
AJU94606 A/chicken/Dongguan/191/2014(H7N9)
AJU90661 A/chicken/Dongguan/2912/2013(H7N9)
AJU90951 A/chicken/Dongguan/3544/2013(H7N9)
AJU91155 A/chicken/Dongguan/4037/2013(H7N9)
AJU92031 A/chicken/Dongguan/4064/2013(H7N9)
AJU91993 A/chicken/Dongguan/4119/2013(H7N9)
AJU93907 A/chicken/Dongguan/449/2014(H7N9)
AJU93931 A/chicken/Dongguan/536/2014(H7N9)
AJU93943 A/chicken/Dongguan/568/2014(H7N9)
AJU94754 A/chicken/Dongguan/748/2014(H7N9)
AJU94838 A/chicken/Dongguan/835/2014(H7N9)
AJU94862 A/chicken/Dongguan/843/2014(H7N9)
AJU94886 A/chicken/Dongguan/851/2014(H7N9)
AJU94910 A/chicken/Dongguan/874/2014(H7N9)
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)
AJU91402 A/chicken/Huzhou/4045/2013(H7N9)
AJU91476 A/chicken/Huzhou/4076/2013(H7N9)

FIGURA 22-28

```
AJJ93051 A/chicken/Jiangxi/10573/2014(H7N9)  .....K.....
AJJ96552 A/chicken/Jiangxi/12206/2014(H7N9)  .....K.....
AJJ96684 A/chicken/Jiangxi/13207/2014(H7N9)  .....K.....
AJJ96720 A/chicken/Jiangxi/13220/2014(H7N9)  .....K.....
AJJ96732 A/chicken/Jiangxi/13223/2014(H7N9)  .....K.....
AJJ97267 A/chicken/Jiangxi/13252/2014(H7N9)  .....K.....
AJJ97291 A/chicken/Jiangxi/13493/2014(H7N9)  .....K.....
AJJ96889 A/chicken/Jiangxi/13496/2014(H7N9)  .....K.....
AJJ96901 A/chicken/Jiangxi/13502/2014(H7N9)  .....K.....
AJJ97331 A/chicken/Jiangxi/13512/2014(H7N9)  .....K.....
AJJ96925 A/chicken/Jiangxi/13513/2014(H7N9)  .....K.....
AJJ97373 A/chicken/Jiangxi/13521/2014(H7N9)  .....K.....
AJJ97443 A/chicken/Jiangxi/13530/2014(H7N9)  .....K.....
AJJ97582 A/chicken/Jiangxi/14023/2014(H7N9)  .....K.....
AJJ97697 A/chicken/Jiangxi/14517/2014(H7N9)  .....K.....
AJJ97709 A/chicken/Jiangxi/14518/2014(H7N9)  .....K.....
AJJ97745 A/chicken/Jiangxi/14554/2014(H7N9)  .....K.....
AJJ97899 A/chicken/Jiangxi/15524/2014(H7N9)  .....K.....
AJJ96817 A/chicken/Jiangxi/9513/2014(H7N9)   .....K.....
AJJ93027 A/chicken/Jiangxi/9558/2014(H7N9)   .....K.....
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9)  .....K.....
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)     .....K.....
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)    .....K.....
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)  .....K.....
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)  .....K.....
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)  .....K.....
AJJ97757 A/chicken/Shantou/2537/2014(H7N9)    .....K.....
AJJ97973 A/chicken/Shantou/4325/2014(H7N9)    .....V.....
AJJ97998 A/chicken/Shantou/4816/2014(H7N9)    .....K.....
AJJ91314 A/chicken/Shaoxing/2417/2013(H7N9)   .....K.....
AJJ91725 A/chicken/Shaoxing/5201/2013(H7N9)   .....K.....
AJJ95464 A/chicken/Shenzhen/138/2014(H7N9)    .....K.....
AJJ90576 A/chicken/Shenzhen/1665/2013(H7N9)   .....K.....
AJJ90588 A/chicken/Shenzhen/2110/2013(H7N9)   .....K.....
AJJ91035 A/chicken/Shenzhen/3780/2013(H7N9)   .....K.....
AJJ90490 A/chicken/Shenzhen/742/2013(H7N9)    .....K.....
AJJ92005 A/chicken/Shenzhen/801/2013(H7N9)    .....K.....
AJJ90526 A/chicken/Shenzhen/898/2013(H7N9)    .....K.....
AIU47013 A/chicken/Suzhou/04020IH/2013(H7N9)  .....K.....
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FIGURA 22-29

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

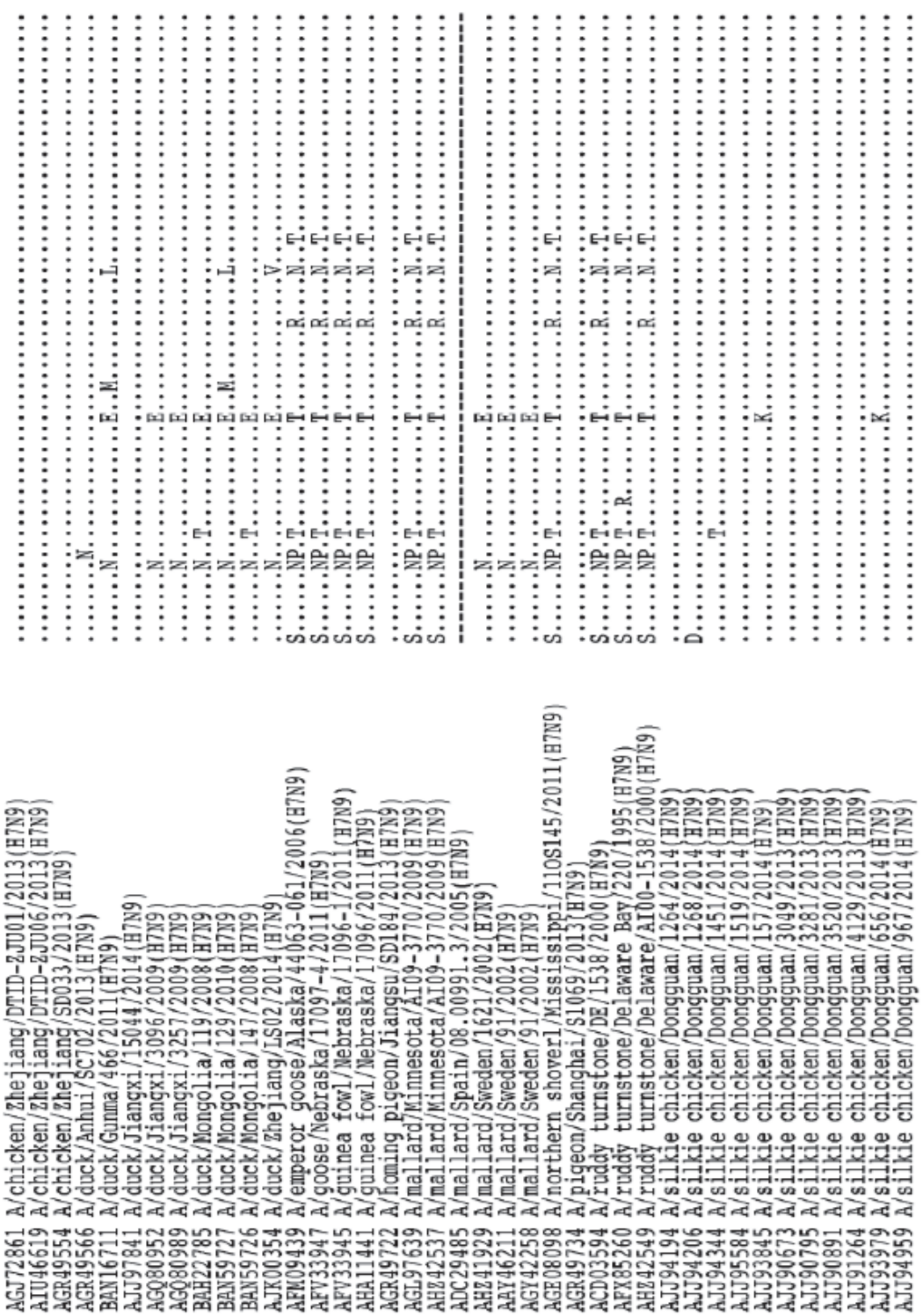

AGJ72861 A/chicken/Zhejiang/DTID-ZJU01/2013(H7N9)
AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013(H7N9)
AGR49554 A/chicken/Zhejiang/SD033/2013(H7N9)
AGR49566 A/duck/Anhui/SC702/2013(H7N9)
BAN16711 A/duck/Gunma/466/2011(H7N9)
AJJ97841 A/duck/Jiangxi/15044/2014(H7N9)
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)
BAH22785 A/duck/Mongolia/119/2008(H7N9)
BAN59727 A/duck/Mongolia/129/2010(H7N9)
BAN59726 A/duck/Mongolia/147/2008(H7N9)
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)
AAY46211 A/mallard/Sweden/91/2002(H7N9)
AGY42258 A/mallard/Sweden/91/2002(H7N9)
AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9)
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)
AJJ94194 A/silkie chicken/Dongguan/1264/2014(H7N9)
AJJ94206 A/silkie chicken/Dongguan/1268/2014(H7N9)
AJJ94344 A/silkie chicken/Dongguan/1451/2014(H7N9)
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)

FIGURA 22-30

FIGURA 22-31

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

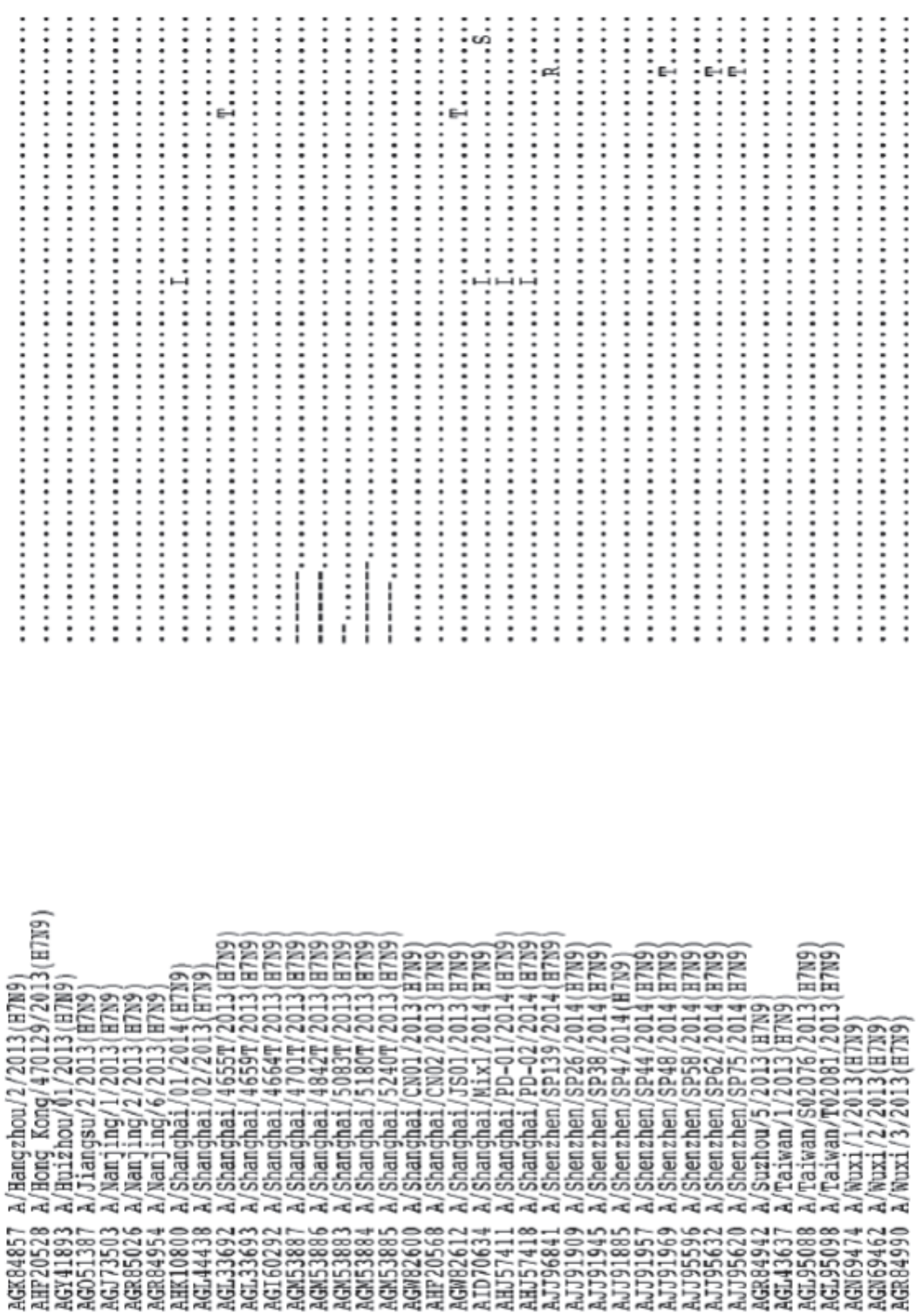


FIGURA 22-32

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

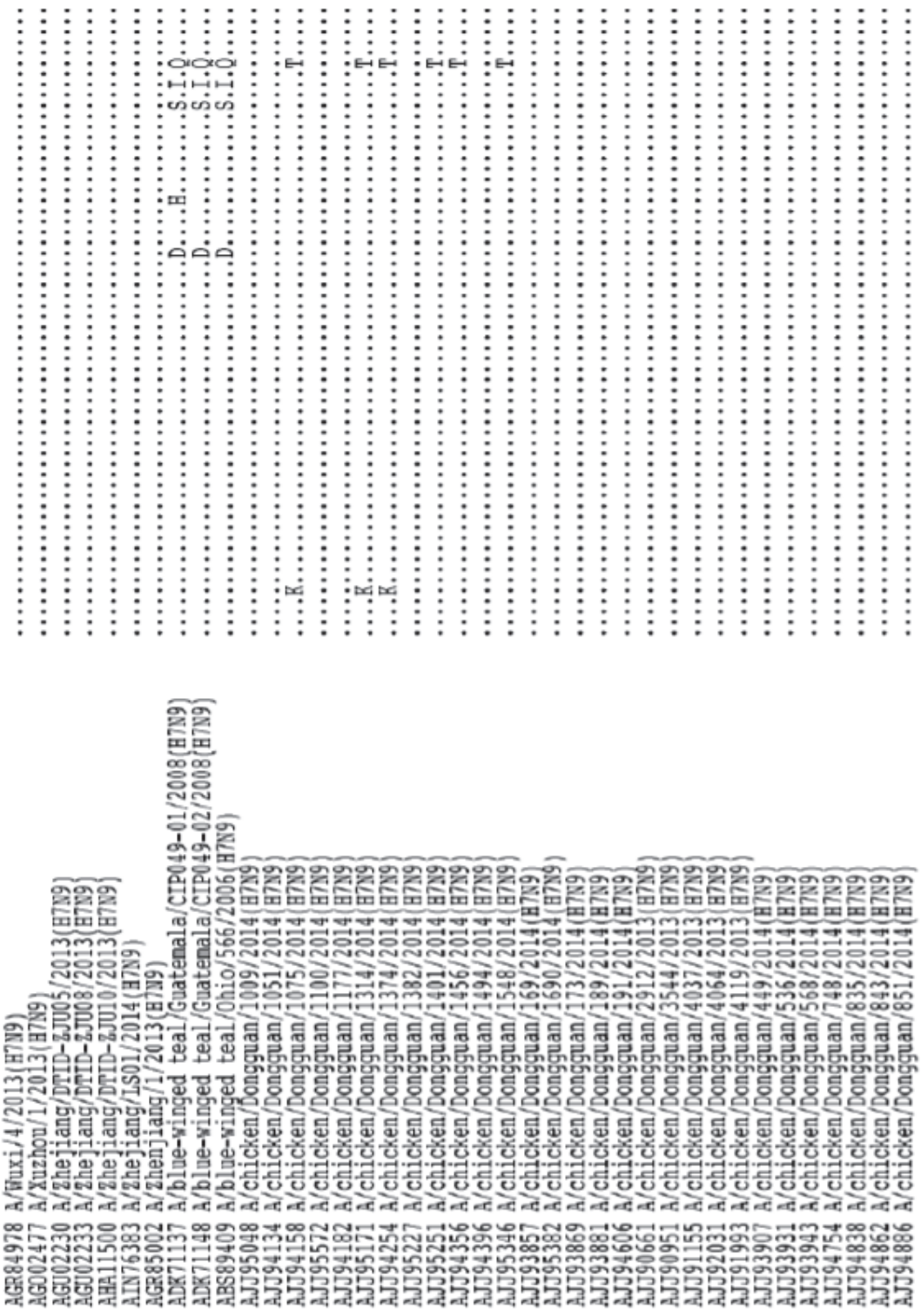
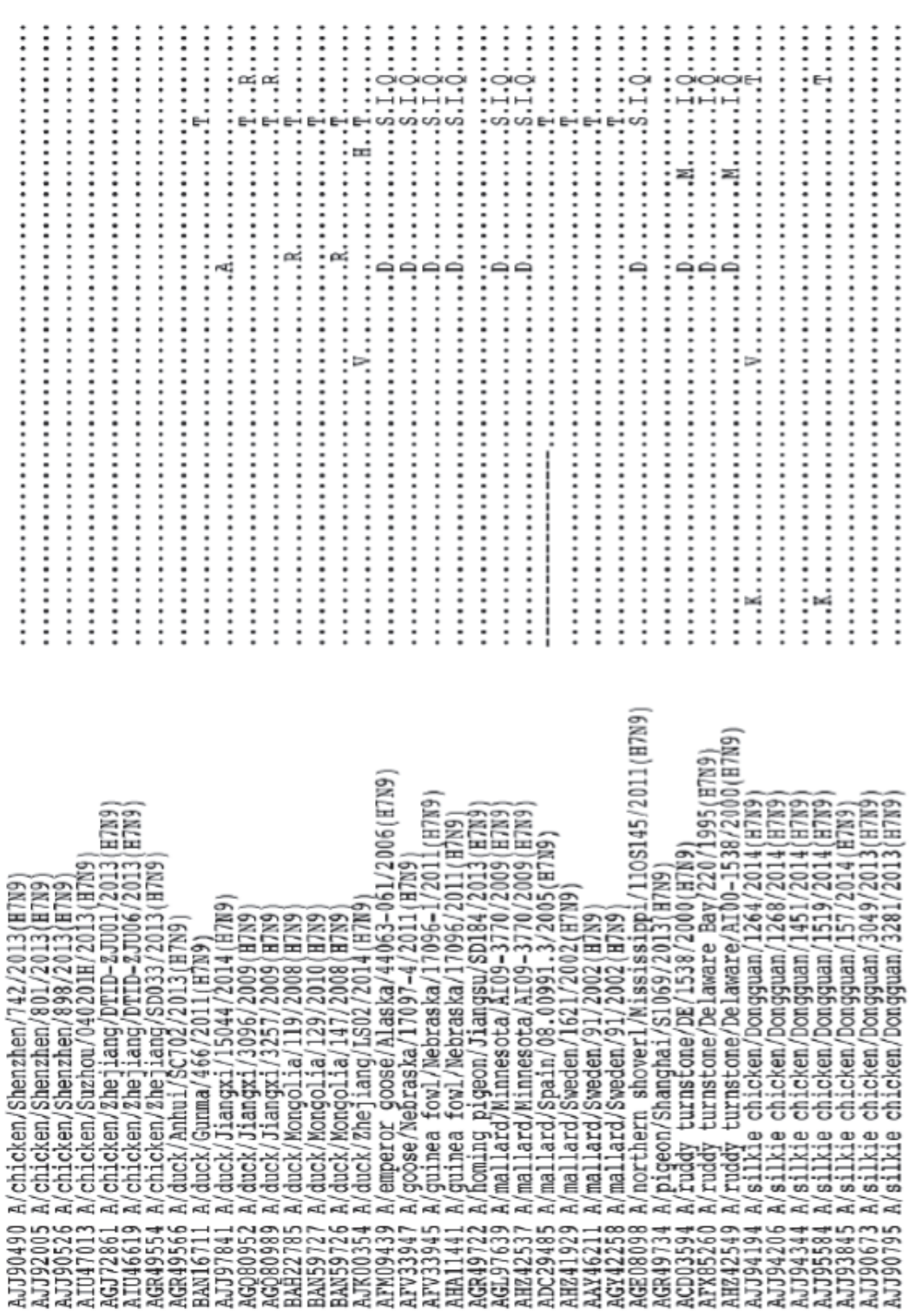


FIGURA 22-33

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-34

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R



FIGURA

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

```
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)  ..........................................K.....G.....
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)  ..........................................K.....G.....
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)   ..........................................K.....G.....
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)   ..........................................K.....G.....
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)   ..........................................K.....G.....
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)   ..........................................K.....G.....
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)   ..........................................K.....G.....
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)    ..........................................K.....T.....
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)      ..........................................K.....G.....
ABI84694 A/turkey/Minnesota/1/1988(H7N9)            ...K.......................................D.....S.I.Q.....
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)      ..........................................S.....D.....S.I.Q.....
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)        ..........................................S.....D.....S.I.Q.....
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)        ..........................................N.....D.....S.I.Q.....
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)        ..........................................N.....D.....S.I.Q.....
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)        ..........................................N.....D.....S.I.Q.....
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)        ..........................................N.....D.....S.I.Q.....
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)        ..........................................N.....D.....M.....S.I.Q.....
ACQ48625 A/turkey/Minnesota/38429/1988(H7N9)        ----------------------------------------------------------------------
AEK84760 A/wild bird/Korea/A14/2011(H7N9)           ...K.......................................D.....-----------T.....
AEK84761 A/wild bird/Korea/A3/2011(H7N9)            ..........................................N.....T.....
AEK84763 A/wild bird/Korea/A9/2011(H7N9)            ..........................................N.....T.....
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)       ..........................................N.....T.....
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)      ..........................................N.....T.....
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)      ..........................................N.....T.....
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)      ..........................................N.....T.....
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)       ..........................................N.....T.....
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)       ..........................................N.....T.....
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)       ..........................................N.....T.....
ADW98291 A/wild duck/Mongolia/1-241/2008(H7N9)      ..........................................N.....T.....
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)     ..........................................N.....T.....

Posizioni da  421 a  480
     Sequenza consenso                              INWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEI
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)  ......N.....................................N.....................
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9) ......N.....................................N.....................
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)        ......N.....................................N.....................
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)               ..........................................N.....................
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)               ..........................................N.....................
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)               ..........................................N.....................
```

FIGURA 22-36

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

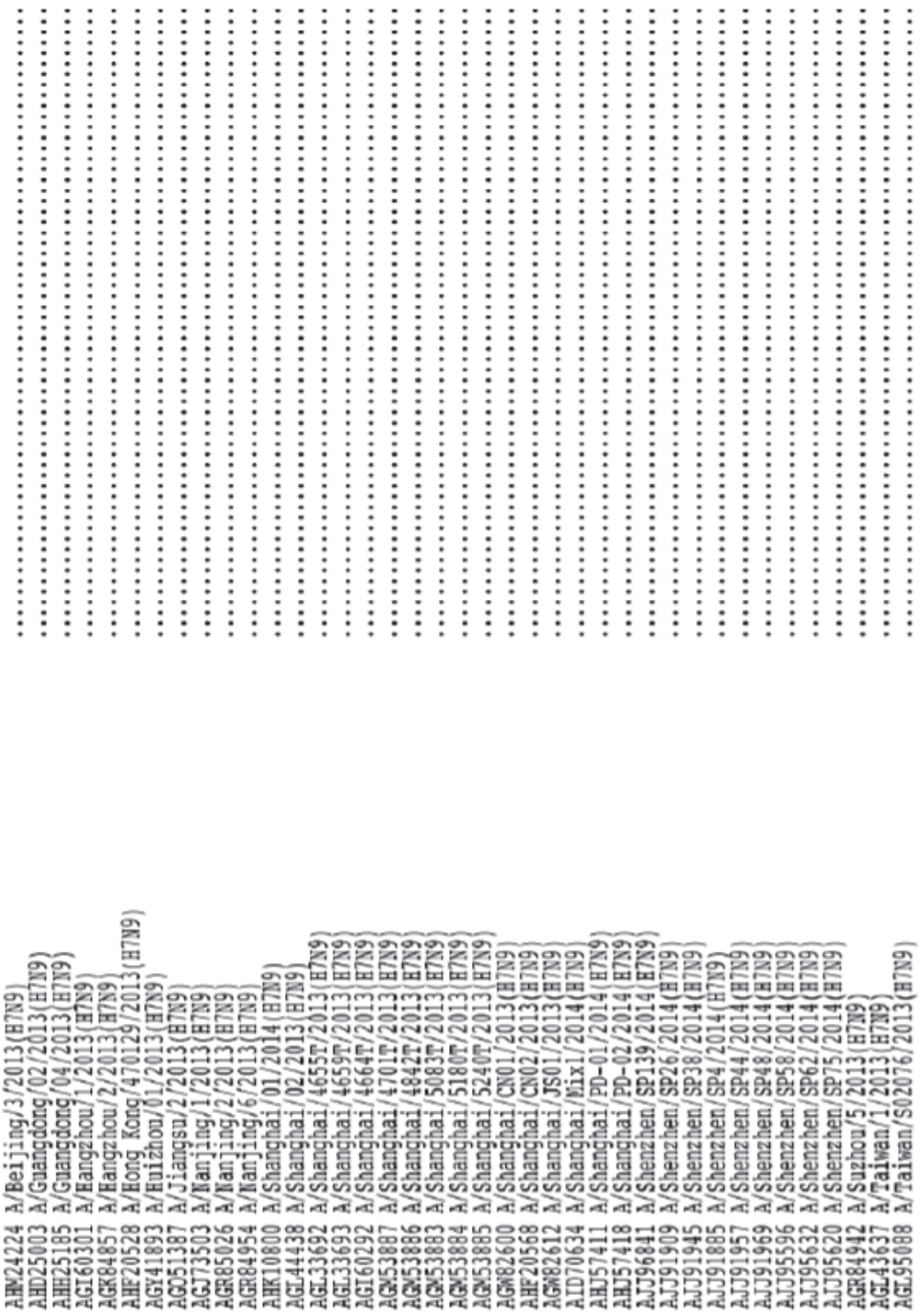


FIGURA 22-37

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-38

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-39

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

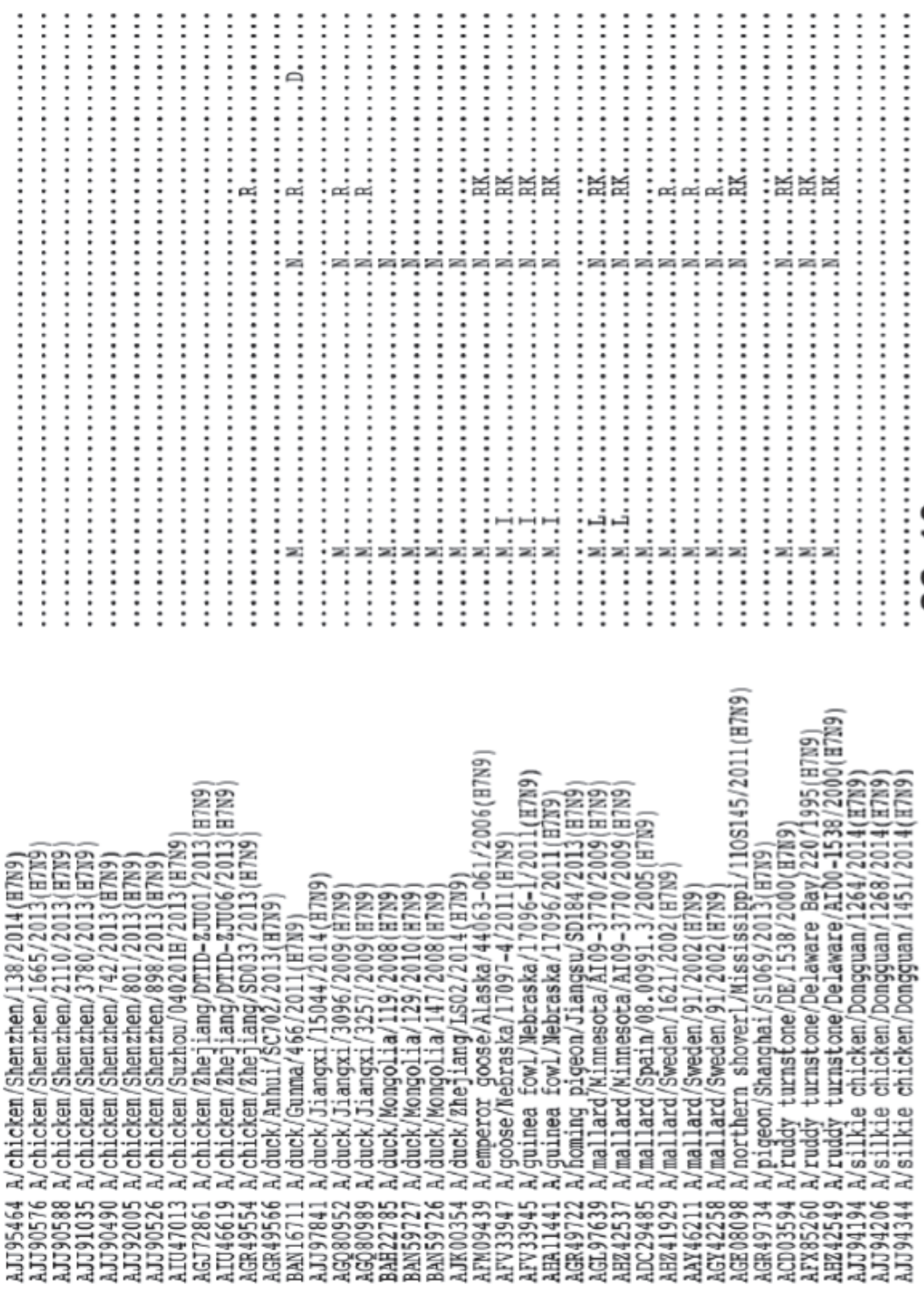


FIGURA 22-40

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

```
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)
ABI84694 A/turkey/Minnesota/1/1988(H7N9)
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)
AEK84760 A/wild bird/Korea/A14/2011(H7N9)
AEK84761 A/wild bird/Korea/A3/2011(H7N9)
AEK84763 A/wild bird/Korea/A9/2011(H7N9)
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)
AGG53432 A/wild duck/Korea/MMC35-41/2011(H7N9)
AGG53399 A/wild duck/Korea/MMC39-26/2011(H7N9)
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)

Posizioni da  481 a  540
     Sequenza consenso
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)
```

FIGURA 22-41

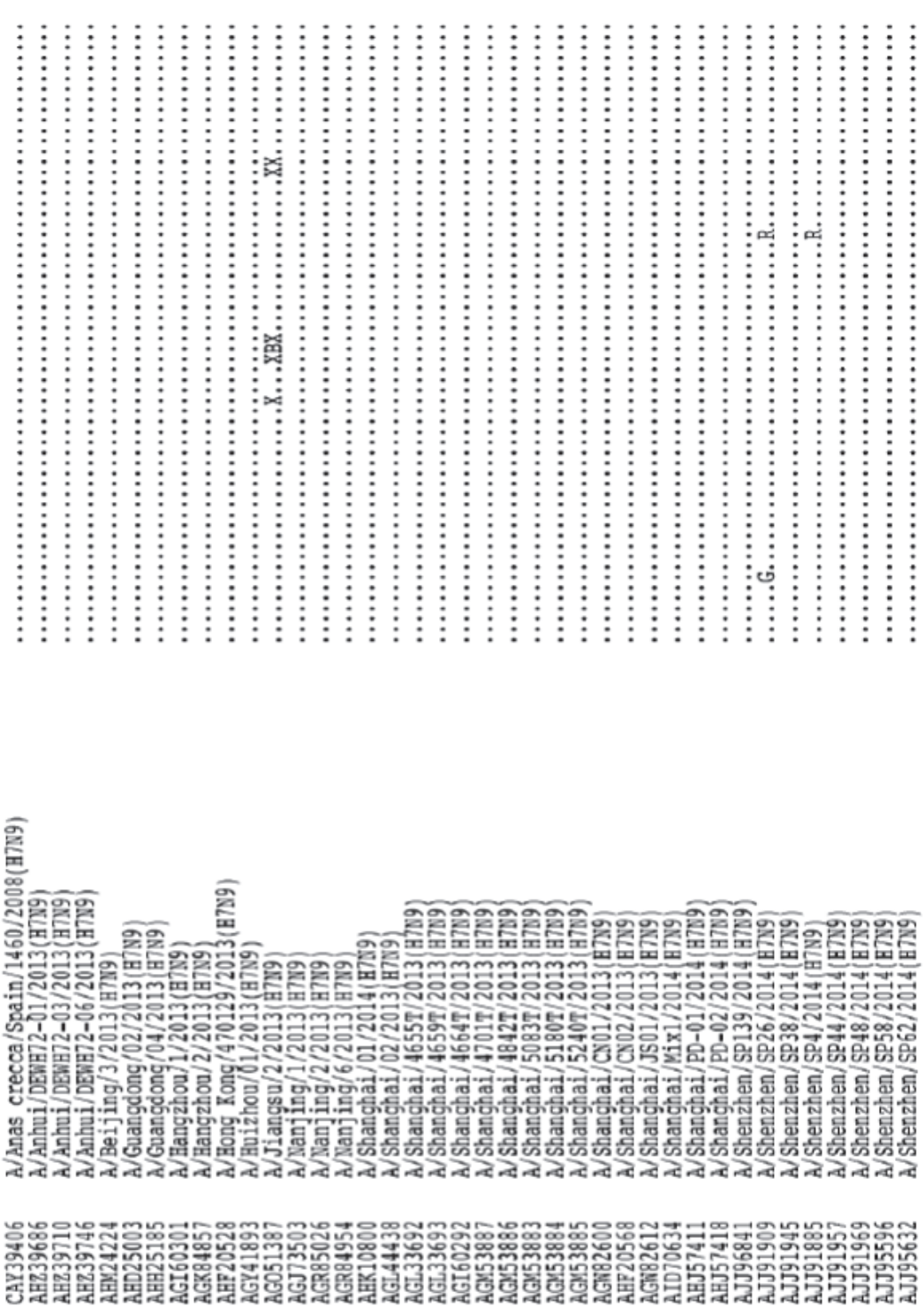


FIGURA 22-42

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

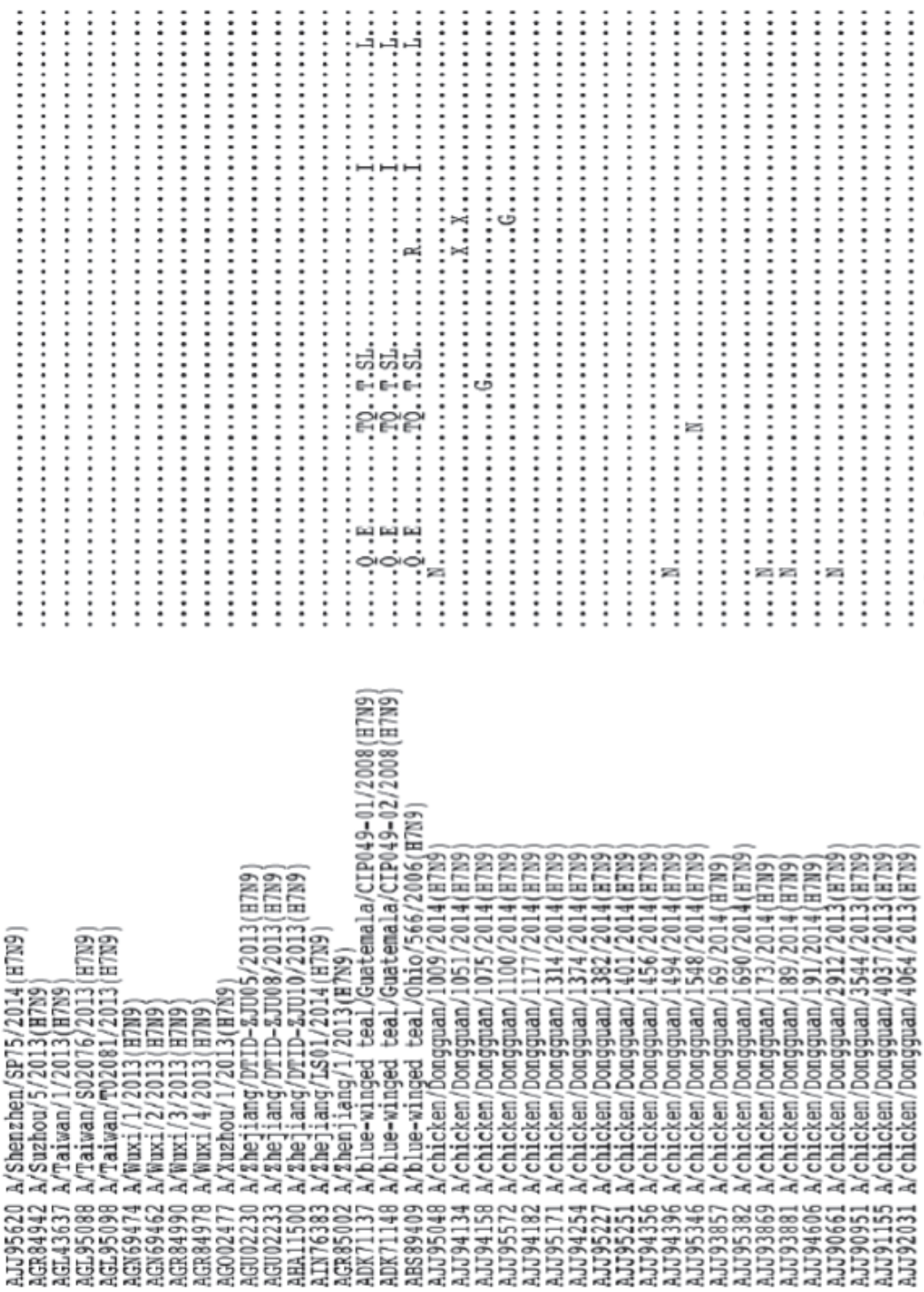


FIGURA 22-43

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

FIGURA 22-44

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

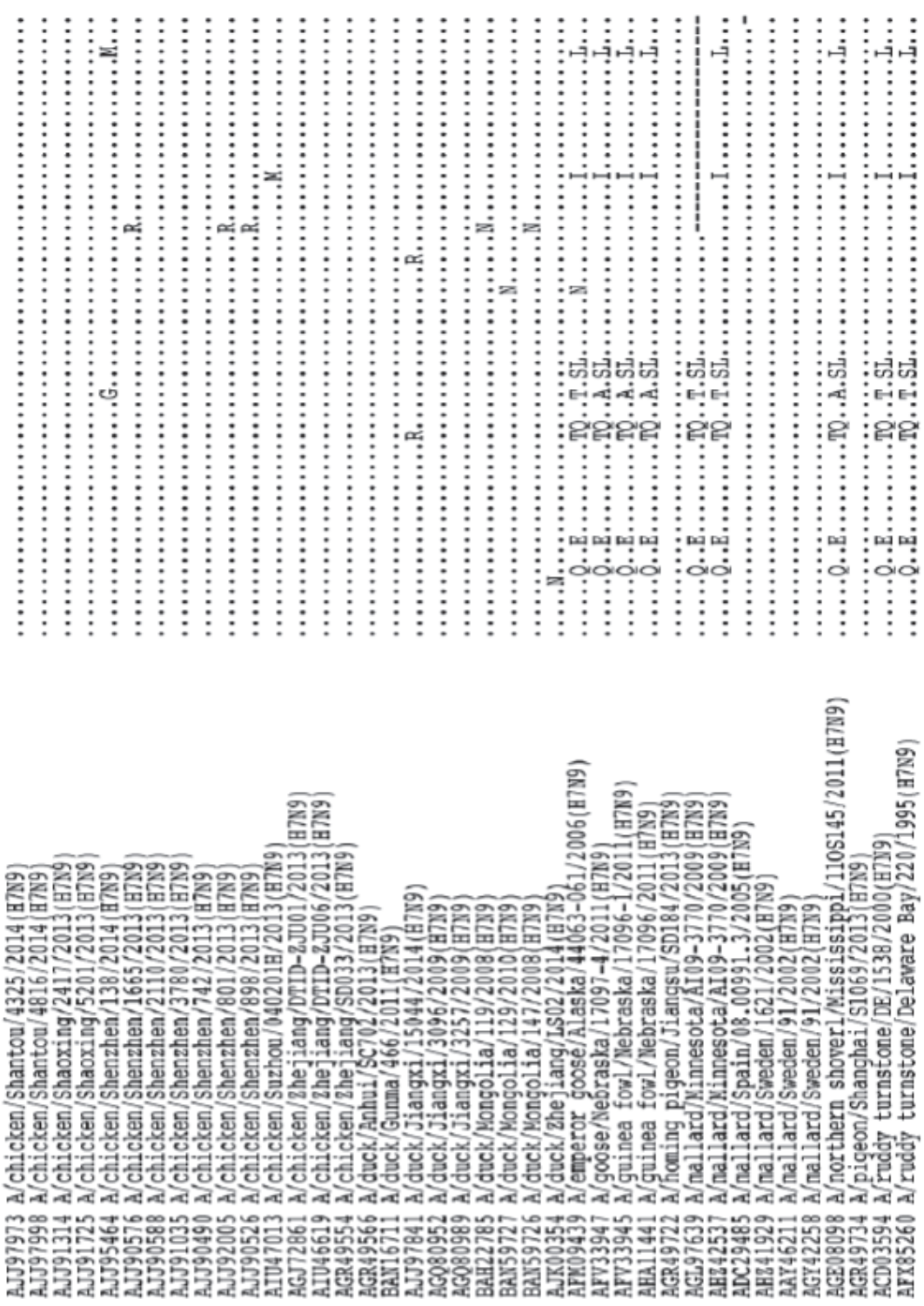


FIGURA 22-45

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

```
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)  .....Q..E.....TQ..T.SL.....I.....L...
AJJ94194 A/silkie chicken/Dongguan/1264/2014(H7N9)        .....G.....M...
AJJ94206 A/silkie chicken/Dongguan/1268/2014(H7N9)        ..........
AJJ94344 A/silkie chicken/Dongguan/1451/2014(H7N9)        ..........
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)        .....G.....M...
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)         ....N.....
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)        ....N.....
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)        ..........
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)        ....N.....
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)        ..........
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)         ....N.....
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)         ....N.....
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)         ..........
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)         ..........
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)         ..........
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)          .....R.....
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)            ..........
ABI84694 A/turkey/Minnesota/1/1988(H7N9)                  .....Q..E.....AQ..A.SL.....I.....L...
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)            .....Q..E.....TQ..K.SL.....I.....L...
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)              .N..Q..E.....TQ..K.SL.....I.....L...
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)              .....Q..E.....TQ..K.SL.....I.....L...
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)              .....Q..E.....TQ..K.SL.....I.....L...
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)              .....Q..E.....TQ..A.SL.....I.....L...
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)              .....Q..E.....TQ..A.SL.....I.....L...
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)              ==========
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)              ==========
AEK84760 A/wild bird/Korea/A14/2011(H7N9)                 ..........
AEK84761 A/wild bird/Korea/A3/2011(H7N9)                  ..........
AEK84763 A/wild bird/Korea/A9/2011(H7N9)                  ..........
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)             .....R.....
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)            .....R.....
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)            ..........
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)            ..........
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)             ..........
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)             ..........
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)             .....N.....
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)            .....N.....
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)           ..........
```

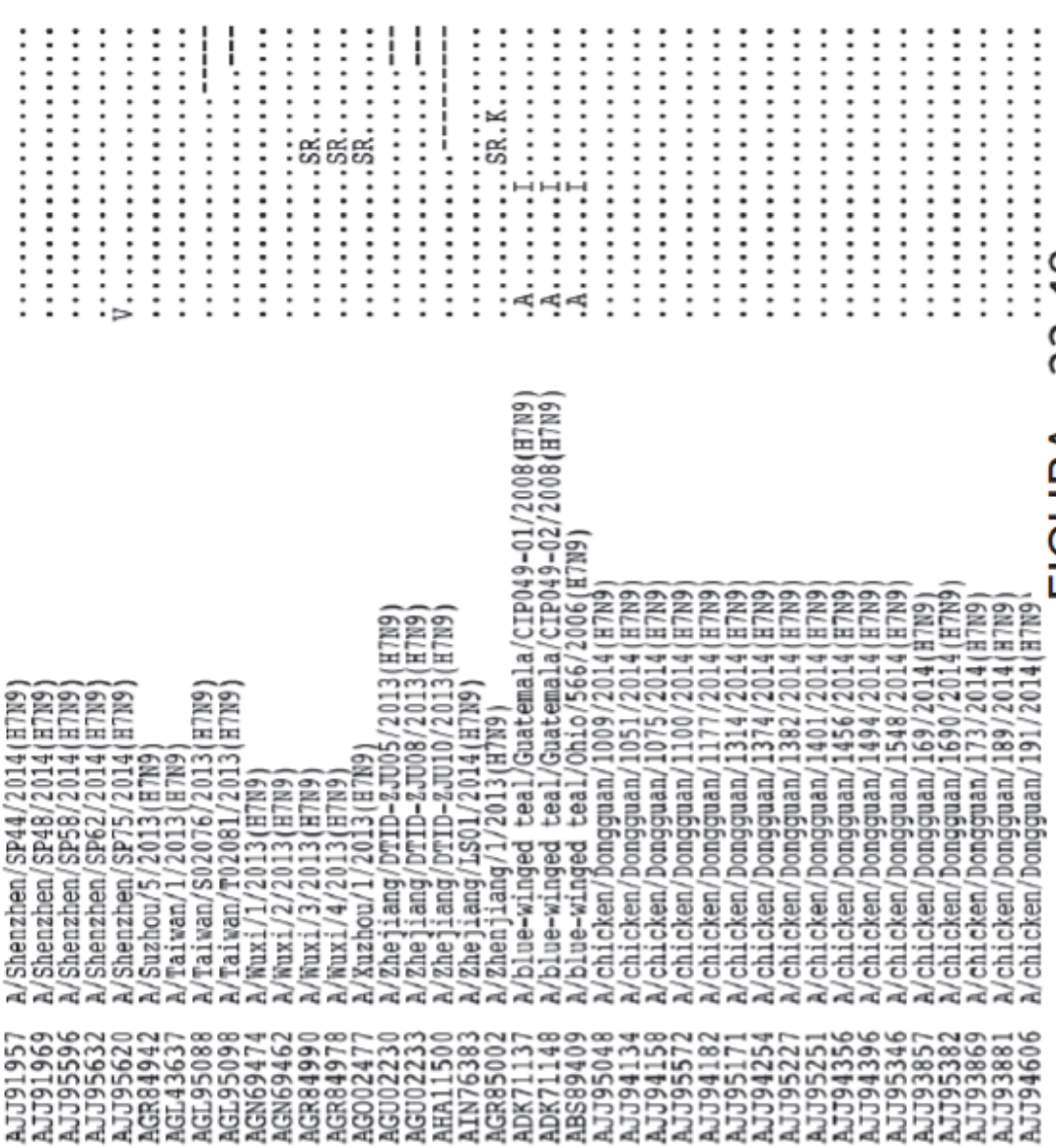
FIGURA 22-46

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

```
Posizioni da  541 a   561
     Sequenza consenso                                  IVMGLVFICVKNGNMRCTICI
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)      .A.....................
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)     .A.....................
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)            .A.....................
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)                   .....................
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)                   .....................
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)                   .....................
AHM24224 A/Beijing/3/2013(H7N9)                         .....................
AHD25003 A/Guangdong/02/2013(H7N9)                      .....------------
AHH25185 A/Guangdong/04/2013(H7N9)                      .....................
AGI60301 A/Hangzhou/1/2013(H7N9)                        .....................
AGK84857 A/Hangzhou/2/2013(H7N9)                        .....................
AHF20528 A/Hong Kong/470129/2013(H7N9)                  .....................
AGY41893 A/Huizhou/01/2013(H7N9)                        .....................
AGO51387 A/Jiangsu/2/2013(H7N9)                         .....................
AGJ73503 A/Nanjing/1/2013(H7N9)                         .....................
AGR85026 A/Nanjing/2/2013(H7N9)                         .....SR...............
AGR84954 A/Nanjing/6/2013(H7N9)                         .....R................
AHK10800 A/Shanghai/01/2014(H7N9)                       .....................
AGL44438 A/Shanghai/02/2013(H7N9)                       .....................
AGL33692 A/Shanghai/4655T/2013(H7N9)                    .A....................
AGL33693 A/Shanghai/4659T/2013(H7N9)                    .....................
AGI60292 A/Shanghai/4664T/2013(H7N9)                    .....................
AGN53887 A/Shanghai/4701T/2013(H7N9)                    .....................
AGN53886 A/Shanghai/4842T/2013(H7N9)                    .....-----------.----
AGN53883 A/Shanghai/5083T/2013(H7N9)                    .....-----------.----
AGN53884 A/Shanghai/5180T/2013(H7N9)                    .....................
AGN53885 A/Shanghai/5240T/2013(H7N9)                    .....-----------.----
AGW82600 A/Shanghai/CN01/2013(H7N9)                     .....................
AHF20568 A/Shanghai/CN02/2013(H7N9)                     .....................
AGW82612 A/Shanghai/JS01/2013(H7N9)                     .A....................
AID70634 A/Shanghai/Mix1/2014(H7N9)                     .....................
AHJ57411 A/Shanghai/PD-01/2014(H7N9)                    .....................
AHJ57418 A/Shanghai/PD-02/2014(H7N9)                    .....................
AJJ96841 A/Shenzhen/SP139/2014(H7N9)                    .....................
AJJ91909 A/Shenzhen/SP26/2014(H7N9)                     .....................
AJJ91945 A/Shenzhen/SP38/2014(H7N9)                     .....................
AJJ91885 A/Shenzhen/SP4/2014(H7N9)                      .....................
```

FIGURA 22-47

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R



FIGURA

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

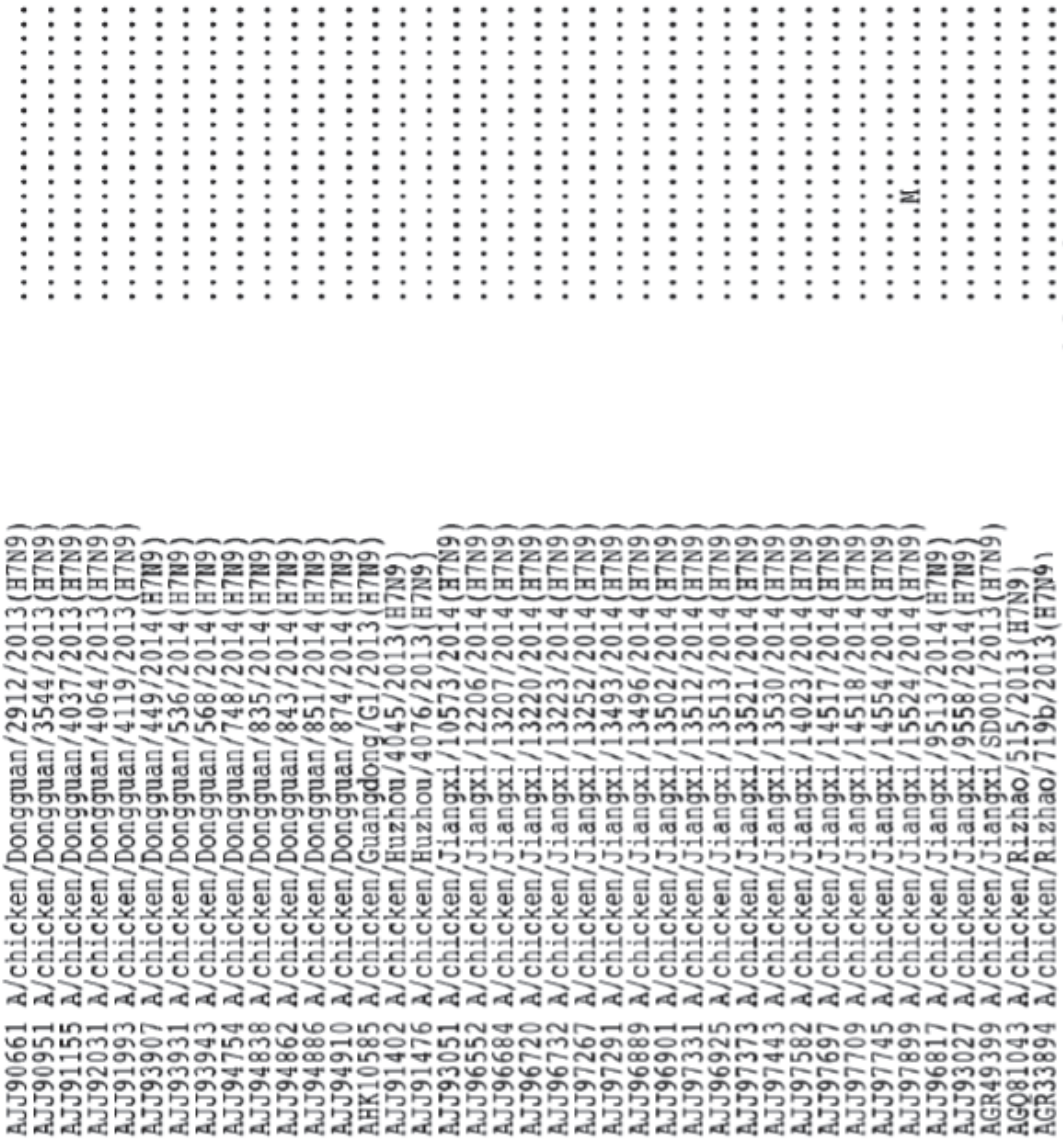


FIGURA 22-49

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

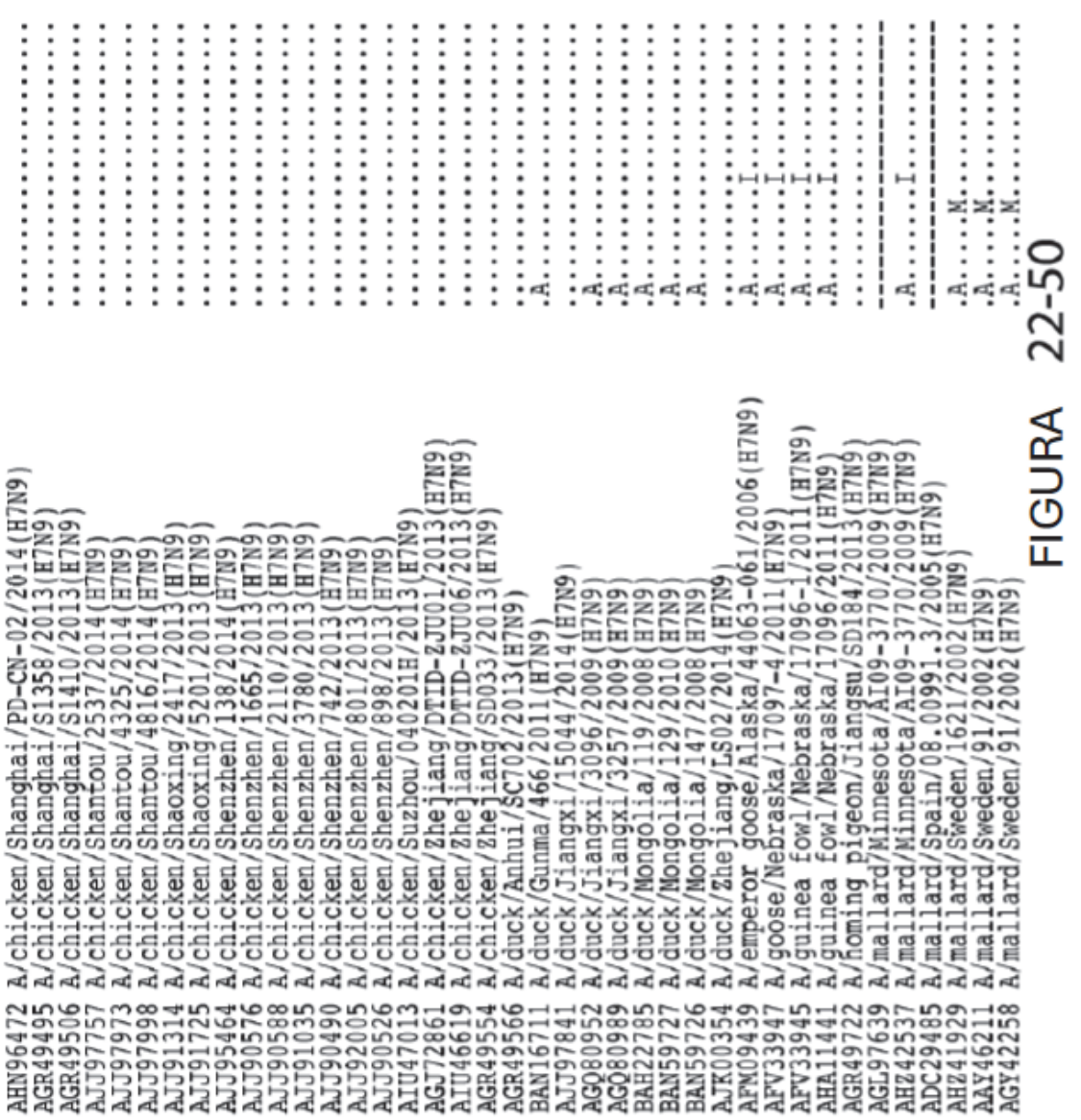


FIGURA 22-50

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

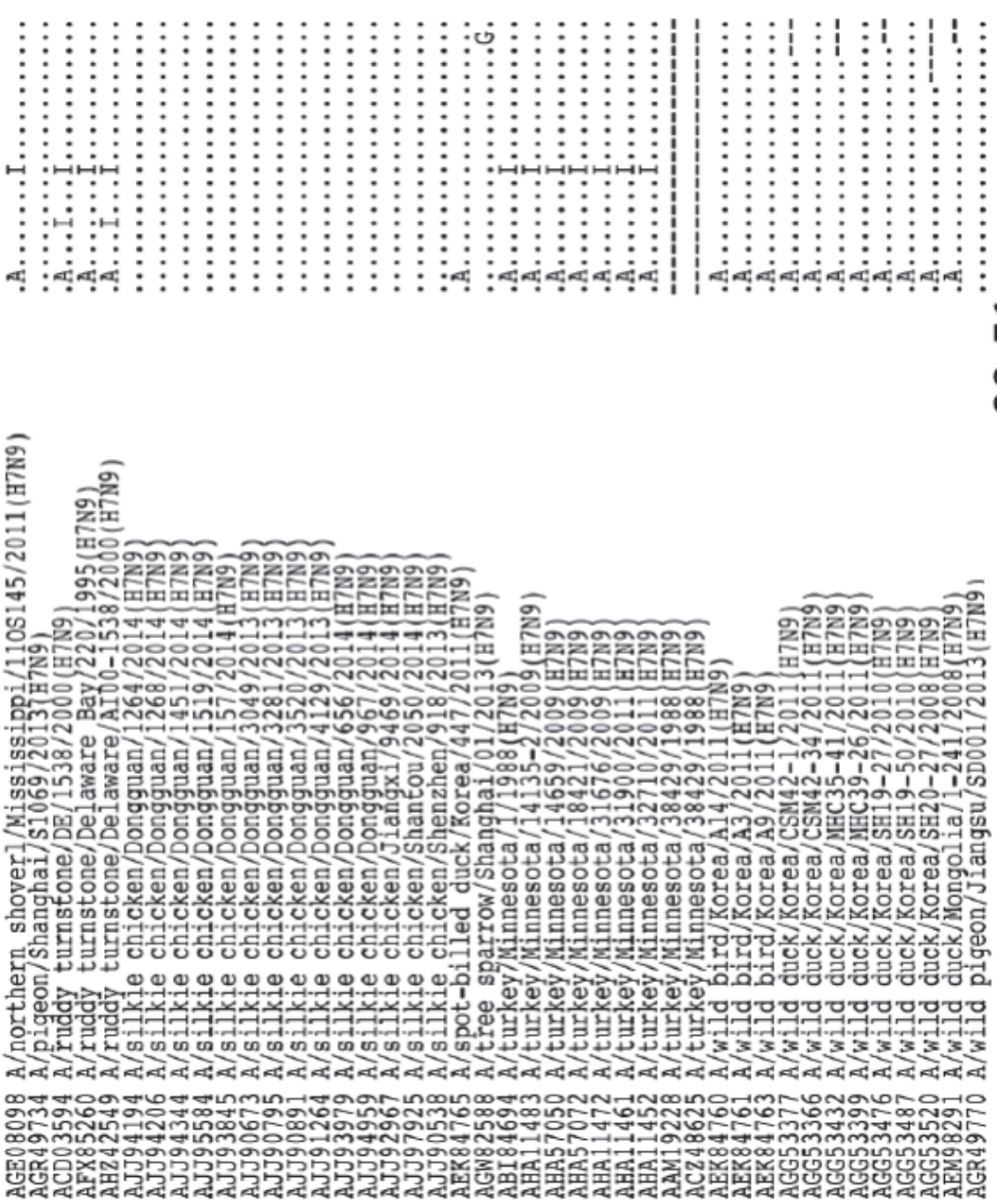

AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9)
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)
AHZ42549 A/ruddy turnstone/DE/AI00-1538/2000(H7N9)
AJJ94194 A/silkie chicken/Dongguan/1264/2014(H7N9)
AJJ94206 A/silkie chicken/Dongguan/1268/2014(H7N9)
AJJ94344 A/silkie chicken/Dongguan/1451/2014(H7N9)
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)
ABI84694 A/turkey/Minnesota/1/1988(H7N9)
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)
ACZ48625 A/turkey/Minnesota/38429/2011(H7N9)
AEK84760 A/wild bird/Korea/A14/2011(H7N9)
AEK84761 A/wild bird/Korea/A3/2011(H7N9)
AEK84763 A/wild bird/Korea/A9/2011(H7N9)
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)

FIGURA 22-51

Posizioni da 1 a 60

	Sequenza consenso	MYKIVVIIALLGAVKGLDKICLGHHAVANGTIVKTLTNEQEEVTNATETVESTGLNRLCM
AHN97094	A/American green-winged teal/Ohio/13OS1869/2013(H10N8)	.....LVL.....H.....P.....K.....KS.DK...
AHM24205	A/Eurasian coot/Germany/R411/2010(H10N8)	.....VT.....R.....T.....S..K...
AHK10761	A/Jiangxi/IPB13/2013(H10N8)	.....I.....
AHK10763	A/Jiangxi/IPB13b/2013(H10N8)	.....I.....
AJD10539	A/chicken/Jiangxi/1204/2014(H10N8)	.....I.....
AJD11559	A/chicken/Jiangxi/1232/2014(H10N8)	...V.....I.....
AJD11571	A/chicken/Jiangxi/1270/2014(H10N8)	.....I.....
AJD11583	A/chicken/Jiangxi/1279/2014(H10N8)	.....I.....
AJD09903	A/chicken/Jiangxi/18399/2013(H10N8)	.....
AJD09915	A/chicken/Jiangxi/18933/2013(H10N8)	.....
AJD09927	A/chicken/Jiangxi/19924/2013(H10N8)	.....
AJD09939	A/chicken/Jiangxi/19960/2013(H10N8)	.....
AJD10551	A/chicken/Jiangxi/23252/2013(H10N8)	.....K.....
AJD10563	A/chicken/Jiangxi/23259/2013(H10N8)	.....K.....
AJD10575	A/chicken/Jiangxi/23274/2013(H10N8)	.....I.....
AJD10587	A/chicken/Jiangxi/27600/2013(H10N8)	....I.....I.....
AJD10611	A/chicken/Jiangxi/28113/2013(H10N8)	.....I.....
AJD11595	A/chicken/Jiangxi/3152/2014(H10N8)	.....I.....
AJD10683	A/chicken/Jiangxi/34609/2013(H10N8)	.....I.....
AJD11271	A/chicken/Jiangxi/36229/2013(H10N8)	...V.....I.....
AIK26172	A/chicken/Jiangxi/JXA132717/2014(H10N8)	-----.....I.....
AFJ19053	A/duck/Guangdong/E1/2012(H10N8)	.....R.....S.....
BAG16719	A/duck/Hokkaido/W95/2006(H10N8)	----------
AJD14343	A/duck/Jiangxi/2039/2005(H10N8)	.....S.....
AJD14367	A/duck/Jiangxi/22960/2008(H10N8)	.....AS.....
AJD14379	A/duck/Jiangxi/4759/2009(H10N8)	.....I.....AS.....
AJD10887	A/duck/Jiangxi/6450/2013(H10N8)	.....
AJD10911	A/duck/Jiangxi/6474/2013(H10N8)	.....
AJD10923	A/duck/Jiangxi/6487/2013(H10N8)	.....I.....
AJD10971	A/duck/Jiangxi/6526/2013(H10N8)	.....
AJD10995	A/duck/Jiangxi/6544/2013(H10N8)	.....V.....
AJD11055	A/duck/Jiangxi/6602/2013(H10N8)	.....
AJD11091	A/duck/Jiangxi/6645/2013(H10N8)	.....X.....
AIK26225	A/duck/Jiangxi/JXA132712/2014(H10N8)	------.....I.....
AIK26196	A/duck/Jiangxi/JXA132727/2014(H10N8)	-------.....I.....
AB052082	A/longtail duck/Maryland/295/2005(H10N8)	.....LVL.....H.....P.....K.....KS.DK...
ADU16029	A/mallard/Interior Alaska/6MP0758/2006(H10N8)	.....LVL..F...H.....P.....K.....KS.DK...

FIGURA 23-1

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

AER09406	A/mallard/Korea/1041/2010(H10N8)	----------
AER09416	A/mallard/Korea/1203/2010(H10N8)	..........T.....KS.....
AHZ38995	A/mallard/Sweden/233/2002(H10N8)	...V.....R.....KS.GK...
ADE75294	A/mallard/Sweden/7/2003(H10N8)	.....I.....V.....H.....N.S..K...
AJD14391	A/migratory duck/Jiangxi/21248/2009(H10N8)	.....S.....
AJD14355	A/migratory duck/Jiangxi/593/2005(H10N8)	.....S.....
ACK43693	A/northern pintail/California/44221-656/2006(H10N8)	.....LVL.....H.....S.....K.....KS.DK...
AEK49546	A/northern shoveler/California/9235/2008(H10N8)	.....PVL.....H.....P.....K.....GS.DK...
ACZ48518	A/quail/Italy/1117/1965(H10N8)	----------.....T.....S..K...
ABI84499	A/quail/Italy/1117/1965(H10N8)	...V.....R.....T.....S..K...
AEA04419	A/quail/Italy/1117/1965(H10N8)	...V.....R.....T.....S..K...
AGU01953	A/ruddy shelduck/Mongolia/1602/2010(H10N8)	.D.K..V.....S.....
AGL58508	A/ruddy turnstone/New Jersey/1148668/2004(H10N8)	.....LVL.....H.....P.....K.....KS.DK...
AGG28633	A/shorebird/Delaware Bay/379/2008(H10N8)	.....LVL.....H.....S.....K.....KN.D....
AGU01957	A/surf scoter/Mongolia/878V/2009(H10N8)	.....V.....S.....
AGU01970	A/velvet scoter/Mongolia/879V/2009(H10N8)	.....V.....S.....

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Sequenza consenso **KGRKHKDLGNCHPIGMLIGTPACDLHLTGTWDTLIERENAIAYCYPGATVNEEALRQKIM**

AHN97094	A/American green-winged teal/Ohio/13OS1869/2013(H10N8)	.S.NY.....I.....D.S.....
AHM24205	A/Eurasian coot/Germany/R411/2010(H10N8)	R..SY....R.....I.L...V.E.....A.....I.....
AHK10761	A/Jiangxi/IPB13/2013(H10N8)	.....M.....V.....
AHK10763	A/Jiangxi/IPB13b/2013(H10N8)	.....M.....V.....
AJD10539	A/chicken/Jiangxi/1204/2014(H10N8)	.....V.....
AJD11559	A/chicken/Jiangxi/1232/2014(H10N8)	.....V.....
AJD11571	A/chicken/Jiangxi/1270/2014(H10N8)	.....A.V.....
AJD11583	A/chicken/Jiangxi/1279/2014(H10N8)	.....V.....
AJD09903	A/chicken/Jiangxi/18399/2013(H10N8)	----------
AJD09915	A/chicken/Jiangxi/18933/2013(H10N8)	----------
AJD09927	A/chicken/Jiangxi/19924/2013(H10N8)	----------
AJD09939	A/chicken/Jiangxi/19960/2013(H10N8)	----------
AJD10551	A/chicken/Jiangxi/23252/2013(H10N8)	.....S.....G.....
AJD10563	A/chicken/Jiangxi/23259/2013(H10N8)	.....I.....
AJD10575	A/chicken/Jiangxi/23274/2013(H10N8)	.....V.....
AJD10587	A/chicken/Jiangxi/27600/2013(H10N8)	.....V.....
AJD10611	A/chicken/Jiangxi/28113/2013(H10N8)	.....V.....
AJD11595	A/chicken/Jiangxi/3152/2014(H10N8)	.....V.....
AJD10683	A/chicken/Jiangxi/34609/2013(H10N8)	.....S.....V.....
AJD11271	A/chicken/Jiangxi/36229/2013(H10N8)	.....V.....

FIGURA 23-2

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

FIGURA 23-3

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

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AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)                                                
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```
ACZ48518  A/quail/Italy/1117/1965(H10N8)                .....S.MR.....P.....S.....GT.....
ABI84499  A/quail/Italy/1117/1965(H10N8)                .....S.MR.....P.....S.....GT.....
AEA04419  A/quail/Italy/1117/1965(H10N8)                .....S.MR.....P.....S.....GT.....
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)    .....S.TN.....K.....N.....
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8) .....S..S.....N.....A.....
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)     ..........................
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)      .....S.....K.....G.....N.....
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)    .....S.....K.....G.....N.....

Posizioni da  181 a  240
      Sequenza consenso                                 TDTAEHLIWGIHHPSSTQEKNDLYGTQSLSISVGSSTYQNNFVPVVGARPQVNGQSGRI
AHN70094  A/american green-winged teal/Ohio/13OS1869/2013(H10N8) ..S.....I.....K...A..Y.....S.T.....
AHM24205  A/Eurasian coot/Germany/R411/2010(H10N8)      ..........I.....K...A..Y.....S.T.....
AHK10761  A/Jiangxi/IPB13/2013(H10N8)                  ..........I.....R.....
AHK10763  A/Jiangxi/IPB13b/2013(H10N8)                 ..........I.....R.....G.....
AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)           ..........I.....R.....
AJD11559  A/chicken/Jiangxi/1232/2014(H10N8)           ..........I.....R.S.....
AJD11571  A/chicken/Jiangxi/1270/2014(H10N8)           ..........I.....R.....
AJD11583  A/chicken/Jiangxi/1279/2014(H10N8)           ..........I.....R.....
AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)          ..........R.....
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)          ..........R.....
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)          ..........R.....
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)          ..........R.....
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)          ..........R.....
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)          ..........R.....
AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)          ..........R.....
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)          ..........R.....
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)          ..........R.....
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)           ..........I.....R.....
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)          ..........R.....
AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)          ..........I.....R.....
AIK26172  A/chicken/Jiangxi/JXA132717/2014(H10N8)      ..........R.....
AFJ19053  A/duck/Guangdong/E1/2012(H10N8)              ...V.....I.....
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)              ----------
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)              ..........
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)             .....I.....
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)              .....I.....
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)              ..........
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)              ..........
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)              ..........
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)              ..........
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)              ..........
```

FIGURA 23-5

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

AJD11055	A/duck/Jiangxi/6602/2013(H10N8)	.....
AJD11091	A/duck/Jiangxi/6645/2013(H10N8)	.....
AIK26225	A/duck/Jiangxi/JXA132712/2014(H10N8)	.....R.....
AIK26196	A/duck/Jiangxi/JXA132727/2014(H10N8)	.....R.....
ABO52082	A/longtail duck/Maryland/295/2005(H10N8)	..SV...I.....
ADU16029	A/mallard/Interior Alaska/6MP0758/2006(H10N8)	..S....I.....
AER09406	A/mallard/Korea/1041/2010(H10N8)	--.S.....
AER09416	A/mallard/Korea/1203/2010(H10N8)	..S.....Y.....
AHZ38995	A/mallard/Sweden/233/2002(H10N8)	..S.....I.....
ADE75294	A/mallard/Sweden/7/2003(H10N8)	.....V.....
AJD14391	A/migratory duck/Jiangxi/21248/2009(H10N8)	.....I.....
AJD14355	A/migratory duck/Jiangxi/593/2005(H10N8)	.....
ACK43693	A/northern pintail/California/44221-656/2006(H10N8)	..S.....I.....
AEK49546	A/northern shoveler/California/9235/2008(H10N8)	..S.....I.....K.....
ACZ48518	A/quail/Italy/1117/1965(H10N8)	.....I.....I.....
ABI84499	A/quail/Italy/1117/1965(H10N8)	.....I.....I.....
AEA04419	A/quail/Italy/1117/1965(H10N8)	.....I.....I.....
AGU01953	A/ruddy shelduck/Mongolia/1602/2010(H10N8)	.....S.....
AGL58508	A/ruddy turnstone/New Jersey/1148668/2004(H10N8)	..S.....I.....
AGG28633	A/shorebird/Delaware Bay/379/2008(H10N8)	..S.....I.....
AGU01957	A/surf scoter/Mongolia/878V/2009(H10N8)	.....I.....
AGU01970	A/velvet scoter/Mongolia/879V/2009(H10N8)	.....I.....

Posizioni da 241 a 300	Sequenza consenso	
AHN97094	A/American green-winged teal/Ohio/13OS1869/2013(H10N8)	DFEWTLVQPGDNITFSHNGGLIAPSRVSKLIGRGLGIQSDAPIDNNCESKCFWRGGSINT
AHK24205	A/Eurasian coot/Germany/R411/2010(H10N8)	.....K.....G.SV..D.....K.....
AHK10761	A/Jiangxi/IPB13/2013(H10N8)	E.....T.....E.SV.....
AHK10763	A/Jiangxi/IPB13b/2013(H10N8)	.....
AJD10539	A/chicken/Jiangxi/1204/2014(H10N8)	.....
AJD11559	A/chicken/Jiangxi/1232/2014(H10N8)	.....
AJD11571	A/chicken/Jiangxi/1270/2014(H10N8)	.....
AJD11583	A/chicken/Jiangxi/1279/2014(H10N8)	.....
AJD09903	A/chicken/Jiangxi/18399/2013(H10N8)	.....
AJD09915	A/chicken/Jiangxi/18933/2013(H10N8)	.....
AJD09927	A/chicken/Jiangxi/19924/2013(H10N8)	.....
AJD09939	A/chicken/Jiangxi/19960/2013(H10N8)	.....
AJD10551	A/chicken/Jiangxi/23252/2013(H10N8)	.....
AJD10563	A/chicken/Jiangxi/23259/2013(H10N8)	.....

FIGURA 23-6

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

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AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)  ..........................................................
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)  ..........................................................
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)  ..........................................................
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)   ..........................................................
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)  ..........................................................
AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)  ..........................................................
AIK26172  A/chicken/Jiangxi/JXA132717/2014(H10N8)  ......................................................
APJ19053  A/duck/Guangdong/E1/2012(H10N8)      .....V....................................................
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)      ----------------------------------------------------
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)      .....I.....V.....................................
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)     .....V.....T.....................................
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)      .....V.....................................
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)      ..........................................................
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)      .....T.....................................
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)      ..........................................................
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)      .....Y.....................................
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)      ..........................................................
AJD11055  A/duck/Jiangxi/6602/2013(H10N8)      .....T.....................................
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)      ..........................................................
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)  ..........................................................
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)  .....L.....................................
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)  .....M.....N....K.....G.SV..D.....K.....
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)  .....M.....K.....GVSV..D.....K.....
AER09406  A/mallard/Korea/1041/2010(H10N8)     .....L.....................................
AER09416  A/mallard/Korea/1203/2010(H10N8)     .....S.....................................
AHZ38995  A/mallard/Sweden/233/2002(H10N8)     .....E.....G.....K.....
ADE75294  A/mallard/Sweden/7/2003(H10N8)       .....L.....D.....
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)  ..........................................................
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)  .....V.....................................
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)  .....M.....K.....G.SV..D.....K.....
AEK49546  A/northern shoveler/California/9235/2008(H10N8)  .....M.....K.....E.S...D.....K.....
AC248518  A/quail/Italy/1117/1965(H10N8)       E.....R.....D.....K.I...G.V..KD.....I.
ABI84499  A/quail/Italy/1117/1965(H10N8)       E.....R.....D.....K.I...G.V..KD.....I.
AEA04419  A/quail/Italy/1117/1965(H10N8)       E.....R.....D.....K.I...G.V..KD.....I.
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)  .....N.....
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)  .....M.....K.....G.SV..D.....K.....
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)  .....M.....K.....G.SV..D.....K....K.
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)  .....M..N.....
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)  .....M..N.....
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FIGURA 23-7

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

FIGURA 23-8

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

AHZ38995	A/mallard/Sweden/233/2002(H10N8)	K.....I.H.....
ADE75294	A/mallard/Sweden/7/2003(H10N8)	.....K.....I.....
AJD14391	A/migratory duck/Jiangxi/21248/2009(H10N8)	.....K.....I.....
AJD14355	A/migratory duck/Jiangxi/593/2005(H10N8)	.....K.....I.....
ACK43693	A/northern pintail/California/44221-656/2006(H10N8)	K.....K.L.....VV.....
AEK49546	A/northern shoveler/California/9235/2008(H10N8)	K.....L.....VV.....
ACZ48518	A/quail/Italy/1117/1965(H10N8)	E.....K...L.....VV.....
ABI84499	A/quail/Italy/1117/1965(H10N8)	E.....K...L.....VV.....K.....
AEA04419	A/quail/Italy/1117/1965(H10N8)	E.....K...L.....VV.....K.....
AGU01953	A/ruddy shelduck/Mongolia/1602/2010(H10N8)	.....K.....I.....
AGL58508	A/ruddy turnstone/New Jersey/1148668/2004(H10N8)	K.....K.L.....VV.....
AGG28633	A/shorebird/Delaware Bay/379/2008(H10N8)	K.....K.L.....VV.....
AGU01957	A/surf scoter/Mongolia/878V/2009(H10N8)	.....K.....I.....
AGU01970	A/velvet scoter/Mongolia/879V/2009(H10N8)	.....K.....I.....

Posizioni da 361 a 420

	Sequenza consenso	**WIGFRHQNAQGTGQAADYKSTQAAIDQITGKLNRLIEKTNTEFESIESEFSEIEHQIGNV**
AEN97094	A/American green-winged teal/Ohio/13OS1869/2013(H10N8)	.....
AEM24205	A/Eurasian coot/Germany/R411/2010(H10N8)	.....N.....
AHK10761	A/Jiangxi/IPB13/2013(H10N8)	.....V.....
AHK10763	A/Jiangxi/IPB13b/2013(H10N8)	.....V.....
AJD10539	A/chicken/Jiangxi/1204/2014(H10N8)	.....V.....
AJD11559	A/chicken/Jiangxi/1232/2014(H10N8)	.....V.....
AJD11571	A/chicken/Jiangxi/1270/2014(H10N8)	.....V.....
AJD11583	A/chicken/Jiangxi/1279/2014(H10N8)	.....V.....
AJD09903	A/chicken/Jiangxi/18399/2013(H10N8)	.....V.....
AJD09915	A/chicken/Jiangxi/18933/2013(H10N8)	.....V.....
AJD09927	A/chicken/Jiangxi/19924/2013(H10N8)	.....V.....
AJD09939	A/chicken/Jiangxi/19960/2013(H10N8)	.....V.....
AJD10551	A/chicken/Jiangxi/23252/2013(H10N8)	.....V.....
AJD10563	A/chicken/Jiangxi/23259/2013(H10N8)	.....V.....
AJD10575	A/chicken/Jiangxi/23274/2013(H10N8)	.....V.....
AJD10587	A/chicken/Jiangxi/27600/2013(H10N8)	.....V.....
AJD10611	A/chicken/Jiangxi/28113/2013(H10N8)	.....V.....
AJD11595	A/chicken/Jiangxi/3152/2014(H10N8)	.....V.....
AJD10683	A/chicken/Jiangxi/34609/2013(H10N8)	.....V.....
AJD11271	A/chicken/Jiangxi/36229/2013(H10N8)	.....V.....
AIK26172	A/chicken/Jiangxi/JXA132717/2014(H10N8)	.....V.....
AFJ19053	A/duck/Guangdong/E1/2012(H10N8)	.....T.....
BAG16719	A/duck/Hokkaido/N95/2006(H10N8)	----------.....
AJD14343	A/duck/Jiangxi/2039/2005(H10N8)	.....
AJD14367	A/duck/Jiangxi/22960/2008(H10N8)	.....

FIGURA 23-9

Ing. Ines Sanglacomo
Consulente in P.I. n° USBM-041R

FIGURA 23-10

Ing. Ines Sangiacomo
Consulente in P.I. n° USBM-041R

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AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)
AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)
AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)
AIK26172  A/chicken/Jiangxi/JXA132717/2014(H10N8)
AFJ19053  A/duck/Guangdong/E1/2012(H10N8)
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)
AJD11055  A/duck/Jiangxi/6602/2013(H10N8)
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)
AER09406  A/mallard/Korea/1041/2010(H10N8)
AER09416  A/mallard/Korea/1203/2010(H10N8)
AHZ38995  A/mallard/Sweden/233/2002(H10N8)
ADE75294  A/mallard/Sweden/7/2003(H10N8)
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)
AEK49546  A/northern shoveler/California/9235/2008(H10N8)
ACZ48518  A/quail/Italy/1117/1965(H10N8)
ABI84499  A/quail/Italy/1117/1965(H10N8)
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FIGURA 23-11

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FIGURA 23-12

Ing. Ines Sanglacomo
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AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)
AER09406  A/mallard/Korea/1041/2010(H10N8)
AER09416  A/mallard/Korea/1203/2010(H10N8)
AHZ38995  A/mallard/Sweden/233/2002(H10N8)
ADE75294  A/mallard/Sweden/7/2003(H10N8)
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)
AEK49546  A/northern shoveler/California/9235/2008(H10N8)
AC248518  A/quail/Italy/1117/1965(H10N8)
ABI84499  A/quail/Italy/1117/1965(H10N8)
AEA04419  A/quail/Italy/1117/1965(H10N8)
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)

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          Sequenza consenso
AHN97094  A/American green-winged teal/Ohio/13OS1869/2013(H10N8)
AHM24205  A/Eurasian coot/Germany/R411/2010(H10N8)
AHK10761  A/Jiangxi/IPB13/2013(H10N8)
AHK10763  A/Jiangxi/IPB13b/2013(H10N8)
AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)
AJD11559  A/chicken/Jiangxi/1232/2014(H10N8)
AJD11571  A/chicken/Jiangxi/1270/2014(H10N8)
AJD11583  A/chicken/Jiangxi/1279/2014(H10N8)
AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)
AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)

                                                
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AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)                    ..........................
AIK26172  A/chicken/Jiangxi/JXA1327717/2014(H10N8)               .....F.....................-
AFJ19053  A/duck/Guangdong/E1/2012(H10N8)                        I..........................
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)                        ..........................
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)                        ..........................
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)                       ..........................
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)                        ..........................
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)                        ..........................
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)                        ..........................
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)                        ..........................
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)                        ..........................
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)                        ..........................
AJD11055  A/duck/Jiangxi/6602/2013(H10N8)                        ..........................
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)                        ..........................
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)                   ..........................
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)                   .....P.....................---
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)               .I.........................
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)         .I.........................
AER09406  A/mallard/Korea/1041/2010(H10N8)                      ...................Q.......
AER09416  A/mallard/Korea/1203/2010(H10N8)                      ..........................
AHZ38995  A/mallard/Sweden/233/2002(H10N8)                      ..........................
ADZ75294  A/mallard/Sweden/7/2003(H10N8)                       ..........................
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)           ..........................
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)             ..........................
ACK43693  A/northern pintail/California/44221-656/2006(H10N8) .I.........................
AEK49546  A/northern shoveler/California/9235/2008(H10N8)     .I.........................
AC248518  A/quail/Italy/1117/1965(H10N8)                       ---------------------------
ABI84499  A/quail/Italy/1117/1965(H10N8)                       .I...G.....................
AEA04419  A/quail/Italy/1117/1965(H10N8)                       .I...G.....................
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)           ..........................
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)    .I.........................
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)           .I.........................
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)            ..........................L.
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)          .A.........................
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FIGURA 23-14

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