Studi Mekanisme Mutasi Virus Influenza A Membentuk Subtipe H5N1 pada Manusia Secara *In silico*

NUR SALIM RIDLO
0304030383

UNIVERSITAS INDONESIA

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM

DEPARTEMEN KIMIA

DEPOK

2008

Studi Mekanisme Mutasi Virus Influenza A Membentuk Subtipe H5N1 pada Manusia Secara *In silico*

Skripsi ini diajukan sebagai salah satu syarat

untuk memperoleh gelar Sarjana Sains

Oleh:

NUR SALIM RIDLO
0304030383

DEPOK

2008

SKRIPSI : Studi Mekanisme Mutasi Virus Influenza A Membentuk Subtipe H5N1 pada Manusia Secara *In silico*

NAMA : Nur Salim Ridlo

NPM : 0304030383

SKRIPSI INI TELAH DIPERIKSA DAN DISETUJUI

DEPOK, Desember 2008

<u>Prof Dr. Usman Sumo F. Tambunan</u>

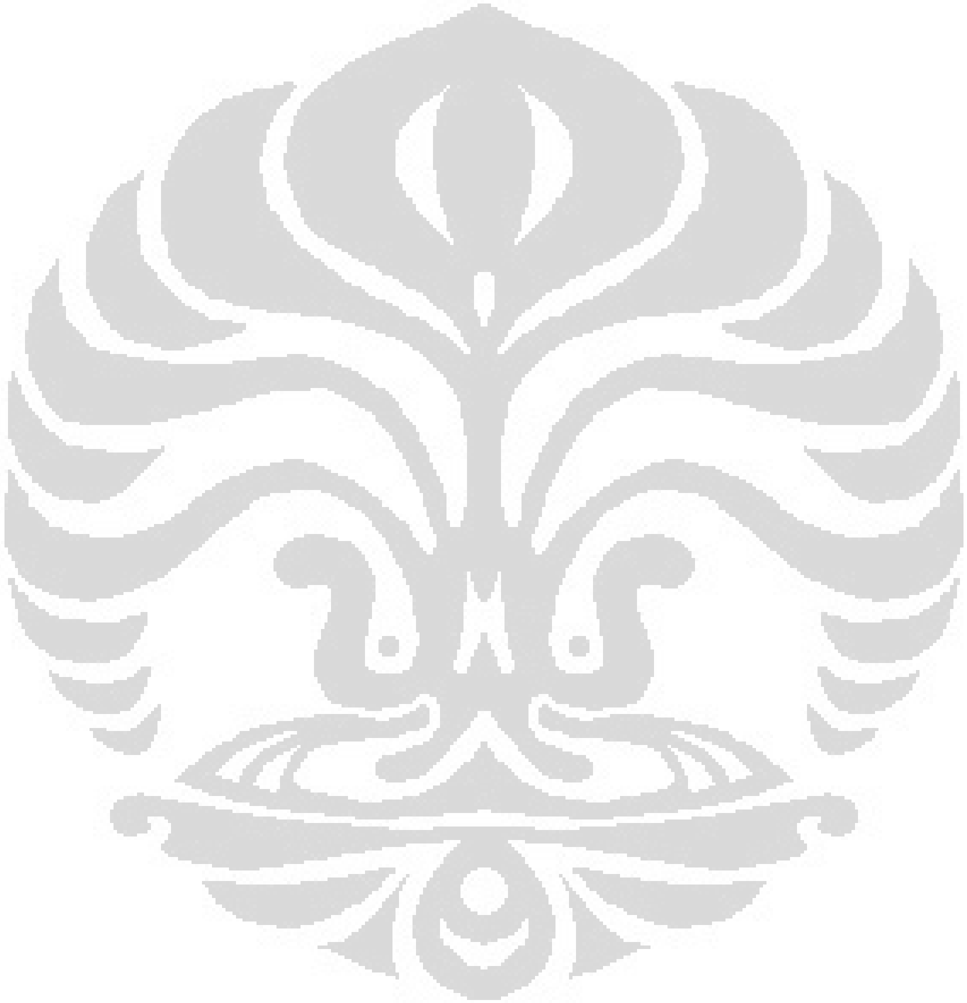
PEMBIMBING

Tanggal lulus Ujian Sidang Sarjana : 22 Desember 2008

Penguji I :Prof. Dr. Sumi Hudiyono Pws

Penguji II :Dr. Riwandy Sihombing

Penguji III :Dra. Sri Handayani MBiomed



Tak akan pernah cukup waktu untuk menjdi sempurna, tapi akan selalu ada waktu untuk menyempurnakan (Nur Salim Ridlo)

KATA PENGANTAR

Segala puji bagi Allah SWT Yang Maha Memberi dan yang telah melimpahkan segala rahmat dan hidayahnya serta karena dengan izinNya sehingga penulis dapat menyelesaikan penelitian dan penulisan skripsi ini tepat pada waktunya. Salawat serta salam semoga senantiasa terlimpahkan kepada Rasulullah Muhammad SAW yang merupakan panutan bagi setiap umat muslim di dunia.

Penulis mengucapkan terima kasih yang sebesar-besarnya kepada Prof. Dr. Usman Sumo F. Tambunan selaku pembimbing yang telah memberikan bimbingan, arahan, waktu dan bantuan pemikiran yang tak ternilai selama penelitian ini, sehingga penulis mampu melaksanakan penelitian dengan hati yang senang.

Penulis juga menyampaikan terima kasih kepada Dr. Ridla Bakri selaku ketua Departemen Kimia FMIPA UI, Dra. Tresye Utari, M.Si. selaku koordinator penelitian yang telah memberikan kesempatan dan bantuan dalam penelitian, Bu Dra. Sri Handayani M.Biomed selaku pembimbing akademik yang telah memberikan perhatian dan kesabarannya dalam membimbing saya dan teman-teman satu bimbingan, kepada Mba Fitri yang telah membantu penulis dan mengarahkan penelitian serta memberikan pencerahan saat penulis mulai kebingungan, serta kepada seluruh dosen Departemen Kimia FMIPA UI yang tidak hanya memberikan begitu banyak ilmu yang bermanfaat, tetapi juga telah menjadi sumber inspirasi yang berarti bagi penulis, serta seluruh staf Departemen Kimia yang telah banyak membantu terlaksananya penelitian.

Rasa terimakasih yang begitu dalam juga penulis sampaikan kepada orang-orang tercinta yang sangat berarti bagi penulis:

1. *Kepada kedua orang tua* yang telah berkorban begitu besar dalam segala hal, yang telah mengajarkan kesabaran, kerja keras, dan semangat hidup yang sangat berarti bagi penulis. Kepada kakaku yang telah memberikan motivasi dalam penulisan skripsi ini. Serta kepada saudara-saudaraku semua yang telah memberikan motivasi pada perjuangan hidup penulis.
2. Kepada Brur, Yanur teman satu kontrakan yang telah membuat semangat dalam penulisan penelitian. Hudan yang telah banyak membantu dalam penulisan skripsi ini.
3. Kepada Isal, Wahyu, Danar, Irwan yang tergabung dalam "D' Gembels & D' Gombals" selalu berbagi suka dan duka dalam mengarungi kehidupan ini.
4. Kepada Ana, Eka, Indah, Niezha dan Yunita, terima kasih karena selama 4 tahun kalian merupakan sahabat yang terbaik dan mudah-mudahan persahabatan ini terus terjalin.
5. Kepada Ari, Ami, Ratna, Atree, Atul yang telah rela menjadi tempat jahil penulis selama penulis menempuh pendidikan di Departemen Kimia
6. Kepada rekan-rekan seperjuangan penelitian semester ganjil Riska, Ika, Bib-bib, Fajriah, Cha-cha, Visti, Alex, indah, Nita, Farid, Redy, Andi, Lukman yang telah sama-sama berjuang menyelesaikan skripsi dalam waktu yang begitu singkat.
7. Kepada teman-teman angkatan 2004 yang selama ini telah memberikan kenangan yang tak terlupakan dan memberikan pengalaman hidup.

8. Kepada teman-teman angkatan 2002, 2003, serta adik-adik angkatan 2005, 2006, dan 2007, atas dukungannya selama ini.
9. Kepada Salemba Group yang telah memberikan tempat kerja yang menyenangkan dan memberikan kelonggaran waktu agar penulis dapat menyelesaikan skripsinya.
10. Kepada Bona, Ase yang telah banyak bertukar informasi tentang sesuatu yang sangat indah serta cerita-cerita yang seru.
11. Kepada Bunda Elin yang bersedia menjadi tempat curhat dan memberikan semangat pada saat penulis kehilangan arah dan semangat.
12. Rekan-rekan yang tergabung dalam PERHIMAK UI yang telah berbagi suka dan duka dalam perantaun demi menggapai masa depan.
13. Kepada Pita atas dukungan dan semangatnya serta atas kesediannya berbagi kesedihan dan kebahagiaan.

Dengan sepenuhnya penulis menyadari bahwa skripsi ini masih jauh dari sempurna, maka dengan segala rendah hati penulis membuka diri bila ada saran dan pendapat untuk perbaikan.

Semoga skripsi ini bermanfaat bagi kita semua.

Penulis

2008

ABSTRAK

Kemampuan virus Influenza A dalam menginfeksi manusia sangat bergantung pada *receptor binding* yang dimiliknya. Protein yang berfungsi sebagai *receptor binding* pada virus ini adalah *haemaggl* [illegible] fluenza A akan mampu menginfeksi manusia dan dapat menyebar antar manusia apabila protein *haemagglutinin* telah mengenali SA α-2,6 Gal sebagai *receptor* pada manusia. Virus Influenza A subtipe H5N1 telah ditemukan dapat menginfeksi manusia namun belum mampu menular antar manusia. Dari hasil analisis mutasi terhadap sekuan *haemagglutinin* didapatkan bahwa sekuen protein *haemagglutinin* pada virus H5N1 belum menyamai sekuan protein *haemagglutinin* pada virus Influenza A yang telah menjadi pandemik yaitu subtipe H1N1, H2N2, dan H3N2 sehingga belum mampu menyebar antar manusia. Sekuan utama yang mendukung penyebaran pada manusia adalah asam amino posisi 226 dan 228 pada protein *Haemagglutinin*. Pada saat virus menjadi pendemik maka asam amino posisi 226 telah berubah menjadi Leu dan pada posisi 228 telah berubah menjadi Ser. Sedangkan pada virus H5N1 masih berupa Gln pada posisi 226 dan Gly pada posisi 228 yang merupakan pengenal SA α-2,3 Gal receptor pada burung. Selain pada posisi tersebut perbedaan juga ditemukan pada posisi 251 dan posisi 258. Pada subtipe yang telah menjadi pandemik sekuen posisi 251 adalah Leu dan posisi 258 adalah Phe, sedangkan pada H5N1 Phe pada 251 dan Tyr pada 258. Dari hasil ini dapat diprediksi sekuen H5N1 yang dapat menjadi pandemik yaitu apabila telah terjadi perubahan pada sekuen posisi 226 dan 228 serta didukung dengan perubahan pada posisi 251 dan 258.

Kata Kunci : *haemagglutinin*, Influenza A H5N1, Mutasi, SA α-2,3 Gal. SA α-2,6 Gal

xi + 266 hlm;gbr;tab;lamp

Bilbiografi 46 (1990 - 2008)

DAFTAR ISI

Daftar Gambar

Daftar Tabel

Daftar Lampiran

Lampiran 1. Informasi Genetik Virus H5N1 *Hemaglutinin*

BAB I

PENDAHULUAN

1.1 Latar Belakang

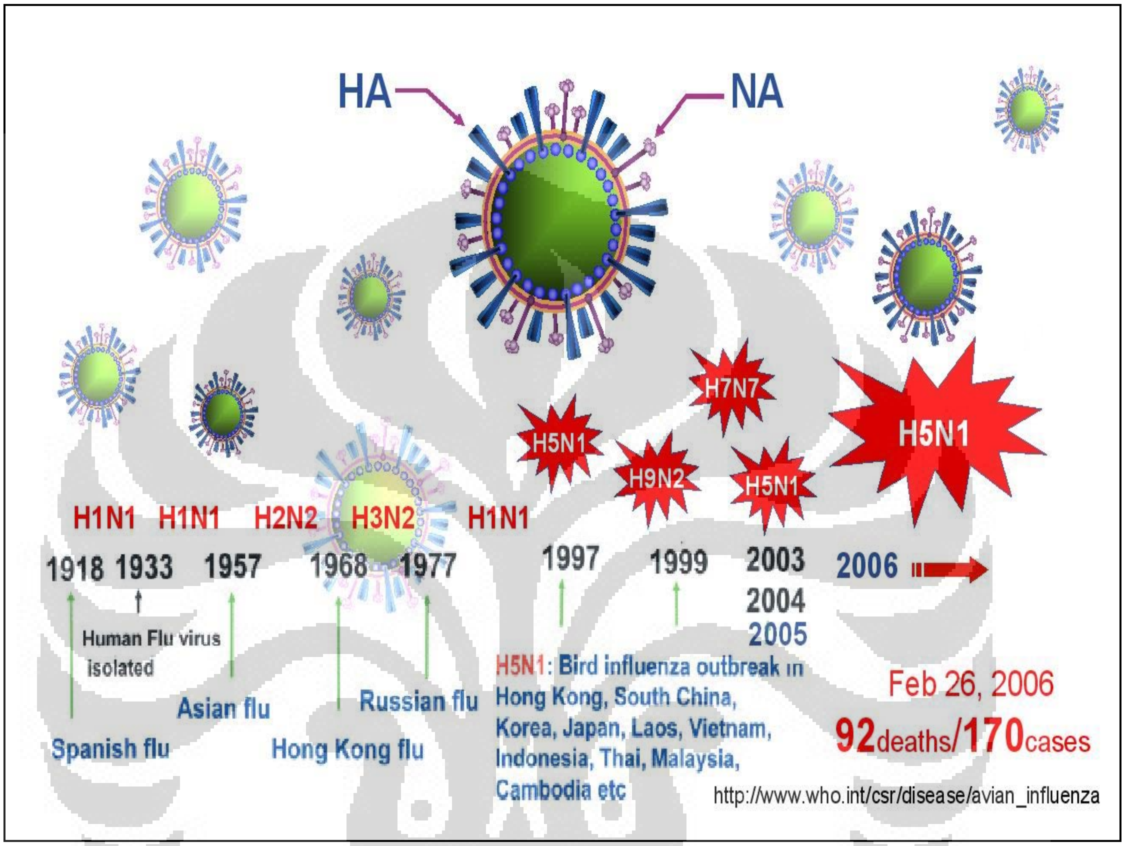
Avian Influenza atau sering disingkat AI merupakan salah satu penyakit yang telah menyebabkan banyak kematian di dunia. Sampai saat ini tiga subtipe *avian influenza* pandemik telah menyebabkan puluhan juta orang meninggal. Subtipe baru dari virus influenza A yang merupakan ancaman bagi kehidupan manusia telah muncul kembali dan telah menyebabkan kematian bagi manusia. Virus ini pertama kali muncul di Asia pada tahun 1997 dan kini dikenal dengan virus influenza A subtipe H5N 1.

(www.en.wikipedia/influenza, diakses pada hari Rabu 13 agustus 2008 pukul 16:59)

Virus *avian influenza* subtipe H5N1 tergolong famili *Orthomyxoviridae*, yang terdiri dari genom tunggal bersegmen. Antigen virus influenza tersusun atas beberapa komponen. Komponen pertama adalah antigen internal yang terdiri atas genome RNA dan protein M. Komponen kedua adalah antigen eksternal permukaan glikoprotein yang tersusun atas *haemaglutinin* (HA) dan *neuraminidase* (NA).

Berdasarkan perbedaan lapisan permukaan glikoprotein, *haemagglutinin* (HA) dan *neuraminidase* (NA) virus influenza A dikelompokkan dalam beberapa subtipe. *Haemagglutinin* merupakan antigen yang diperlukan oleh virus untuk melekat pada membran sel inang (*host*) . Enzim *neuraminidase* berperan dalam penetrasi virus dan lepasnya virus dari sel yang diinfeksi. Virus influenza A terdiri dari 16 *haemagglutinin* dan 9 *neuraminidase* (de Jong., 2005).

Dalam perkembangannya virus influenza A telah bermutasi membentuk beberapa subtipe yang menjadi pandemik.



Gambar 1 Perkembangan mutasi (evolusi) virus Influenza A yang menjadi pandemik.

(sumber : http://wisdom.eu-egee.fr/avianflu/pictures/)

Virus influenza pandemik yang pertama kali muncul adalah H1N1, subtipe ini pertama kali muncul pada tahun 1918. Virus inilah yang lebih dikenal dengan *Spanish flu.* Virus ini telah menyebabkan kematian sekitar 50 juta orang diseluruh dunia (Stevens et al 2006). Subtipe kedua yang muncul menjadi pandemik adalah H2N2 , subtipe inilah yang dikenal sebagai *Asian flu* pada tahun 1956 yang berkembang di China,Singapura, Hong Kong, dan USA. Hasil mutasi dari H2N2 adalah subtipe H3N2 yang dikenal dengan *Russian flu* yang berkembang pada tahun 1977-1978. Pada tahun 1968-1969 H3N2 muncul di Hong Kong dan dikenal dengan *Hong Kong Flu* (www.en.wikipedia, diakses pada hari Rabu 13 agustus 2008 pukul 17:05).

Pada tahun 1999 dan 2003 muncul virus subtipe H9N2 yang menginfeksi tiga orang yang berumur satu, empat ,dan lima tahun di Hong Kong. Semuanya dapat disembuhkan, tapi pada tahun 2007 H9N2 menginfeksi bayi berumur sembilan bulan di Hong Kong (people daily online march,2007). Kemudian muncul subtipe H7N7 yang memiliki *Highly pathogenic strains (HPAI) and low pathogenic strains (LPAI)*. H7N7 bisa menginfeksi manusia, burung, babi, paus, dan kuda dan berpotensi menjadi pandemik (www.en.wikipedia, diakses pada hari Rabu 13 agustus 2008 pukul 17:05).

Pada tahun 1997 avian influenza H5N1 pertama kali menyerang dan menewaskan 6 orang dari 18 orang penduduk yang terinfeksi di Hongkong. Pada saat ini, masalah penting yang dikhawatirkan oleh para ahli adalah kemungkinan munculnya subtipe baru virus influenza yang mampu menular antarmanusia. Hal ini dapat terjadi sehubungan dengan adanya virus subtipe baru yang mungkin terbentuk akibat mutasi atau reasorsi (*reassortment*) virus avian influenza asal unggas dan virus *human influenza* (Horimoto T, Kawaoka Y. 2001).

Virus influenza A subtipe H5N1, yang juga dikenal sebagai A(H5N1) atau H5N1 merupakan subtipe dari virus influenza A yang dapat menyebabkan penyakit pada manusia dan beberapa spesies hewan lainnya. *Strain* H5N1 yang beradaptasi pada burung disebut juga HPAI A H5N1 yaitu *highly pathogenic avian influenza* virus dari tipe A pada subtipe H5N1, merupakan agen kausatif H5N1 flu yang biasa dikenal sebagai avian influenza atau flu burung. Flu burung merupakan epizootic (sebuah epidemic dalam non manusia) dan panzootic (mempengaruhi beberapa spesies) (www.en.wikipedia, diakses pada hari Rabu 13 agustus 2008 pukul 17:08).

Saat ini virus subtipe H5N1 yang paling dikhawatirkan akan menjadi pandemik dan memungkinkan terbentuknya *strain* yang mampu menular antar manusia. Namun sampai saat ini belum ditemukan *strain* yang mampu menular dari manusia ke manusia (Tambunan et al , 2008)

Beradaptasinya virus *avian influenza* dalam populasi manusia disebabkan berubahnya kemampuan virus tersebut. Avian influenza akan mampu menginfeksi manusia apabila kemampuan pelekatannya telah berubah dari α-2,3 SA Gal menjadi α-2,6 SA Gal. Pada saat menginfeksi burung *(avian)* maka virus tersebut akan berikatan dengan α-2,3 SA Gal, sedangkan pada saat virus mampu menginfeksi manusia maka virus akan mengenali α-2,6 SA Gal sebagai agen untuk berikatannya. Kemampuan virus dalam menginfeksi sangat terkait dengan protein *haemagglutinin*nya karena fungsi pelekatan virus pada inangnya dipegang oleh protein ini.

Pada penelitian-penelitian sebelumnya telah dipelajari mutasi yang terjadi pada virus H5N1 yang dilihat dari protein *haemagglutinin* dan *neuraminidase.* Namun belum ada yang mengungkapkan mekanisme terjadinya virus H5N1 yang kini telah menyebabkan kematian diberbagai negara. Terbentuknya subtipe virus baru ini disebabkan mutasi yang dialami oleh virus sebelumnya. Mutasi ini bisa diakibatkan oleh *antigenic drift* maupun *antigenic shift*. Ini bisa terjadi apabila satu sel terinfeksi dua jenis virus yang masih dalam satu famili (Gurtler, 2007).

Dengan terus ditemukannya virus Influenza subtipe baru yang merupakan hasil mutasi dari virus sebelumnya maka perlu dipelajari mekanisme mutasi yang terjadi pada virus influenza terutama pada subtipe H5N1. Dengan diketahinya mekanisme mutasi yang tejadi pada virus maka akan dapat diprediksi subtipe virus yang akan muncul kemudian dan dapat dilakukan penanganan lebih awal.

1.2 Tujuan Penelitian

Melihat dari perkembangannya sampai kini telah ditemukan beberapa virus influenza A yang telah menjadi pandemik. Masing-masing subtipe ini muncul pada tahun yang berbeda bahkan ada virus yang mampu bertahan puluhan tahun. Oleh karena itu dalam penelitian ini akan dicari asal-usul dari virus H5N1 yang sekarang dikhawatirkan akan menjadi pandemik serta mempelajari mekanisme mutasi yang terjadi pada virus tersebut hingga membentuk virus subtipe H5N1yang mampu menginfeksi manusia.

1.3 Batasan Penelitian

Namun demikian seiring dengan telah terbentuknya banyak subtipe dari virus influenza A yang berarti juga telah terjadi banyak mutasi maka pada penenlitian ini penulis memfokuskan pada mutasi yang telah dialami virus hingga membentuk virus H5N1. Pada penelitian ini, penulis hanya menganalisis mutasi dari segi perubahan asam amino pada masing-masing *sequence*. Penelitian ini akan difokuskan untuk mempelajari mekanisme mutasi virus pada Influenza A H5N1 dari virus asalnya secara *in silico*, menggunakan seperangkat komputer yang terhubung langsung ke internet.

BAB II

TINJAUAN PUSTAKA

2.1 Virus Influenza

Virus influenza termasuk dalam famili *Orthomyxoviridae*, yang memiliki genom tunggal bersegmen. Antigen virus influenza terdiri dari beberapa komponen yaitu antigen internal, terdiri dari genom RNA dan protein M dan antigen eksternal yang terdapat pada permukaan , yaitu *haemagglutinin* (HA) dan neuraminidase (NA). Antigen yang terdapat pada lapisan permukaan merupakan pembeda atau yang menjadi perbedaan antar virus influenza. Berikut ini digambarkan jenis virus famili *Orthomyxoviridae* :

Tabel 1 Virus famili *Orthomyxoviridae*

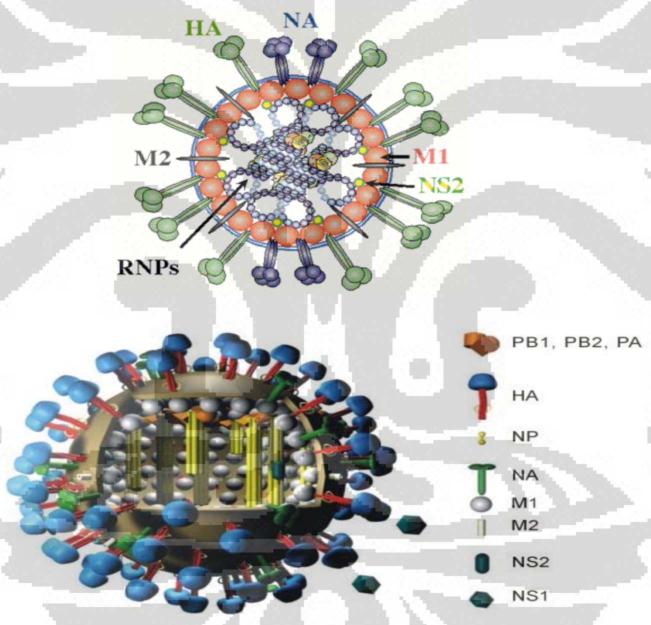
Family (Subfamily)	**Genus**	**Type Species**	**Hosts**
Orthomyxoviridae	*Influenza A virus*	*Influenza A virus*	Vertebrates
	Influenza B virus	*Influenza B virus*	Vertebrates
	Influenza C virus	*Influenza C virus*	Vertebrates

Ada tiga tipe virus influenza yang telah dikenal banyak orang yaitu A, B, dan C. Influenza A dan B memiliki 8 segman sebagai berikut :

1. Polymerase B2 protein (PB2)
2. Polymerase B1 protein (PB1)
3. Polymerase A protein (PA)

4. Haemagglutinin (H atau HA)
5. Nucleocapsid protein (NP)
6. Neuraminidase (NA atau N)
7. Matrix protein (M),terdiri dari M1 dan M2
8. Non-stuctural protein, terdiri dari NS1 dan NS2

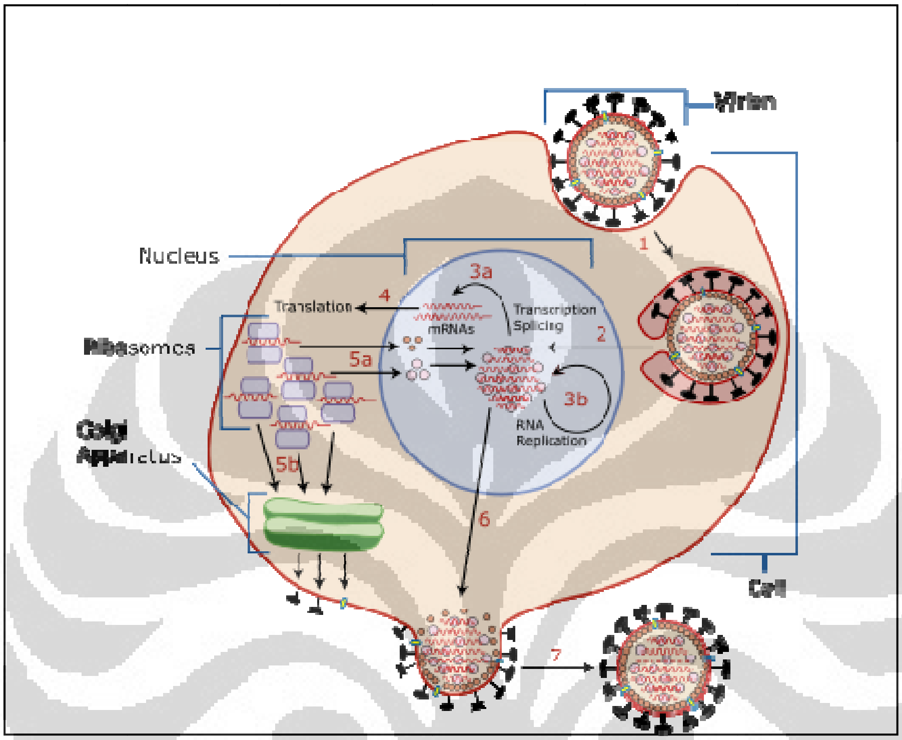
sedangkan influenza C hanya memiliki 7 segmen yaitu permukaanya hanya terdiri dari satu glikoprotein. Struktur virus ditunjukkan dalam gambar 2.



www.cytokinestorm.com

Gambar 2 Struktur virus influenza.

RNA aktif (RNA polymerase) yang berfungsi untuk replikasi dan transkripsi tarsusun atas PB2, PB1, dan PA. ini mempunyai aktifitas endonuklease dan terikat pada RNP. Protein NS1 dan NS2 berfungsi dalam regulasi virus didalam sel yang telah terinfeksi. Virus ini dibungkus oleh membran yang berupa lipid bilayer yang terdiri dari HA(H), NA(N), dan matrik. Berikut ini digambarkan tahapan dari replikasi virus.



Gambar 3 Mekanisme masuk dan penggandan virus dalam sel *host*.

Replikasi virus terdiri dari beberapa tahap. Tahap pertama *haemagglutinin* virus influenza terikat pada gula *sialic acid* pada bagian permukaan sel, umumnya pada bagian hidung dan paru-paru dari mamalia atau burung. Tahap kedua virus masuk kedalam sel melalui endositosis, dalam keasaman endosom *haemagglutinin* dari virus berdifusi memasuki dan melepaskan molekul viral RNA (vRNA), protein aksesoris, dan RNA-polimerase kedalam sitoplasma. Tahap ketiga protein yang dilepaskan pada tahap kedua dan vRNA menuju ke inti sel dan RNA polimerase mulai mentransripsikan rantai komplemennya (Viral RNA (vRNA) dikopi dari (-) sense menjadi (+) cRNA dan mRNA). Tahap keempat vRNA dikeluarkan kembali kedalam sitoplasma dan mulai ditranslasikan. Tahap kelima viral protein yang baru terbentuk kembali lagi ke inti sel untuk membentuk vRNA lagi atau viral protein yang baru terbentuk dikeluarkan menuju apparatus golgi pada permukaan selnya (dalam hal ini *Haemagglutinin* dan Neuraminidasenya) . Tahap keenam vRNA dan inti viral meninggalkan inti sel menuju membran. Tahap terahir virus meninggalkan sel dan membentuk virus baru (http://en.wikipedia.org/wiki/Orthomyxoviridae diakses pada selasa 19 Agustus 2008 pukul 12.50).

Influenza A terdefinisi dalam 16 HA dan 9 NA, secara teori ada 16 x 9 subtipe, dan sampai sekarang telah ditemukan 105 subtipe dari virus influenza A dan semuanya endemik pada burung air. Namun demikian beberapa subtipe telah ditemukanm dalam ayam dan mamalia (Cinati,et al.2007).

Pada manusia telah terdeteksi tiga subtipe :H1N1,H2N2, dan H3N2 yang menjadi pandemik. H1N1 yang dikenal dengan *Spanish flu* pada tahun 1918-1919 telah meyababkan 40 juta orang meninggal, *Asian flu* (H2N2) pada tahun1957 menyebabkan 2 sampai 4 juta orang meninggal, dan *Hong Kong influenza* (H3N2) pada tahun 1968 mengakibatkan 1 sampai 2 juta orang meninggal (Cinati et al, 2007).

Sampai saat ini H1N1 dan H3N2 masih terdapat dalam populasi manusia tetapi merepresentasikan jenis *lower pathogenic.* Walaupun menyebabkan banyak kematian pada orang-orang tua pada saat gelombang musim dingin datang (Cinati et al .2007).

Sampai 1997 virus flu burung yang dikenal tidak bisa bertransmisi ke manusia karena tidak adanya reseptor untuk sel pada manusia. Namun pada musim panas 1997 di Hong Kong *strain* flu burung A H5N1 dtemukan telah bertransimisi kedalam tubuh manusia yang menyebabkan 18 orang terinfeksi dan 6 diataranya meninggal. Analisa genetik dari antigen pada virus tersebut ternyata berbeda dengan H5N1 pada umumnya. Perbedaan yang utama terdapat pada keberadaan glikosilasi residu 152 pada *haemagglutinin*nya (Kodihali et al 1999).

2.1.1 Mutasi virus

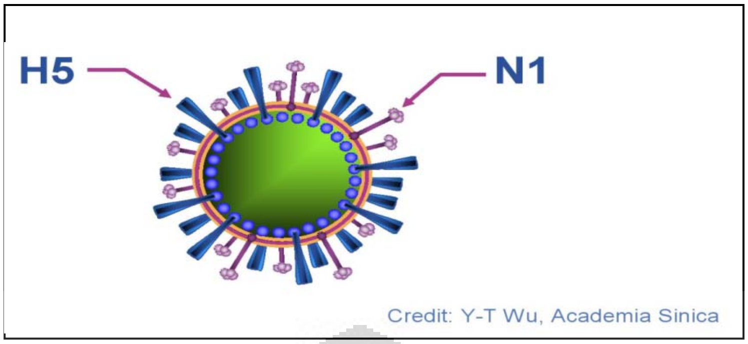
Mutasi merupakan perubahan susunan genetik yang mengakibatkan terbentuknya struktur baru. Pada virus mutasi umumnya terjadi pada saat terjadinya replikasi didalam sel *host.* Pada saat pengkopian rantai RNA kadang terjadi kesalahan yang disebabkan karena adanya proses replikasi lain yang berlangsung didalam sel yang sama sehingga menghasilkan susunan RNA yang baru dan akan terbentuk virus dengan genetik yang baru pula. Jika mutasi ini menyebabkan virus menjadi kebal terhadap antibodi maka akan terjadi virus baru yang lebih berbahaya (Art Anderson, 2000).

2.1.2 Avian Influenza A subtipe H5N1

Virus H5N1 merupakan virus influenza tipe A, termasuk kelompok (famili) *Orthomyxoviridae*. Seringkali dalam referensi WHO, virus influenza ini dituliskan sebagai virus HPAI A/H5N1, "*Highly Pathogenic Avian Influenza*". Virus tipe A subtipe H5N1 bersifat sangat patogen dan merupakan penyebab flu H5N1 atau yang lebih dikenal dengan avian influenza atau juga flu burung. Burung liar di seluruh dunia membawa virus H5N1 pada ususnya tetapi biasanya tidak menyebabkan sakit pada burung tersebut. Penyakit ini bersifat endemik pada populasi burung terutama di Asia Tenggara. Satu *strain* dari HPAI A (H5N1) telah menyebar ke seluruh dunia setelah pertama kali muncul di Asia (http://www3.niaid.nih.gov/).

Virus H5N1 tidak dengan mudah menular antarmanusia dan jika seseorang telah terinfeksi maka virus tersebut sangat sulit untuk dapat menyebar atau menular antarmanusia. Hingga saat ini belum ada bukti berbasis molekular adanya transmisi antarmanusia atau penularan melalui transmisi udara (*airborne transmission*) oleh virus HPAI A(H5N1) ke manusia . Sejauh ini semua kasus flu burung yang terjadi adalah karena kontak fisik dengan burung yang telah terinfeksi oleh virus tersebut. Walaupun demikian, dikhawatirkan adanya kemungkinan bahwa virus H5N1 dapat menular dan menyebar antarmanusia karena H5N1 dapat bermutasi (http://www3.niaid.nih.gov/).

Untuk melihat adanya perbedaan antara *strain* virus influenza yang satu dengan yang lain dapat dilakukan dengan cara melihat tiga jenis *sites* yang terdapat pada *haemagglutinin* virus influenza. Cara lain untuk mengetahui *strain* atau serotipe suatu virus yaitu dengan cara membuat pseudovirus atau virus buatan yang mengandung HA (*haemagglutinin*) dari virus influenza tetapi tidak punya kemampuan untuk menginfeksi. Kemudian pseudovirus tersebut diinkubasikan dalam darah tikus yang mengandung antibodi (niaidnews@niad.nih.gov).



Gambar 4 Struktur virus influenza A H5N1

2.1.3 Haemagglutinin (HA)

Haemagglutinin (HA atau H) adalah glikoprotein yang terdiri dari 3 situs glikosilasi, mempunyai berat molekul 76000. *Haemagglutinin* terdapat di membran dan merupakan bagian utamanya dan memiliki 5 antigen yang dominan yang terdapt di permukaan. *Haemagglutinin* ini merupakan homotrimer dan masing-masing merupak polipeptida tunggal yang terpisah menjadi HA1 dan HA2. *Haemagglutinin* inilah yang nantinya akan berikatan dengan "*sialic acid*". Ini adalah antigen yang utama pada virus. Sejuah ini telah diketahui ada 16 jenis antigen *Haemagglutinin* (HA). Subtipe ini diberi nama H1 sampai H16. H16 hanya baru ditemukan pada virus influenza A yang diisolasi dari burung gagak berkepala hitam yang ada di Swedia dan Norwegia (www.wikipedia.org).

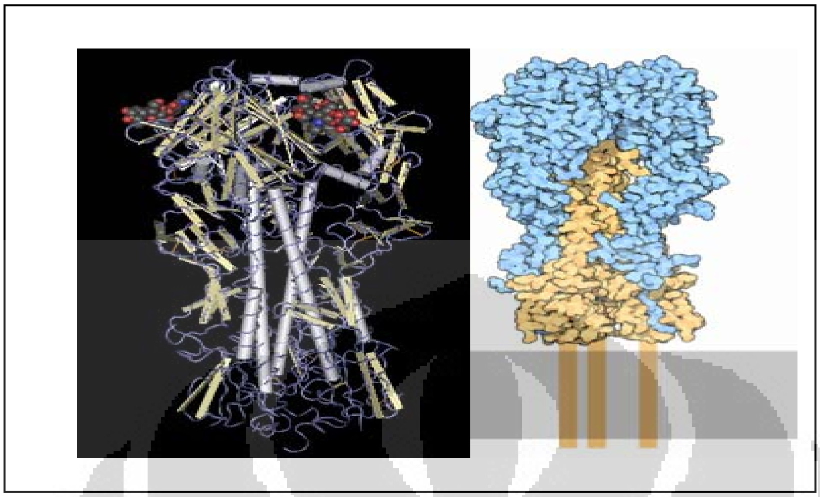
Namun demikian, sampai saat ini hanya H1, H2, dan H3 yang mampu menyebar antar manusia dan menjadi pandemik. Perubahan pengenalan dari *sialic acid* pada glukosanya dari α2-3 *(avian)* menjadi α2-6 (human) merupakan penyebab utama dari virus influenza A untuk menginfeksis spesies baru dan merubah *host* (Stevens et al 2006).

Pada *haemagglutinin* untuk subtipe H3, dan H2 ada dua buah posisi yang menentukan kemampuan pengenalan *receptor* yaitu pada posisi 226 dan 228 (berdasarkan penomoran pada H3). Pada virus yang hanya mengenali SA α-2,3 Gal posisi 226 merupakan Gln sedangkan untuk virus yang mampu mengenali SA α-2,6 Gal merupakan Leu. Sementara pada posisi 228 pengenal SA α-2,3 Gal adalah Gly dan pengenal SA α-2,6 Gal merupakan Ser (Gamblin et al,2004).

Haemagglutinin memiliki dua fungsi utama yaitu untuk mengenali sel target pada vertebrata yang akan berikatan dengan virus dan membantu masuknya genom viral kedalam sel melalui penggabungan membran endosom pada *host* dengan membran viral (White 1997).

Mutasi yang terjadi pada antigen akan mengurangi atau mencegah penetralan oleh antibodi, hal ini memungkinkan tarjadinya subtipe baru yang menyebar dalam populasi non-imun. Fenomena ini dikenal dengan *"antigenic drift"*. Mutasi yang disebabkan oleh *antigenic drift* menerangkan strain virus influenza pada musim epidemik influenza yang terjadi pada musim dingin (beriklim dingin). Respon imun terhadap antigen HA diikuti produksi antibodi penetralan yang merupakan dasar penyembuhan infeksi olah setiap individu.(Gurtler et al 2007).

Atigenic shift merupakan perpindahan antigen yang terjadi pada saat sebuah sel terinfeksi dua virus yang berbeda tipe. Genome ini mengalami pertukaran pada saat terjadi replikasi didalam sel, misalnya H1 yang digantikan oleh H5 yang menghasilkan virus influenza dengan subtipe baru. (Gurtler at al 2007)



Gambar 5 Molekul Haemagglutinin

2.1.4 Neuraminidase

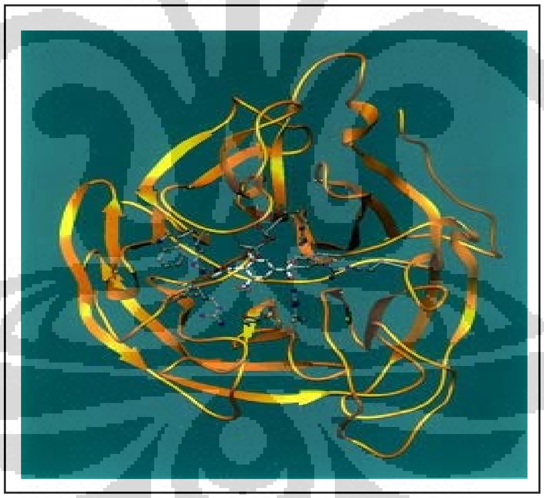
Seperti HA, neuraminidase (NA atau N) merupakan glikoprotein yang juga ditemukan pada permukaan virus. Memiliki struktur tetramer dan berat molekul rata-rata 220000. Molekul NA menampilkan bagian utamanya pada permukaan luar dari sel, menempel pada lipid bilayer, dan memilki ekor sitoplasma yang kecil(Gurtler et al 2007).

NA berfungsi seperti enzim yang memisahkan antara molekul HA dengan " *sialic acid*" , dari molekul NA yang lain, dan dari glikoprotein dan glikolipid pada permukaan sel. NA juga merupakan antigen yang berperan penting pada penetrasi saat virus memasuki lapisan mucin pada epithelium (Gurtler et al 2007).

Dari data *Swiss-Prot* ada 137 tipe neuraminidase dari berbagai jenis spesies sampai 18 oktober 2006. Sembilan diantara subtipe NA terdapat pada virus Influenza, dan sebagian besarnya terdapat pada spesies bebek dan ayam. Subtipe N1 dan N2 telah diketahui terdapat pada manusia dan N3 atau N7 telah diidentifikasi pada beberapa kasus kematian akibat virus influenza (www.eng.wikipedia.org)

Antigenic drift juga memungkinkan terjadi pada NA. NA membawa residu asam amino yang penting, dan jika mengalami mutasi dapat bertahan pada NA inhibitor (Gurtler et al 2007).

Ketika asam amino arginin (R) pada posisi 292 digantikan oleh lisin (K) misalnya maka kekebalan akan terbentuk. Mutasi ini terjadi ketika satu buah nukleotida berubah yaitu dari AGA menjadi AAA pada gen NA. Posisi 292 sangat signifikan karena mutasi pada posisi ini dapat membentuk *neuraminidase* yang kebal (*resistant*) terhadap inhibitor seperti zanamivir dan olestamivir (Gurtler et al 2007).



Gambar 6 Neuraminidase

2.1.5 Polymerase B2 protein (PB2), Polymerase B1 protein (PB1), dan Polymerase A protein (PA)

Protein PB1, PB2, dan PA merupakan RNA-RNA polymerase aktif yang mampu melakukan replikasi dan transkripsi dan replikasi. Fungsi dari protein ini adalah sebagai enzim yang akan menggandakan rantai RNA pada virus pada saat terjadi replikasi didalam sel inang (Gutler 2006).

2.1.6 Protein M2

Merupakan protein matrik yang terdapat dibawah kapsid. Saat protein virus. Fungsi protein M2 pada saat replikasi adalah mempengaruhi keadaan didalam sel seperti pH sehingga proses pemasukkan RNA kedalam inti sel akan berjalan lancar (Gutler 2006).

2.1.7 Protein NS1 dan NS2

Protein NS1 merupakan M-RNA yang memiliki berat molekul 26000. Protein ini akan membantu transport Viral RNA ke ribosom untuk ditranslasikan. Sedangkan NS2 merupakan molekul yang lebih kecil dengan berat molekul 11000. Protein ini dipercaya memiliki fungsi memfasilitasi transport RNP yang baru disintesis dari intisel menuju sitoplasma untuk mempercepat penggandaan virus (Gutler 2006).

2.2 Host

2.2.1 Definisi

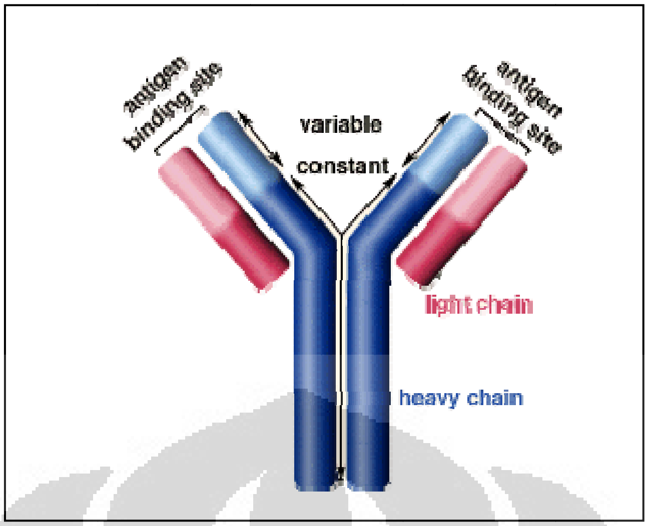
Dalam ilmu virologi *host* merupakan organisme tempat menempelnya virus. Didalam *host* inilah virus dapat disebut sebagai makhluk hidup karena virus akan mengalami replikasi atau perkembangbiakan. Ada dua jenis *host* yaitu *host* primer dan *host* sekunder. *Host* primer merupakan *host* dimana virus akan bereplikasi atau bereproduksi secara seksual. Sedangkan *host* sekunder merupakan *host* yang ditempati oleh virus atau bakteri dalam waktu yang singkat saja, atau merupakan perantara. Dalam pengertian ini manusia merupakan *host* primer (www.eng.wikipedia.org)

Jenis *host* untuk virus influenza famili *Orthomyxoviridae* juga berbeda-beda berdasarkan tipenya. Influenza A dapat menginfeksi mamalia termasuk menusia, kuda, babi dan burung. Virus tipe inilah yang telah menjadi pandemik karena dapat menginfeksi lebih dari satu jenis makhluk hidup. Influenza B dan C hanya menginfeksi mamalia. Namun dengan adanya mutasi pada virus mengakibatkan virus dapat menginfeksi *host* yang baru. Umumnya virus yang mengalami mutasi adalah influenza tipa A yang kini telah membentuk subtipe H5N1 yang menjadi ancaman bagi manusia.

2.2.2 Antibodi dan Antigen

Antibodi adalah molekul protein dan dihasilkan oleh sistem imun sebagai respon terhadap antigen (Abbas et al., 1994). Antibodi yang sering dikenal dengan istilah *immunoglobulins* merupakan protein glubolin gamma yang ditemukan didarah atau dalam cairan lain didalam tubuh makhluk hidup. Atibodi akan merespon senyawa-senyawa asing yang masuk kedalam tubuh dan akan menetralisirnya (www.en.wikipedia.org/antibody).

Setiap antibodi tersusun atas empat polipeptida yang membentuk huruf “Y”.



Gambar 7 Interaksi antibodi dengan antigen

Sementara antigen merupakan senyawa asing yang umumnya berupa protein. Suatu molekul dapat dikatakan antigen apabila molekul tersebut mempunyai sifat *immunogenicity* dan *antigenicity*. *Immunogenicity* sendiri adalah kemampuan suatu molekul untuk menginduksi respon imunitas spesifik dan antigen yang mempunyai sifat ini sering disebut sebagai *immunogen*. Sedangkan *antigenicity* adalah kemampuan suatu molekul untuk bereaksi secara spesifik dengan produk-produk yang dihasilkan oleh respon imunitas yang diinduksinya (Kuby, 1992; Kelgert, 1996).

2.2.3 Sistem Imun

Mekanisme pertahanan yang bersifat spesifik terhadap makromolekul tertentu disebut dengan *specific* atau *adaptive immunity*. Senyawa yang dapat memicu respon *specific immunity* dikenal dengan antigen. Antigen memicu timbulnya antibodi yang merupakan respon imunitas dari *specific immunity* (Abbas et al, 1994).

Antibodi disekresikan oleh limfosit . Limfosit terbagi atas dua kelas, yakni B limfosit dan T limfosit. B limfosit adalah satu-satunya limfosit yang dapat memproduksi antibodi. Kelas kedua yang merupakan T limfosit, tidak dapat memproduksi antibodi, sehingga untuk mengenali suatu antigen diperlukan suatu reseptor. Reseptor antigen T limfosit merupakan molekul membran yang secara struktur mirip dengan antibodi (Abbas, et al., 1994)

T limfosit terbagi atas dua jenis yaitu cytotoxic T cell dan helper T cell. Kedua jenis sel T ini hanya dapat mengenali antigen yang berupa peptida dan yang berikatan dengan protein hasil pengkodean senyawa MHC (Major Histocompability Complex). MHC merupakan komponen integral dari ligan yang dapat dikenali oleh T cell. Terdapat dua kelas MHC, yaitu kelas I yang merupakan fragmen peptida dari protein intraselular dan kelas II yang merupakan fragmen peptida dari protein ekstraseluler.

Helper T cell mensekresikan protein hormon yang disebut dengan cytokine yang fungsinya untuk mengaktivasi *macrophage*, sel B, dan mengaktifkan *inflammotary* leukosit. Cytotocix T cell melisil sel yang menghasilkan antigen asing , seperti sel yang terinfeksi dengan virus dan mikroba intraseluler lainnya (Abbas, et al., 1994). Epiptope *sequence* yang tidak terlalu panjang, tanpa adanya keseluruhan *sequence* virus, dapat menstimulasi memori spesifik dari Cytotoxic T Lymphocyte (CTL) (Thomson, et al., 1997).

Sistem *mononuclear phagocyte* merupakan sistem imun yang terdiri atas kumpulan sel yang memiliki fungsi utama untuk proses fagositosis. Sel pertama yang meninggalkan sumsum tulang belakang melalui darah dan belum sepenuhnya terdiferensiasi disebut dengan monosit. Monosit yang sampai di dalam jaringan disebut dengan *macrophage* (Abbas, et al, 1994)

Fungsi *macrophage* adalah untuk memfagositosis partikel asing seperti mikroba dan makromolekul, termasuk antigen. *Macrophage* dapat memproduksi *cytokine*. *Cytokine* ini kemudian mengaktifkan *inflammatory cell* dan bertanggung jawab terhadap efek *inflammatory* seperti demam (Abbas, et al., 1994).

2.2.4 Penamaan

Virus Influenza memiliki aturan penamaan sendiri berstandar international. Dapat dilihat pada contoh di bawah ini.

A/Chicken/Indonesia/CDC370P/2006(H5N1)

- **A** menunjukan spesies dari virus influenza (A, B atau C).
- **Chicken** adalah asal spesies virus tersebut diisolasi.
- **Indonesia** adalah lokasi spesifik virus tersebut diisolasi.
- **CDC370P** adalah kode strain.
- **2006** menunjukan tahun diambilnya sample.
- **H5** menunjukan jenis hemmaglutinin yang dikandung.
- **N1** menunjukan jenis neuraminidase yang dikandung.

Pada sistem ini berlaku pada virus yang diambil dari sample hewan, sedangkan pada manusia tidak disebutkan spesies inangnya. Seperti pada contoh dibawah ini.

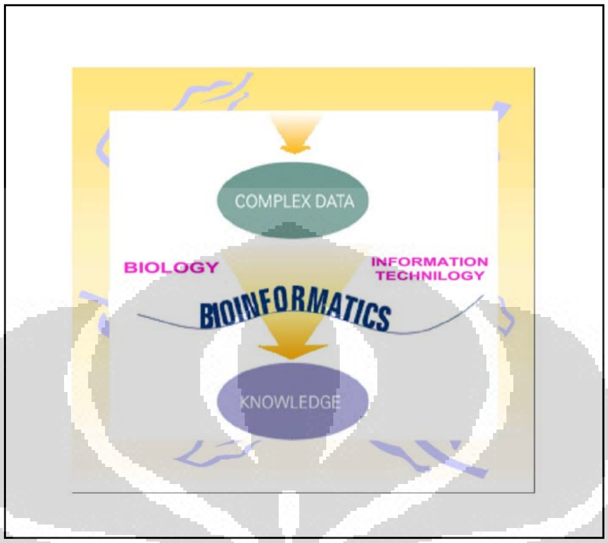
A/Indonesia/CDC669P/2006(H5N1)

2.3 Bioinformatika

2.3.1 Definisi

Bioinformatika merupakan perkawinan antara ilmu biologi dan ilmu teknik informatika. Bioinformatika melakukan analisa data genomik/proteomik yang kompleks, untuk menghasilkan pengetahuan biologi molekuler yang koheren. Bioinformatika adalah aplikasi dari alat komputasi dan analisis untuk menangkap dan menginterpretasikan data-data biologi. Ilmu ini merupakan ilmu baru yang merangkum berbagai disiplin ilmu termasuk ilmu komputer, matematika, fisika, kimia, biologi dan ilmu kedokteran yang kesemuanya saling menunjang dan saling bermanfaat satu sama lainnya (Utama, 2003).

Pesatnya perkembangan teknologi informasi dan peningkatan ilmu komputer, khususnya pada bidang biologi molekuler, menjadikan bioinformatika sebagai ilmu yang membuka sudut pandang baru dalam menyelesaikan persoalan biologi molekuler (Baxevanis dan Oullette, 2005).



Gambar 8 Bioinformatik

2.3.2 Format FASTA

Format FASTA terdiri atas *definition line* dan *sequence* asam amino atau nukleotida. Format ini merupakan format input *(query sequence)* untuk berbagai program analisis bioinformatika. Format FASTA tergolong kurang informatif dibandingkan format lainnya, namun format ini lebih praktis jika dipakai untuk data-data primer pada manusia (Baxevanis dan Oullete, 2001).

Dalam format FASTA penamaan protein pada *sequence* menggunakan kode satu huruf *(one letter code)*. Penamaan protein memiliki dua jenis pengkodean, yaitu *1-letter code* dan *3-letter code*. Sebagai contoh, untuk Triptophan digunakan W sebagai *1-letter code* dan Trp sebagai *3-letter code.* Semua format dalam bioinformatika, termasuk format FASTA menggunakan *1-letter code* (Claveire dan Notredame, 2001).

2.3.3 GenBank Flatfile Format

Format penyimpanan data yang paling umum digunakan adalah format *GenBank Flatfile Format* (GBFF), yang merupakan format elementer penyimpanan informasi dalam *GenBank*. *GenBank* merupakan suatu institusi yang menyimpan dan mengelola database urutan DNA suatu gen dan ekspresi asam aminonya. Urutan DNA diperoleh dari berbagai penelitian yang dengan sukarela mempublikasikan hasil penelitiannya untuk masyarakat umum. *GenBank* didirikan oleh *National Center for Biotechnology Information* (NCBI) bersama dengan *DNA Data Bank of Japan dan European Bioinformatics Institute* (EBI) (Baxevanis dan Oullette, 2001).

2.3.4 Sequence Alignment

Sequence Alignment merupakan metode penjajaran dua atau lebih *sequence* DNA atau asam amino menggunakan algoritma tertentu dengan bantuan komputer, sehingga didapatkan area yang memiliki urutan relatif identik satu sama lain. Metode ini berfungsi mencari kesamaan (konservatifitas) dan homologi antar *sequence* nukleotida DNA. Konservatifitas menunjukkan adanya hubungan evolusi antara dua atau lebih *sequence* nukleotida yang mengalami perubahan, seperti substitusi, insersi, dan delesi. Suatu area *sequence* nukleotida yang tidak memiliki kesamaan dengan *sequence* nukleotida yang lain menunjukkan telah terjadinya substitusi (Baxevanis dan Ouellette, 2001).

Berdasarkan jumlah *sequence* yang digunakan, *sequence* alignment dibagi menjadi dua jenis, yaitu *pairwise alignment* jika melibatkan dua *sequence* dan *multiple sequence alignment* jika melibatkan lebih dari dua *sequence*. *Multiple sequence alignment* memberikan hasil yang lebih akurat dan representatif dibandingkan *pairwise sequence alignment*, karena peningkatan jumlah input *sequence* meningkatkan kepercayaan dan akurasi output. Peningkatan jumlah *sequence* yang dimasukkan berarti meningkatkan kompleksitas proses *sequence alignment* (Baxevanis dan Ouellette, 2001) .

2.3.5 Database Similarity Searching

Sequence alignment digunakan untuk membandingkan pasangan *sequence* yang spesifik. Untuk suatu *sequence* yang belum diketahui pembandingnya digunakan *database similarity searching*, yang mana *sequence* tersebut dicari kecocokannya dengan *sequence* yang terdapat dalam database dan hasilnya berupa suatu daftar (*hit list*) beserta berbagai nilai dan statistik. (Baxevanis dan Oullette, 2001)

Dikarenakan jumlah database yang begitu besar maka untuk melakukan pencarian dengan cara *sequence alignment* satu demi satu akan memakan waktu yang sangat lama, walaupun cara tersebut memberikan hasil yang paling baik. Salah satu pendekatan yang digunakan untuk meningkatkan kecepatan pencarian adalah dengan memecah *sequence* menjadi sejumlah rangkaian huruf yang disebut *word*. Prinsip dasarnya adalah dua *sequence* yang berhubungan mengandung setidaknya satu word yang terdapat pada keduanya (*word hit*) (Baxevanis dan Oullette, 2001).

Program pertama kali yang dipakai secara luas dalam database *similarity searching* adalah FASTA (Lipman dan Pearson, 1985). Program FASTA tidak melakukan *sequnce alignment* untuk tiap *word hit* yang terjadi, tetapi terlebih dahulu mencari bagian-bagian yang mengandung beberapa *word hit* yang berdekatan. Kompromi antara kecepatan dan sensitivitas dapat diatur dengan menentukan parameter ukuran word. Meningkatkan nilai *ktup*, akan menurunkan jumlah *word hit* yang terjadi tetapi meningkatkan kecepatan. (Baxevanis dan Ouellette, 2001).

2.3.6 BLAST

Program *Basic Local Alignment Search Tool* (*BLAST*) memperbaiki pencarian berdasarkan metode *word* dengan memperkenalkan konsep *neighborhood word*. Ada beberapa jenis *BLAST* sesuai tipe *sequence query* dan *subject*, protein atau nukleotida. Jika tipe *sequence* berbeda, *sequence* nukleotida akan terlebih dahulu ditranslasikan oleh program. *BLASTp* digunakan untuk *query* protein terhadap *subject* protein, *BLASTn* digunakan untuk *query* nukleotida (ditranslasikan) terhadap *subject* protein, *TBLASTn* digunakan untuk *query* protein terhadap *subject* nukleotida (ditranslasikan), yang terakhir adalah *TBLASX* dimana *sequence query* dan *subject* merupakan nukleotida, tetapi keduanya ditranslasikan terlebih dahulu dan dibandingkan sebagai protein. (Baxevanis dan Ouellette, 2001).

2.3.7 Pohon Filogenetik

Filogeni bermanfaat untuk merekonstruksi sejarah kehidupan dan menjelaskan diveristas dari makhluk hidup. Hal ini dapat direpresentasikan sebagai pohon genealogi yang besar (pohon kehidupan). Prinsip filogeni adalah mencoba untuk mengklasifikasikan makhluk hidup berdasarkan tingkat similaritasnya. Dalam konteks ini, diasumsikan bahwa semakin similar kedua spesies (seperti manusia dan kera), semakin dekat *common ancestor* mereka. Filogenetik adalah filogeni khusus yang bergantung pada perbandingan gen-gen ekivalen dari beberapa spesies untuk merekonstruksi pohon genealogi dan mengetahui kekerabatan diantara mereka. Sejarah molekuler yang bisa dijabarkan oleh filogenetiks adalah sangat kaya. Ketika famili protein dipelajari, ternyata ditemukan mutasi, delesi, duplikasi, spesiasi, kehilangan/penambahan fungsi, inaktivasi, dan berbagai even lainnya. Dalam konteks analisa bioinformatika, ada tiga alasan utama mengapa filogenetiks digunakan:

- Menentukan relasi terdekat dari organisme yang diteliti. Sebagai contoh, jika suatu bakteri baru dipelajari, RNA ribosomnya dapat di*sequence*ing dan dijabarkan pada pohon filogenetik untuk dibandingkan dengan RNA ribosom yang diketahui. Hal ini dapat memberikan gambaran mengenai identitas bakteri tersebut.

- Menemukan fungsi dari gen. Jika suatu gen baru dipelajari, maka pohon filogenetik dapat digunakan untuk memastikan apakah gen tersebut ortolog dengan gen pada spesies lain (Ortolog adalah gen-gen yang berasal dari organisme berbeda, yang memiliki gen dari *common ancestor* yang sama, namun dipisahkan oleh even spesiasi).

- Melacak asal-usul dari gen: Sebagian besar gen pada genome melakukan perjalanan melalui waktu evolusi. Namun, gen individu dapat loncat dari satu spesies ke spesies lain, sebagai contoh pada infeksi virus. Pohon filogenik dapat mendeteksi even seperti itu, yang disebut sebagai transfer horizontal

(Tambunan,.,Arli A.P : Hand Out Mata Kuliah Biokomia Lanjut)

BAB III

METODE PENELITIAN

Penelitian dilakukan di Laboratorium Bioinformatika Departemen Kimia Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Indonesia

3.1 Pencarian Genom dan Database protein

Peralatan yang digunakan untuk memperoleh genom virus influenza A adalah komputer yang terhubung ke internet dengan program *Internet Browser* seperti *Internet Explorer* atau *Mozilla FireFox* yang terintegrasi pada sistem operasi Microsoft Windows XP. Selain itu juga mempergunakan situs *google* yang menyediakan layanan *search engine* (www.google.com). Bahan yang digunakan adalah *sequence* avian influenza A yang dapat diperoleh dari GenBank yang dikeluarkan oleh *National Center for Biotechnology Information* dari Influenza *Sequence Database* yang dikeluarkan oleh Los Alamos National Laboratory. Pencarian genom didapat dalam format GBFF pada website Los Alamos National Laboratory http://www.ncbi.nlm.nih.gov.

Untuk menggunakan *sequence-sequence* yang telah didapat dalam *soft ware* maka *sequence-sequence* ini dirubah dalam bentuk FASTA yang telah tersedia pada situs http://www.ncbi.nlm.nih.gov. Format FASTA inilah yang akan digunakan untuk analisis selanjutnya dengan berbagai *software* bioinformatika.

3.2 Database Similarity Searching

Dilakukan pencarian *sequence* yang memiliki kemiripan dengan *sequence* yang telah didapatkan dari hasil pencarian genom dengan menggunakan *Basic Local Alignment Search Tool (BLAST)* yang juga bisa diakses dari *National Center for Biotechnology Information* (NCBI).

3.3 Sequence Alignment Genom

Dilakukan *sequence alignment* pada gen yang dikira punya *conserved region* yang tinggi yang menyusun protein strukturan kapsid.

Sequence alignment dilakukan dengan software ClustalW versi 1.83. *Sequence alignment* dilakukan dengan menggunakan program ClustalW produksi *European Molecular Biology Laboratory*, program text editor Microsoft Word Office produksi Microsoft. Bahan yang digunakan adalah file *sequence* genom dari virus influenza dalam format FASTA.

File dalam format FASTA yang berisikan *sequence-sequence* yang akan diolah dimasukkan sebagai input *sequence*. Selanjutnya parameter-parameter operasi alignment ditentukan, lalu *multiple sequence alignment* dijalankan. Setelah selesai file output disimpan dalam format ClustalW.

3.4 Analisis Mutasi

Analisi mutasi dilkukan dengan *Amino Track toolbox* yang tersedia di situs http/www.apps.sbri.org/AminoTrack/. Program ini digunakan untuk indentifikasi mutasi pada protein viral.

3.5 Prediksi struktur 3 dimensi

Setelah ditemukan mutasi yang terjadi maka digunakan program online yang bias di akses di http://ps2.life.nctu.edu.tw untuk memprediksi struktur 3 dimensi dari *sequence* yang mengalami mutasi.

3.6 Analisis Filogenetik

Analisis filogenetik digunakan untuk melacak asal-usul virus H5N1. Data yang digunakan untuk analisis filogenetik ini adalah data hasil output dari alignment dengan program clustal W yang memiliki extention .dnl dengan menggunakn program ArboDraw untuk menampilkan pohon filogenik yang dihasilkan.

BAB IV

HASIL DAN PEMBAHASAN

4.1 Pencarian Sekuen Protein

Protein virus influenza yang digunakan sebagai bahan penelitian adalah semua sekuen protein yang terdapat pada virus *avian influenza* subtype H1N1,H2N2, H3N2, dan H5N1dengan host *avian* dan *human*. Pemilihan subtipe ini berdasarkan kemampuan virus dalam penyebarannya pada populasi manusia. Dalam hal ini H1N1, H2N2, dan H3N2 merupakan subtipe yang telah mampu menyebar antar manusia dan telah menjadi pandemic, sementara H5N1 merupakan virus *avian* yang dikhawatirkan akan menjadi pandemic karena telah mampu menginfeksi manusia namun belum ada kasus yang menunjukkan kemampuan H5N1 menyebar antar manusia. Sekuen protein diperoleh dari *database GenBank* yang dikeluarkan oleh *National Center Biotechnology Information* melalui *Influenza Virus Resource* (IVR-NCBI) dengan alamat situs: http://ncbi.nlm.nih.gov/genomes/FLU/Database.html.

Dalam situs ini terdapat *influenza data search* yang kemudian dilakukan *advanced search* sesuai dengan spesifikasi yang kita inginkan. Penulis menggunakan spesifikasi Influenza A dengan inang manusia dan burung yang berada dalam database dengan segmen yang kita inginkan. Data yang diambil adalah data perwakilan dari data yang ada. Pada pemilihan data untuk protein *Haemagglutinin* dipilih sekuen yang *full length* dan diambil seratus sekuen sebagai sampel apabila datanya lebih dari seratus sekuen. Data yang diambil sebagai sampel adalah sekuen yang awal diisolasi, pertengahan, dan sekuen yang tahun terahir diisolasi dengan asumsi telah mewakili mutasi yang terjadi pada sekuen virus tersebut. Begitu juga dengan sekuen *Neuraminidase* dan sekuen protein yang lain.

Format yang ada pada *GenBank* IVR-NCBI adalah format GBFF (Gen Bank Flatfile Format) yaitu format yang berisi data lengkap sekuen tersebut dari mulai identitas host sampai dengan nukleotida dan proteinnya. Format GBFF terdiri atas *Header, Feature*, serta sekuen nukleotida. *Header* berisi data-data identitas organisme dari mana sampel virus diambil, seperti nama gen, waktu diambil, nomor akses. Sedangkan *feature* berisi informasi biologi yang terpenting, seperti nama genus, spesies, jaringan, kromosom, dan sebagainya. Sedangkan bagian terakhir adalah susunan lengkap asam aminonya (Lampiran 1). .Sekuen protein yang ada terdiri dari urutan huruf-huruf, setiap huruf merupakan kode dari suatu asam amino (Lampiran 2). Agar lebih memudahkan penggunaannya dalam *software* maupun *server* dalam penelitian, semua sekuen protein diubah ke dalam format FASTA (Lampiran 3). Format FASTA ini juga telah tersedia didalam *Gen Bank* yang dikeluarkan oleh NCBI.

4.2 Multiple Sequence Alignments

Sequence Alignment merupakan metode penjajaran dua atau lebih sekuens DNA atau asam amino sehingga didapatkan area yang memiliki urutan relatif identik satu sama lain. Metode ini berfungsi mencari kesamaan (konservatifitas) dan homologi antar sekuens protein. Sekuan protein virus yang disimpan dalam format FASTA masing-masing dimasukkan sebagai *input* program ClustalX versi 1.83 untuk proses *multiple sequence alignments*. ClustalX memudahkan melihat perbedaan sekuen asam amino sehingga dapat dikaitkan dengan variasi genetik dari virus sehingga dapat ditentukan satu perwakilan untuk setiap protein. Dengan menggunakan *Sequence Alignment* ini juga penulis menentukan sekuen hemagglitinin yang merupakan HA1 karena sekuen yang ada didatabase merupakan sekuen total dari protein *haemagglutinin* tanpa memperlihatkan bagian HA1 dan HA2-nya. Dengan *software* inilah penjajaran terhadap semua segmen virus dlakukan. Hasil dari *software* ini adalah berupa *file* dengan extension *.aln dan *.dnd. Asam amino yang sama pada semua protein diberikan tanda asterisk (*) untuk mempermudah melihat kesamaan yang terdapat pada semua sekuen (Lampiran 4).

4.3 Penentuan Conserved Region

Hasil *multiple alignments* dapat pula dilihat menggunakan program BioEdit versi 7.0.9.0 dengan *query* berupa file dalam format ClustalX yang disimpan (*.aln). Selanjutnya program BioEdit digunakan untuk menentukan *conserved region* dari hasil *alignments*.

Pemisahan *conserved region* dari hasil *alignment* dapat dilakukan dengan memasukkan sekuen-sekuen hasil *alignment*, dan kemudian menentukan parameter *conserved region* yang ingin diperoleh. Parameter yang digunakan pada penelitian ini menggunakan parameter *default* pada program tersebut. *Conserved region* merupakan daerah yang memiliki kemiripan antar nukleotida atau asam amino yang rapat sehingga jika dipisahkan, dapat membentuk subsekuen-subsekuen yang serupa. Untuk membatasi diskontinuitas tersebut, dapat ditentukan batasan jumlah maksimum yang diperbolehkan ada dalam tiap segmen yang ditemukan. Selain itu dibatasi juga jumlah diskontinuitas yang berurutan. Dengan membatasi diskontinuitas, hasil yang akan ditampilkan oleh program hanyalah bagian-bagian sekuen yang masuk dalam kategori tersebut.

Hasil pencarian *conserved region* untuk protein *haemagglutinin* pada H5N1 didapat 8 sekuen *conserved region* yaitu, untuk subtipe H1N1 didapat 3 *conserve region,* dan untuk subtipe H2N2 didapat 7 *conserve region,* serta untuk H3N2 didapat 8 *conserve region* yang terdapat pada lampiran 5. Dari *conserve region* yang didapatkan terlihat ada beberapa *conserve region* yang berada pada posisi yang sama pada virus H5N1, H1N1, H2N2, dan H3N2. Hasil pencarian *conserve region* untuk protein yang lain juga terdapat dalam lampiran 5.

4.4 Analisis Pohon Filogenetik

Penggambaran pohon filogenetik untuk semua sekuen protein dilakukan dengan *software* ArboDraw yang bisa dilakukan secara *offline.* Input dari *software* ini adalah hasil dari *alignment* dengan format *dnd. Hasil penggambaran pohon filogenetik untuk masing-masing protein dapat dilihat pada lampiran 6. Berdasarkan pohon filogenetik yang diperoleh didapatkan bahwa protein *haemagglutinin* pada virus influenza A subtipe H5N1 memiliki kekerabatan yang lebih dekat dengan subtipe H1N1 dibandingkan dengan subtipe H2N2 atau pun H3N2. Dari pohon filogenetik ini juga dapat dilihat bahwa sekuen protein *haemagglutinin* pada H5N1 dengan host *Avian* dan *Human* masih terletak dalam satu grup yang menandakan bahwa belum ada sekuen *haemagglutinin* yang mengalami mutasi secara signifikan.

Sedangkan untuk protein *Neuraminidase* sekuen protein dari subtipe H5N1 juga lebih dekat dengan H1N1 karena masih dalam satu subtipe yaitu N1. Untuk pohon filogenetik dari masing-masing protein bisa dilihat pada lampiran 6.

4.5 Analisis Mutasi

Secara umum perbedaan virus influenza A yang menginfeksi manusia dan burung adalah pada pengenalan reseptornya. Virus influenza yang mampu menginfeksi manusia akan mengenali *α-2,6–linked sialic acid* (SA $\alpha - 2{,}3\ Gal$)sebagai tempat berikatannya, sedangkan avian influenza akan mengenali *α-2,6–linked sialic acid* (SA $\alpha - 2{,}6\ Ga$) sebagai tempat berikatannya (Kongchanagul et al 2008).

Pada manusia *receptor* SA $\alpha - 2{,}6Gal$ berada pada jalur udara bagian atas sementara SA $\alpha - 2{,}3Gal$ berada pada alveoli dan terminal bronkilous (Shinya et al, 2006). Virus yang mempunyai afinitas yang baik terhadap kedua *receptor* ini akan sangat berbahaya bagi manusia, virus itu akan mampu berikatan dengan SA $\alpha - 2{,}6Gal$ pada permukaan saluran pernafasan yang berarti akan mudah menginfeksi dan juga akan berikatan dengan $\alpha - 2{,}3Gal$ yang berada pada paru-paru sehingga akan menginfeksi organ bagian dalam (Glaser et al, 2005).

Secara fungsional protein *haemagglutinin* yang berada pada kapsid viruslah yang berperan sebagai *receptor binding.* Sekuen yang berfungsi sebagai *receptor binding* pada protein *haemagglutinin* adalah sekuen nomer 116 sampai 261 dengan penomeran berdasarkan pada penomeran sekuen H3 (Gamblin et al 2004). Dengan demikian mutasi yang akan diamati adalah mutasi pada protein *haemagglutinin* terutama pada *reseptor binding sites*.

Dalam berikatan dengan protein *haemagglutinin* dari virus *receptor* SA $\alpha - 2{,}3\, Gal$ dan SA $\alpha - 2{,}6\, Gal$ mempunyai konformasi spesifik yaitu *cis* atau *trans.* Pada H5 ikatan antara protein *haemagglutinin* dengan SA $\alpha - 2{,}6\, Gal$ yang merupakan receptor pada manusia menunjukkan ketidakstabilan untuk kedua konformasi tersebut (Auewarakul et al, 2007).

Analisis yang digunakan untuk mengamati mutasi yang terjadi adalah dengan software AminoTrac^{TM}. *Software* ini akan menunjukkan sekuen yang mengalami perubahan. *Input* dari software ini adalah sekuen yang telah disimpan dalam file dengan format fasta. Sementara *outpunya* adalah hasil yang berupa urutan sekuen asam asmino dalam file excel. Sekuen yang dipilih sebagai input untuk analisis mutasiini adalah sekuen yang dianggap mewakili subtipenya masing-masing yaitu (A/South Carolina/1/18 (H1N1)) untuk subtipe H1, (A/Kayano/57(H2N2)) untuk mewakili subtipe H2, (A/Beijing/1/68(H3N2)) sebagai perwkilan untuk subtipe H3, dan (A/Hong Kong/482/97(H5N1)) sebagai perwakilan untuk subtipe H5. Hasil dari analisis mutasi dari sekuen pada *Receptor Binding Domain* (RBD) dengan *software* AminoTrack adalah sebagai berikut :

Tabel 2 Hasil Anlisis Mutasi

a. Heamagglutinin

No AA	134	136	139	190	191	195	225	226	228	251	258
H3	G	S	C		Q	Y		L	S	L	F
H1	G	S	C	D	Q	Y	D	Q	G	L	F
H2	G	S	C		Q	Y		L	S	L	F
H5	G	S	C	E	Q	Y	G	Q	G	F	Y
H5 Ind.	G	G	C	E	Q	Y	G	Q	G	F	Y

b. Neuraminidase

NO AA	190	191	258	264	269	328	346	350	358	396	397	401
H2N2	K	A	L	K	S	T	E	P	D	N	R	V
H3N2	K	A	L	K	S	T	E	Q	D	N	R	V
H1N1	M	G	L	K	I	N	S	N	R	V	R	V
H5N1	I	S	F	R	V	S	L	Y	K	X	K	I
H5N1 Ind.	I	S	F	R	V	S	L	Y	K	X	K	I

Pada protein *haemagglutinin* ada tiga area yang merupakan *reseptor binding site* yaitu pada 190 helix (residu 190-198), 130 loop (residu 134-138) dan 220 loop (residu 221-228). Dari hasil analisis sekuen protein *haemagglutinin* pada bagian *reseptor binding domain* dihasilkan data bahwa pada residu 134 dan 136 yang termasuk kedalam 130 loop pada subtipe H5N1 telah menyamai subtipe lainnya yang menjadi pandemik. Begitu juga pada residu nomer 191 dan 195, pada residu ini H5N1 juga telah sama dengan H1N1, H2N2, dan H3N2. Namun demikian pada H5N1 posisi yang paling menentukan pada protein *haemagglutinin* yang paling berperan dalam penyebaranya pada manusia belum berubah, yaitu pada posisi 226 dan 228. Residu pada posisi 226 masih *Gln* dan pada 228 masih *Gly* sementara pada virus influenza yang menjadi pandemik adalah *Leu* dan *Ser*.

Pada saat virus influenza A menginfeksi manusia maka virus tersebut terlebih dahulu harus mengenali SA *α-2,6 Gal* sebagai *receptor* yang terletak pada bagian permukaan saluran pernafasan, tanpa mampu mengenali *receptor* ini maka virus influenza A tidak akan mampu menginfeksi manusia. Setelah mampu menginfeksi virus influenza A akan berbahaya karena umumnya virus ini mengenali SA *α-2,3 Gal* yang merupakan *receptor* yang terdapat pada paru-paru manusia. Inilah hal yang utama yang menyebabkan virus influenza A berbahya bagi manusia sehingga menjadikan virus tersebut menjadi pandemik.

Pada kasus virus influenza A subtipe H5N1 yang kini telah mampu menginfeksi manusia namun belum memiliki kemampuan untuk menyebar antar manusia dapat disimpulkan bawa virus subtipe ini belum sepenuhnya mampu mengenali SA *α-2,6 Gal* sebagai *receptor* utama pada manusia. Hal ini disebabkan karena mutasi yang terjadi pada protein *haemagglutinin* dari subtipe H5N1belum benar-benar dapat mengenali SA *α-2,6 Gal*. Bedasarkan dari penelitian yang dilakukan penulis sekuen asam amino dari haemagglutinin H5 dan H1 pada posisi yang menentukan pengenalan terhadap SA *α-2,6 Gal* yaitu pada posisi 226 dan 228 masih belum berubah dari mengenali SA *α- 2,3 Gal* menjadi SA *α-2,6 Gal.* Dalam penelitian ini juga didapatkan perbedaan antara virus influenza A subtipe yang telah menjadi panemik yaitu H1N1, H2N2, H3N2 dengan subtipe H5N1 yaitu pada sekuen asam amino posisi 251 dan 258. Pada subtipe yang menjadi pandemik asam amino 251 adalah *Leu* sedangkan pada H5N1 adalah *Phe*, sementara pada posisi 258 untuk subtipe pandemik adalah *Phe* dan pada H5N1 adalah *Tyr*. Perbedaan lain antara H1 dan H5 adalah pada posisi 225 dan 190. Untuk H1 terdapat *Asp* pada posisi 190 dan 225 sedangkan pada H5 terdapat *Glu* pada 190 dan *Gln* pada 225. Posisi inilah yang telah mendukung pengenalan H1 dengan *receptor* pada manusia (Gamblin et al,2004).

Sedangkan pada protein *neuraminidase* pada subtipe H5N1 dan H1N1 merupakan *neuraminidesa* yang satu tipe sehingga untuk melihat perbedaanya akan lebih dilihat antara H1N1 dan H5N1. Dari hasil analisis mutasi didapatkan perbedaan pada posisi 190, 191, 258, 264, 269, 328, 346, 350, 358, 396, 397, 401. Bila dibandingkan dengan dengan tipe lain yang telah pandemik maka didapatkan posisi 258, 264, 397, 401 yang pada H1 sama dengan tipe lainnya namun pada H5 berbeda dengan tipe lainnya.

Terkait dengan kemungkinan virus subtipe H5N1 menjadi pademik maka dapat dilihat dari mutasi yang terjadi, apabila semua receptor binding yang terkait dengan pengenalan receptor SA *α-2,6 Gal* telah berubah sepenuhnya sehingga memungkinkan penyebaran antar manusia. Pada asam amino yang masih berbeda dengan asam amino pada subtipe virus yang telah menjadi pandemik juga tidak bisa diabaikan karena perbedaan ini juga memiliki potensi dalam hal mempengaruhi kemampuan virus untuk menular antar manusia.

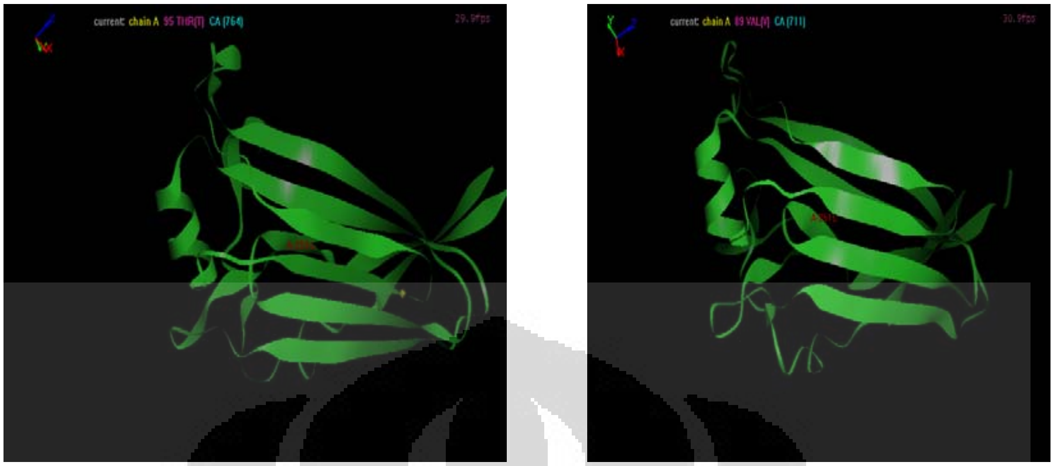
Bila dibandingkan dengan virus subtipe H5N1 yang menyebar di Indonesia dapat dilihat pada hasil analisis dengan AminoTrack. Dari sini bisa dilihat bahwa pada protein *haemagglutinin* virus H5N1 yang di Indonesia memiliki kesamaan dengan virus H5N1 yang menyebar didunia terutama pada bagian *conserve region.* Dengan demikian maka dapat disimpulkan bahwa virus subtipe H5N1 yang menyebar di Indonesia memiliki sifat yang sama dengan virus subtipe H5N1 diwilayah lain dan belum memiliki kemampuan menyebar antar manusia.

4.6 Prediksi Struktur Tiga Dimensi

Untuk meyakinkan bahwa sekuen yang dianalisis menggunakan AminoTrack merupakan sekuan yang tepat maka untuk setiap sekuen dari masing-masing subtipe ini dilakukan prediksi struktur tiga dimensinya. Dalam penentuan strutur tiga dimensi digunakan *software* online yang bisa diakses melalui http://ps2.life.nctu.edu.tw. Input dari software ini adalah sekuen protein dalam format FASTA. Sekuen yang dipilih untuk diprediksi struktur tiga dimensi adalah sekuen *Haemagglutinin* yang merupakan *Receptor Binding Domain* (RBD) seperti yang digunakan pada analisis mutasi. Hasil prediksi dari software ini didasarkan pada data yang telah tersimpan dalam *Protein Data Bank* (PDB).

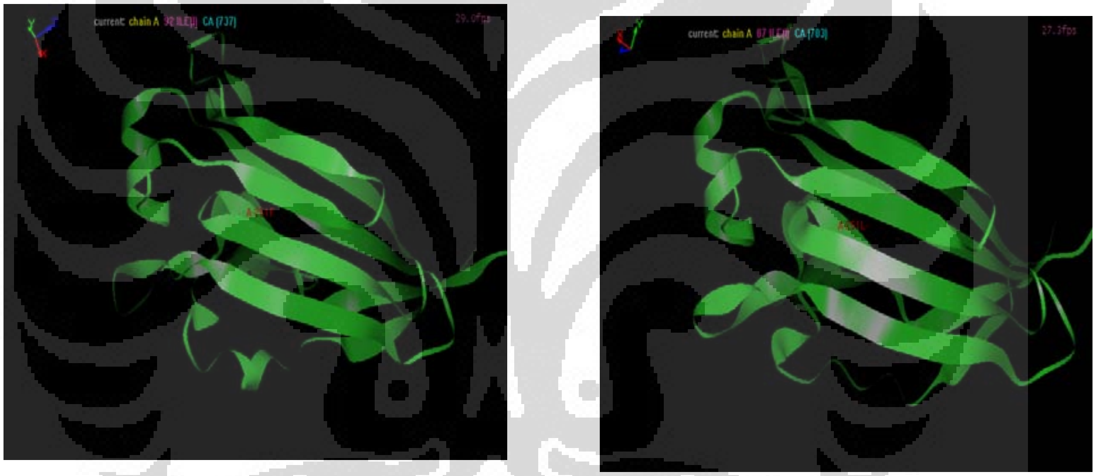
Output dari prediksi struktur tiga dimensi adalah file dalam fomat *.pdb yang bisa akan dibuka dengan *software* noc-3. Berikut ini adalah hasil prediksi struktur tiga dimensi dari RBD untuk masing-masing subtipe.

Dari hasil prediksi struktur tiga dimensi terlihat kemiripan antara struktur H1N1, H2N2, H3N2, dan H5N1. Kemiripan ini dapat dilihat dari struktur *α-helik* dan *β-sheet* dari masing-masing steruktur tersebut. Hal ini dapat meyakinkan bahwa sekuen yang dianalisis dengan menggunakan AminoTrack adalah sekuan yang memiliki fungsi sama untuk masing-masing subtipe.



b. H1N1

a. H2N2



d. H3N2

c. H5N1

Gambar 9 struktur tiga dimensi protein *Haemagglutinin*

BAB V

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Hasil penentuan dari analisis filogenetik didapatkan bahwa sekuen *haemagglutinin* dan *neuraminidase* untuk virus influenza A subtipe H5N1 lebih mirip dengan virus influenza A subtipe H1N1 dibanding dengan subtipe lain yang telah menjadi pandemik yaitu H2N2 dan H3N2. Berdasarkan analisis mutasi dengan AminoTrack didapatkan bahwa subtipe H5N1 belum menjadi pandemik karena virus ini belum sepenuhnya mampu mengenali *receptor SA α-2,6 Gal* yang merupakan *receptor* yang terdapat pada saluran pernafasan bagian atas pada manusia (hidung).

Ketidakmampuan virus subtipe H5N1 menyebar antar manusia adalah karena belum terjadinya mutasi pada posisi 226 dan 228 pada protein *haemagglutinin.* Posisi inilah yang merupakan *receptor binding* yang membedakan kemampuan mengenali *receptor* SA α-2,3 Gal dengan SA α-2,6 Gal. Pada host *avian* posisi 226 adalah *Gln* sementara pada host *human* merupakan *Leu*. Sedangkan pada posisi 228 adalah *Glu* untuk *avian* dan *Ser* untuk *human.* Berdasarkan analisis mutasi dengan AminoTrack didapatkan bahwa pada virus H5N1 asam amino posisi 226 dan 228 masih merupakan asam amino yang mengenali SA α-2,3 Gal. Hal lain yang mendukung ketidakmampuan H5N1 dalam mengenali SA α-2,6 Gal adalah asam amino posisi 251 dan 258 yang masih berbeda dengan asam amino pada subtipe yang telah menjadi pandemik. Selain itu perbedaan pada sekuen protein neuraminidase juga ikut berperan pada ketidakmampuan virus H5N1 dalam penyebarannya pada manusia.

Begitu juga dengan virus influenza A subtipe H5N1 di Indonesia. Virus yang menyebar di Indonesia masih memiliki kesamaan sekuen dengan virus H5N1 lainnya dalam hal sekuen haemagglutinin terutama pada conserve region. Dengan demikian dapat disimpulkan virus yang menyebar di Indonesia akan menjadi pandemik apabila asam amino pada posisi yang telah dibahas telah mengalami mutasi baik secara *antigenic drift* maupun *antigenic sift*. Dari hasil penelitian ini maka dapat dilakukan perancangan vaksin untuk virus dengan sekuen *haemagglutinin* yang diprediksi bisa menjadi pandemik.

5.2 Saran

Melakukan penelitian lebih lanjut untuk mutasi yang terjadi pada sekuen protein lain dan pengaruhnya terhadap kemampuan penyebaran virus antar manusia serta peranannya dalam patogenitasnya secara *in silico*. Melakukan penelitian perancangan primer dan vaksin secara *in silico* untuk sekuen *hemagglutinin* yang telah diprediksikan akan menjadi pandemik.

Melakuan penelitian secara in vitro untuk uji patogenitas virus influenza A subtipe H5N1 hasil yang memiliki sekuen pandemic dari hasil prediksi secara *in silicio*.

DAFTAR PUSTAKA

Abbas, K. Abul., Lichtman A, Pober J. 1994. *Selular and Molecular Immunology, 2^{nd} Edition.* W.B. Saunders Company: Pennsylvania.

Anwar,Tmanna.Lal, Sunil K.Khan, Asad U.2006.*Matrix Protein 1: A Comparative in Silico Study on Different Strains of Influenza A H5N1 Virus*.Biomedical Informatics Publishing Group

Auewarakul, P., dkk.2007. *An Avian Influenza H5N1 Virus That Bind to Human-Type Receptor*. Journal of Virology 81(18):9950-9955

Baxevanis, A.D., Oulette, B. F. F. 2001. *Bioinformatics A Practical Guide to the Analysis of Genes and Protein 2nd Edition.* USA: Wiley Interscience.

Belshe,Robert B Md.2005.*The Origin of Pandemic Influenza_Lessons from The 1918 Vius*.the new England Journal of Medicine

Bragstad, K., L.P. Nielsen, A. fomsgaard. 2008. *The Evolution of Human Influenza A Virus from 1999 to 2006 : A Complete Genome Study*. Virology Journal 5:40

Campitelli,Laura.Ciccozi,Massimo.dkk.2006.*H5N1 Influenza Virus Evolution: A Comparison Of Different Epidemics in Bird and Human*.Jornal Of General Virology 87:955-960

Claverie, J. Michael, Notredame. 2003. *Bioinformatics for Dummies*. Wiley Publishing Inc: New York.

Cinati Jr, inrich, Martim Michaelis, Hans w. Doerr.2007.*The Threat Of Avian Influenza A (H5N1) Part 1 :Epidemiologic Concern And Virulance Determinant.* Med Microbiol Imuonol de Jong Menno, Tran TinH Hien. 2005. *Avian Influenza A (H5N1)*. Journal of Clinical Virology, 951.

Gamblin, S.J. dkk. 2004.*The Structur and Receptor Binding Properties of 1918 Influenza Haemagglutinin. Sciencemag* 10.1126/4093155

Glaser, L.,J,stevens,D ,Zamarin, I.A. Wilson, Gracia-Sastre, T.M. Tumpey, C.F. Basler, J.K Taubenberger,dan P.Palese.2005. *A single amino acid subtitutin in 1918 influenza virus haemagglutinin changes receptor binding specificity*.J. Virol. 79: 1153-11536

Gultyaev,.A.P., H.A. Heus, R.C.L. Olsthoom. 2007. *An RNA conformational Shift in Recent H5N1 Influenza A Viruses*. Bioinformatic Journal 23 : 272-276

Gurtler, L dkk. 2007. *Influenza Report 2006. Flying Publisher*

Horimoto, T dan Kawaoka Y. 2001. *Pandemic Threat Posed by Avian Influenza A Viruses.* Clin Microbiol Rev. 14(1) : 129-149.

Joseph, Tomy. dkk. 2007. *Evaluation of Replicatin and Pathogenicity of Avian Influenza A H7 Subtype Viruses in Mouse Model*. Journal of Vilrology 81 (19) : 10558-10566

Kawaoka Y, Nancy J. Cox, Gabrielle Neumann, Ruben O. Donis. *Orthomyxoviruses: Influenza*.

Kodihalli, Shantha. dkk.1999.*DNA Vaccine Encoding Haemagglutinin Provides Protective Immunity againts H5N1 Influenza Virus Infection In Mice*. Journal of Virology 73 (3) : 2094-2096

Kongchanagul, A. dkk.2008. Positive Selection at The Receptor-Binding Site of Haemagglutinin H5 in Viral Sequences Drived from Human Tissues. Journal of General Virology 89 : 1805-1810

Li, Minyong., Binghe Wang. 2006. *Computational studies of H5N1 hemagglutinin binding with SA-a-2, 3-Gal and SA-a-2, 6-Gal.* Sciencedirect 347 : 662–668

Liao, Yu C. dkk. 2008. *Bioinformatic Model for Predicting Antigenic Variants of Influenza A/H3N2 Virus*. Bionformatic Journal 24:505-512

Lipman, D.J., Pearson, W. R. 1985. *Rapid and Sensitive Protein Similarity Searches.* Sciences 227: 1435-1441.

Matrosovich, M.N. dkk. 1997. *Avian Influenza A virus Differ from Human Viruses by Recognitin of sialyloligosaccharides and Gangliosides and by higher Cosevatin of The HA Receptor-Binding Site*. Jornal of Virology 233:224-234

McDonald, N.J., C.B. Smith, N.J. Cox. 2007. *Antigenic Drift in the Evolution of H1N1 Influenza A Viruses Resulting from Deletion of Single Amino Acid in The Haemagglutinin Gene*. Jornal of General Virology 88:3209-3213

McDonnell,W.M.,F.K. Askari. 1996. *Molecular Medicine DNA Vaccines*. The New England Journal of Medicine.

Reid, A. H. dkk.1999. *Origin and Evolution of The 1918 " Spanish" Influenza Virus Haemagglutinin Gene*. PNAS 96:1651-1656

Reid, A. H. dkk.1999. *1918 Influenza Pandemic Caused by Highly Conserved Viruses with Two Receptor-Binding Variant*. Emerging Infection Diseases vol 9, No 10.

Stevens, J. dkk. 2006. *Structur and Receptor Spesificity of The Haemagglutinin from an H5N1 Influenza Virus*. Science : 1124513

Salzberg, **L** dkk. 2007. *Genome Analysis Linking Recent European and African Infl uenza (H5N1) Viruses.* Emerging Infectious Diseakses • www.cdc.gov/eid 13 : 5

Tambunan,Usman S.F.Hikmawan,Oksya dan Theofilus A. Tochari.2008.*In Silico Mutation Study Of Haemagglutinin and Neuraminidase on Banten Province Strain Influenza A H5N1 Virus*. Trends in Bioinformatic:Science Allert

Thomson, Scott., Burrows, Scott., Miske Ihor. 1997. *Targetting for Polyepitope Protein Incorporating Multiple Class II-restricted Viral Epitopes to the secretory Pathway Facilitates Immun Recognition by CD4+ T Lymphocytes: A Novel Approach to Vaccine Design*. Journal of virology 72: 2246-2252.

Utama, Andi. 2003. *Aplikasi Bioinformatika dalam Virology.* Ilmu Komputer.com

Wang, Qinghua. dkk. 2007. *Structur Basic for Receptor Spesificity of Influenza B Virus Haemagglutinin*. PNAS 104 (43) :16874-16879

Wang, Shixia dkk. 2006. *Hemagglutinin (HA) Proteins from H1 and H3 Serotypes of Influenza A Viruses Require Different Antigen Designs for the Induction of Optimal Protective Antibody Responses as Studied by Codon-Optimized HA DNA Vaccines*. Journal of Vilrology 80 (23): 11628–11637

Wilson, Ian A. 1990. *Structural Basic of Immune Recognition of Influenza Virus Haemagglutinin*. Annual Review 8 : 737-771

http://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?db=nucleotide&val=118864407

http://www3.niaid.nih.gov/

http://www.uq.edu.au/vdu/VDUInfluenza.htm(diakses pada Rabu,13 agustus 2008 pukul 16:50)

http://en.wikipedia.org/wiki/H5N1.htm (diakses pada Rabu,13 agustus 2008 pukul 16:55)

http://en.wikipedia.org/wiki/influenza.htm (diakses pada Rabu,13 agustus 2008 pukul 16:59)

http://en.wikipedia.org/wiki/H1N1.htm (diakses pada Rabu,13 agustus 2008 pukul 17:02)

http://en.wikipedia.org/wiki/H2N2.htm (diakses pada Rabu,13 agustus 2008 pukul 17:04)

http://en.wikipedia.org/wiki/H3N2.htm (diakses pada Rabu,13 agustus 2008 pukul 17:08)

http://en.wikipedia.org/wiki/H9N2.htm (diakses pada Rabu,13 agustus 2008 pukul 17:09)

http://en.wikipedia.org/wiki/H7N7.htm (diakses pada Rabu,13 agustus 2008 pukul 17:10)

http/www.microbiologybytes.comvirologyOrthomyxoviruses.htm (diakses pada Rabu,13 agustus 2008 pukul 11:05)

LAMPIRAN

Lampiran 1. Informasi Genetik Virus H5N1 *Hemaglutinin* dalam Format GBFF

```
☐
        1:  hemagglutinin [In...[gi:124098927]
LOCUS      ABM90478               552 aa          linear   VRL 24-JAN-2007
DEFINITION  hemagglutinin [Influenza A virus (A/Indonesia/CDC1032/2007(H5N1))].
ACCESSION   ABM90478
VERSION     ABM90478.1  GI:124098927
DBSOURCE    accession CY019384.1
KEYWORDS    .
SOURCE      Influenza A virus (A/Indonesia/CDC1032/2007(H5N1))
  ORGANISM  Influenza A virus (A/Indonesia/CDC1032/2007(H5N1))
            Viruses; ssRNA negative-strand viruses; Orthomyxoviridae;
            Influenzavirus A.
REFERENCE   1  (residues 1 to 552)
  AUTHORS   Balish,A., Deyde,V., Garten,R., Lindstrom,S., Shu,B., Smith,C.,
            Smith,E. and Xu,X.
  TITLE     Avian Influenza Associated with Outbreaks in Indonesia
  JOURNAL   Unpublished
REFERENCE   2  (residues 1 to 552)
  AUTHORS   Balish,A., Deyde,V., Garten,R., Lindstrom,S., Shu,B., Smith,C.,
            Smith,E. and Xu,X.
  TITLE     Direct Submission
  JOURNAL   Submitted (24-JAN-2007) WHO Collaborating Center for Surveillance,
            Epidemiology and Control of Influenza, Influenza Branch, Centers
            for Disease Control and Prevention, 1600 Clifton Road NE, Atlanta,
            GA 30333, USA
COMMENT     Method: conceptual translation.
FEATURES             Location/Qualifiers
     source          1..552
                     /organism="Influenza A virus
                     (A/Indonesia/CDC1032/2007(H5N1))"
                     /strain="A/Indonesia/CDC1032/2007"
                     /serotype="H5N1"
                     /isolation_source="gender:F; age:37; Throat Swab"
                     /specific_host="Human"
                     /db_xref="taxon:421471"
                     /segment="4"
                     /lab_host="E1 passage(s)"
                     /country="Indonesia"
                     /collection_date="6-Jan-2007"
     Protein         <1..552
                     /product="hemagglutinin"
                     /function="receptor binding and fusion protein"
     Region          3..552
                     /region_name="Hemagglutinin"
                     /note="Hemagglutinin. Hemagglutinin from influenza virus
                     causes membrane fusion of the viral membrane with the host
                     membrane. Fusion occurs after the host cell internalises
                     the virus by endocytosis; pfam00509"
                     /db_xref="CDD:64376"
     CDS             1..552
                     /gene="HA"
                     /coded_by="CY019384.1:<1..1659"
ORIGIN
        1 dqicigyhan nsteqvdtim eknvtvthaq dilekthngk lcdldgvkpl ilrdcsvagw
       61 llgnpmcdef invpewsyiv ekanptndlc ypgsfndyee lkhllsrinh fekiqiipks
      121 swsdheassg vssacpylgs psffrnvvwl ikknstypti kksynntnqe dllvlwgihh
      181 pnneeeqtrl yqnpttyisi gtstlnqrlv pkiatrskvn gqsgrmeffw tilkpndain
      241 fesngnfiap eyaykivkkg dsaimksele ysncntkcqt pmgainssmp fhnihpltig
      301 ecpkyvkssr lvlatglrns pqresrrkkr glfgaiagfi eggwqgmvdg wygyhhsneq
      361 gsgyaadkes tqkaidgvtn kvnsiidkmn tqfeavgref nnlerrienl nkkmedgfld
      421 vwtynaellv lmenertldf hdsnvknlyd kvrlqlrdna kelgngcfef yhkcdnecme
      481 sirngtynyp qyseearlkr eeisgvkles igtyqilsiy stvasslala imiaglslwm
      541 csngslqcri ci
```

Lampiran 2. Daftar Kode Dua Puluh Asam Amino

No	Kode satu huruf	Kode tiga huruf	Nama
1	A	Ala	Alanin
2	R	Arg	Arginin
3	N	Asn	Aspargin
4	D	Asp	Asam aspartat
5	C	Cys	Sistein
7	Q	Gln	Glutamin
6	E	Glu	Asam glutamat
8	G	Gly	Glisin
9	H	His	Histidin
10	I	Ile	Isoleusin
11	L	Leu	Leusin
12	K	Lys	Lisin
13	M	Met	Metionin
14	F	Phe	Fenilalanin
15	P	Pro	Prolin
16	S	Ser	Serin
17	T	The	Treonin
18	W	Trp	Triptofan
19	Y	Tyr	Tirosin
20	V	Val	Valin

Lampiran 3 : Sekuen Protein Virus Influenza A subtipe H1N1, H2N2, H3N2, dan H5N1 dalam Format Fasta

Haemagglutinin

H1N1

```
>gi|4325039|gb|AAD17229.1| hemagglutinin [influenza A virus (A/South Carolina/1/18
(H1N1))]
MEARLLVLLCAFAATNADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCKLKGIAPLQLG
KCNIAGWLLGNPECDLLLTASSWSYIVETSNSENGTCYPGDFIDYEELREQLSSVSSFEKFEIFPKTSSW
PNHETTKGVTAACSYAGASSFYRNLLWLTKKGSSYPKLSKSYVNNKGKEVLVLWGVHHPPTGTDQQSLYQ
NADAYVSVGSSKYNRRFTPEIAARPKVRDQAGRMNYYWTLLEPGDTITFEATGNLIAPWYAFALNRGSGS
GIITSDAPVHDCNTKCQTPHGAINSSLPFQNIHPVTIGECPKYVRSTKLRMATGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAIDGITNKVNSVIEKMNTQFTAVGKEFNNLERR
IENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVRNLYEKVKSQLKNNAKEIGNGCFEFYHKCDD
ACMESVRNGTYDYPKYSEESKLNREEIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|94960371|gb|ABF47955.1| hemagglutinin [Influenza A virus (A/WSN/1933 TS61(H1N1))]
MKAKLLVLLYAFVATDADTICIGYHANNSTDTVDTIFEKNVAVTHSVNLLEDRHNGKLCKLKGIAPLQLG
KCNITGWLLGNPECDSLLPARSWSYIVETPNSENGACYPGDFIDYEELREQLSSVSSLERFEIFPKESSW
PNHTFNGVTVSCSHRGKSSFYRNLLWLTKKGDSYPKLTNSYVNNKGKEVLVLWGVHHPSSSDEQQSLYSN
GNAYVSVASSNYNRRFTPEIAARPKVKDQHGRMNYYWTLLEPGDTIIFEATGNLIAPWYAFALSRGFESG
IITSNASMHECNTKCQTPQGSINSNLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQYRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINRITNKVNSVIEKMNTQFTAVGKEFNNLEKRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDLNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDNE
CMESVRNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|89782156|gb|ABD77796.1| hemagglutinin [Influenza A virus (A/Wilson-
Smith/33(H1N1))]
MKARLLVLLCALAATDADTICIGYHANNSTDTVDTLLEKNVTVTHSVNLLEDSHNGKLCKLKGIAPLQLG
KCNIAGWLLGNPECDSLLPARSWSYIVETPNSENGACYPGDFIDYEELKEQLSSVSSLERFEIFPKESSW
PNHNTLKGVTASCSHGGKSSFYRNLLWLTKXGDSYPKLNNSYVNNKGKEVLVLWGVHHPSSSNEQQSLYH
NVNAYVSVVSSNYNRRFTPEIAARPKVRDQPGRMNYYWTLLEPGDTIIFEATGNLIAPWYAFALSRGFGS
GIITSNASMHECNTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDLNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDN
ECMESVRNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|194352371|gb|ACF54598.1| hemagglutinin [Influenza A virus (A/WSN/1933(H1N1))]
MKAKLLVLLYAFVATDADTICIGYHANNSTDTVDTIFEKNVAVTHSVNLLEDRHNGKLCKLKGIAPLQLG
KCNIIGWLLGNPECDSLLPARSWSYIVETPNSENGACYPGDFIDYEELREQLSSVSSLERFEIFPKESSW
PNHTFNGVTASCSHRGKSSFYRNLLWLTKKGDSYPKLTNSYVNNKGKEVLVLWGVHHPSSSDEQQSLYSN
GNAYVSVASSNYNRRFTPEIAARPKVKDQHGRMNYYWTLLEPGDTIIFEATGNLIAPWYAFALSRGFESG
IITSNASMHECNTKCQTPQGSINSNLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQYRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSIIEKMNTQFTAVGKEFNNLEKRM
ENLNKKVDDGFLDIWTYNAELLVLLENGRTLDFHDLNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDNE
CMESVRNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|94481538|gb|ABF21278.1| hemagglutinin [Influenza A virus (A/Wilson-
Smith/1933(H1N1))]
MKAKLLVLLYAFVATDADTICIGYHANNSTDTVDTILEKNVAVTHSVNLLEDRHNGKLCKLKGIAPLQLG
KCNITGWLLGNPECDSLLPARSWSYIVETPNSENGACYPGDFIDYEELREQLSSVSSLERFEIFPKESSW
PNHTFNGVTASCSHRGKSSFYRNLIWLTKKGDSYPKLTNSYVNNKGKEVLVLWGVHHPSSSDEQQSLYSN
GNAYVSVASSNYNRRFTPEIAARPKVRDQHGRMNYYWTLLEPGDTIIFEATGNLIAPWYAFALSRGFESG
IITSNASMHECNTKCQTPQGSINSNLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQYRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDLNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDNE
CMESVRNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|324200|gb|AAA43209.1| hemagglutinin precursor [Influenza A virus (A/WSN/33)]
MKAKLLVLLYAFVATDADTICIGYHANNSTDTVDTIFEKNVAVTHSVNLLEDRHNGKLCKLKGIAPLQLG
KCNITGWLLGNPECDSLLPARSWSYIVETPNSENGACYPGDFIDYEELREQLSSVSSLERFEIFPKESSW
PNHTFNGVTVSCSHRGKSSFYRNLLWLTKKGDSYPKLTNSYVNNKGKEVLVLWGVHHPSSSDEQQSLYSN
GNAYVSVASSNYNRRFTPEIAARPKVKDQHGRMNYYWTLLEPGDTIIFEATGNLIAPWYAFALSRGFESG
IITSNASMHECNTKCQTPQGSINSNLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQYRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDLNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDNE
CMESVRNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
```

```
>gi|62291|emb|CAA24272.1| haemagglutinin [Influenza A virus (A/PR/8/34(H0N1))]
MKANLLVLLCALAAADADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWLLGNPECDPLLPVRSWSYIVETPNSENGICYPGDFIDYEELREQLSSVSSFERFEIFPKESSW
PNHNTTKGVTAACSHAGKSSFYRNLLWLTEKEGSYPKLKNSYVNKKGKEVLVLWGIHHPSNSKDQQNIYQ
NENAYVSVVTSNYNRRFTPEIAERPKVRDQAGRMNYYWTLLKPGDTIIFEANGNLIAPRYAFALSRGFGS
GIITSNASMHECNTKCQTPLGAINSSLPFQNIHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNIQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDN
ECMESVRNGTYDYPKYSEESKLNREKVDGVKLESMGIYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|194304803|gb|ACF41834.1| hemagglutinin [Influenza A virus (A/Puerto
Rico/8/34(H1N1))]
MKANLLVLLCALAAADADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWLLGNPECDPLLPVRSWSYIVETPNSENGICYPGDFIDYEELREQLSSVSSFERFEIFPKESSW
PNHNTNGVTAACSHEGKSSFYRNLLWLTEKEGSYPNLKNSYVNKKGKEVLVLWGIHHPSNSKEQQNLYQN
ENAYVSVVTSNYNRRFTPEIAERPKVRDQAGRMNYYWTLLKPGDTIIFEANGNLIAPMYAFALSRGFGSG
IITSNASMHECNTKCQTPLGAINSSLPYQNIHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNTVIEKMNIQFTAVGKEFNKLEKRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDNE
CMESVRNGTYDYPKYSEESKLNREKVDGVKLESMGIYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|89779321|gb|ABD77675.1| hemagglutinin [Influenza A virus (A/Puerto
Rico/8/34(H1N1))]
MKANLLVLLCALAAADADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWLLGNPECDPLLPVRSWSYIVETPNSENGICYPGDFIDYEELREQLSSVSSFERFEIFPKESSW
PNHNTNGVTAACSHEGKSSFYRNLLWLTEKEGSYPKLKNSYVNKKGKEVLVLWGIHHPPNSKEQQNLYQN
ENAYVSVVTSNYNRRFTPEIAERPKVRDQAGRMNYYWTLLKPGDTIIFEANGNLIAPMYAFALSRGFGSG
IITSNASMHECNTKCQTPLGAINSSLPYQNIHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNTVIEKMNIQFTAVGKEFNKLEKRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDNE
CMESVRNGTYDYPKYSEESKLNREKVDGVKLESMGIYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|126599271|gb|ABO21709.1| hemagglutinin [Influenza A virus (A/Puerto
Rico/8/34(H1N1))]
MKANLLVLLCALAAADADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWLLGNPECDPLLPVRSWSYIVETPNSENGICYPGDFIDYEELREQLSSVSSFERFEIFPKESSW
PNHNTNGVTAACSHEGKSSFYRNLLWLTEKEGSYPKLKNSYVNKKGKEVLVLWGIHHPPNSKEQQNLYQN
ENAYVSVVTSNYNRRFTPEIAERPKVRDQAGRMNYYWTLLKPGDTIIFEANGNLIAPMYAFALSRGFGSG
IITSNASMHECNTKCQTPLGAINSSLPYQNIHPVTIGECPKYVRSAKLRMVTGLRNNPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNTVIEKMNIQFTAVGKEFNKLEKRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDNE
CMESVRNGTYDYPKYSEESKLNREKVDGVKLESMGIYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|125976181|gb|ABN59412.1| hemagglutinin [Influenza A virus (A/Alaska/1935(H1N1))]
MKANLLVLLCALAAADADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWLLGNPECDPLLPVRSWSYIVETPNSENGICYPGDFIDYEELREQLSSVSSFERFEIFPKESSW
PNHNTNGVTAACSHEGKSSFYRNLLWLTEKEGSYPKLKNSYVNKKGKEVLVLWGIHHPPNSKEQQNLYQN
ENAYVSVVTSNYNRRFTPEIAERPKVRDQAGRMNYYWTLLKPGDTIIFEANGNLIAPMYAFALSRGFGSG
IITSNASMHECNTKCQTPLGAINSSLPYQNIHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNTVIEKMNIQFTAVGKEFNKLEKRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLEFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDNE
CMESVRNGTYDYPKYSEESKLNREKVDGVKLESMGIYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|133754189|gb|ABO38384.1| hemagglutinin [Influenza A virus (A/Phila/1935(H1N1))]
MKARLLVLLCALAAADADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIPPLQLG
KCNIAGWLLGNPECDSLLPARSWSYIVETPNSENGACYPGDFINYEELREQLSSVSSFERFEIFPKESSW
PKHNTTKGVTAACSHAGKSSFYRNLLWLTKKEDSYPKLKNSYVNKKGKEVLVLWGVHHPSSSKEQQTLYQ
NENAYVSVVSSNYNRRFTPEIAERPKVRDQTGRMNYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMHECNTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDN
ECMESVRNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|89148077|gb|ABD62781.1| hemagglutinin [Influenza A virus (A/Melbourne/35(H1N1))]
MKARLLILLCALAATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWLLGNPECDSLLPASSWSYIVETPNSKNGICYPGDFIDYEELREQLSSVSSFERFEIFPKESSW
PKHNTTKGVTAACSHAGKSSFYRNLLWLTKKEDSYPKLSNSYVNKKGKEVLVLWGVHHPSNSKEQQTLYQ
NENAYVSVVSSNYNRRFTPEIAERPKVRDQAGRMNYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMHECNTKCQTPQGAINSSLPFQNIHPVTIGECPKYVKSAKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKIQLKNNAKEIGNGCFEFYHKCDN
ECMESVRNGTYDYPKYSKESKLNREKIDGVKLEPMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|133754132|gb|ABO38351.1| hemagglutinin [Influenza A virus (A/Henry/1936(H1N1))]
MKARLLVLLCALAATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWLLGNPECDPLLPARSWSYIVETPNSENGICYPGAFIDYEELREQLSSVSSFERFEIFPKESSW
PNHNTNIGVTAACSHAGKSSFYRNLLWLTKKGGSYPKLKNSYVNKKGKEVLVLWGIHHPSNSKDQQTLYQ
```

```
NENAYVSVVSSNYNRRFTPEIAERPEVRDQAGRMNYYWTLLEPGDTIMFEANGNLVAPWYAFALSRGFGS
GIITSNASMHECNTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCDN
ECMESVRNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|86788144|gb|ABD15258.1| hemagglutinin [Influenza A virus (A/Denver/57(H1N1))]
MKAKLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGKAPLQLG
NCNIAGWVLGNPECESLLSNRSWSYIAETPNSENGTCYPGDFADYEELREQLSSVSSFERFEIFPKERSW
PNHTTRGVTAACPHARKSSFYKNLVWLTEANGSYPNLSRSYVNNQEKEVLVLWGVHHPSNIEEQRALYRK
DNAYVSVVSSNYNRRFTPEIAKRPKVRDQSGRMNYYWTLLEPGDTIIFEATGNLIAPWYAFALSRGPGSG
IITSNAPLDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSVQSRGLFGAIA
GFIEGGWTGMMDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKRM
ENLNKKVDDGFMDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKELGNGCFEFYHKCDNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYRILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303378|gb|ACD85764.1| hemagglutinin [Influenza A virus
(A/Oklahoma/02/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGBQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303362|gb|ACD85756.1| hemagglutinin [Influenza A virus
(A/Florida/09/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGXQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303368|gb|ACD85759.1| hemagglutinin [Influenza A virus (A/New
Jersey/10/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGNQKTLYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMEVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303386|gb|ACD85768.1| hemagglutinin [Influenza A virus (A/North
Carolina/04/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLIKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303392|gb|ACD85771.1| hemagglutinin [Influenza A virus
(A/Georgia/06/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGBQKALYHT
ENAYVSVVSSHYSRKFAPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303390|gb|ACD85770.1| hemagglutinin [Influenza A virus
(A/Georgia/05/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTXKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
```

```
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITXKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303388|gb|ACD85769.1| hemagglutinin [Influenza A virus (A/North
Carolina/05/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLRKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMGKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303376|gb|ACD85763.1| hemagglutinin [Influenza A virus
(A/Wyoming/10/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTRKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303382|gb|ACD85766.1| hemagglutinin [Influenza A virus
(A/Indiana/04/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENNHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEMFPKEGSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLXKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDNCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVXKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|193084911|gb|ACF10345.1| hemagglutinin [Influenza A virus
(A/Vermont/01/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSISSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGBQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|194294065|gb|ACF40127.1| hemagglutinin [Influenza A virus (A/New
Jersey/13/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PXHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPXLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRLAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303380|gb|ACD85765.1| hemagglutinin [Influenza A virus
(A/Oklahoma/03/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENNHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTRKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGBQKALYHT
ENAYVSVVSSHYSRKFIPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDNCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLRNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303400|gb|ACD85775.1| hemagglutinin [Influenza A virus
(A/Illinois/06/2008(H1N1))]
MKVKLLVLLCTFAATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PSHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
```

```
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNNKVXDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|194294069|gb|ACF40129.1| hemagglutinin [Influenza A virus (A/South
Carolina/01/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLXKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PXHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKTLYHT
ENAYVSVMSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWXGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|112787546|gb|ABI20826.1| hemagglutinin [Influenza A virus (A/Hickox/1940(H1N1))]
MKAKLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSKRSWSYIAETPNSENGTCYPGDFADYEELREQLSSVSSFERFEIFPKERSW
PNHNINIGVTAACSHAGKSSFYKNLLWLTEKDGSYPNLNKSYVNKKEKEVLVLWGVHHPSNIENQKTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRMNYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGLGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPFTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWAGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|89152215|gb|ABD62843.1| hemagglutinin [Influenza A virus (A/Bel/1942(H1N1))]
MKARLLVLLCAIAATDADTICIGYHANNSTDTVDTILEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSERSWSYIVETPNSENGTCYPGDFIDYEELREQLSSVTSFERFEIFPKETSW
PKHNTTKGVTAACSHAGKCSFYRNLLWLTEKDGSYPNLNNSYVNKKGKEVLVLWGVHHPSNIKDQQTLYQ
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRMNYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMHECNTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLRNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|89903056|gb|ABD79101.1| hemagglutinin [Influenza A virus (A/Weiss/43(H1N1))]
MKARLLVLLCALAATDADTICIGYHANNSTDTVDTILEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSERSWSYIVEIPNSENGTCYPGDFTDYEELREQLSSVSSFERFEIFPKESSW
PKHNTARGVTAACSHAGKSSFYRNLLWLTEKDGSYPNLKNSYVNKKGKEVLVLWGVHHPSSIKEQQTLYQ
KENAYVSVVSSNYNRRFTPEIAERPKVRDQAGRMNYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMHECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKR
MENLNKKVDDGFLDIWTYNAELLILLENERTLDFHDSNVKNLYEKVKSQLRNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|133752882|gb|ABO38054.1| hemagglutinin [Influenza A virus
(A/AA/Marton/1943(H1N1))]
MKARLLVLLCALAATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSERSWSYIVETPNSENGTCYPGDFIDYEELREQLSSVSSFERFEIFSKESSW
PKHNTTRGVTAACSHAGKSSFYRNLLWLTEKDGSYPNLNNSYVNKKGKEVLVLWGVHHPSNIKDQQTLYQ
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRMNYYWTLLKPGDTIMFEANGNLIAPWYAFALSRGFGS
GIITSNASMHECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|133754170|gb|ABO38373.1| hemagglutinin [Influenza A virus (A/Iowa/1943(H1N1))]
MKARLLVLLCALAATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSERSWSYIVETPNSENGTCYPGDFIDYEELREQLSSVSSFERFEIFSKESSW
PKHTTGGVTAACSHAGKSSFYRNLLWLTEKDGSYPNLNNSYVNKKGKEVLVLWGVHHPSNIKDQQTLYQK
ENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRINYYWTLLKPGDTIMFEANGNLIAPWYAFALSRGFGSG
IITSNASMHECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTAASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|145278810|gb|ABP49327.1| hemagglutinin [Influenza A virus
(A/AA/Huston/1945(H1N1))]
MKARLLVLLCALAATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLR
KCNIAGWILGNPECESLLSERSWSYIVETPNSENGTCYPGDFTNYEELREQLSSVSSFERFEIFPKESSW
PKHNTTRGVTAACSHAGKSSFYRNLLWLTEKDGSYPNLNNSYVNKKGKEVLVLWGVHHPSNIKDQQTLYQ
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRMNYYWTLLKPGDTIMFEANGNLIAPWYAFALSRGFGS
GIITSNASMHECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNNLEKR
MENLNKKVDDGFLDIWTYNAELLILLENERTLDFHDSNVKNLYEKVKSQLRNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
```

```
QCRICI
>gi|89903075|gb|ABD79112.1| hemagglutinin [Influenza A virus (A/Cam/46(H1N1))]
MKAKLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSKRSWSYIAETPNSENGACYPGDFADYEELREQLSSVSSFERFEIFPKGRSW
PEHNIDIGVTAACSHAGKSSFYKNLLWLTEKDGSYPNLNKSYVNKKEKEVLILWGVHHPPNIENQKTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALNRGIGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPFTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWDGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKFSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|89782382|gb|ABD77807.1| hemagglutinin [Influenza A virus
(A/FortMonmouth/1/47(H1N1))]
MKAKLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSKRSWSYIAETPNSENGTCYPGDFADYEELREQLSSVSSFERFEIFPKERSW
PKHNITRGVTAACSHAGKSSFYKNLLWLTETNGSYPKLSKSYVNNKEKEVLVLWGVHHPSNIEDQKTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRMNYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVKSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|406042|gb|AAA67338.1| hemagglutinin [Influenza A virus (A/Fort
Monmouth/1/1947(H1N1))]
MKAKLLILLCALTATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSKRSWSYIAETPNSENGACYPGDFADYEELREQLSSVSSFERFEIFPKERSW
PKHNITRGVTAACSHAGKSSFYKNLLWLTETDGSYPKLSKSYVNNKEKEVLVLWGVHHPSNIEDQKTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRDFGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVKSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINWITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|125976162|gb|ABN59401.1| hemagglutinin [Influenza A virus
(A/Albany/4835/1948(H1N1))]
MKAKLLVLLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLFSKKSWSYIAETPNSENGTCYPGYFADYEELREQLSSVSSFERFEIFPKERSW
PKHNITRGVTAACSHKGKSSFYRNLLWLTEKNGSYPNLNKSYVNNKEKEVLVLWGVHHPSNIEDQKTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRINYYWTLLEPGDTIIFEANGNLIAPWHAFALSRGFGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|125976219|gb|ABN59434.1| hemagglutinin [Influenza A virus (A/Roma/1949(H1N1))]
MKAKLLVLLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLFSKKSWSYIAETPNSENGTCYPGYFADYEELREQLSSVSSFERFEIFPKERSW
PKHNVTRGVTAACSHKGKSSFYRNLLWLTEKDGSYPNLSKSYVNNKEKEVLVLWGVHHPSNIEDQKTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRINYYWTLLEPGDTIIFEANGNLIAPWHAFALSRGFGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|89114296|gb|ABD61735.1| hemagglutinin [Influenza A virus (A/Fort Worth/50(H1N1))]
MKAKLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGKAPLQLG
KCNIAGWVLGNPECESLLSNRSWSYIAETPNSENGICYPGDFADYEELREQLSSVSSFERFEIFPKERSW
PKHNTIRGVTAACSHAGKSSFYKNLVWLTEANGSYPALSTSYVNNQEKEVLVLWGVHHPSNIEEQRTLYR
KDNAYVSVVSSNYNRRFTPEIAKRPKVRDQPGRMNYYWTLLEPGDTIIFEATGNLIAPWYAFALSRGPGS
GIITSNAPMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMMDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKELGNGCFEFYHKCDN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYRILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|145278791|gb|ABP49316.1| hemagglutinin [Influenza A virus
(A/Albany/4836/1950(H1N1))]
MKAKLLVLLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLFSKKSWSYIAETPNSENGTCYPGYFADYEELREQLSSVSSFERFEIFPKERSW
PKHNITRGVTAACSHKGKSSFYRNLLWLTEKNGSYPNLKKSYVNNKEKEVLVLWGVHHPSNIEDQKTLYR
KENAYVSVVSSNYNKRFTPEIAERPKVRGQAGRINYYWTLLEPGDTIIFEANGNLIAPWHAFALSRGFGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|145279077|gb|ABP49481.1| hemagglutinin [Influenza A virus
(A/Albany/12/1951(H1N1))]
```

```
MKARLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSNRSWSYIAETPNSENGTCYPGDFADYEELREQLSSVSSFERFEIFPKERSW
PKHNITRGVTAACSHAKKSSFYKNLLWLTEANGSYPNLSKSYVNNKEKEVLVLWGVHHPSNIEDQRTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRMNYYWTLLEPGDKIIFEANGNLIAPWYAFALSRGLGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCDN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|146760085|gb|ABQ44471.1| hemagglutinin [Influenza A virus
(A/Albany/14/1951(H1N1))]
MKARLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSNRSWSYIAETPNSENGTCYPGDFADYEELREQLSSVSSFERFEIFPKERSW
PKHNITRGVTAACSHAKKSSFYKNLLWLTEANGSYPNLSKSYVNNKEKEVLVLWGVHHPSNIEDQRTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRMNYYWTLLEPGDKIIFEANGNLIAPWYAFALSRGLGS
GIITSNASMDECDTKCQTPQGAINNSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCDN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|146133734|gb|ABQ01311.1| hemagglutinin [Influenza A virus
(A/Albany/1618/1951(H1N1))]
MKARLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSNRSWSYIAETPNSENGTCYPGDFADYEELREQLSSVSSFERFEIFPKERSW
PKHNITRGVTAACSHAKKSSFYKNLLWLTEANGSYPNLSKSYVNNKEKEVLVLWGVHHPSKIEDQRTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRMNYYWTLLEPGDKIIFEANGNLIAPWYAFALSRGLGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCDN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|148897951|gb|ABR15808.1| hemagglutinin [Influenza A virus
(A/Albany/13/1951(H1N1))]
MKARLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSNRSWSYIAETPNSENGTCYPGDFADYEELREQLSSVSSFERFEIFPKERSW
PKHNITRGVTAACSHAKKSSFYKNLLWLTEANGSYPNLSKSYVNNKEKEVLVLWGVHHPSNIEDQRTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRMNYYWTLLEPGDKIIFEANGNLIAPWYAFALSRGLGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCDN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|134047484|gb|ABO52280.1| hemagglutinin [Influenza A virus
(A/Malaya/302/1954(H1N1))]
MKARLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSNRSWSYIAETPNSENGICYPGDFADYEELREQLSSVSSFERFEIFPKESSW
PKHNITRGVTVACSHAKKSSFYKNLLWLTEANGLYPSLSKSYVNDREKEVLVLWGVHHPSNIEDQRTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQPGRMNYYWTLLEPGDKIIFEANGNLIAPWYAFALSRGPGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCDN
ECMESVKNGTYDYPKYSEESKLNRAKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|89112489|gb|ABD60966.1| hemagglutinin [Influenza A virus (A/Malaysia/54(H1N1))]
MKARLLILLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCNIAGWILGNPECESLLSNRSWSYIAETPNSENGICYPGDFADYEELREQLSSVSSFERFEIFPKESSW
PKHNITRGVTVACSHAKKSSFYKNLLWLTEANGLYPSLSKSYVNDREKEVLVLWGVHHPSNIEDQRTLYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQPGRMNYYWTLLEPGDKIIFEANGNLIAPWYAFALSRGPGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLRNNAKEIGNGCFEFYHKCDN
ECMESVKNGTYDYPKYSEESKLNRAKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|324122|gb|AAA43171.1| hemagglutinin [Influenza A virus
(A/Leningrad/1954/1(H1N1))]
MKAKLLVLLCALSATDADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGIAPLQLG
KCSIAGWILGNPECESLVSKKSWSYIAETPNSENGTCYPGYFADYEELREQLSSVSSFERFEIFPKERSW
PKHNVTRGVTASCSHKGKSSFYRNLLWLTEKNGSYPNLSKSYVNNKEKEVLVLWGVHHPSNIEDQKTIYR
KENAYVSVVSSNYNRRFTPEIAERPKVRGQAGRINYYWTLLEPGDTIIFEANGNLIAPWHAFALNRGFGS
GIITSNASMDECDTKCQTPQGAINSSLPFQNIHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFDELEKR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|189303366|gb|ACD85758.1| hemagglutinin [Influenza A virus
(A/Memphis/07/2008(H1N1))]
MKVKLLVLLCTFAATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
```

```
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PXHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|170786954|gb|ACB11800.2| hemagglutinin [Influenza A virus (A/New
Jersey/04/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PXHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|188076427|gb|ACD47240.1| hemagglutinin [Influenza A virus
(A/Alaska/03/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGVQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPRDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLXGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303398|gb|ACD85774.1| hemagglutinin [Influenza A virus
(A/Nebraska/01/2008(H1N1))]
MKVKLLVLLCTFAATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTRKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGFFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|188076425|gb|ACD47239.1| hemagglutinin [Influenza A virus (A/New
Jersey/08/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGBQKTLYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHBSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMEVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|194294063|gb|ACF40126.1| hemagglutinin [Influenza A virus
(A/Idaho/01/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQNTLYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|188076441|gb|ACD47247.1| hemagglutinin [Influenza A virus
(A/Idaho/02/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PKHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|170181783|gb|ACB11806.1| hemagglutinin [Influenza A virus (A/New
Jersey/05/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
```

```
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTXKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKTLYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNXKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMEVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|193084897|gb|ACF10338.1| hemagglutinin [Influenza A virus
(A/Mississippi/06/2008(H1N1))]
MKVKLLVLLCTFAATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGGQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDXEGRINYYWTLLEPGDTIIFEANGNLIAPRXAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303374|gb|ACD85762.1| hemagglutinin [Influenza A virus
(A/Mississippi/06/2008(H1N1))]
MKVKLLVLLCTFAATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELRKQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPSLSKSYANNKEKEVLVLWGVHHPPNIGBQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|188076459|gb|ACD47256.1| hemagglutinin [Influenza A virus (A/New
Jersey/09/2008(H1N1))]
MKVKLLVLLCTFAATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTRKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303372|gb|ACD85761.1| hemagglutinin [Influenza A virus
(A/Hawaii/06/2008(H1N1))]
MKVKLLVLLCTFAATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGNQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|188076435|gb|ACD47244.1| hemagglutinin [Influenza A virus (A/New
York/01/2008(H1N1))]
MKVKLLVLLCTFAATYADTICIGYHANNSTDTVDTVXEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGBQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|194294061|gb|ACF40125.1| hemagglutinin [Influenza A virus
(A/Wisconsin/01/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPDIGDQKTLYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|170181707|gb|ACB11768.1| hemagglutinin [Influenza A virus
(A/Indiana/01/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
```

```
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYHWTLLEPGDTIIFEANGNLIAPRYAFTLSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303370|gb|ACD85760.1| hemagglutinin [Influenza A virus
(A/Hawaii/05/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDNHNGKLCLLKGIAPLQLG
NCSVAGWVLGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYKNLLWLTGKNGLYPNLSKSYANNKKKEVLVLWGVHHPPNIGBQMTLYHK
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDVWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLSREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303360|gb|ACD85755.1| hemagglutinin [Influenza A virus (A/New
York/03/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGLAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPXLSKSYANNKEKEVLVLWGVHHPPNIGBQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|170181715|gb|ACB11772.1| hemagglutinin [Influenza A virus (A/New
Jersey/06/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREXLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKTLYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMEVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|193084905|gb|ACF10342.1| hemagglutinin [Influenza A virus (A/New
York/05/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQKALYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWXGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|189303384|gb|ACD85767.1| hemagglutinin [Influenza A virus (A/North
Carolina/02/2008(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGESSFYRNLLWLTXKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIVBQKTLYHT
ENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRYAFALSRGFGSG
IINSNAPMDKCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFIDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|112789450|gb|ABI21541.1| hemagglutinin [Influenza A virus
(A/Nanchang/16/1996(H1N1))]
MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECESLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHHPSNIGVQRAIYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFESG
IITSNAPMNECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|112789469|gb|ABI21552.1| hemagglutinin [Influenza A virus
(A/Nanchang/17/1996(H1N1))]
MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
```

```
NCSVAGWILGNPECESLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHHPSNIGVQRAIYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFESG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|134047389|gb|ABO52225.1| hemagglutinin [Influenza A virus
(A/Memphis/15/1996(H1N1))]
MKAKLLVLLCAFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGTAPLQLG
NCSVAGWILGNPECESLFSKESWSYIAETPNPENGTCYPGYFADYEELKEQLSSVSSFERFEIFPKESSW
PNHTVTKGVTASCSHNGKSSFYKNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHHPSNIGDQRAIYH
TENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMGECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADKKSTQNAIDGITNKVNSVIEKMNTQFTAVGKEFNKLERR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLKNNAKEIGNGCFEFYHKCND
ECMESVKNGTYDYPKYSEESKLKREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|120434212|gb|ABM22290.1| hemagglutinin [Influenza A virus
(A/Memphis/7/1996(H1N1))]
MKAKLLVLLCAFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLENSHNGKLCRLKGTAPLQLG
NCSVAGWILGNPECESLFSKESWSYIAETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTKGVTASCSHNGKSSFYKNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHHPSNIGDQRAIYH
TENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMGECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAIDGITNKVNSVIEKMNTQFTAVGKEFNKLERR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLKNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|94959685|gb|ABF47649.1| hemagglutinin [Influenza A virus (A/New
York/653/1996(H1N1))]
MKAKLLVLLCAFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGTAPLQLG
NCSVAGWILGNPECESLFSKESWSYIAETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTKGVTASCSHNGKSSFYKNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHHPSNIGDQRAIYH
TENAYVSVVSSHYSRRFTPEITKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMGECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAIDGITNKVNSVIEKMNTQFTAVGKEFNKLERR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKTQLKNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|94959704|gb|ABF47660.1| hemagglutinin [Influenza A virus (A/New
York/640/1996(H1N1))]
MKAKLLVLLCAFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGTAPLQLG
NCSVAGWILGNPECESLFSKESWSYIAETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTKGVTASCSHNGKSSFYKNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGIHHPSNIGDQRAIYH
TENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMGDCDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADKKSTQNAIDGITNKVNSVIEKMNTQFTAVGKEFNKLERR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKTQLKNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLKREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|112787584|gb|ABI20848.1| hemagglutinin [Influenza A virus (A/New
York/646/1996(H1N1))]
MKAKLLVLLCAFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGTAPLQLG
NCSVAGWILGNPECESLFSKESWSYIAETPNPENGTCYPGYFADYEELKEQLSSVSSFERFEIFPKESSW
PNHTVTKGVTASCSHNGKSSFYKNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHHPSNIGDQRAIYH
TENAHVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMGECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADKKSTQNAIDGITNKVNSVIEKMNTQFTAVGKEFNKLERR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKNQLKNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLKREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|109914458|gb|ABG47829.1| hemagglutinin [Influenza A virus (A/New
York/626/1996(H1N1))]
MKAKLLVLLCAFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCRLKGTAPLQLG
NCSVAGWILGNPECESLFSKESWSYIAETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTKGVTASCSHNGKSSFYKNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHHPSNIGDQRAIYH
TENAYVSVVSSHYSRRFTPEITKRPKVRNQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGS
GIITSNASMGECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSTKLRMVTGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAIDGITNKVNSVIEKMNTQFTAVGKEFNKLERR
MENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKTQLKNNAKEIGNGCFEFYHKCNN
ECMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSL
QCRICI
>gi|89033079|gb|ABD59848.1| HA [Influenza A virus (A/TW/3355/97(H1N1))]
MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSINLLENSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
```

```
PNHTVTGVSASCSHNGKSSFYRNLLWLTKKNGLYPNLSKSYVNNKEKEVLVLWGVHHPSNIGDQRAIYHT
ENAYVSVVSSHYSRRFTPEIVKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGSG
IITSNASMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSIIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|14587051|gb|AAK70452.1|AF386776_1 hemagglutinin [Influenza A virus (A/Hong
Kong/1035/98 (H1N1))]
MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDRHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHNPSNIGDQRAIYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFVEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|14587053|gb|AAK70453.1|AF386777_1 hemagglutinin [Influenza A virus (A/Hong
Kong/1035/98 (H1N1))]
MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDRHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHNPSNIGDQRAIYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|14587061|gb|AAK70457.1|AF386781_1 hemagglutinin [Influenza A virus (A/Hong
Kong/1134/98 (H1N1))]
MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLIPKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYVNNKEKEVLVLWGVHHPPNIGDQRAIYHT
ENAYVSVVSSHYSRRFTPEIVKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|14587049|gb|AAK70451.1|AF386775_1 hemagglutinin [Influenza A virus (A/Hong
Kong/1131/98 (H1N1))]
MKAKLLILLCTFTATYADPICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTEKNGLYPNLSKSYVNNKEKEVLVIWGVHHPSNIGDQRAIYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGSG
IITSNAPMDECDTKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|14587055|gb|AAK70454.1|AF386778_1 hemagglutinin [Influenza A virus (A/Hong
Kong/1035/98 (H1N1))]
MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDRHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTEKNGLYPNLSKSYVNNKEKEVLVLWGVHNPSNIGDQRAIYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRGQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|14587059|gb|AAK70456.1|AF386780_1 hemagglutinin [Influenza A virus (A/Hong
Kong/1134/98 (H1N1))]
MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLIPKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYVNNKEKEVLVLWGVHHPPNIGDQRAIYHT
ENAYVSVVSSHYSRRFTPEIVKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|117571148|gb|ABK40006.1| hemagglutinin [Influenza A virus (A/New South
Wales/24/1999(H1N1))]
MKAKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
```

```
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYVNNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPWYAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNNE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|158830221|gb|ABW81514.1| hemagglutinin [Influenza A virus
(A/Denmark/116/2005(H1N1))]
MKVKLLVLLCTFTATYADTICISYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|158830231|gb|ABW81519.1| hemagglutinin [Influenza A virus
(A/Denmark/33/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAHVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|115607765|gb|ABJ16653.1| hemagglutinin [Influenza A virus (A/South
Australia/55/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEGSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGBQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNRERIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|115607784|gb|ABJ16664.1| hemagglutinin [Influenza A virus (A/South
Australia/56/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGHFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNRERIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|158830235|gb|ABW81521.1| hemagglutinin [Influenza A virus
(A/Denmark/22/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IISSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|158830237|gb|ABW81522.1| hemagglutinin [Influenza A virus
(A/Denmark/79/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|158830241|gb|ABW81524.1| hemagglutinin [Influenza A virus
(A/Denmark/110/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTIDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
```

```
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|158830223|gb|ABW81515.1| hemagglutinin [Influenza A virus
(A/Denmark/11/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|145278924|gb|ABP49393.1| hemagglutinin [Influenza A virus (A/South
Australia/51/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGIHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNRERIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|115607822|gb|ABJ16686.1| hemagglutinin [Influenza A virus (A/South
Australia/58/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|112456302|gb|ABI19015.1| hemagglutinin [Influenza A virus
(A/Iowa/CEID23/2005(H1N1))]
MKAIIVVLLYTFATADADTLCIGYHANNSTDTVDTVLEKNVTVTHSVNLLENKHDGKLCKLRGIAPLHLG
KCNIAGWILGNPECESLFTTSSWSYIVETPNSDNGTCYPGDFINYEELREHLSSVSSFERFEIFPKANSW
PYHDTNKGVTAACPYAGANSFYRNLIWLVKKGNSYPKLSKSYINNKKKEVLVIWGIHHPPTSTDQQTLYQ
NADAYVFVGSSKYSKRFKPEIAARPKVRDQAGRMDYYWTLIEPGDTITFEATGNLVVPRYAFTMKRGSGS
GIIVSDAPVHDCNTTCQTPKGAINTSLPFQNIHPVTIGECPKYVKSTKLRMATGLRNIPSIQSRGLFGAI
AGFIEGGWTGMIDGWYGYHHQNEQGSGYAADQKSTQNAIDGITNKVNSIIEKMNTQFTAVGKEFSQLEKR
IESLNNKVDDGFLDIWTYNAELLVLLENERTLDYHDSNVKNLYEKVRSQLKNNAKEIGNGCFEFYHKCDD
TCMESVKNGTYDYPKYSEEAKLNRQEIDGVKLESARIYQILAIYSTVASSLVLLVSLGAVSFWMCSNGSL
QCRICI
>gi|115607803|gb|ABJ16675.1| hemagglutinin [Influenza A virus (A/South
Australia/57/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMVTGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFNKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNRERIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|158830225|gb|ABW81516.1| hemagglutinin [Influenza A virus
(A/Denmark/54/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|158830227|gb|ABW81517.1| hemagglutinin [Influenza A virus
(A/Denmark/226/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
NCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSISSFERFEIFPKESSW
```

```
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
>gi|158830233|gb|ABW81520.1| hemagglutinin [Influenza A virus
(A/Denmark/3/2005(H1N1))]
MKVKLLVLLCTFTATYADTICIGYHANNSTDTVDTVLEKNVTVTHSVNLLEDSHNGKLCLLKGIAPLQLG
SCSVAGWILGNPECELLISKESWSYIVETPNPENGTCYPGYFADYEELREQLSSVSSFERFEIFPKESSW
PNHTVTGVSASCSHNGKSSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGVHHPPNIGDQRALYHT
ENAYVSVVSSHYSRRFTPEIAKRPKVRDQEGRINYYWTLLEPGDTIIFEANGNLIAPRFAFALSRGFGSG
IITSNAPMDECDAKCQTPQGAINSSLPFQNVHPVTIGECPKYVRSAKLRMATGLRNIPSIQSRGLFGAIA
GFIEGGWTGMVDGWYGYHHQNEQGSGYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEFSKLERRM
ENLNKKVDDGFLDIWTYNAELLVLLENERTLDFHDSNVKNLYEKVKSQLKNNAKEIGNGCFEFYHKCNDE
CMESVKNGTYDYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLLVSLGAISFWMCSNGSLQ
CRICI
```

H2N2

```
>gi|26453383|dbj|BAC43764.1| hemagglutinin [Influenza A virus (A/Kayano/57(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKNILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLIVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPIDETEQITLYQNVGT
YVSVGTSTLNKRSTPEIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQFRI
CI
>gi|127057978|dbj|BAF48641.1| haemagglutinin [Influenza A virus
(A/Singapore/1/57(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|145279038|gb|ABP49459.1| hemagglutinin [Influenza A virus
(A/Albany/22/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTPTLNKRSTPDIATRPKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|146760066|gb|ABQ44460.1| hemagglutinin [Influenza A virus
(A/Albany/20/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMIWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|188504350|gb|ACD56291.1| hemagglutinin [Influenza A virus (A/Ann
Arbor/23/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYTVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVSTSTLNKRSTPEIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
```

```
>gi|189230499|gb|ACD85231.1| hemagglutinin [Influenza A virus
(A/Guiyang/1/1957(H2N2))]
IIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDCSI
AGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVTHFEKVKILPRDRWTQHTT
TGGSRACAVSGNPSFFRNMVWLTEKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGTYV
SVGTSTLNKRSTPEIATRPKVNGLGSRMEFSWILLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMKTE
GTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFIEG
GWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNIQFEAVGKEFSNLERRLENLNK
KMEDGFRDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNAKELGNGCFEFYHKCDDECMNSV
KNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRICI
>gi|194352162|gb|ACF54477.1| hemagglutinin [Influenza A virus
(A/Singapore/1/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|194352181|gb|ACF54488.1| hemagglutinin [Influenza A virus (A/Singapore/1-
MA12/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTETVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|194352200|gb|ACF54499.1| hemagglutinin [Influenza A virus (A/Singapore/1-
MA12A/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTETVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|194352219|gb|ACF54510.1| hemagglutinin [Influenza A virus (A/Singapore/1-
MA12B/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTETVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|194352238|gb|ACF54521.1| hemagglutinin [Influenza A virus (A/Singapore/1-
MA12D/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTETVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|94481522|gb|ABF21270.1| hemagglutinin [Influenza A virus (A/Japan/305/57(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEMVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSDYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPEIATRLKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKTGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|324146|gb|AAA43185.1| hemagglutinin precursor [Influenza A virus
(A/Japan/305/1957(H2N2))]
```

```
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTNLERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKEGSDYPVAKGSYNNTSGEQMLIIWGVHHPIDETEQRTLYQNVGT
YVSVGTSTLNKRSTPEIATRPKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFGNLERRLENL
NKRMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|408677|gb|AAA43678.1| hemagglutinin [Influenza A virus (A/Singapore/1/57 (H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTEKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDEKEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMIDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|305115|gb|AAA64362.1| hemagglutinin [Influenza A virus (A/Japan/305+/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKYLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSDYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPEIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPRYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|305155|gb|AAA64364.1| hemagglutinin [Influenza A virus (A/Japan/305-/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSDYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPEIATRPKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|305163|gb|AAA64365.1| hemagglutinin [Influenza A virus (A/RI/5+/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVDGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVEKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYNKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGIYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|305117|gb|AAA64363.1| hemagglutinin [Influenza A virus (A/RI/5-/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKINTQFEAVEKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSSVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGIYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|305171|gb|AAA64366.1| hemagglutinin [Influenza A virus
(A/Singapore/1/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKESNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|115279062|gb|ABI84959.1| hemagglutinin [Influenza A virus
(A/Japan/305/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPEIATRPKVNGLGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
```

```
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|133753657|gb|ABO38307.1| hemagglutinin [Influenza A virus
(A/Albany/26/1957(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|133752958|gb|ABO38098.1| hemagglutinin [Influenza A virus
(A/Albany/2/1958(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|133753638|gb|ABO38296.1| hemagglutinin [Influenza A virus
(A/Albany/4/1958(H2N2))]
MVIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHFLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNAKELGNGCFEFYHKCDDECMN
SVKNGTYYYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|134047523|gb|ABO52302.1| hemagglutinin [Influenza A virus
(A/Albany/3/1958(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGNC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGIYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|145279000|gb|ABP49437.1| hemagglutinin [Influenza A virus
(A/Albany/24/1958(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPEIATRPKVNGLGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|145279057|gb|ABP49470.1| hemagglutinin [Influenza A virus
(A/Albany/1/1958(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVSTSTLNKRSTPDIATRPKVNGLGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|134047408|gb|ABO52236.1| hemagglutinin [Influenza A virus
(A/Albany/5/1958(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHFLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
```

```
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNAKELGNGCFEFYHKCDDECMN
SVKNGTYYYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|408525|gb|AAA43248.1| hemagglutinin [Influenza A virus (A/Krasnodar/101/59
(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTQKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|189230461|gb|ACD85209.1| hemagglutinin [Influenza A virus
(A/Krasnodar/101/1959(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTQKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|133982551|gb|ABO44090.1| hemagglutinin [Influenza A virus
(A/Albany/1/1959(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMIWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVVTSTLNKRSTPKIATRPKVNGLGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQRAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGLLDVWTYNAELLVLMENERILDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|146133810|gb|ABQ01355.1| hemagglutinin [Influenza A virus
(A/Albany/1/1960(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVRILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMIWLTKKGSNYPVAKGSYNNTSGEQMLIIWGVHHPIDETEQRTLYQNVET
YVSVVTSTLNKRSTPKIATRPKVNGLGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQRAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|189230480|gb|ACD85220.1| hemagglutinin [Influenza A virus
(A/Cottbus/1/1964(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPKYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSKACAVSGEPSFFRNMVWLTKKGPNYPVAKGSYNNTSGEQMLIIWGVHHPKDEAEQRALYQNVGT
YVSASTSTLNKRSTPEIAARPEVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFNNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEKESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|94481532|gb|ABF21275.1| hemagglutinin [Influenza A virus (A/Taiwan/1964(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSMACAVSGKPSFFRNMVWLTEKGTNYPVAKGSYNNTSGEQMLIIWGVHHPNDEAEQRALYQKVGT
YVSASTSTLNKRSIPEIAARPKVNGLGSRMEFSWTLLDMWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDNECMD
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|408515|gb|AAA43090.1| hemagglutinin [Influenza A virus (A/Berlin/3/64 (H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSQACAVSGKPSFFRNMVWLTKKGPNYPVAKGSYNNTSGEQMLIIWGVHHPNDEAEQRALYQKVGT
YVSEATSTLNKRSTPEIAARPKVSGLGSRMEFSWTLLDVWDTISFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFNNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
```

```
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|189230423|gb|ACD85187.1| hemagglutinin [Influenza A virus
(A/Berlin/3/1964(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKGSYNNTSGEQMLIIWGVHHPKDEAEQRALYQEVGT
YVSASTSTLNKRSTPEIAARPEVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFNNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|189230442|gb|ACD85198.1| hemagglutinin [Influenza A virus
(A/Potsdam/2/1965(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDGWTQH
TTTGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKRSYNNTSGEQMLIIWGVHHPTDEAEQRALYQEVGT
YVSASTSTLNKRSTPEIAARPEVNGLRSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLGFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|188504407|gb|ACD56324.1| hemagglutinin [Influenza A virus
(A/Moscow/1019/1965(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKNILEKTHNGRLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRNGLCYPGSFNDYEELKHLLSSVKHFEKVRILPKDRWTQH
TTTGSSRACAVSGNPSFFRNMVWLTKKESNYPVAKGSYNNTSGEQMLIIWGVHHPIDETEQRTLYQNVGT
YVSVGTSTLNKRSTPDIATRPKVNGLGSRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TERTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIEPRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|221326|dbj|BAA02774.1| hemagglutinin [Influenza A virus (A/Izumi/5/65(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGNFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKGSYNNTSGEQMLIIWGVHHPNDEAEQRALYQEVGT
YVSASTSTLNKRSIPEIAARPKVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFNNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|221324|dbj|BAA02775.1| hemagglutinin [Influenza A virus (A/Izumi/5/65(R)(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGNFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKGSYNNTSGEQMLIIWGVHHPNDEAEQRALYQEVGT
YVSASTSTLNKRSIPEIAARPKVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKENSVIEKMNTQFEAVGKEFNNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|133755366|gb|ABO38701.1| hemagglutinin [Influenza A virus
(A/Albany/6/1967(H2N2))]
MAIIYFILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVRILPKDGWTQH
TTSGGSKACAVSGKSSFFRNMVWLTKKGPNYPVAKRSYNNTSGEQMLIIWGVHHPKDEAEQRALYQKVGT
YVSASTSTLNKRSTPEIAARPEVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYNKVRMQLRDNVKELGNGCFEFYHKCDDECMS
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMIAGISLWMCSNGSLQCRI
CI
>gi|133755385|gb|ABO38712.1| hemagglutinin [Influenza A virus
(A/Albany/7/1967(H2N2))]
MAIIYFILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVRILPKDGWTQH
TTSGGSKACAVSGKSSFFRNMVWLTKKGPNYPVAKRSYNNTSGEQMLIIWGVHHPKDEAEQRALYQKVGT
YVSASTSTLNKRSTPEIAARPEVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYNKVRMQLRDNVKELGNGCFEFYHKCDDECMS
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMIAGISLWMCSNGSLQCRI
CI
```

```
>gi|133755404|gb|ABO38723.1| hemagglutinin [Influenza A virus
(A/Albany/3/1967(H2N2))]
MAIIYFILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVRILPKDGWTQH
TTSGGSKACAVSGKSSFFRNMVWLTKKGPNYPVAKRSYNNTSGEQMLIIWGVHHPNDEAEQRALYQKVGT
YVSASTSTLNKRSTPEIAARPEVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNTQFEAVGKEFSNLEKRLGNL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYNKVRMQLRDNVKELGNGCFEFYHKCDDECMS
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMIAGISLWMCSNGSLQCRI
CI
>gi|146760028|gb|ABQ44438.1| hemagglutinin [Influenza A virus
(A/Albany/4/1967(H2N2))]
MAIIYFILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SITGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVRILPKDGWTQH
TTSGGSKACAVSGKSSFFRNMVWLTKKGPNYPVAKRSYNNTSGEQMLIIWGVHHPNDEAEQSALYQKVGT
YVSASTSTLNKRSTPEIAARPEVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYNKVRMQLRDNVKELGNGCFEFYHKCDDECMS
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMIAGISLWMCSNGSLQCRI
CI
>gi|133982571|gb|ABO44101.1| hemagglutinin [Influenza A virus
(A/Albany/8/1967(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDGWTQH
KTDGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKRSYNNTSGEQMLIIWGVHHPNDEAEQRALYQKVGT
YVSASTSTLNKRSTPEIAARPEVSGLGSRMEFSWTLLDVWDTISFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMIAGISFWMCSNGSLQCRI
CI
>gi|133981962|gb|ABO44057.1| hemagglutinin [Influenza A virus
(A/Albany/9/1967(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDGWTQH
ETDGGSKACAVSGKASFFRNMVWLTKRGPNYQVAKRSYNNTSGEQMLIIWGVHHPKDEAEQRALYQKVGT
YVSASTSTLNKRSTPEIAARPEVNGLESRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNIQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMIAGISFWMCSNGSLQCRV
CI
>gi|189230518|gb|ACD85242.1| hemagglutinin [Influenza A virus
(A/Tashkent/1046/1967(H2N2))]
MAIIYLILLFATVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSLNDYEELKHLLSSVKHFEKVRILPKDRWTQH
TTTGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKGSYNNTSGEQMLIIWGVHHPKDEAEQRALYQEVGT
YVSASTSTLNKRSIPEIAARPEVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSMIEKMNTQFEAVGKEFNNLEKRLENL
DKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYEKVRMQLRDNVKELGNGCFEFYHKCDNECMN
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMVAGISFWMCSNGSLQCRI
CI
>gi|189230537|gb|ACD85253.1| hemagglutinin [Influenza A virus
(A/Johannesburg/617/1967(H2N2))]
MAIIYLILLFATVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYNLCYPGSLNEYEELKHLLSSVKHFEKVRILPKDRWTQH
TTTGGSKACAVSGEPSFFRNMVWLTKKGPNYPVAKGSYNNTSGEQMLIIWGVHHPNDEAEQRALYQKVGT
YVSASTSTLNKRSIPEIAARPKVNGLGSRMEFFWTLLDVWDTINFESTGNLVVPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFETVGKEFNNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYEKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMVAGISFWMCSNGSLQCRI
CI
>gi|194351979|gb|ACF54389.1| hemagglutinin [Influenza A virus
(A/Georgia/1/1967(H2N2))]
MAIIYLILLFATVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSLNDYEELKHLLSSVKHFEKVRILPKDRWTQH
TTTGGSKACAVSGKPSFFRNMVWLTKKGTNYPVAKGSYNNTSGEQMLIIWGVHHPIDEAEQRALYQEVGT
YVSASTSTLNKRSIPEIAARPEVNGLGSRMEFSWTLLDVWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFNNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYEKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMVAGISFWMCSNGSLQCRI
CI
```

```
>gi|408523|gb|AAA43247.1| hemagglutinin [Influenza A virus (A/Korea/426/68 (H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSWACAVSGKPSFFRNMVWLTRKGSNYPVAKGSYNNTSGEQMLIIWGVHHPNDEAEQRALYQNVGT
YVSVATSTLYKRSIPEIAARPKVNGLGRRMEFSWTLLDMWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFNGITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDNECMD
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|408513|gb|AAA43089.1| hemagglutinin [Influenza A virus (A/Berkeley/1/68 (H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDGWTQH
ETTGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKGSYNNTSGEQMLIIWGVHHPNDEAEQRALYQEVGT
YVSEATSTLNKRSTPEIAARPKVSGLGSRMEFSWTLLDMWDTISFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLKRNEIKGVELSSMGVYQILAIYATVAGSLSLAIMIAGISFWMCSNGSLQCRI
CI
>gi|194304556|gb|ACF41691.1| hemagglutinin [Influenza A virus
(A/Berkeley/1/1968(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDGWTQH
ETDGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKRSYNNTSGEQMLIIWGVHHPNDEAEQRALYQEVGT
YVSASTSTLNKRSTPEIAARPKVSGLGSRMEFSWTLLDVWDTISFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLKRNEIKGVELSSMGVYQILAIYATVAGSLSLAIMIAGISFWMCSNGSLQCRI
CI
>gi|134047427|gb|ABO52247.1| hemagglutinin [Influenza A virus
(A/Albany/1/1968(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDGWTQH
KTDGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKRSYNNTSGEQMLIIWGVHHPNDEAEQRALYQKVGT
YVSASTSTLNKRSTPEIAARPEVSGLGSRMEFSWTLLDVWDTISFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGPRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMIAGISFWMCSNGSLQCRI
CI
>gi|188504369|gb|ACD56302.1| hemagglutinin [Influenza A virus (A/North
Carolina/1/1968(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPKYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGPNYPVAKGSYNNTSGEQMLIIWGVHHPIDEAEQIALYQKVGT
YVSASTSTLNKRSTPEIAARPEVNGLGSRMEFSWTLLDMWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMD
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|188504388|gb|ACD56313.1| hemagglutinin [Influenza A virus
(A/Korea/426/1968(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSMACAVSGKPSFFRNMVWLTTKGPNYPVAQGSYNNTSGEQMLIIWGVHHPNDEAEQRALYQKVGT
YVSASTSTLYKRSIPEIAARPKVNGLGSRMEFSWTLLDMWDTINFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDNECMD
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
>gi|133755423|gb|ABO38734.1| hemagglutinin [Influenza A virus
(A/Albany/2/1968(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
SIAGWLLGNPECDRLLRVPEWSYIMEKENPRYSLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDGWTQH
KTDGGSKACAVSGKPSFFRNMVWLTKKGPNYPVAKRSYNNTSGEQMLIIWGVHHPNDEAEQRALYQKVGT
YVSASTSTLNKRSTPEIAARPEVSGLGSRMEFSWTLLDVWDTISFESTGNLVAPEYGFKISKRGSSGIMK
TEGTLGNCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDRITNKVNSVIEKMNTQFEAVGKEFSNLEKRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLKRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMIAGISFWMCSNGSLQCRI
CI
>gi|63054902|gb|AAY28987.1| hemagglutinin [Influenza A virus (A/Canada/720/05(H2N2))]
MAIIYLILLFTAVRGDQICIGYHANNSTEKVDTILERNVTVTHAKDILEKTHNGKLCKLNGIPPLELGDC
```

```
SIAGWLLGNPECDRLLSVPEWSYIMEKENPRDGLCYPGSFNDYEELKHLLSSVKHFEKVKILPKDRWTQH
TTTGGSRACAVSGNPSFFRNMVWLTKKGSNYPVAQGSYNNTSGEQMLIIWGVHHPNDETEQRTLYQNVGT
YVSVGTSTLNKRSTPEIATRPKVNGQGGRMEFSWTLLDMWDTINFESTGNLIAPEYGFKISKRGSSGIMK
TEGTLENCETKCQTPLGAINTTLPFHNVHPLTIGECPKYVKSEKLVLATGLRNVPQIESRGLFGAIAGFI
EGGWQGMVDGWYGYHHSNDQGSGYAADKESTQKAFDGITNKVNSVIEKMNTQFEAVGKEFSNLERRLENL
NKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRMQLRDNVKELGNGCFEFYHKCDDECMN
SVKNGTYDYPKYEEESKLNRNEIKGVKLSSMGVYQILAIYATVAGSLSLAIMMAGISFWMCSNGSLQCRI
CI
```

H3N2

```
>gi|85816052|gb|ABC84389.1| hemagglutinin [Influenza A virus (A/Beijing/1/68(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|80977928|gb|ABB54514.1| hemagglutinin [Influenza A virus (A/Memphis/1/68(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGINCTLIDALLGDPHCDVFQDETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|193805114|gb|ACF22210.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-
1/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|193805171|gb|ACF22243.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-
5/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|193805209|gb|ACF22265.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-
7/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|148628604|gb|ABQ97200.1| hemagglutinin [Influenza A virus (A/Hong Kong/68(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGNGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQESGRVTVSTRRSQQSIIPNIGSRPWVRGQSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMSSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194304746|gb|ACF41801.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-11-MA21-
3/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
```

```
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLEINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|106907813|gb|ABF83447.1| hemagglutinin [Influenza A virus (A/Northern
Territory/60/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNNTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGGVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|145279136|gb|ABP49514.1| hemagglutinin [Influenza A virus
(A/Albany/10/1968(H3N2))]
MKTIIALSYIFYLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194294011|gb|ACF40100.1| hemagglutinin [Influenza A virus
(A/Oregon/01/2008(H3N2))]
MKTIIALSYILCLVFAQKFPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKNWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNENFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDIGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCIALLGFIMWACQKGNI
RCNICI
>gi|194580029|gb|ACF75879.1| hemagglutinin [Influenza A virus
(A/Florida/14/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|189303163|gb|ACD85638.1| hemagglutinin [Influenza A virus
(A/Texas/05/2008(H3N2))]
MKTIIALSYILCLVFAQKFPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKNWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNENFDKLYIWGIHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPXVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCIALLGFIMWACQKGNI
RCNICI
>gi|194293991|gb|ACF40090.1| hemagglutinin [Influenza A virus
(A/Washington/04/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTMVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRXRXRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194294015|gb|ACF40102.1| hemagglutinin [Influenza A virus
(A/Minnesota/06/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
```

```
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194293979|gb|ACF40084.1| hemagglutinin [Influenza A virus (A/New
Jersey/15/2008(H3N2))]
MKTIIALSYILCLVFAQKFPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKNWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNENFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIRSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCIALLGFIMWACQKGNI
RCNICI
>gi|193084875|gb|ACF10327.1| hemagglutinin [Influenza A virus
(A/Texas/06/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSXCIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194294019|gb|ACF40104.1| hemagglutinin [Influenza A virus
(A/Minnesota/07/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIXSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
XIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|193084879|gb|ACF10329.1| hemagglutinin [Influenza A virus (A/Iowa/01/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194294003|gb|ACF40096.1| hemagglutinin [Influenza A virus
(A/Illinois/09/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194294007|gb|ACF40098.1| hemagglutinin [Influenza A virus (A/South
Carolina/03/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194293983|gb|ACF40086.1| hemagglutinin [Influenza A virus
(A/Tennessee/04/2008(H3N2))]
MKTIIALSYILCLVFAQKFPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKNWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
```

```
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNDENFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCIALLGFIMWACQKGNI
RCNICI
>gi|193084883|gb|ACF10331.1| hemagglutinin [Influenza A virus (A/Iowa/02/2008(H3N2))]
MKTIIALSYILCLVFAQKFPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKNWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNENFDKLYIWGIHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFKIKGVELKSGYKDWILWISFAISCFLLCIALLGFIMWACQKGNI
RCNICI
>gi|194293995|gb|ACF40092.1| hemagglutinin [Influenza A virus (A/New
Jersey/14/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRDIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194294023|gb|ACF40106.1| hemagglutinin [Influenza A virus (A/New
York/09/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRXRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|193805266|gb|ACF22298.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-
12/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|60753|emb|CAA24269.1| haemagglutinin [Influenza A virus (A/Aichi/2/68(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGIHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEEMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194304632|gb|ACF41735.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-1-MA-
12/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIWSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGNYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194304670|gb|ACF41757.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-9-MA21-
2/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRNGK
```

```
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194352017|gb|ACF54411.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-
8/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194352093|gb|ACF54455.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-8-MA21-
3/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIESRPWVRGLSSRISIYWTIVNPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|14009692|gb|AAK51718.1| hemagglutinin [Influenza A virus (A/Hong
Kong/1/68(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|125664195|gb|ABN51099.1| hemagglutinin [Influenza A virus
(A/Albany/11/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKMNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|125664233|gb|ABN51121.1| hemagglutinin [Influenza A virus
(A/Albany/19/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGINCTLIDALLGDPHCDVFQDETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGTCPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDLEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|134047618|gb|ABO52357.1| hemagglutinin [Influenza A virus
(A/Albany/17/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCIFECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|148910822|gb|ABR18477.1| hemagglutinin [Influenza A virus (A/Aichi/2/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
```

```
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|148910824|gb|ABR18478.1| hemagglutinin [Influenza A virus (A/Aichi/2/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194304651|gb|ACF41746.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-9-MA21-
1/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRINIYWTIVKPGDVLVINSNGNLIAPRGYFKMRNGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194304765|gb|ACF41812.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-12-MA21-
1/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSRQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHNVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|118420992|dbj|BAF37221.1| hemagglutinin [Influenza A virus
(A/Aichi/2/1968(H3N2))]
MKTIIALSYIFCLAIGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPSSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVGGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194352074|gb|ACF54444.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-8-MA21-
1/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|194352112|gb|ACF54466.1| hemagglutinin [Influenza A virus (A/Hong Kong/1-12-MA21-
3/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSRQTIIPNIGSRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHNVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|126567435|dbj|BAF48361.1| haemagglutinin [Influenza A virus
(A/Aichi/2/1968(H3N2))]
MKTIIALSYIFCLALGQDLPGNDNSTATLCLGHHAVPNGTLVKTITDDQIEVTNATELVQSSSTGKICNN
PHRILDGIDCTLIDALLGDPHCDVFQNETWDLFVERSKAFSNCYPYDVPDYASLRSLVASSGTLEFITEG
FTWTGVTQNGGSNACKRGPGSGFFSRLNWLTKSGSTYPVLNVTMPNNDNFDKLYIWGVHHPSTNQEQTSL
YVQASGRVTVSTRRSQQTIIPNIESRPWVRGLSSRISIYWTIVKPGDVLVINSNGNLIAPRGYFKMRTGK
SSIMRSDAPIDTCISECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNVPEKQTRGLFGA
IAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRVIEKTNEKFHQIEKEFSEVEG
```

```
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRRQLRENAEDMGNGCFKIYHKCD
NACIESIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQRGNI
RCNICI
>gi|189303143|gb|ACD85628.1| hemagglutinin [Influenza A virus
(A/Idaho/03/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSKCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEKFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRDIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|189303103|gb|ACD85608.1| hemagglutinin [Influenza A virus
(A/Tennessee/02/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYXDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|189303139|gb|ACD85626.1| hemagglutinin [Influenza A virus
(A/Virginia/02/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSSCIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINEKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194293999|gb|ACF40094.1| hemagglutinin [Influenza A virus
(A/Vermont/02/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNEEFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|188076381|gb|ACD47217.1| hemagglutinin [Influenza A virus
(A/Wisconsin/07/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNINRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|189303151|gb|ACD85632.1| hemagglutinin [Influenza A virus
(A/Wisconsin/10/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRBIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194293953|gb|ACF40071.1| hemagglutinin [Influenza A virus
(A/Memphis/28/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
```

```
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194293949|gb|ACF40069.1| hemagglutinin [Influenza A virus
(A/Florida/10/2008(H3N2))]
MKTIIALSYILCLVFAKKFPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKNWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNENFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDIILINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCIALLGFIMWACQKGNI
RCNICI
>gi|188076407|gb|ACD47230.1| hemagglutinin [Influenza A virus
(A/Virginia/01/2008(H3N2))]
MKTIIALSYILCLVFAQKFPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKNWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNENFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCIALLGFIMWACQKGNI
RCNICI
>gi|189303115|gb|ACD85614.1| hemagglutinin [Influenza A virus
(A/Florida/07/2008(H3N2))]
MKTIIALSSILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTIANDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEKFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFLEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194293957|gb|ACF40073.1| hemagglutinin [Influenza A virus
(A/Georgia/07/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|188076387|gb|ACD47220.1| hemagglutinin [Influenza A virus
(A/Wisconsin/08/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|193084867|gb|ACF10323.1| hemagglutinin [Influenza A virus (A/North
Carolina/01/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|193084863|gb|ACF10321.1| hemagglutinin [Influenza A virus (A/New
York/06/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFKNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNKEKFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRLRVRDIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
```

```
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|189303147|gb|ACD85630.1| hemagglutinin [Influenza A virus
(A/Oklahoma/01/2008(H3N2))]
MKTIIALSYILCLVFAQKFPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKNWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNENFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRDIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCIALLGFIMWACQKGNI
RCNICI
>gi|189303155|gb|ACD85634.1| hemagglutinin [Influenza A virus
(A/Missouri/01/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194293961|gb|ACF40075.1| hemagglutinin [Influenza A virus
(A/Indiana/05/2008(H3N2))]
MKTIIALSYILCLVFAQKFPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKNWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNENFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCIALLGFIMWACQKGNI
RCNICI
>gi|189303159|gb|ACD85636.1| hemagglutinin [Influenza A virus
(A/Georgia/04/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHSKFKYPALNVTMPNNEEFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194293971|gb|ACF40080.1| hemagglutinin [Influenza A virus
(A/Arkansas/05/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICNS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSXCIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRDIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|194293975|gb|ACF40082.1| hemagglutinin [Influenza A virus
(A/Washington/03/2008(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSSSTGEICDS
PHQILDGENCTLIDALLGDPQCDGFQNKKWDLFVERXKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEQFDKLYIWGVHHPGTDNDQIFL
YAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGFIMWACQKGNI
RCNICI
>gi|90571879|gb|ABD94932.1| hemagglutinin [Influenza A virus (A/New
York/600/1996(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTKEG
FNWTGVAQDGTSYACKRGSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSISNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
```

```
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|109675432|gb|ABG37142.1| hemagglutinin [Influenza A virus (A/New
York/577/1996(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQGSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|91126541|gb|ABE13323.1| hemagglutinin [Influenza A virus (A/New
York/578/1996(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQGSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|89784791|gb|ABD77884.1| hemagglutinin [Influenza A virus (A/New
York/588/1996(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQGSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|89789541|gb|ABD78115.1| hemagglutinin [Influenza A virus (A/New
York/584/1996(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSDCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQDGTSYACKRGSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRNEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|14030469|gb|AAK52911.1|AF363503_1 hemagglutinin [Influenza A virus
(A/Paris/906/97(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTKEG
FNWTGVAQDGTSYACKRGSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|14030467|gb|AAK52910.1|AF363502_1 hemagglutinin [Influenza A virus
(A/Paris/896/97(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTKEG
FNWTGVAQDGTSYACKRGSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|14030471|gb|AAK52912.1|AF363504_1 hemagglutinin [Influenza A virus
(A/Paris/908/97(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERTKAYSNCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQNGTSYACKRGSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
```

```
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|89938645|gb|ABD79167.1| hemagglutinin [Influenza A virus (A/New
York/579/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTKEG
FNWTGVAQDGTSYACKRGSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|89923293|gb|ABD79134.1| hemagglutinin [Influenza A virus (A/New
York/564/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGKNCTLIDALLGDPHCDGFQNKKWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTKEG
FNWTGVAQDGTSYACKRGSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSISNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|194268899|gb|ACF36373.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK4245/1997(H3N2))]
MKTIIALSYILCMVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDDFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|194268907|gb|ACF36377.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK4391/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQDGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGIHHPSTDSDQTSL
YVHASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|194268913|gb|ACF36380.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK4542/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQDGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVHASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|194268911|gb|ACF36379.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK4529/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDN
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQDGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVHASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|194268915|gb|ACF36381.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK4622/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDN
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQDGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVHASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
```

```
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|194268917|gb|ACF36382.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK4803/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQDGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVHASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|194268561|gb|ACF36204.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK12160/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYVSLRSLVASSGTLEFNNES
FNWTGVAQNGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YAQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|194268575|gb|ACF36211.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK12566/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVNTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQDGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVHASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNIC
>gi|194268573|gb|ACF36210.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK12563/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQDGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVHASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|194268581|gb|ACF36214.1| hemagglutinin [Influenza A virus (A/Hong
Kong/CUHK12626/1997(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHRILDGKNCTLIDALLGDPHCDGFQNKEWDLFVERSTAYSNCYPYDVPDYASLRSLVASSGTLEFTNEG
FNWTGVAQDGTSYACKRRSVKSFFSRLNWLHKLEYKYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YVHASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIDNCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|14486408|gb|AAK62042.1| hemagglutinin [Influenza A virus (A/Hong
Kong/1180/99(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSMATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGENCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSSACKRRSIKSFFSRLNWLHQLKYRYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YAQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMMDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|46981871|gb|AAT08002.1| hemagglutinin [Influenza A virus (A/Moscow/10/99(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGENCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSSSCKRRSIKSFFSRLNWLHQLKYRYPALNVTMPNNDKFDKLYIWGVHHPSTDSDQTSL
YTQASGRVTVSTKRSQQTVIPNIGSRPWVRGISSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMMDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
```

```
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|115607670|gb|ABJ16598.1| hemagglutinin [Influenza A virus (A/New South
Wales/17/1999(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICNS
PHQILDGENCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSSACKRRSIKSFFSRLNWLHQLKYKYPALNVTMPNNEKFDKLYIWGVHHPSTDSDQISL
YAQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|115521598|gb|ABJ09250.1| hemagglutinin [Influenza A virus (A/New South
Wales/2/1999(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGENCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSSACKRRSNKSFFSRLNWLHQLKYKYPALNVTMPNNEKFDKLYIWGIHHPSTDSDQISL
YAQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNETYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|115521636|gb|ABJ09272.1| hemagglutinin [Influenza A virus (A/New South
Wales/6/1999(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICNS
PHQILDGENCTLIDALLGDPHCDGFQNKEWDLFVERRKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSSACKRRSIKSFFSRLNWLHQLKYKYPALNVTMPNNEKFDKLYIWGVHHPSTDSDQISL
YAQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKDVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|92090508|gb|ABE73114.1| hemagglutinin [Influenza A virus
(A/Panama/2007/1999(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVSNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGENCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSSACKRRSNNSFFSRLNWLHQLKYKYPALNVTMPNNEKFDKLYIWGVHHPSTDSDQISI
YAQASGRVTVSTKRSQQTVIPNIGSIPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|92090510|gb|ABE73115.1| hemagglutinin [Influenza A virus (A/Moscow/10/99(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVPNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGENCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSSACKRRSIKSFFSRLNWLHQLENRYPALNVTMPNNDKFDKLYIWGVHHPSTDSVQTSV
YVQASGRVTVSTKRSQQTVIPNIGSRPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMMDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTRKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|94481528|gb|ABF21273.1| hemagglutinin [Influenza A virus
(A/Panama/2007/1999(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVSNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGENCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSSACKRRSNKSFFSRLNWLHQLKYKYPALNVTMPNNEKFDKLYIWGVHHPSTDSDQISI
YAQASGRVTVSTKRSQQTVIPNIGSSPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI
>gi|14275704|emb|CAC40044.1| haemagglutinin [Influenza A virus (A/Hong
Kong/1774/99(H3N2))]
MKTIIALSYIFCMVLGQDLPGKGNNTATLCLGHHAVPNGTLVKTITDDQVEVTNATELVQNLSMGKICSN
PHRILDGANCTLIDALLGDPHCDGFQNEKWDLFIERSKAFSNCYPYDVPEHASLRSLIASSGTLEFVNES
FNWTGVTQNGGSNACKRGPDSSFFSRLNWLYKSGNTYPMLNVTMPNSDGFDKLYIWGVHHPSTDREQINL
YVQASGKITVSTKRSQQTIIPNVGSRPWVRGLSSRISIYWTIVKPGDILIISSNGNLIAPRGYFKVHTGK
SSIMRSDAPIETCSSECITPNGSIPNDKPFQNVNKITYGACPKYVKQNTLKLATGMRNIPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRVIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFEKTRKQLRENAEDMGNGCLKIYHKCD
NSCIDSIRNGTYDHNEYRDEALNNRFQIKSVELKTGYKDWILWISFAISCFLLCVVWLGFIMWACQKGNI
```

```
RCNIC
>gi|194352295|gb|ACF54554.1| hemagglutinin [Influenza A virus
(A/Panama/2007/1999(H3N2))]
MKTIIALSYILCLVFAQKLPGNDNSTATLCLGHHAVSNGTLVKTITNDQIEVTNATELVQSSSTGRICDS
PHQILDGENCTLIDALLGDPHCDGFQNKEWDLFVERSKAYSNCYPYDVPDYASLRSLVASSGTLEFNNES
FNWTGVAQNGTSSACKRRSNKSFFSRLNWLHQLKYKYPALNVTMPNNEKFDKLYIWGVHHPSTDSDQISI
YAQASGRVTVSTKRSQQTVIPNIGSSPWVRGVSSRISIYWTIVKPGDILLINSTGNLIAPRGYFKIRSGK
SSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGMRNVPEKQTRGIFGA
IAGFIENGWEGMVDGWYGFRHQNSEGTGQAADLKSTQAAINQINGKLNRLIEKTNEKFHQIEKEFSEVEG
RIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSEMNKLFERTKKQLRENAEDMGNGCFKIYHKCD
NACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSGYKDWILWISFAISCFLLCVVLLGFIMWACQKGNI
RCNICI

H5N1

>gi|3421260|gb|AAC32100.1| hemagglutinin subtype H5 [Influenza A virus (A/Hong
Kong/482/97(H5N1))]
MEKIVLLLATVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILERTHNGKLCDLNGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKASPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSN
HDASSGVSSACPYLGRSSFFRNVVWLIKKNSAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPEIATRPKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNTPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVKNGTYDYPQYSEEARLNREEISGVKLESMGTYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|54402287|gb|AAV34704.1| hemagglutinin [Influenza A virus (A/Thailand/4(SP-
528)/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|58618438|gb|AAW80717.1| hemagglutinin HA [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|113494676|gb|ABI36040.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC184/2005(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDGAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQRAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI
>gi|113494698|gb|ABI36044.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC292N/2005(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILNPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI
>gi|113494703|gb|ABI36045.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC292T/2005(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILNPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
```

```
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI
>gi|113494709|gb|ABI36046.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC326N/2006(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILNPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI
>gi|113494718|gb|ABI36047.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC326N2/2006(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILNPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI
>gi|113494735|gb|ABI36049.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC326T/2006(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILNPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI
>gi|113495235|gb|ABI36056.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC370T/2006(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILKDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNSLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNGSLQCRICI
>gi|113495243|gb|ABI36057.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC390/2006(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILKDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKESYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNKLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNGSLQCRICI
>gi|124098875|gb|ABM90456.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC1031T2/2007(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNNEAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNGSLQCRICI
>gi|118864330|gb|ABI49415.2| hemagglutinin [Influenza A virus
(A/Indonesia/CDC759/2006(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEXSSGVSSACPYLGSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWAILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNG
SLQCRICI
>gi|118864126|gb|ABL31744.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC835/2006(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
```

```
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNG
SLQCRICI
>gi|157103062|gb|ABV23940.1| hemagglutinin [Influenza A virus
(A/Iraq/756/2006(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
LNVPEWSYIVEKINPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYQGR
SSFFRNVVWLIKKDNAYPTIKRSYNNTNQEDLLVLWGIHHPSDAAEQTRLYRNPTTYISVGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPENAYKIVKKGDSTIMKSELEYGNCNTKCQT
PIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRCDNECMESVRNGTYDYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQCRICI
>gi|159144911|gb|ABW90130.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKFSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|159144913|gb|ABW90131.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIEKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|159144915|gb|ABW90132.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNNAAEQTELYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|159144917|gb|ABW90133.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKPSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|159144923|gb|ABW90136.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKPSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|159144925|gb|ABW90137.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKTSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
```

```
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|50296053|gb|AAT73274.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCR
>gi|50296057|gb|AAT73276.1| hemagglutinin [Influenza A virus (A/Viet
Nam/3062/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
S
>gi|148767765|gb|ABR10842.1| hemagglutinin [Influenza A virus (A/China/2006(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYQGTPSFFRNVIWLIKKNNTYPTIKRSYNNTNQEDLLILWGIHHSNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRMDFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
LKSEVEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNKLVLATGLRNSPLRERRRKRGLFGA
IAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLER
RIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLKDNAKELGNGCFEFYHKCD
NECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGS
LQCRICI
>gi|158604874|gb|ABW74708.1| hemagglutinin [Influenza A virus
(A/Indonesia/TLL008/2006(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRSVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNG
SLQCRICI
>gi|4457129|gb|AAD21155.1| hemagglutinin [Influenza A virus (A/Hong
Kong/516/97(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILERTHNGKLCDLNGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKASPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSNHDASSGVSSACPYLGR
SSFFRNVVWLIKKNSAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNPTTYISVGTSTLNQRLV
PEIATRPKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNTPQRERRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLERRIENFNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESVKNGTYDYP
QYSEEARLNREEISGVKLESMGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQCRICI
>gi|4457134|gb|AAD21160.1| hemagglutinin [Influenza A virus (A/Hong
Kong/542/97(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILERTHNGKLCDLNGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKASPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSNHDASSGVSSACPYLGR
SSFFRNVVWLIKKNSSYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNPTTYISVGTSTLNQRLV
PEIATRPKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNTPQRERRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADQESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESVKNGTYDYP
QYSEEARLNREEISGVKLESMGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQCRICI
>gi|4457136|gb|AAD21162.1| hemagglutinin [Influenza A virus (A/Hong
Kong/532/1997(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILERTHNGKLCDLNGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKASPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSNHDASSGVSSACPYLGR
SSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNPTTYISVGTSTLNQRLV
PEIATRPKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNTPQRERRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADQESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESVKNGTYDYP
```

```
QYSEEARLNREEISGVKLESMGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQCRICI
>gi|4457138|gb|AAD21164.1| hemagglutinin [Influenza A virus (A/Hong
Kong/514/97(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILERTHNGKLCDLNGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKASPANDLCYPGNFNDYEELKHLLSRINHFEKIQMIPKSSWSNHDASSGLSSACPYLGK
SSFFRNVVWLIKKNSSYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNPTTYISVGTSTLNQRLV
PEIATRPKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNTPHRERRRKKRGLFGAIARFIEGGWQGMVDG
WYGYHHSNEQGSGYAADQESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESVKNGTYDYP
QYSEEARLNREEISGVKLESMGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLLCRICI
>gi|8307803|gb|AAF74330.1|AF084280_1 hemagglutinin [Influenza A Virus (A/Hong
Kong/483/97(H5N1))]
MEKIVLLLATVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILERTHNGKLCDLNGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKASPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSN
HDASSGVSSACPYLGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPEIATRPKVNGQSGRIEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNAPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADQESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVKNGTYDYPQYSEEARLNREEISGVKLESMGTYQILSLYSTVASSLALAIMVAGLSLW
>gi|8307805|gb|AAF74331.1|AF084281_1 hemagglutinin [Influenza A virus (A/Hong
Kong/486/97(H5N1))]
MEKIVLLLATVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILERTHNGKLCDLNGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKASPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSN
HDASSGVSSACPYLGRSSFFRNVVWLIKKNSAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPEIATRPKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNTPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVKNGTYDYPQYSEEARLNREEISGVKLESMGTYQILSIYSTVASSLALAIMVAGLSLW
>gi|4457132|gb|AAD21158.1| hemagglutinin [Influenza A virus (A/HongKong/97/98(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILERTHDGKLCDLNGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKASPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSNHDASSGVSSACPYLGR
SSFFRNVVWLIKKNSAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNPTTYISVGTSTLNQRLV
PEIATRPKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNTPHRERRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADQESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESVKNGTYDYP
QYSEEARLNREEISGVKLESMGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQCRICI
>gi|71013498|dbj|BAE07201.1| hemagglutinin [Influenza A virus (A/Hong
Kong/213/03(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPANDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKNSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNNAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQNGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|145284462|gb|ABP51975.1| hemagglutinin [Influenza A virus (A/Hong
Kong/213/2003(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPANDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKNSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNNAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQNGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|148340806|gb|ABQ58979.1| hemagglutinin [Influenza A virus
(A/Beijing/01/2003(H5N1))]
MEKIVLLLAIISLVKSDQICIGSHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKASPANDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSN
HEASSGVSSACPYLGRPSFFRNVVWLIKKNNTYPTIKRSYNNTNQEDLLVLWGIHHPNDEAEQIKLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRMEFFWAILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNAPQREGRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAIGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYEKVRLQLRDNAKGLGNGCFEFYHKC
DNECMESVKNGTYDYPQYSEEATLNREEISGVKLESMGTYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|145284448|gb|ABP51968.1| hemagglutinin [Influenza A virus
(A/Prachinburi/6231/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
```

```
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|159895958|gb|ABX10515.1| hemagglutinin [Influenza A virus
(A/Thailand/16/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEVSLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLKDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|118722729|gb|ABL10088.1| hemagglutinin [Influenza A virus (A/Thailand/1(KAN-
1A)/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSEVNGQSGRMEFFWTILKPNDAINFESNGNFVAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAANKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|156992239|gb|ABU99108.1| hemagglutinin [Influenza A virus
(A/Vietnam/1196/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|159144901|gb|ABW90125.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSYWSS
HEASLGVSSACPYQGKSSFFRNVVWLTKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|159144907|gb|ABW90128.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIEKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|145284464|gb|ABP51976.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1194/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|118864224|gb|ABL31766.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC836T/2006(H5N1))]
MEKIVLLLAIVSFVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
```

```
HEASSGVSSACPYLGSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWAILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNG
SLQCRICI
>gi|118864183|gb|ABL31755.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC836/2006(H5N1))]
MEKIVLLLAIVSFVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWAILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNG
SLQCRICI
>gi|118864380|gb|ABL31780.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC887/2006(H5N1))]
MEKIVLLLSIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKGSWSD
HEASSGVSSACPYLRSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNNEAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNG
SLQCRICI
>gi|118574870|gb|ABL07008.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC938/2006(H5N1))]
MEKIVLLLSIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSPSFFRNVVWLTKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNNEAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYSNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNG
SLQCRICI
>gi|118574889|gb|ABL07019.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC938E/2006(H5N1))]
MEKIVLLLSIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSPSFFRNVVWLTKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNNEAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYSNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNG
SLQCRICI
>gi|118574908|gb|ABL07030.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC940/2006(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWAILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMIAGLSLWMCSNG
SLQCRICI
>gi|145843656|gb|ABP96845.1| hemagglutinin [Influenza A virus (A/Egypt/1394-
NAMRU3/2007(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCNLDGVKPLILRD
CSVAGWLLGNPMCDEFLNVPEWSYIVEKINPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKNSWSD
HEASGVSSACPYQGRSSFFRNVVWLTKRDNAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQXRLYQNPT
TYISVGTSTLNQRLVPKIATRSKVNGQXGRMEFFWTILKSNDAINFESNGNFIAPENAYKIVKKGDSTIM
KSELEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRKKRGLFGA
IAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLER
RIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRCD
NECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGS
LQCRICI
>gi|145843658|gb|ABP96846.1| hemagglutinin [Influenza A virus (A/Egypt/1604-
NAMRU3/2007(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFLNVPEWSYIVEKINPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSD
```

```
HEASSGVSSACPYQGRSSFFRNVVWLIKKDNAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRIEFFWTILKSNDAINFESNGNFIAPENAYKIVKKGDSTI
MKSELEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLFLWMCSNG
SLQCRICI
>gi|145843660|gb|ABP96847.1| hemagglutinin [Influenza A virus (A/Egypt/1731-
NAMRU3/2007(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFLNVPEWSYIVEKINPANDLCYPGNFNNYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYQGRSSFFRNVVWLIKKDNAYPTIKRSYNNTNQEDLLILWGIHHPNDAAEQTRLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKSNDAINFESNGNFIAPENAYKIVKKGDSTI
MKSELEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVAGSLALAIMVAGLFLWMCSNG
SLQCRICI
>gi|145843662|gb|ABP96848.1| hemagglutinin [Influenza A virus (A/Egypt/1902-
NAMRU3/2007(H5N1))]
MEKIVLLLAIVNLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFLNVPEWSYIVEKINPANDLCYPGTFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPHQGRSSFFRNVVWLIKKNNAYPTIKISYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKSNDAINFESNGNFIAPENAYKIVKKGDSTI
MKSELEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|145843664|gb|ABP96849.1| hemagglutinin [Influenza A virus (A/Egypt/2256-
NAMRU3/2007(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFLNVPEWSYIVEKINPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYQGRSSFFRNVVWLIKKDNAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKSNDAINFESNGNFIAPENAYKIVKKGDSTI
MKSELEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRC
DNECIESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLFLWMCSNG
SLQCRICI
>gi|145843668|gb|ABP96851.1| hemagglutinin [Influenza A virus (A/Egypt/2331-
NAMRU3/2007(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFLNVPEWSYIVEKINPANDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSD
YEASSGVSSACPYQGRSSFFRNVVWLIKKNNAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQIRLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKSNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRRKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLFLWMCSNG
SLQCRICI
>gi|182382596|gb|ACB87573.1| hemagglutinin [Influenza A virus
(A/Jiangsu/1/2007(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYQGTPSFFRNVVWLIKKNNTYPTIKRSYNNTNQENLLILWGIHHSNDAAEQIKLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRMDFFWTILKPNDAINFESNGNFIAPEYAYKIVKEGDSAI
MKSEVEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNKLVLATGLRNSPLRERRRKRGLFGA
IAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLER
RIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDRVRLQLRDNAKELGNGCFEFYHKCD
NECMESVRNGTYDYPQYSEEARLKREEISGVKLESMGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGS
LQCRICI
>gi|145843666|gb|ABP96850.1| hemagglutinin [Influenza A virus (A/Egypt/2321-
NAMRU3/2007(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFLNVPEWSYIVEKINPANDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSD
YEASSGVSSACPYQGRSSFFRNVVWLIKKNNAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQIRLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKSNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRRKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLFLWMCSNG
SLQCRICI
>gi|145843670|gb|ABP96852.1| hemagglutinin [Influenza A virus (A/Egypt/2616-
NAMRU3/2007(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFLNVPEWSYIVEKINPANDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSD
```

```
YEASSGVSSACPYQGRSSFFRNVVWLIKKNNAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQIRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKSNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRRKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIINKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESMGIYQILSIYSTVASSLALAIMVAGLFLWMCSNG
SLQCRICI
>gi|145843674|gb|ABP96854.1| hemagglutinin [Influenza A virus (A/Egypt/2621-
NAMRU3/2007(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCNLDGVKPLILRD
CSVAGWLLGNPMCDEFLNVPEWSYIVEKINPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKNSWSD
HEASGVSSACPYQGRSSFFRNVVWLTKKDNAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPT
TYISVGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKSNDAINFESNGNFIAPENAYKIVKKGDSTIM
KSELEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQGERRRKKRGLFGA
IAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLER
RIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHRCD
NECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLFLWMCSNGS
LQCRICI
>gi|46578416|gb|AAS89004.2| hemagglutinin [Influenza A virus (A/Thailand/3(SP-
83)/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|93008393|gb|ABE97627.1| hemagglutinin [Influenza A virus
(A/Vietnam/CL20/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFDDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVMWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCR
>gi|145284466|gb|ABP51977.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|145284468|gb|ABP51978.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1204/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|145284482|gb|ABP51985.1| hemagglutinin [Influenza A virus
(A/Thailand/Kan353/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|159144905|gb|ABW90127.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
```

```
HEASLGVSSACPYQGESSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|159144909|gb|ABW90129.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSAYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTELYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|159144921|gb|ABW90135.1| hemagglutinin [Influenza A virus (A/Viet
Nam/1203/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKKHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLINKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRETRGLFGAIAG
FIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIE
NLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNEC
MESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGSLQC
RICI
>gi|126361918|gb|ABO10181.1| hemagglutinin [Influenza A virus (A/Viet
Nam/JP178/2004(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVMWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRVCI
>gi|126361922|gb|ABO10183.1| hemagglutinin [Influenza A virus (A/Viet
Nam/JP4207/2005(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVMWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRIEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|157955881|gb|ABW06367.1| hemagglutinin [Influenza A virus
(A/Indonesia/7/2005(H5N1))]
MEKIMLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSSSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECIESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNG
SLQCRICI
>gi|93008405|gb|ABE97633.1| hemagglutinin [Influenza A virus
(A/Vietnam/CL119/2005(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILKD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGRSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVMWGIHHPNDAAEQTRLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQC
>gi|126361924|gb|ABO10184.1| hemagglutinin [Influenza A virus (A/Viet
Nam/JP14/2005(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
```

```
HEASLGVSAACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVMWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPLHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|78096576|dbj|BAE46949.1| hemagglutinin [Influenza A virus
(A/Hanoi/30408/2005(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWLS
HEASLGVSSACPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRERRKKRGLFGA
IAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLER
RIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCD
NECMESVRNGTYDYPQYSEEAKLKRGEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNGS
LQCRICI
>gi|85680918|gb|ABC72655.1| hemagglutinin [Influenza A virus
(A/Thailand/676/2005(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKPNPANDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASVGVSSVCPYQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQREKRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAIMVAGLSLWMCSNG
SLQCRICI
>gi|87137941|gb|ABD28182.1| hemagglutinin [Influenza A virus
(A/Guangxi/1/2005(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPANDLCYPGNFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGGSSACPYQGTPSFFRNVVWLIKKNNTYPTIKRSYNNTNQEDLLILWGIHHSNDAAEQTKLYQNP
TTYISVGTSTLNQRLVPKIATRSKVNGQSGRMDFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSEVEYGNCNTKCQTPIGAINSSMPFHNIHPLTIGECPKYVKSNKLVLATGLRNSPLRERRRKRGLFGA
IAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLER
RIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCD
NECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMVAGLSLWMCSNGS
LQCRICI
>gi|116295112|gb|ABJ98529.1| hemagglutinin [Influenza A virus
(A/Thailand/RPNP/2005(H5N1))]
LVKSDQICIGYHANLSTERVDTIREKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPM
CDEFINVPEWSYIVEKANPANDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSSHEASLGVSSACP
YQGKSSFFRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTKLYQNPTTYISVGTSTLN
QRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTIMKSELEYGNCNT
KCQTPMGAINSSMPFHNIHPLTIGECPTYVKSNRLVLAPGLRNSPQREXRRKKRGLFGAIAGFIEGGWQG
MVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNXLERRIENLNKXMED
XFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESVRXGT
YDYPQYSEEARLKREEISGVKLESIGIYQILSIYSPVASSLAQAIMVAGLSLWMCFNGSFIR
>gi|116295116|gb|ABJ98531.1| hemagglutinin [Influenza A virus
(A/Thailand/HA20/2005(H5N1))]
MEKIVLLFAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPVNDLCYPGDFNDYEELKHLLSRINHFEKIQIIPKSSWSS
HEASLGVSSACPYQGKSSFFRNVVWLIKKTSTYPTIKRSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISVGTSTLNQRLVPRIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSTI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQKERRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNEKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESVRNGTYDYPQYSEEARLKREEISGVKLESIGIYQILSIYSTVASSLALAITVAGLSLWMCSNG
SL
>gi|113494436|gb|ABI36012.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC7/2005(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
SSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECIESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI
>gi|157955845|gb|ABW06347.1| hemagglutinin [Influenza A virus
(A/Indonesia/160H/2005(H5N1))]
MEKIMLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDGAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
```

```
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQRAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNG
SLQCRICIK
>gi|157955864|gb|ABW06358.1| hemagglutinin [Influenza A virus
(A/Indonesia/175H/2005(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNGLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNP
TTYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNG
SLQCRICIK
>gi|113494681|gb|ABI36041.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC194P/2005(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNGLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI
>gi|157955826|gb|ABW06336.1| hemagglutinin [Influenza A virus
(A/Indonesia/195H/2005(H5N1))]
MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRD
CSVAGWLLGNPMCDEFINVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSD
HEASSGVSSACPYLGSPSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDVAEQTRLYQNP
ATYISIGTSTLNQRLVPKIATRSKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDSAI
MKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLATGLRNSPQRESRRKKRGLFG
AIAGFIEGGWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLE
RRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKC
DNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNG
SLQC
>gi|113494687|gb|ABI36042.1| hemagglutinin [Influenza A virus
(A/Indonesia/CDC287E/2005(H5N1))]
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDILEKTHNGKLCDLDGVKPLILRDCSVAGWLLGNPMCDEF
INVPEWSYIVEKANPTNDLCYPGSFNDYEELKHLLSRINHFEKIQIIPKSSWSDHEASSGVSSACPYLGS
PSFFRNVVWLIKKNSTYPTIKKSYNNTNQEDLLVLWGIHHPNDAAEQTRLYQNPTTYISIGTSTLNQRLV
PKIATRSKVNGQSGRMEFFWTILNPNDAINFESNGNFIAPEYAYKIVKKGDSAIMKSELEYGNCNTKCQT
PMGAINSSMPFHNIHPLTIGECPKYVKSNRLVLAKGLRNSPQRESRRKKRGLFGAIAGFIEGGWQGMVDG
WYGYHHSNEQGSGYAADKESTQKAIDGVTNKVNSIIDKMNTQFEAVGREFNNLERRIENLNKKMEDGFLD
VWTYNAELLVLMENERTLDFHDSNVKNLYDKVRLQLRDNAKELGNGCFEFYHKCDNECMESIRNGTYNYP
QYSEEARLKREEISGVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI
```

Neuraminidase

H1N1

```
>gi|8572181|gb|AAF77042.1|AF250362_1 neuraminidase [influenza A virus
(A/duck/Alberta/35/76(H1N1))]
MNPNQKIITIGSICMAIGIISLMLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVVSVTLAGNSSLCPIGGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78095594|gb|ABB19417.1| neuraminidase [Influenza A virus (A/mallard
duck/ALB/65/1976(H1N1))]
MNPNQKIITIGSICMAIGIISLMLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVVSVTLAGNSSLCPIGGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
```

```
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78097953|gb|ABB20505.1| neuraminidase [Influenza A virus (A/mallard
duck/ALB/35/1976(H1N1))]
MNPNQKIITIGSICMAIGIISLMLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVVSVTLAGNSSLCPIGGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|113531187|dbj|BAF03628.1| neuraminidase [Influenza A virus
(A/duck/Miyagi/66/77(H1N1))]
MNPNQKIITIGSLCMVVGIISLILQIGNIISIWVSHSIQTGNQNQPETCNQSIITYENNTWVNQTYINIS
NTNFAAEQAVASVALAGNSSLCPISGWAIYSKDNGIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACMNGSCFTVMTDGPSNGQASYKIFKIEKGRVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMVWDPNGWTETDSSFSMKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|37955297|gb|AAO62048.1| neuraminidase [Influenza A virus
(A/duck/Miyagil/9/77(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWVSHSIQTGNQNQPETCNQSIITYENNTWVNQTYINIS
NTNFAAEQAVASVALAGNSSLCPISGWAIYSKDNGIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACMNGSCFTVMTDGPSNGQASYKIFKIEKGRVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMVWDPNGWTETDSSFSMKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78095767|gb|ABB19521.1| neuraminidase [Influenza A virus (A/mallard
duck/ALB/46/1977(H1N1))]
MNPNQKIITIGSICMAIGIISLMLQIGNIISIWVSHSIQTGNQNHPETCNQSIITYENNTWVNQTYINIS
NTNLIAEQAVASVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPIGEAPSPYNSRFESVAWSASACHDGIGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNHHYEECS
CYPDAGEIMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78096022|gb|ABB19670.1| neuraminidase [Influenza A virus (A/mallard
duck/ALB/127/1977(H1N1))]
MNPNQKIITIGSICMAIGIISLMLQIGNIISIWVSHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVVSVTLLGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
MITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78095786|gb|ABB19532.1| neuraminidase [Influenza A virus (A/pintail
duck/ALB/219/1977(H1N1))]
MNPNQKIITIGSICMAIGIISLMLQIGNIISIWVSHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVASVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFIQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78095805|gb|ABB19543.1| neuraminidase [Influenza A virus (A/pintail
duck/ALB/238/1979(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
MITDTIKSWRNNTLRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78095824|gb|ABB19554.1| neuraminidase [Influenza A virus (A/mallard
duck/ALB/965/1979(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78097742|gb|ABB20381.1| neuraminidase [Influenza A virus
(A/duck/AUS/749/1980(H1N1))]
MNPNQKIITIGSTCMVIGIISLILQIGNIISIWVSHSIQTGNQNQPETCNQSVITYENKTWVNQTYVNIS
NTNLVIERDVISVALLGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
```

```
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTVGISGPDNGAVAVLKYNG
IITDTVKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEIMCVCRDNWHGSNRPWVSFNRNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGKGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|189312997|gb|ACD88519.1| neuraminidase [Influenza A virus
(A/turkey/KS/4880/1980(H1N1))]
MNTNQRIITIGTICLIVGIVSLLLQIGNIVSLWISHSIQTGEKNHPEVCNQSVITYENNTWVNQTYVNIS
NTNIAAGQGVTPIILAGNSSLCPISGWAIYSKDNSIRIGSKGDIFVMREPFISCSHLECRTFFLTQGALL
NDRHSNGTVRDRSPYRTLMSCPIGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNKILRTQESECVCINGSCFTIMTDGPSNGQASYKIFKMEKGKIIKSIELDAPNYHYEECS
CYPDTGKVVCVCRDNWHASNRPWVSFDQNLDYQIGYICSGVFGDNPRSNDGKGNCGPVLSNGANGVKGFS
FRYGNGVWIGRTKSISSRSGFEMIWDPNGWTETDSSFSMKQDIIALTDWSGYSGSFVQHPELTGMNCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVNSETASWSWPDGADLPFTIDK
>gi|78103339|gb|ABB21775.1| neuraminidase [Influenza A virus
(A/pigeon/MN/1407/1981(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACTNGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEIMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115278678|gb|ABI84736.1| neuraminidase [Influenza A virus (A/mallard
duck/Tennessee/11464/1985(H1N1))]
MNPNQKIITIGSICMVIGIISLALQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPATLAGNSSLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSNLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACMNGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIIAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVSSDTVGWSWPDGAELPFTIDK
>gi|8572173|gb|AAF77038.1|AF250358_1 neuraminidase [Influenza A virus
(A/Duck/Ohio/175/86 (H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAIAPMTLAGNSSLCSISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNDILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELSAPNYHYEECS
CYPDAGEVMCVCRDNWHGSNRPWVSFNQNLEYRIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGAWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|8572175|gb|AAF77039.1|AF250359_1 neuraminidase [Influenza A virus
(A/Duck/Ohio/30/86 (H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAIAPMTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNDILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELSAPNYHYEECS
CYPDAGEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|8572177|gb|AAF77040.1|AF250360_1 neuraminidase [Influenza A virus
(A/Duck/Ohio/194/86 (H1N1))]
MNPNQKIITIGSICMAIGMISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NINLVAEQVVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777931|gb|ABU95361.1| neuraminidase [Influenza A virus (A/blue-winged
teal/LA/B228/1986(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQVAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTVGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193877823|gb|ACF25582.1| neuraminidase [Influenza A virus
(A/turkey/SD/7034/1986(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWISHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSTYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
```

```
>gi|193877620|gb|ACF25464.1| neuraminidase [Influenza A virus (A/blue winged
teal/LA/B228/1986(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQVAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTVGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777939|gb|ABU95365.1| neuraminidase [Influenza A virus (A/green-winged
teal/LA/213GW/1987(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACMNGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVSSDTVGWSWPDGAELPFTIDK
>gi|193877878|gb|ACF25613.1| neuraminidase [Influenza A virus
(A/turkey/MO/21939/1987(H1N1))]
MNTNQRIITIGTICLIVGIVSLLLQIGNIVSLWISHSIQTGEKNHPEICNQNVITYENNTWVNQTYVNIS
NTNIAAGQGVTSIILAGNSSLCPISGWAIYSKDNSIRIGSKGDIFVIREPFISCSHLECRTFFLTQGALL
NDRHSNGTVKDRSPYRTLMSCPIGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITDTIRSWRNKILRTQESECVCINGSCFTIMTDGPSNGQASYKIFKMEKGKIIKSIELDAPNYHYEECS
CYPDTGKVVCVCRDNWHASNRPWVSFDQNLDYQIGYICSGVFGDNPRSNDGKGNCGPVLSNGANGVKGFS
FRYGNGVWIGRTKSISSRSGFEMIWDPNGWTETDSSFSMKQDIIASTDWSGYSGSFVQHPELTGMDCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVDSETASWSWPDGADLPFTIDK
>gi|39840720|emb|CAC95054.1| neuraminidase [Influenza A virus
(A/turkey/France/87075/87(H1N1))]
MNPNQKVITIGSICMTIGIASLMLQIGNIISIWVSHSIQIGNQNQPETCNQSVITYENNTWVNQTYVNIS
NTNFVAEQAVVSVKLAGNSSLCPISGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTIKDRSPYRTLMSCPVGEVPSPYNSKFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACMNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELDAPNYHYEECS
CYPDSGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGIFGDSPRPNDGTGSCGPVSSKGANGVKGFS
FKYNNGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVKQDIVGITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|110733283|gb|ABG88215.1| neuraminidase [Influenza A virus (A/green-winged
teal/Ohio/430/1987(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLITEQTAVPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|189313201|gb|ACD88706.1| neuraminidase [Influenza A virus
(A/turkey/NC/19762/1988(H1N1))]
MNTNQRIITIGTVCLIVGIVSLLLQIGNIVSLWISHSIQTGEKNHSEICSQNVITYENNTWVNQTYVNIS
NTNIADGQGVTSIILAGNSSLCPISGWAIYSKDNSIRIGSKGDIFVIREPFISCSHLECRTFFLTQGALL
NDRHSNGTVKDRSPYRTLMSCPIGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNKILRTQESECVCINGSCFTIMTDGPSNGQASYKIFKMEKGKIIKSVELDAPNYHYEECS
CYPDTGKVVCVCRDNWHASNRPWVSFDQNLDYQIGYICSGVFGDNPRSNDGKGNCGPVLSNGANGVKGFS
FRYGNGVWIGRTKSISSRSGFEMIWDPNGWTETDSSFSIKQDIIALTDWSGYSGSFVQHPELTGMNCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVDSETASWSWPDGADLPFTIDK
>gi|78095921|gb|ABB19610.1| neuraminidase [Influenza A virus (A/mallard
duck/ALB/322/1988(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSMKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193877860|gb|ACF25603.1| neuraminidase [Influenza A virus (A/turkey/IA/10271-
3/1990(H1N1))]
MNTNQRIITIGTVCMIVGIVSLLLQIGNIVSLWISHSIQTGEKNHSEICSQNVITYENNTWVNQTYVNIS
NTNIADGQGVTSIILAGNSPLCPISGWAIYSKDNSIRIGSKGDIFVIREPFISCSHLECRTFFLTQGALL
NDRHSNGTIKDRSPYRTLMSCPIGEAPSPYNSRFESVAWSASACHDGIGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNKILRTQESECVCINGSCFTIMTDGPSNGQASYKIFKMEKGKIIKSVELDAPNYHYEECS
CYPDTSKVVCVCRDNWHASNRPWISFDQNLDYQIGYICSGVFGDNPRSNDGKGNCGPVLSNGANGVKGFS
FRYGNGVWIGRTKSISSRSGFEMIWDPNGWTETDSSFSIKQDIIALTDWSGYSGSFVQHPELTGMNCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVDSETASWSWPDGADLPFTIDK
>gi|110733264|gb|ABG88204.1| neuraminidase [Influenza A virus
(A/mallard/Ohio/171/1990(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
```

```
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|37955311|gb|AAO62055.1| neuraminidase [Influenza A virus
(A/mallard/Alberta/99/91(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHLIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IIIDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|189313182|gb|ACD88695.1| neuraminidase [Influenza A virus
(A/chicken/PA/35154/1991(H1N1))]
MNTNQRIITIGTICLIVGIVSLLLQIGNIVSLWISHSIQTGEKNHPEVCNQSVITYENNTWVNQTYVNIS
NTNIAAGQGVTPIILAGNSSLCPISGWAIYSKDNSIRIGSKGDIFVMREPFISCSHLECRTFFLTQGALL
NDRHSNGTVRDRSPYRTLMSCPIGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNKILRTQESECVCINGSCFTIMTDGPSNGQASYKIFKMEKGKIIKSIELDAPNYHYEECS
CYPDTGKVVCVCRDNWHASNRPWVSFDQNLDYQIGYICSGVFGDNPRSNDGKGNCGPVLSNGANGVKGFS
FRYGNGVWIGRTKSISSRSGFEMIWDPNGWTETDSSFSMKQDIIALTDWSGYSGSFVQHPELTGMNCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVNSETASWSWPDGADLPFTIDK
>gi|193877842|gb|ACF25593.1| neuraminidase [Influenza A virus (A/turkey/IA/21089-
3/1992(H1N1))]
MNTNQRIITIGTVCLIVGIVSLLLQIGNIVSLWISHSIQTGEKNHSEICNQNIITYENNTWVNQTYVNIS
NTNIADGQGVTSIILAGNSSLCPIGGWAIYSKDNSIRIGSKGDIFVIREPFISCSHLECRTFFLTQGALL
NDRHSNGTVKDRSPYRTLMSCPIGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNKILRTQESECVCINGSCFTIMTDGPSNGQASYKIFKMEKGKIIKSVELDAPNYHYEECS
CYPDTGKVVCVCRDNWHASNRPWVSFDQNLDYQIGYICSGVFGDNPRSNDGKGNCGPVLSNGANGVKGFS
FRYGNGVWIGRTKSISSRSGFEMIWDPDGWTETDSSFSIKQDIIALTDWSGYSGSFVQHPELTGMNCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVDSETASWSWPDGADLPFTIDK
>gi|115278019|gb|ABI84398.1| neuraminidase [Influenza A virus (A/blue-winged
teal/Alberta/141/1992(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLGCMRP
CFWVELIRGKPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|8572179|gb|AAF77041.1|AF250361_1 neuraminidase [Influenza A virus
(A/Duck/Ohio/118C/93 (H1N1))]
MNPNQKIITIGSVCMAIGIISLVLQIGNIISIWVSHSIQTGSQNRPETCNQSVITYENNTWVNQTYINIS
NTNLIAEKTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777943|gb|ABU95367.1| neuraminidase [Influenza A virus
(A/quail/IN/38685/1993(H1N1))]
MNPNQKIITIGSVCMVIGIISLVLQVGNIISIWVSHSIQTGSQNRPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQDLDYQIGYICSGVFGDNPRPNDGTGNCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|189313163|gb|ACD88684.1| neuraminidase [Influenza A virus
(A/quail/IN/38685/1993(H1N1))]
MNPNQKIITIGSVCMVIGIISLVLQVGNIISIWVSHSIQTGSQNRPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQDLDYQIGYICSGVFGDNPRPNDGTGNCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|120433647|gb|ABM21963.1| neuraminidase [Influenza A virus
(A/mallard/Ohio/118/1993(H1N1))]
MNPNQKIITIGSVCMAIGIISLVLQIGNIISIWVSHSIQTGSQNRPETCNQSVITYENNTWVNQTYINIS
NTNLIAEKTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
```

```
>gi|115289126|gb|ABI92184.1| neuraminidase [Influenza A virus (A/black
duck/Ohio/95/1993(H1N1))]
MNPNQKIITIGSVCMAIGIISLVLQIGNIISIWVSHSIQTGSQNRPETCNQSVITYENNTWVNQTYINIS
NTNLIAEKTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777935|gb|ABU95363.1| neuraminidase [Influenza A virus (A/duck/NY/13152-
13/1994(H1N1))]
MNPNQKIITIGSVCMVIGIISLVLQIGNIISIWVSHSIQTGSQNRPETCNQSVITYENNTWVNQTYINIS
NTNLITEQTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCSVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152623|gb|ABS70430.1| neuraminidase [Influenza A virus (A/duck/NY/13152-
13/1994(H1N1))]
MNPNQKIITIGSVCMAIGIISLVLQIGNIISIWVSHSIQTGSQNRPETCNQSVITYENNTWVNQTYINIS
NTNLITEQTAAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCSVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVIKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154154393|gb|ABS70441.1| neuraminidase [Influenza A virus (A/duck/NJ/7717-
70/1995(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQSHPETCNQSVITYENNTWVNQTYINIS
NTNLVAEQTVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777933|gb|ABU95362.1| neuraminidase [Influenza A virus (A/duck/NJ/7717-
70/1995(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIRVSHSIQTGSQSHPETCNQSVITYENNTWVNQTYINIS
NTNLVAEQTVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777937|gb|ABU95364.1| neuraminidase [Influenza A virus (A/duck/NY/15024-
21/1996(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQSHPETCNQSVITYENNTWVNQTYINIS
NTNLVAEQTVAPVILAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNVLRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|113531191|dbj|BAF03630.1| neuraminidase [Influenza A virus
(A/duck/Hokkaido/55/96(H1N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQPEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEQAVTSVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVCVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDSGEITCVCRDNWHGSNRPWVSFNQDLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLNCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78095855|gb|ABB19572.1| neuraminidase [Influenza A virus
(A/mallard/Alberta/267/1996(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQRHPETCNQSVITYENNTWVNQTYIDIS
NTNLIAEQTVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFDQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|49357281|gb|AAT65399.1| neuraminidase [Influenza A virus
(A/mallard/Alberta/211/98(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
```

```
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193876870|gb|ACF25034.1| neuraminidase [Influenza A virus (A/chicken/NY/21665-
73/1998(H1N1))]
MNTNQRIITIGTVCLIVGIVSLLLQIGNIISLWISHSIQIGGKNHSEVCNQNIITYENKTWVNQTYLNIS
NTNIAEGQGVTSIILAGNSSLCPVGGWAIYSKDNSIRIGSKGDIFVIREPFISCSHLECRTFFLTQGALL
NDRHSNGTVKDRSPYRTLMSCPIGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNKILRTQESECVCINGSCFTIMTDGPSNGQASYKIFKMEKGKIIKSVELEAPNYHYEECS
CYPDTGKVVCVCRDNWHASNRPWVSFDQNLDYQIGYICSGVFGDNPRSNDGKGNCGPVPSNGANGVKGFS
FRYGNGVWIGRTKSTISRSGFEMIWDPNGWTETDSSFSIKQDIISLTDWSGYSGSFVQHPELTGMNCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVDSGTVSWSWPDGADLPFTIDK
>gi|78095864|gb|ABB19577.1| neuraminidase [Influenza A virus
(A/mallard/ALB/201/1998(H1N1))]
MNPNQKIITIGSICMVIGIISLMLQIGNIISIWVSHSIQTGSRNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSYVQHPELTGLNCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|119365220|gb|ABL67069.1| neuraminidase [Influenza A virus
(A/pintail/Ohio/25/1999(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQSHPETCNQSVITYENNTWVNQTYVNIS
NTNLIAEQTVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFDQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|110733359|gb|ABG88259.1| neuraminidase [Influenza A virus
(A/mallard/Ohio/56/1999(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQSHPETCNQSVITYENNTWVNQTYVNIS
NTNLIAEQTVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFDQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|116069871|gb|ABJ53430.1| neuraminidase [Influenza A virus
(A/mallard/Ohio/66/1999(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQSHPETCNQSVITYENNTWVNQTYVNIS
NTNLIAEQTVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFDQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|119365201|gb|ABL67058.1| neuraminidase [Influenza A virus (A/green-winged
teal/Ohio/72/1999(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQSHPETCNQSVITYENNTWVNQTYVNIS
NTNLIAEQTVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFDQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|27466288|gb|AAN85704.1| neuraminidase [Influenza A virus (A/Quail/Nanchang/12-
340/2000(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSYPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKRWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNSHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YRYGNGVWIGRTKSNRFRKGFEMIWDPNGWTDTDSDFSVKQDVVAMTDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGRPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|78097232|gb|ABB20164.1| neuraminidase [Influenza A virus (A/Quail/Nanchang/12-
340/2000(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNSHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YRYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAMTDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGRPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
```

```
>gi|93204701|emb|CAG27352.1| neuraminidase [Influenza A virus (A/Pekin Duck/France/M-
2060/01 (H1N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQPEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEQAVVSVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTIKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEIICVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSPSSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|93204703|emb|CAG27353.1| neuraminidase [Influenza A virus (A/Mallard/France/D-
691/02 (H1N1))]
MNPNQKIITIGSICMVIGIASLMLQIGNIISIWVSHSIQTENQHQPEPCNQSIITYENNTWVNQTYINIS
NTNLPTEQAVASMTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSNLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNFHYEECS
CYPDASEIICVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|93204705|emb|CAG27354.1| neuraminidase [Influenza A virus (A/Mallard/France/D-
710/02 (H1N1))]
MNPNQKIITIGSICMVIGIASLMLQIGNIISIWVSHSIQTENQHQPEPCNQSIITYENNTWVNQTYINIS
NTNLPTEQAVASMTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSNLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNFHYEECS
CYPDASEIICVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777941|gb|ABU95366.1| neuraminidase [Influenza A virus
(A/mallard/MD/321/2002(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCLISGWAIYSKDNGIRIGSKGDVFVSREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|159156228|gb|ABW94126.1| neuraminidase [Influenza A virus (A/mallard/MD/02-
163/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|159156232|gb|ABW94128.1| neuraminidase [Influenza A virus (A/mallard/MD/02-
358/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777945|gb|ABU95368.1| neuraminidase [Influenza A virus
(A/mallard/MD/163/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777947|gb|ABU95369.1| neuraminidase [Influenza A virus
(A/mallard/MD/168/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777949|gb|ABU95370.1| neuraminidase [Influenza A virus
(A/mallard/MD/170/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
```

```
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777951|gb|ABU95371.1| neuraminidase [Influenza A virus
(A/mallard/MD/181/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPATLAGNSSLCPISGWAIYSKDNGIRIGSKGDAFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777953|gb|ABU95372.1| neuraminidase [Influenza A virus
(A/mallard/MD/307/2002(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCLISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777955|gb|ABU95373.1| neuraminidase [Influenza A virus
(A/mallard/MD/322/2002(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCLISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTAGWSWPDGAELPFTIDK
>gi|156777957|gb|ABU95374.1| neuraminidase [Influenza A virus
(A/mallard/MD/334/2002(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCLISGWAIYSKDNGIRIGSKGDVFVIREPFVSCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777959|gb|ABU95375.1| neuraminidase [Influenza A virus
(A/mallard/MD/352/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777961|gb|ABU95376.1| neuraminidase [Influenza A virus
(A/mallard/MD/369/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPATLAGNSSLCPISGWAIYSKDNGIRIGSKGDAFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777963|gb|ABU95377.1| neuraminidase [Influenza A virus
(A/mallard/MD/382/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777965|gb|ABU95378.1| neuraminidase [Influenza A virus
(A/mallard/MD/390/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPATLAGNSSLCPISGWAIYSKDNGIRIGSKGDAFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
```

```
>gi|156777967|gb|ABU95379.1| neuraminidase [Influenza A virus
(A/mallard/MD/403/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777969|gb|ABU95380.1| neuraminidase [Influenza A virus
(A/mallard/MD/304/2002(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGGQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCLISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|156777971|gb|ABU95381.1| neuraminidase [Influenza A virus
(A/mallard/MD/350/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152413|gb|ABS70308.1| neuraminidase [Influenza A virus
(A/mallard/MD/161/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152449|gb|ABS70329.1| neuraminidase [Influenza A virus
(A/mallard/MD/168/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152468|gb|ABS70340.1| neuraminidase [Influenza A virus
(A/mallard/MD/170/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152485|gb|ABS70350.1| neuraminidase [Influenza A virus
(A/mallard/MD/352/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152519|gb|ABS70370.1| neuraminidase [Influenza A virus
(A/mallard/MD/369/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPATLAGNSSLCPISGWAIYSKDNGIRIGSKGDAFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152538|gb|ABS70381.1| neuraminidase [Influenza A virus
(A/mallard/MD/382/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
```

```
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152557|gb|ABS70392.1| neuraminidase [Influenza A virus
(A/mallard/MD/390/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPATLAGNSSLCPISGWAIYSKDNGIRIGSKGDAFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152576|gb|ABS70403.1| neuraminidase [Influenza A virus
(A/mallard/MD/403/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|154152595|gb|ABS70414.1| neuraminidase [Influenza A virus
(A/mallard/MD/406/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193877090|gb|ACF25157.1| neuraminidase [Influenza A virus (A/mallard/MD/02-
181/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193877071|gb|ACF25146.1| neuraminidase [Influenza A virus (A/mallard/MD/02-
184/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193877052|gb|ACF25135.1| neuraminidase [Influenza A virus (A/mallard/MD/02-
359/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193877033|gb|ACF25124.1| neuraminidase [Influenza A virus (A/mallard/MD/02-
375/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|189220496|gb|ACD85146.1| neuraminidase [Influenza A virus
(A/mallard/Maryland/350/2002(H1N1))]
MNPNQKIITIGSICMAIGVISLVLQIGNIISIWVSHSIQTGNQNHPEICNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSAKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
```

```
>gi|78095957|gb|ABB19631.1| neuraminidase [Influenza A virus (A/pintail
duck/Alberta/210/2002(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKMEQGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQDLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGKPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|167859464|gb|ACA04691.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/103/2003(H1N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQYQPEPCNQSIITYENNTWVNQTYVNIS
NTNFLAEQAVTSVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELSAPNYHYEECS
CYPDAGEIMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|167859468|gb|ACA04693.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/152/2003(H1N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQYQPEPCNQSIITYENNTWVNQTYVNIS
NTNFLAEQAVTSVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGTQVMGQASYKIFKIEKGKVVKSVELSAPNYHYEEC
SCYPDAGEIMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGF
SFKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMR
PCFWVELIRGRPKENTIWTSRSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|195958017|gb|ACG59855.1| neuraminidase [Influenza A virus
(A/mallard/MD/11/2003(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGGQSHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVALAGNSSLCPINGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGIFGDNPRPNDGTGSCGPMSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|195958000|gb|ACG59845.1| neuraminidase [Influenza A virus
(A/mallard/MD/199/2003(H1N1))]
MNPNQKIITIGSICMAIGIISLVLQIGNIISIWVSHSIQTGGQSHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVALAGNSSLCLINGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGIFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|167859136|gb|ACA04511.1| neuraminidase [Influenza A virus (A/muscovy duck/New
York/21211-5/2005(H1N1))]
MNPNQKIITIGSICIAIGAISLVLQIGNIISIWVSHSIQTGSQNHPETCNQSVITYENNTWVNQTYINIS
NTNLIAEQAVAPVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYND
IITDTIKSWRNDILRTQESECACINGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDASEVMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTSSRSGFEMIWDPNGWTETDNSFSVKQDIVAITDWSGYSGSFVQHPELTGMDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK

H2N2
>gi|116013110|dbj|BAF34378.1| neuraminidase [Influenza A virus
(A/duck/Hokkaido/95/01(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIERNITEIVYLNN
TTIEKEICPEVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPSKCYQFALGQGTTL
DNKHSNGTIHDRTPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIGSWSQNILRTQESECVCINGICTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMVDYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQVDRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|78097446|gb|ABB20232.1| neuraminidase [Influenza A virus (A/duck/Hong
Kong/319/1978(H2N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQHECNSPAINQVTPCEPIIIERNMTEIVYLNN
TTIEREICPEIAEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDKNATASFIYDGK
LADSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPQYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRLGYETFKVIGGWSTPNSKSQVNRQIIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|115278697|gb|ABI84747.1| neuraminidase [Influenza A virus (A/chicken/New
York/13828-3/1995(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPANNTVIEKEICPKAVDYRNWSKPQC
```

```
QITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTSKCYQFALGQGTTLDNKHSNGTIHDRIPHRTLLMNE
LGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGMLVDSIGSWSQNILRTQESECVC
INGTCTVVMTDGSASGKADTRILFIKEGKVVHISPLSGSAQHIEECSCYPRYPNVRCVCRDNWKGSNRPI
IDINIAEYSIDSSYVCSGLVGDTPRNDDSSSSNCRNPNNERGNPGVKGWAFDDGNDVWMGRTISKDSRS
GYETFRVIGGWATADSKSQTNRQVIVDNNNWSGYSGIFSVENKGCINRCFYVELIRGRPQETRVWWTSNS
IVVFCGTSGTYGTGSWPDGADINFMPI
>gi|115278716|gb|ABI84758.1| neuraminidase [Influenza A virus (A/guinea fowl/New
York/20221-11/1995(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSISANSQVVPCEPIIIERNITEIVYLND
TIIEKEICSKVVDYRSWSKPQCQITGFAPFSKDNSIRLSAGGDIWITREPYVSCDTSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIGSWSQNILRTQESECVCINGSCTVVMTDGSASGKADTRILFVKEGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDSGDDVWMGRTISRDSRSGYETFKVIGGWTTAHSKSQTSRQVIVDNNNWSGYSGIFSVEHKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|68164871|gb|AAY87411.1| neuraminidase [Influenza A virus (A/mallard/Postdam/178-
4/83(H2N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQHECNSPAINQVNPCEPIIVERNITEIVYLNS
TTIEREICPEAVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASLIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHVSPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDDGSDVWMGRTISKDSRSGYETFKVIGGWSTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|68164892|gb|AAY87423.1| neuraminidase [Influenza A virus (A/mallard/Postdam/178-
4/83(H2N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQHECNSPAINQVNPCEPIIVERNITEIVYLNS
TTIEREICPEAVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASLIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHVSPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDDGSDVWMGRTISKDSRSGYETFKVIGGWSTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|189313144|gb|ACD88673.1| neuraminidase [Influenza A virus (A/chicken/PA/298101-
4/2004(H2N2))]
MNPNQKIITIGSVSLTIAIVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIEKNITEIVYLNS
TTIEKEICPEVPEYRNWSKTQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPGKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWRGSNRPVIDINMADYSIDSSYICSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQIIVDNNNWSGYSGIFSVEGKGCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANIDFMPV
```

H3N2

```
>gi|119371724|emb|CAE00566.1| neuraminidase [Influenza A virus
(A/turkey/England/69(H3N2))]
MNPNQKIITIGSISLTIATVCFFMQIAILATTVTLHFKQHDCNLPANNQMVPCEPVIIERNITEIVYLNN
TTIEKEICPEVVKYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGTDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMSELGIPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIRSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHVSPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPIIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDNGDDIWMGRTISKDSRSGYETFRVIGGWSTPNAKSQVNRQVIVDNSKWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETKVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|82654670|gb|ABB88259.1| neuraminidase [Influenza A virus (A/duck/Hong
Kong/7/1975(H3N2))]
MNPNQKIITIGSVSLIIATICFLMQIAILATTVTLHFKQHECNSPATNQVTPCEPIIVERNITEIVYLNN
TTIEREICPEAVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTKILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGADINFMPI
>gi|418073|dbj|BAA04720.1| neuraminidase [Influenza A virus (A/duck/Hong
Kong/24/76(H3N2))]
MQIAILATTVTLHFKQHECNSPAINQVIPCEPIIIERNITEIVYLNNTTIEREVCPKIADYRNWSKPQCQ
ITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPGKCYQFALGQGTTLDNKHSNGTIHDRIPHRTLLMNEL
GVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGRLVDSIGSWSQNILRTQESECVCI
NGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSCYPRHPDVRCVCRDNWKGSNRPII
DINMADYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVKGWAFDNGDDVWMGRTISKDSRSG
YETFKGIGGWSTANSKSQVNRQIIVDNNNWSGYSGIFSIEGKSCIIRCFYVELIRGRPQETRVWWTSNSI
VVFCGTSGTYGTGSWPTGANINFMPI
>gi|82652548|gb|ABB87380.1| neuraminidase [Influenza A virus (A/pintail
duck/ALB/86/1976(H3N2))]
MNPNQKIITIGSVSLTITTVCFLMQIAILATTVTLHFKQNECSIPANNQIVPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
```

```
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSASSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQTNRQVIVDNNNWSGYSGIFSVESKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|116235393|dbj|BAF34925.1| neuraminidase [Influenza A virus
(A/duck/Hokkaido/5/1977(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSYNQVVPCEPIIIERNITAIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|418075|dbj|BAA04721.1| neuraminidase [Influenza A virus (A/duck/Hong
Kong/245/77(H3N2))]
MQIAILATTVTLHFKQHECNPPAINQVTPCEPIIIERNITEIVYLNNTTIEREVCPVIADYRNWSKPQCQ
ITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTLDNKHSNGTIHDRIPHRTLLMNEL
GVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGRLADSIGSWSQNILRTQESECVCI
NGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSCYPRFPNVRCVCRDNWKGSNRPII
DINMADYSIDSSYLCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVKGWAFDNGDDVWMGRTISKDSRSG
YETFKVIGGWSTPNSKSQVNRQVIVDNNNSSGYSGIFSVEGESCIIRCFYVELIRRRPQETRVWWTSNSL
VVFWGTSGTYGTGSWPDGANINFMPI
>gi|189312959|gb|ACD88497.1| neuraminidase [Influenza A virus
(A/duck/NY/6874/1978(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPANNQVVPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRSWSKPQCQITGFAPFSKDNSIRLSAGGDIWITREPYVSCDPNKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHICVTGDDRNATASFIYDGL
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQINRQVIVDNNNWSGYSGIFSVESKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|134044270|gb|ABO51832.1| neuraminidase [Influenza A virus
(A/mallard/Ohio/48/1986(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNGCSIPANNQVVPCEPIIIERNITEIVYLNN
TTIEKEICPKAVDYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHISPLSGNAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFRVIGGWATANSKSQTNRQVIVDNNNWSGYSGIFSVENKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|78096130|gb|ABB19734.1| neuraminidase [Influenza A virus (A/mallard
duck/ALB/144/1987(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPANNQVVPCEPIIIERNITEIVYLNN
TTIEKEICPKAVDYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFRVIGGWATANSKSQTNRQVIVDNNNWSGYSGIFSVENKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|118314107|gb|ABK80017.1| neuraminidase [Influenza A virus
(A/mallard/Ohio/424/1988(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPTNNQVVPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCKDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQTNRQVIVDNNNWSGYSGIFSVESKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|193877768|gb|ACF25550.1| neuraminidase [Influenza A virus (A/guinea fowl/NJ/8848-
18/1998(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPANNQVVPCEPIIIERNITEIVYLNN
TVIEKEICPKAIDYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFVYDGM
LVDSISSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDDGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQTNRQVIVDNNNWSGYSGIFSVENKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANIDFMPI
>gi|193877785|gb|ACF25560.1| neuraminidase [Influenza A virus (A/chicken/NY/11602-
12/1998(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSITANNQVAPCEPIIIERNITEIVYLNN
TVIEKEICPKTVDYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGI
LVDSISSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDDGNDVWMGRTISKDSRSGYETFRVIGGWATANSKLQTNRQVIVDNNNWSGYSGIFSVENKSCINR
CFYVELIRGRPQETRVWWTSNSIVAFCGTSGTYGTGSWPDGANINFMPI
>gi|193876809|gb|ACF25000.1| neuraminidase [Influenza A virus
(A/mallard/MN/290/1999(H3N2))]
```

```
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPANNQVVPCEPIIIERNITEIVYLNN
TVIEKEICPKAVDYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFVYDGM
LVDSISSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDDGNDVWMGRTISKDSRSGYETFRVIGGWSTANSKSQINRQVIVDNNNWSGYSGIFSVENKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|193877204|gb|ACF25223.1| neuraminidase [Influenza A virus
(A/mallard/MN/380/1999(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPANNQVVPCEPIIIERNITEIVYLNN
TVIEKEICPKAVDYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFVYDGM
LVDSISSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDDGNDVWMGRTISKDSRSGYETFKVIGGWSTANSKSQINRQVIVDNNNWSGYSGIFSVENKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|193876825|gb|ACF25009.1| neuraminidase [Influenza A virus
(A/mallard/MN/68/1999(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPANNQVVPCEPIIIERNITEIVYLNN
TVIEKEICPKAVDYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFVYDGM
LVDSISSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDDGNDVWMGRTISKDSRSGYETFRVIGGWSTANSKSQINRQVIVDNNNWSGYSGIFSVENKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|119502416|gb|ABL75566.1| neuraminidase [Influenza A virus (A/blue-winged
teal/Ohio/31/1999(H3N2))]
MNPNQKIITIGSVSLTIATACFLMQIAILATTVTLHFKQNECSTPANNQAVPCEPIIIERNITEIVYLNN
TILEKEICPKAVDYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWITREPYVSCDTSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHICVTGDDRNATASFIYDGM
LIDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIEEGKVVHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSVDSNYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDSGDDVWMGRTISKDSRSGYETFRVIGGWVTANSKSQTNRQVIVDNNNWSGYSGIFSVENKNCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|93204711|emb|CAG27357.1| neruaminidase [Influenza A virus (A/duck/Ontario/05/00
(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECDYPANNQAMPCEPIIIERNITEIVYLTN
TTIEKEVCPKLVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRTPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGYDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIVHTSPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINVKDYSINSSYVCSGLVGDTPRNNDRSSSSYCQNPNNEKGTHGVK
GWAFDDGNDVWMGRTISEDSRSGYETFKVIGGWSTPNSKLQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGREQETRVWWTSNSIVVFCGTSGTYGTGSWPDGADINIMPI
>gi|78097273|gb|ABB20188.1| neuraminidase [Influenza A virus (A/chicken/Nanchang/3-
120/2001(H3N2))]
MNPNQKIIAIGSVSLTIATICFLMQIAILATTMTLHFKQIGCSNPSNNQVVPCEPIIIEKNIVHLNSTTI
EKEICPKVVEYKNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGLGKCYQFALGQGTTLKNE
HSNGTTHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASIIYDGMLVD
SIGSWSKNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIREGKIVHISPLSGSAQHVEECSCYPR
YPEVRCVCRDNWKGSNRPVLYINMADYSIESSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGAPGVKGWA
FDNGNDIWMGRTIKEDSRSGYETFRVVGGWTTANSKSQINRQVIVDSENWSGYSGIFSVEGKNCINRCFY
VELIRGRPQETRVWWTSNSIIVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859368|gb|ACA04643.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/36/2002(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTITLHFKQNECSIPSNNQVMPCEPIIIERNITEMVYLNN
TIIEKELCPKVLEYRDWSKPQCQIAGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGNAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYVCSGLVGDTPRYDDSSSNSNCKDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|113901312|gb|ABI48009.1| neuraminidase [Influenza A virus (A/blue-winged
teal/Ohio/908/2002(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIEKNITEIVYLNR
TTIEKEICPEVPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPGKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGV
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMADYSIDSSYICSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|58429315|gb|AAW78084.1| neuraminidase [Influenza A virus
(A/dove/Korea/S11/03(H3N2))]
MNPNQKIIAIGSVSLTIATVCFLMQIAILATTVTLHFKQNGCSIPSNNQVVPCEPTIIERNITEVVYLNN
TTVEKEICPGMPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
```

```
GWAFDNENDVWMGRTISKDSRSGYETFKVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVAFCGTSGTYGTGSWPDGANINFMPI
>gi|167859408|gb|ACA04663.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/848/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVLEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPSYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859440|gb|ACA04679.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/855/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVLEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTHESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPSYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859488|gb|ACA04703.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/857/2003(H3N2))]
MNPNQKIITIGSVSLAIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVLEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPSYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|58429307|gb|AAW78080.1| neuraminidase [Influenza A virus
(A/duck/Korea/S7/03(H3N2))]
MNPNQKIIAIGSVSLTIATVCFLMQIAILATTVTLHFKQNGCSIPSNNQVVPCEPTIIERNITEVVYLNN
TTVEKEICPGMPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVSREPYVSCDPSKCYQFALGQGTTL
DNEHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFKVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVAFCGTSGTYGTGSWPDGANINFMPI
>gi|167859406|gb|ACA04662.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/838/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVLEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTRGPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPSYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMP
>gi|167859438|gb|ACA04678.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/770/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVLEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTHESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPSYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859442|gb|ACA04680.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/875/2003(H3N2))]
MNPNQKIITIGSVTLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVLEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGI
LVDSIGSWSQNILRTHESECVCTNGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPSYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859478|gb|ACA04698.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/866/2003(H3N2))]
MKPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVLEYRDWSKPQCQITGFAPFSKDNSIRLSAGRDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGKCIREGLILEYYFVKEGKIVHISPLSGSAQHIEECS
CYPSYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGV
KGWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCIN
RCFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859500|gb|ACA04709.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/852/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
```

```
TTIEKELCPKVLEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
FPSYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859430|gb|ACA04674.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/160/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNGCSIPSNNQIVPCEPIIVERNITEIVYLNN
TTIEKELCPKALEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSGCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCNNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|58429305|gb|AAW78079.1| neuraminidase [Influenza A virus
(A/chicken/Korea/S6/03(H3N2))]
MNPNQKIIAIGSVSLTIATVCFLMQIAILATTVTLHFKQNGCSIPSNNQVVPCEPTIIERNITEVVYLNN
TTVEKEICPGMPEYRNWSKPQWQITGVAPFSKDNSIRFSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFKVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVAFCGTSGTYGTGSWPDGANINFMPI
>gi|58429309|gb|AAW78081.1| neuraminidase [Influenza A virus
(A/duck/Korea/S8/03(H3N2))]
MNPNQKIIAIGSVSLTIATVCFLMQIAILATTVTLHFKQNGCSIPSNNQVVPCEPTIIERNITEVVYLNN
TTVEKEICPGMPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVSREPYVSCDPSKCYQFALGQGTTL
DNEHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFKVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVAFCGTSGTYGTGSWPDGANINFMPI
>gi|167859444|gb|ACA04681.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/901/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVLEYRDWSKPQCQITGFAPFSKDISIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGIPFHLGTKQVCIAWSSSSCHDGRAWLHVCVTGDDRDATASFIYGGM
LVDSIGSWSQNILRTHESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIIHISPLSGSAQHIEECSC
YPSYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|84626340|gb|ABC59711.1| neuraminidase [Influenza A virus
(A/turkey/Ohio/313053/04(H3N2))]
MNPNQKIITIGSVSLIIATICFLMQIAILVTTVTLHFKQHDCNSPPNNQVMLCEPTIIERNTTEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIGSWSKNILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQTNRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETKVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|167996870|gb|ACA14285.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM01/2004(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQVAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIYPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859456|gb|ACA04687.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/6/2004(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTITLHFKQNECSIPSNNQVMPCEPIIIERNITEIVYLNN
TIIEKELCPKVLEYRDWSKPQCQIAGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYVCSGLVGDTPRNDDSSSDSNCKDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|146454452|gb|ABQ41890.1| neuraminidase [Influenza A virus
(A/turkey/Illinois/2004(H3N2))]
MNPNQKIITIGSVSLIIATICFLMQIAILVTTVTLHFKQHDCNSPPNNQVMLCEPTIIERNTTEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIGSWSKNILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRENDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQTNRQVIVERGNRSGYSGIFSVEGKSCINR
```

```
CFYVELIRGRKEETKVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|167996851|gb|ACA14276.1| neuraminidase [Influenza A virus (A/aquatic
bird/Korea/CN-2/2004(H3N2))]
MNPNQKIIAIGSVSLTIATVCFLMQIAILATTVTLHFKQNGCSIPSNNQVMPCEPTIIERNITEVVYLNN
TTIEKEICPGMPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFKVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVF
>gi|189313125|gb|ACD88662.1| neuraminidase [Influenza A virus
(A/turkey/OH/313053/2004(H3N2))]
MNPNQKIITIGSVSLIIATICFLMQIAILVTTVTLHFKQHDCNSPPNNQVMLCEPTIIERNTTEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIGSWSKNILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQTNRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETKVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|167996872|gb|ACA14286.1| neuraminidase [Influenza A virus
(A/chicken/Korea/LPM03/2004(H3N2))]
MNPSQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIYPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996874|gb|ACA14287.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM09/2004(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIYPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996876|gb|ACA14288.1| neuraminidase [Influenza A virus
(A/chicken/Korea/LPM17/2004(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIYPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQIIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996878|gb|ACA14289.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM18/2004(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIYPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTXANSKSQVNRQIIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996888|gb|ACA14294.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM39/2005(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQDECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIHPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDXNATASXIYNGM
LIDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRVLFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVDRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996890|gb|ACA14295.1| neuraminidase [Influenza A virus
(A/chicken/Korea/LPM43/2005(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIYPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LIDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRVLFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINVADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDDENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|82652621|gb|ABB87422.1| neuraminidase [Influenza A virus (A/pintail
duck/ALB/627/1979(H3N2))]
MNPNQKIITIGSVSLTIATVCLLMQIAILATTVTLHFKQNECSIPVNNQVVPCEPIIIERNITEIVYLNN
TTIEKEICPKVVDYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
```

```
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQTNRQVIVDNNNWSGYSGIFSVESKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996855|gb|ACA14278.1| neuraminidase [Influenza A virus (A/aquatic
bird/Korea/KN-2/2005(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIERNITEIVYLNN
TTIEKEICPEVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPSKCYQFALGQGTTL
DNKHSNGTIHDRTPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMVDYSIDSSYVCSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQVDRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|94404624|gb|ABF17977.1| neuraminidase [Influenza A virus
(A/turkey/Ontario/31232/2005(H3N2))]
MNPNQKIITIGSVSLIIATICFLMQIAILVTTVTLHFKQHDCNSSPNNQVMLCEPTIIERNTTEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIGSWSKNILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQTNRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETKVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|138393046|gb|ABO76949.1| neuraminidase [Influenza A virus
(A/mallard/Maryland/615/2005(H3N2))]
MNPNQKIITISSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIEKNITEIVYLNS
TTIEKEICPELPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPSKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYICSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996892|gb|ACA14296.1| neuraminidase [Influenza A virus
(A/chicken/Korea/LPM44/2005(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIYPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LIDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRVLFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINVADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDDENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996894|gb|ACA14297.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM56/2005(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIHPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LIDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRVLFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|134048055|gb|ABO52569.1| neuraminidase [Influenza A virus
(A/mallard/Maryland/681/2005(H3N2))]
MNPNQKIITISSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIEKNITEIVYLNS
TTIEKEICPELPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPSKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYICSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|134048093|gb|ABO52591.1| neuraminidase [Influenza A virus
(A/mallard/Maryland/631/2005(H3N2))]
MNPNQKIITISSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIEKNITEIVYLNS
TTIEKEICPELPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPSKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYICSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996882|gb|ACA14291.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM23/2005(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIYPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LIDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRVLFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
```

```
>gi|167996896|gb|ACA14298.1| neuraminidase [Influenza A virus
(A/chicken/Korea/LPM61/2005(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIHPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LIDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRVLFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNEKGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWSDGANINFMPI
>gi|138393241|gb|ABO76960.1| neuraminidase [Influenza A virus
(A/mallard/Maryland/710/2005(H3N2))]
MNPNQKIITISSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIEKNITEIVYLNS
TTIEKEICPELPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPSKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYICSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859528|gb|ACA04723.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/03/2005(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCESIIVERNITEIVYLNN
TTIEKELCPKISEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYGIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTIANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|193877761|gb|ACF25546.1| neuraminidase [Influenza A virus
(A/turkey/MN/366767/2005(H3N2))]
MNPNQKIITIGSVSLITATICFLMQIATLVTTVTLHFKQHDCNSPPNNQVMLCEPTIIERNTTEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIGSWSKNILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGGAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSRPNSKLQTNRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETKVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|134048074|gb|ABO52580.1| neuraminidase [Influenza A virus
(A/mallard/Maryland/691/2005(H3N2))]
MNPNQKIITISSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIEKNITEIVYLNS
TTIEKEICPELPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPSKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYICSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|189313106|gb|ACD88651.1| neuraminidase [Influenza A virus
(A/turkey/NC/353568/2005(H3N2))]
MNPNQKIITIGSVSLIIATICFLMQIAILVTTVTLHFKQHDCNSPPNNQVMLCEPTIIERNTTEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIGSWSKNILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGRAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQTNRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETKVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|167996880|gb|ACA14290.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM22/2005(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIYPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LIDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRVLFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|155016310|gb|ABS89401.1| neuraminidase [Influenza A virus
(A/mallard.Maryland/708/2005(H3N2))]
MNPNQKIITISSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIEKNITEIVHLNS
TTIEKEICPELPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPSKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYICSGLVGDTPRNDDSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|149930114|gb|ABR37487.1| neuraminidase [Influenza A virus
(A/mallard/Maryland/712/2005(H3N2))]
MNPNQKIITISSVSLTIATVCFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIEKNITEIVYLNS
TTIEKEICPELPEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCGPSKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGM
```

```
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIIHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIDSSYICSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996898|gb|ACA14299.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM66/2006(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIHPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LIDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRVLFFKEGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996906|gb|ACA14303.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM91/2006(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIEKNITEIVYLNN
TIIEKEICPRVQKYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIIHVSPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSSNCKDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859450|gb|ACA04684.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/142/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVSEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859502|gb|ACA04710.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/35/2006(H3N2))]
MNPNQKIITSGSVSLTTATICFLMQIAILATTITLHFKQNECSIPSNNQVIPCEPIIIERNITEMVYLNN
TIIEKELCPKVLEYRDWSKPQCQIAGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
NNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHVGKAWLHVCVTGDDRNATASFIYDGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGKADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCKDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWNTANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRRRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859510|gb|ACA04714.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/23/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKISEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSIGSWSQNILRTHESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTIANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCDTSGTYGTGSWPDGANINFMPI
>gi|167859514|gb|ACA04716.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/42/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIERNITEIVYLNN
TTIEKELCPKVSEYRDWSKPQCQITGFAPFSKGNSIRLSAGGDIWVTREPYVSCSPDKCYQFAVGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGRTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859504|gb|ACA04711.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/02/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKISEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFVLGQGTTL
DNKRSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFGVIGGWTIANSKSQVNRQVIVDNSNWSGYSGIFSVEGRSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859512|gb|ACA04715.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/31/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKISEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSISSWSQNILRTHESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTIANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
```

```
>gi|167859516|gb|ACA04717.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/53/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKISEYRDWSKPQCRITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSYHDGKAWLHVCVTGDDRNAAASFIYGGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YLRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTIANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859518|gb|ACA04718.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/60/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKISEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTIANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859520|gb|ACA04719.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/63/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIERNITEIVYLNN
TTIEKELCPKVSEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996900|gb|ACA14300.1| neuraminidase [Influenza A virus
(A/chicken/Korea/LPM67/2006(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIHPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LIDSIVSGSQNILRTQEFECVCINGTCTVVMTDGSXSGRADXRVLFXXEGKIIXISPLSGSAQHIEEXSC
YPXYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLXGDTPRNDDSSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTIXKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDXNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996904|gb|ACA14302.1| neuraminidase [Influenza A virus
(A/chicken/Korea/LPM88/2006(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIERNITEIVYLNN
TIIEKEIHPRVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LIDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRVLFIREGKIIHISPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSSNCKDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFRVIGGWTTANSKSQVNRQVIVDNNNWSGYSGIFSVESKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996908|gb|ACA14304.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM92/2006(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIEKNITEIVYLNN
TIIEKEICPRVQKYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIIHVSPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSSNCKDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859508|gb|ACA04713.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/21/2006(H3N2))]
MNPNQKIITTGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIIERNITEIVYLNN
TTIEKELCPKVSEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVKCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859506|gb|ACA04712.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/04/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSNNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKISEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTIANSKSQVNRQVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167859534|gb|ACA04726.1| neuraminidase [Influenza A virus (A/duck/Eastern
China/62/2006(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILATTVTLHFKQNECSIPSSNQVVPCEPIIVERNITEIVYLNN
TTIEKELCPKVSEYRDWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCSPDKCYQFALGQGTAL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGM
```

```
LVDSIGSWSQNIPRTQESECVCINGTCTVVMTDGSASGRADTRILFVKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPIIDINMADYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDYGNDVWMGRTISKDSRSGYETFRVIGGWTMANSKSQVNRHVIVDNSNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996902|gb|ACA14301.1| neuraminidase [Influenza A virus
(A/duck/Korea/LPM86/2006(H3N2))]
MNPNQKIITIGAVSLTIATICFLMQIAILTTTVTLHFKQNECSIPSNNQIVPCEPIIIEKNITEIVYLNN
TIIEKEICPRVQKYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIIHVSPLSGSAQHIEECSC
YPRYPNVRCVCRDNWKGSNRPVIDINMADYSIGSSYVCSGLVGDTPRNDDSSSSSNCKDPNNERGNPGVK
GWAFDNGNDVWMGRTISKDSRSGYETFRVIGGWATANSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|167996853|gb|ACA14277.1| neuraminidase [Influenza A virus (A/aquatic
bird/Korea/JN-2/2006(H3N2))]
MNPNQKIIAIGSVSLTIATVCFLMQIAILATTVTLHFKQNECNIPSNNQVVPCEPIIIERNITEVVYLNN
TTIEKEICPVVLEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDRNATASFIYNGM
LVDSIGSWSRNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIREGKIVHISPLSGSAQHIEECSC
YPRYPDVRCVCRDNWKGSNRPVIDINMADYSIDSSYVCSGLVGDTPRNDDSSSSSNCRDPNNERGNPGVK
GWAFDNENDVWMGRTISKDSRSGYETFKVIGGWTTANSKLQVNRQVIVDNNNWSGYSGIFSVEGKSCVNR
CFYVELIRGRPQETRVWWTSNSIVVF

H5N1
>gi|39840718|emb|CAC95053.1| neuraminidase [Influenza A virus
(A/chicken/Scotland/59(H5N1))]
MNPNQKIITIGSICMIVGIISLILQIGNIISIWVSHSIQTGNQNQPEICNQSIITYENNTWVNQTYVNIS
NTNFVTEQALAPVALAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPIGESPSPYNSRFESVAWSASACHDGIGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACMNGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEIMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGAGSCGPVSSNGAYGVKGFS
FKYGKGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115279319|gb|ABI85109.1| neuraminidase [Influenza A virus
(A/chicken/Scotland/1959(H5N1))]
MNPNQKIITIGSICMIVGIISLILQIGNIISIWVSHSIQTGNQNQPEICNQSIITYENNTWVNQTYVNIS
NTNFVTEQALAPVALAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPIGESPSPYNSRFESVAWSASACHDGIGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACMNGSCFTIMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEIMCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGAGSCGPVSSNGAYGVKGFS
FKYGKGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|5805285|gb|AAD51926.1|AF144304_1 neuraminidase [influenza A virus
(A/Goose/Guangdong/1/96(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|3335405|gb|AAC32079.1| neuraminidase subtype 1 [Influenza A virus (A/Chicken/Hong
Kong/220/97 (H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHIIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYKSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|13676827|gb|AAK38299.1|AF364335_1 neuraminidase [Influenza A virus
(A/goose/Guangdong/3/1997(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRGPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115343552|gb|ABI94755.1| neuraminidase [Influenza A virus
(A/chicken/Hubei/wh/1997(H5N1))]
MNPNQKITTIGSICMVLGIVSLMLQMGNIISIWVSHSFQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNRAVAVLKYYG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSINSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
```

```
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGRSWSDGAELPFTIDK
>gi|115382792|gb|ABI96720.1| neuraminidase [Influenza A virus
(A/chicken/Hubei/wj/1997(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGSMISIWVSHSIQTGSQRQAEPISNTKFLAEKAVASVTLAGNSS
LCPISGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPSGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSMKQDIVAITDWSGYSGSFVQHPEMTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115382815|gb|ABI96733.1| neuraminidase [Influenza A virus
(A/chicken/Hubei/wk/1997(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAEPISNTNLLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPMGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNMLITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115382833|gb|ABI96742.1| neuraminidase [Influenza A virus
(A/chicken/Hubei/wl/1997(H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAEPCIPSIITYENTTWVNQTYVNIS
NTNFLAEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELDAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|9863879|gb|AAG01196.1|AF216714_1 neuraminidase 1 [Influenza A virus
(A/Environment/Hong Kong/437-4/99 (H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVALTDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|9863898|gb|AAG01206.1|AF216722_1 neuraminidase [Influenza A virus
(A/Environment/Hong Kong/437-6/99 (H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|9863916|gb|AAG01216.1|AF216730_1 neuraminidase 1 [Influenza A virus
(A/Environment/Hong Kong/437-8/99 (H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVALTDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|9863934|gb|AAG01226.1|AF216738_1 neuraminidase 1 [Influenza A virus
(A/Environment/Hong Kong/437-10/99 (H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTHFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVALTDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156371|gb|AAT12073.1| neuraminidase [Influenza A virus
(A/duck/Guangxi/07/1999(H5N1))]
MNPNQKIITIGSICMVIGMVSLVLQIGNMISIWASHSIQTRNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASITLSGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSQLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNSILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFDQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVLPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSLKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156359|gb|AAT12067.1| neuraminidase [Influenza A virus
(A/duck/Fujian/19/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQTGNIISIWVSHSIQTGNQHQAEPISNTNFLAEKAVASVTLAGNSS
LCPISGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
```

```
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSINSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|168203842|gb|ACA21690.1| neuraminidase [Influenza A virus (A/starling/Rostov-on-
Don/39/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQVEPISNTKFLTEKAVASLTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFVSCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNRNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|175362936|gb|ACB72445.1| neuraminidase [Influenza A virus
(A/chicken/Israel/1055/2008(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQCQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|193345879|gb|ACF17960.1| neuraminidase [Influenza A virus (A/chicken/Thailand/NS-
339/2008(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQQKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGSLLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMDKGKVVKSVELDAPDYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYRIGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPEMTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193345897|gb|ACF17970.1| neuraminidase [Influenza A virus (A/chicken/Thailand/PC-
340/2008(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQQKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGSLLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMDKGKVVKSVELDAPDYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYRIGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPEMTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193299706|gb|ACF17941.1| neuraminidase [Influenza A virus (A/chicken/Thailand/NS-
341/2008(H5N1))]
NKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQQKAEPISNTNFLTEKAVASVKLAGNSSLCP
INGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGSLLNDKHSNGTVKDRSPHRTLMSCPV
GEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDIGAVAVLKYNGIITDTIKSWRNNILRTQESECAC
VNGSCFTVMTDGPSNGQASHKIFKMDKGKVVKSVELDAPDYHYEECSCYPDAGEITCVCRDNWHGSNRPW
VSFNQNLEYRIGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRTKSTNSRSGFEM
IWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPEMTGLDCIRPCFWVELIRGRPKESTIWTSGSSI
SFCGVNSDTVGWSWPDGAELPFTIDK
>gi|193299724|gb|ACF17951.1| neuraminidase [Influenza A virus (A/chicken/Thailand/NS-
342/2008(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQQKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGSLLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMDKGKVVKSVELDAPDYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYRIGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPEMTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGA
>gi|190195509|gb|ACE73618.1| neuraminidase [Influenza A virus (A/duck/Thailand/ICRC-
V629/2008(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQQKAEPISNTNFLTEKAVASVKLVGNSS
LCPITGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGSLLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMDKGKVVKSVELDAPDYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQLGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRTKSINSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPEMTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|190195523|gb|ACE73624.1| neuraminidase [Influenza A virus (A/Kalij
pheasant/Thailand/vsmu-1/2008(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNXEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTCG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
```

```
>gi|190195374|gb|ACE73594.1| neuraminidase [Influenza A virus
(A/chicken/Thailand/ICRC-V586/2008(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQQKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGSLLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMDKGKVVKSVELDAPDYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYRIGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPEMTGLDCIRPCFWVELIRGRPKETHNLDLC
GSRHIFLWCKIVTTVGWSWPDGAELPFTIDK
>gi|189046951|dbj|BAG34612.1| neuraminidase [Influenza A virus
(A/chicken/Laos/1/2008(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAEPIRNANFLTENAVASVTLAGNSS
LCPVRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPNNGQASYKIFKMEKGKVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGIKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKEGTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|188035688|dbj|BAG32241.1| neuraminidase [Influenza A virus (A/whooper
swan/Hokkaido/1/2008(H5N1))]
MNPNQKIITIGSVCMIIGIVSLMLQIGNMISIWVSHSIQTGNQHQAEPIRNTNFLTENAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHMECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECSCYPDAGEIICVCRDNWHGSN
RPWISFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGIKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSEFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|195536909|dbj|BAG68177.1| neuraminidase [Influenza A virus (A/whooper
swan/Akita/2008(H5N1))]
MNPNQKIITIGSVCMIIGIVSLMLQIGNMISIWVSHSIQTGNQHQAEPIRNTNFLTENAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHMECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECSCYPDAGEIICVCRDNWHGSN
RPWISFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSLNGAYGIKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSEFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|188572140|gb|ACD65005.1| neuraminidase [Influenza A virus (A/chicken/Egypt/1709-
6/2008(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQCQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFT
>gi|188572138|gb|ACD65004.1| neuraminidase [Influenza A virus (A/chicken/Egypt/1709-
5/2008(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTRNQCQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|188526737|gb|ACD62245.1| neuraminidase [Influenza A virus
(A/chicken/Primorje/1/2008(H5N1))]
MNPNQKIITIGSVCMIIGIVSLMLQIGNMISIWVSHSIQTGNQHQAEPIRNTNFLTENAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHMECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECSCYPDAGEIICVCRDNWHGSN
RPWISFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGIKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSEFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|47156363|gb|AAT12069.1| neuraminidase [Influenza A virus
(A/duck/Guangdong/07/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIG
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYKIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156365|gb|AAT12070.1| neuraminidase [Influenza A virus
(A/duck/Guangdong/12/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPISNTNFLTEKAVASITLAGNSS
LCPISGWAVHSKDNGIRIGSKGDVFVVREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPFPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
```

```
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156391|gb|AAT12083.1| neuraminidase [Influenza A virus
(A/duck/Zhejiang/11/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPISNTNFLTEKAVASVTLAGNSS
LCPISGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156393|gb|AAT12084.1| neuraminidase [Influenza A virus
(A/duck/Zhejiang/52/2000(H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKTVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFRIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGIFGDNPRPNDGTGSCGPVSPNGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156369|gb|AAT12072.1| neuraminidase [Influenza A virus
(A/duck/Guangdong/40/2000(H5N1))]
MNPNQKIMTIGSICMVIGMVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNKNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAISDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESAIWTSGSSISFCGVNSDTVGWSWPDGAELPFTI
>gi|18092174|gb|AAL59146.1|AF398421_1 neuraminidase [Influenza A virus (A/Goose/Hong
Kong/385.3/2000(H5N1))]
MNPNQKIITIGSICMVIGTVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAMASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIKP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|18092176|gb|AAL59147.1|AF398422_1 neuraminidase [Influenza A virus (A/Goose/Hong
Kong/385.5/2000(H5N1))]
MNPNQKIITIGSICMVIGTVSLMLQIGNIISIWVTHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAMASVTLAGNSSLCPISGWAVYSKDNGLRIGSKGDVFVIREPLISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|21326683|gb|AAL75844.1| neuraminidase N1 [Influenza A virus (A/Goose/Hong
Kong/3014.5/2000(H5N1))]
MNSNQKIITIGSICMVIGIVSLMLQIGNIISIWISHSIQTGNQHQAEPCNQSIITYENNTWVNQTYINIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPTPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|19697776|gb|AAL31389.1| neuraminidase [Influenza A virus (A/Goose/Hong
Kong/ww26/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|19697778|gb|AAL31390.1| neuraminidase [Influenza A virus (A/Goose/Hong
Kong/ww28/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWGNQTYVNIS
NTNLLTEKAVASVTLAGNPSLCPISGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
```

```
>gi|19697780|gb|AAL31391.1| neuraminidase [Influenza A virus (A/Duck/Hong
Kong/ww381/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYKIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|19697782|gb|AAL31392.1| neuraminidase [Influenza A virus (A/Duck/Hong
Kong/ww382/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTENAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYKIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|19697784|gb|AAL31393.1| neuraminidase [Influenza A virus (A/Duck/Hong
Kong/ww461/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYKIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|19697786|gb|AAL31394.1| neuraminidase [Influenza A virus (A/Duck/Hong
Kong/ww487/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYKIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|19697788|gb|AAL31395.1| neuraminidase [Influenza A virus (A/Goose/Hong
Kong/ww491/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYKIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGQPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|19697790|gb|AAL31396.1| neuraminidase [Influenza A virus (A/Duck/Hong
Kong/2986.1/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|19697792|gb|AAL31397.1| neuraminidase [Influenza A virus (A/Goose/Hong
Kong/3014.8/2000(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWISHSIQTGNQHQAEPCNQSIITYENNTWVNQTYINIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKVEKGKVVKSVELNAPNYHNEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|76786309|gb|ABA54916.1| neuraminidase [Influenza A virus
(A/Goose/Huadong/1/2000(H5N1))]
MNPNQKIITTGSICMVIGMVSLMLQIGNIISIWVSHSIQTGTQHRAEPCNRSIINYENNTWVNQTYVKIS
NTNFLTEKAVASVRLVGNSSLCPISGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRAQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|169124083|gb|ACA47419.1| neuraminidase [Influenza A virus
(A/chicken/Shantou/904/2001(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWASHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
```

```
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAE
>gi|169124102|gb|ACA47430.1| neuraminidase [Influenza A virus
(A/duck/Shantou/1101/2001(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWISHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVVKSVELNAPNYHYEECS
CYPDAGEIICVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSLNGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVN
>gi|194719730|emb|CAQ58532.1| neuraminidase [Influenza A virus
(A/chicken/Nigeria/OG11/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGSSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACANGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTID
>gi|194719732|emb|CAQ58533.1| neuraminidase [Influenza A virus
(A/chicken/Nigeria/OYO14/2007(H5N1))]
KIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSSLCPIS
GWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMSCPVGE
APSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESECACVN
SSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEIMCVCRDNWHGSNRPWVS
FNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSGFEMIW
DPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSGSSISF
CGVNSDTVSWSWPDGAELPFTIDK
>gi|194719734|emb|CAQ58534.1| neuraminidase [Influenza A virus
(A/chicken/Nigeria/EKI15/2007(H5N1))]
IITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGSQRQAEPISNTKFLTEKAGASVTLAGNSSLCPISG
WAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMSCPVGEA
PSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESECACVNG
SCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSNRPWVSF
NQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGDGVWIGRTKSINSRSGFEMIWD
PNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSGSSISFC
GVNSDTVSWSWPDGAELPFTIDK
>gi|190195352|gb|ACE73583.1| neuraminidase [Influenza A virus
(A/chicken/Thailand/ICRC-195/2007(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQQKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGSLLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNDQASHKIFKMDKGKVVKSVELDAPDYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPEMTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|183238978|gb|ACC61060.1| neuraminidase [Influenza A virus (A/turkey/Saudi
Arabia/6732-6/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKIEKGKVIKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLKYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSANSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|156994170|gb|ABU99152.1| neuraminidase [Influenza A virus
(A/Chicken/Indonesia/Magelang1631-57/2007(H5N1))]
MNPNQKIITIGSICMVIGVVSLMLQIGNMISIWVSHSIQTGNQHQAESTSNTNPLTEKAVASVTLAGNSS
LCPIRGWAIHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGFFGDNPRPNDGTGSCGPMSPNGAYGVKGFAFKYGNGVWIGRTKSINSRSG
FEMIWDPNGWTGPDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGA
>gi|156994172|gb|ABU99153.1| neuraminidase [Influenza A virus
(A/Swan/Indonesia/Magelang1631-57/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGA
```

```
>gi|156992255|gb|ABU99117.1| neuraminidase [Influenza A virus
(A/Chicken/Indonesia/Soppeng1631-71/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNXAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELP
>gi|129910655|gb|ABO31431.1| neuraminidase [Influenza A virus
(A/chicken/Moscow/2/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQCQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|188572132|gb|ACD65001.1| neuraminidase [Influenza A virus (A/chicken/Egypt/1709-
1VIR08/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQCQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELP
>gi|156994174|gb|ABU99154.1| neuraminidase [Influenza A virus
(A/Chicken/Indonesia/Semerang1631-62/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLLLQIGNMISIWISHSIQTGNQHQSESISNTNPLAEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDASEVTCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMFPNGAYGIKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGA
>gi|188572134|gb|ACD65002.1| neuraminidase [Influenza A virus (A/duck/Egypt/1709-
3VIR08/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHPIQTGNQCQAEPISNTKFLIEKAVASVTLVGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELP
>gi|188572136|gb|ACD65003.1| neuraminidase [Influenza A virus (A/chicken/Egypt/1709-
4VIR08/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHPIQTGNQCQAEPISNTKFLIEKAVASVTLVGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKXEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTID
>gi|168805416|gb|ACA28785.1| neuraminidase [Influenza A virus (A/turkey/Czech
Republic/10309-3/07(H5N1))]
NQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSILTRNQRQAEPISNTKFLTEKAVASVTLAGNSSLCP
ISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMSCPV
GEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESECAC
VNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSNRPW
VSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTNSRSGFEM
IWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPEESTIWTSGSSI
SFCGVNSDTVSWSWPDGAELP
>gi|157678115|gb|ABV60443.1| neuraminidase [Influenza A virus
(A/chicken/Krasnodar/300/07(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSILTRNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPEESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|161019236|gb|ABX56048.1| neuraminidase [Influenza A virus (A/Cygnus
cygnus/Krasnodar/329/07(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWGSHSILTRNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWKNNILRTQESE
```

```
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPEESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|166798264|gb|ABY89677.1| neuraminidase [Influenza A virus (A/chicken/Rostov-on-
Don/35/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQVEPISNTKFLTEKAVASLTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFVSCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNRNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|168445541|gb|ACA23996.1| neuraminidase [Influenza A virus (A/pigeon/Rostov-on-
Don/6/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQVEPISNTKFLTEKAVASLTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFVSCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNRNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|190683270|gb|ACE81948.1| neuraminidase [Influenza A virus (A/rook/Rostov-on-
Don/26/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQVEPISNTKFLTEKAVASLTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFVSCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNRNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|168445523|gb|ACA23986.1| neuraminidase [Influenza A virus (A/muscovy duck/Rostov-
on-Don/51/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQVEPISNTKFLTEKAVASLTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFVSCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNRNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|115396994|gb|ABI97324.1| neuraminidase [Influenza A virus
(A/chicken/Jilin/hg/2002(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAEPISNTNFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115397015|gb|ABI97336.1| neuraminidase [Influenza A virus
(A/chicken/Jilin/hh/2002(H5N1))]
MNPNQKIMTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTENQHQAEPISNTNFLTEKAVASVTLAGNSS
LCPISGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115502993|gb|ABI98930.1| neuraminidase [Influenza A virus
(A/chicken/Jilin/hf/2002(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFRMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGIKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELVRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115343524|gb|ABI94742.1| neuraminidase [Influenza A virus
(A/chicken/Hubei/wf/2002(H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLQYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGIKGFS
FKYGNGVWIGRTKSINSRSGFEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
```

```
>gi|115343537|gb|ABI94748.1| neuraminidase [Influenza A virus
(A/duck/Hubei/wg/2002(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPISNTNFLTEKAVASVTLAGNSS
LCPISGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFRIEKGKVVKSAELNAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGIKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSNFSVRQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115382884|gb|ABI96768.1| neuraminidase [Influenza A virus
(A/chicken/Jiangsu/cz1/2002(H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTKFLAEKAVASVTLAGNSSLCPISGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVMTDGPSNGQASYKIFRIEKGKVVKSAELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156379|gb|AAT12077.1| neuraminidase [Influenza A virus
(A/duck/Guangxi/53/2002(H5N1))]
MNPNQKTITIGSICMAIGTVSLMLQTGNIISIWVSHSIQTENQHQAEPISNTNFLTEKAVASVTLAGNSS
LCPISGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRERPKESTTWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156367|gb|AAT12071.1| neuraminidase [Influenza A virus
(A/duck/Guangdong/22/2002(H5N1))]
MNPNQKIITIGSICMAIGIVSLMLQIGNIIPIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIN
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQEALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTVVTDGPSNGQASYKIFKIVKGKVVQSVELNAPNYHYEECS
CYLDAGEITCVCRDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAHGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156353|gb|AAT12064.1| neuraminidase [Influenza A virus
(A/duck/Fujian/01/2002(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTENQHQAEPISNTNFLTEKAVASVTLAGNSS
LCPISGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47156355|gb|AAT12065.1| neuraminidase [Influenza A virus
(A/duck/Fujian/13/2002(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTENQHQAEPISNTNFLTEKAVASVTLAGNSS
LCPISGWAVHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|115382759|gb|ABI96702.1| neuraminidase [Influenza A virus
(A/chicken/Henan/wu/2004(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAEPISNTNFLTEKAVASVTLAGNSS
LCPISGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|110287941|gb|ABG65734.1| neuraminidase [Influenza A virus
(A/goose/Huadong/220/2004(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQEGNQHQAEPISNINFITEKAVASVTLAGNSS
LCPISGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|111433453|gb|ABH09780.1| neuraminidase [Influenza A virus
(A/chicken/Vietnam/486A/2004(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFAIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
```

```
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPSP
>gi|119368927|gb|ABL67772.1| neuraminidase [Influenza A virus (A/open-billed
stork/Nakhonsawan/BBD0104F/2004(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLKYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|119368946|gb|ABL67783.1| neuraminidase [Influenza A virus (A/open-billed
stork/Nakhonsawan/BBD0404F/2004(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|119368969|gb|ABL67796.1| neuraminidase [Influenza A virus (A/open-billed
stork/Suphanburi/TSD0912F/2004(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSYNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|132653825|gb|ABO34194.1| neuraminidase [Influenza A virus (A/open-billed
stork/Bangkok/LBD0111F/04(H5N1))]
QKQEFKMNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVK
LAGNSSLCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRNFFLTQGALLNDKHSNGTVKDRSP
HRTLMSCPVGEVPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNIL
RTQESECACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDASEITCVCRD
NWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKS
TNSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKES
TIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|132653827|gb|ABO34195.1| neuraminidase [Influenza A virus (A/open-billed
stork/Bangkok/LBD0511F/04(H5N1))]
QKQEFKMNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVK
LAGNSSLCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSP
HRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNRAVAVLKYNGIITDTIKSWRNNIL
RTQESECACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDASEITCVCRD
NWHGSNRPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKS
TNSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKES
TIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|50296137|gb|AAT73316.1| neuraminidase [Influenza A virus
(A/Dk/Indonesia/MS/2004(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQSESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSLNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSNTVSWSWPDGAELPFTIDK
>gi|48431280|gb|AAS89184.2| neuraminidase [Influenza A virus (A/chicken/Nakorn-
Patom/Thailand/CU-K2/2004(H5N1))]
TIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVKLAGNSSLCPINGWA
VYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMSCPVGEAPS
PYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESECVCVNGSC
FTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSNRPWVSFNQ
NLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSGFEMIWDPN
GWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSGSSISFCGV
NSDTVGWSWPDGAELPFTIDK
>gi|71277737|gb|AAZ30016.1| neuraminidase [Influenza A virus (A/sparrow/Phang-
Nga/Thailand/CU-203/04(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASIKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTID
```

```
>gi|71277739|gb|AAZ30017.1| neuraminidase [Influenza A virus
(A/Mynas/Ranong/Thailand/CU-209/04(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASLKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTID
>gi|72398577|gb|AAZ72706.1| neuramindase [Influenza A virus (A/chicken/Viet Nam/TN-
025/2004(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|72398579|gb|AAZ72707.1| neuramindase [Influenza A virus (A/chicken/Viet Nam/VL-
008/2004(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|72398581|gb|AAZ72708.1| neuramindase [Influenza A virus (A/chicken/Viet Nam/AG-
010/2004(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|72398583|gb|AAZ72709.1| neuramindase [Influenza A virus (A/chicken/Viet Nam/DT-
015/2004(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|72398585|gb|AAZ72710.1| neuramindase [Influenza A virus (A/chicken/Viet Nam/CT-
018/2004(H5N1))]
MNPNQKIITIGSICMVTGIVNLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|72398587|gb|AAZ72711.1| neuramindase [Influenza A virus (A/chicken/Viet Nam/TG-
023/2004(H5N1))]
MNPNQKIITIGSICMVTGIVNLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|72398589|gb|AAZ72712.1| neuramindase [Influenza A virus (A/chicken/Viet Nam/LA-
024/2004(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQVSHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|72398591|gb|AAZ72713.1| neuramindase [Influenza A virus (A/chicken/Viet Nam/HCM-
022/2004(H5N1))]
MNPNQKIITIGSICMVTGIVNLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
```

```
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|8572169|gb|AAF77036.1|AF250356_1 neuraminidase [influenza A virus
(A/Brevig_Mission/1/18(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWVSHSIQTGNQNHPETCNQSIITYENNTWVNQTYVNIS
NTNVVAGQDATSVILTGNSSLCPISGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNILRTQESECACVNGSCFTIMTDGPSNGQASYKILKIEKGKVTKSIELNAPNYHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGANGIKGFS
FRYDNGVWIGRTKSTSSRSGFEMIWDPNGWTETDSSFSVRQDIVAITDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGQPKENTIWTSGSSISFCGVNSDTVGWSWPDGAELPFSIDK
>gi|94960376|gb|ABF47958.1| neuraminidase [Influenza A virus (A/WSN/1933 TS61(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGNQNHTGICNQGSITYKVVAGQDSTSVILT
GNSSLCPIRGWAIHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSRGTFKDRSPYR
ALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNGIITETIKSWRKNILRT
QESECTCVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDNW
HGSNRPWVSFDQNLDYKIGYICSGVFGDNPRPKDGTGSCGPVSADGANGVKGFSYKYGNGVWIGRTKSDS
SRHGFEMIWDPNGWTETDSRFSMRQDVVAMTDRSGYSGSFVQHPELTGLDCMRPCFWVELIRGLPEEDAI
WTSGSIISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|194352376|gb|ACF54601.1| neuraminidase [Influenza A virus (A/WSN/1933(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGNQNHTGICNQGSITYKVVAGQDSTSVILT
GNSSLCPIRGWAIHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSRGTFKDRSPYR
ALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNGIITETIKSWRKNILRT
QESECTCVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDNW
HGSNRPWVSFDQNLDYKIGYICSGVFGDNPRPKDGTGSCGPVSADGANGVKGFSYKYGNGVWIGRTKSDS
SRHGFEMIWDPNGWTETDSRFSMRQDVVAMTDRSGYSGSFVQHPELTGLDCMRPCFWVELIRGLPEENAI
WTSGSIISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|324482|gb|AAA43397.1| neuraminidase [Influenza A virus (A/WSN/1933(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGNQNHTGICNQGSITYKVVAGQDSTSVILT
GNSSLCPIRGWAIHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSRGTFKDRSPYR
ALMSCPVGEAPSPYNSRFESVAWSASACHDGVGWLTIGISGPDDGAVAVLKYNRIITETIKSWRKNILRT
QESECTCVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDNW
HGSNRPWVSFDQNLDYKIGYICSGVFGDNPRPKDGTGSCGPVSADGANGVKGFSYKYGNGVWIGRTKSDS
SRHGFEMIWDPNGWTETDSRFSMRQDVVAITNRSGYSGSFVQHPELTGLDCMRPCFWVELIRGLPEEDAI
WTSGSIISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|414309|gb|AAA91326.1| neuraminidase [Influenza A virus (A/NWS/1933(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGNQNHTGICNQGIITHKVVAGQDSTSVILT
GNSSLCPIRGWAIHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSYGTSKDRSPYR
ALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILRT
QESECTCVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDNW
HGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGTGSCGPVSADGANGVKGFSYRYGNGVWIGRTKSDS
SRHGFEMIWDPNGWTETDSRFSVRQDVVAMTDRSGYSGSFVQHPELTGLDCMRPCFWVELIRGQPEEETI
WTSGSIISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|414311|gb|AAA91327.1| neuraminidase [Influenza A virus (A/WS/1933(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGNQNHTGICNQGIITYNVVAGQDSTSVILT
GNSSLCPIRGWAIHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYR
ALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILRT
QESECTCVNGSCFTIMTDGPSNGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDNW
HGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGPGSCGPVSADGANGVKGFSYRYGNGVWIGRTKSDS
SRHGFEMIWDPNGWTETDSRFSVRQDVVAMTDRSGYSGSFVQHPELTGLDCMRPCFWVELIRGRPEEETI
WTSGSIISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|94481608|gb|ABF21334.1| neuraminidase [Influenza A virus (A/Wilson-
Smith/1933(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGNQNHTGICNQGSITYKVVAGQDSTSVILT
GNSSLCPIRGWAIHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSKGTVKDRSPYR
ALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNGIITETIKSWRKNILRT
QESECTCVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDNW
HGSNRPWVSFDQNLDYKIGYICSGVFGDNPRPKDGTGSCGPVSADGANGVKGFSYKYGNGVWIGRTKSDS
SRHGFEMIWDPNGWTETDSRFSMRQDVVAMTDRSGYSGSFVQHPELTGLDCMRPCFWVELIRGLPEEDAV
WTSGSIISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|89782161|gb|ABD77799.1| neuraminidase [Influenza A virus (A/Wilson-
Smith/33(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGNQNHTGICNQGIITYNVVAGQDSTSVILT
GNSSLCPIRGWAIHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYR
ALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILRT
QESECTCVNGSCFTIMTDGPSNGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDNW
HGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGTGSCGPVSADGANGVKGFSYRYGNGVWIGRTKSDS
SRHGFEMIWDPNGWTETDSRFSVRQDVVAMTDRSGYSGSFVQHPELTGLDCMRPCFWVELIRGRPEEETI
WTSGSIISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|414313|gb|AAA91328.1| neuraminidase [Influenza A virus (A/WSN/1933(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGNQNHTGICNQGSITYKVVAGQDSTSVILT
GNSSLCPIRGWAIHSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSRGTFKDRSPYR
ALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNGIITETIKSWRKNILRT
QESECTCVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDNW
HGSNRPWVSFDQNLDYKIGYICSGVFGDNPRPKDGTGSCGPVSADGANGVKGFSYKYGNGVWIGRTKSDS
```

```
SRHGFEMIWDPNGWTETDSRFSMRQDVVAMTDRSGYSGSFVQHPELTGLDCMRPCFWVELIRGLPEEDAI
WTSGSIISFCGVNGDTVDWSWPDGAELPFTIDK
>gi|324508|gb|AAA43412.1| neuraminidase [Influenza A virus (A/Puerto
Rico/8/1934(Cambridge)(H1N1))]
MNPNQKIITIGSICLVVGLISLILQIGNIISIWISHSIQTGSQNHTGICNQNIITYKNSTWVKDTTSVIL
TGNSSLCPIRGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDRHSNGTVKDRSPY
RALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILR
TQESECACVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDN
WHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGTGSCGPVYVDGANGVKGFSYRYGNGVWIGRTKSH
SSRHGFEMIWDPNGWTETDSKFSVRQDVVAMTDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKEKT
IWTSASSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|21693173|gb|AAM75160.1|AF389120_1 neuraminidase NA [Influenza A virus (A/Puerto
Rico/8/34/Mount Sinai(H1N1))]
MNPNQKITTIGSICLVVGLISLILQIGNIISIWISHSIQTGSQNHTGICNQNIITYKNSTWVKDTTSVIL
TGNSSLCPIRGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPY
RALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILR
TQESECACVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDN
WHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPEDGTGSCGPVYVDGANGVKGFSYRYGNGVWIGRTKSH
SSRHGFEMIWDPNGWTETDSKFSVRQDVVAMTDWSGYSGSFVQHPELTGLDCMRPCFWVELIRGRPKEKT
IWTSASSISFCGVNSDTVDWSWPDGAELPFSIDK
>gi|194304808|gb|ACF41837.1| neuraminidase [Influenza A virus (A/Puerto
Rico/8/34(H1N1))]
MNPNQKIITIGSICLVVGLISLILQIGNIISIWISHSIQTGSQNHTGICNQNIITYKNSTWVKDTTSVIL
TGNSSLCPIRGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSSGTVKDRSPY
RALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILR
TQESECACVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDN
WHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPEDGTGSCGPVYVDGANGVKGFSYRYGNGVWIGRTKSH
SSRHGFEMIWDPNGWTETDSKFSVRQDVVAMTDWSGYSGSFVQHPELTGLDCMRPCFWVELIRGRPKEKT
IWTSASSISFCGVNSDTVDWSWPDGAELPFSIDK
>gi|126599291|gb|ABO21711.1| neuraminidase [Influenza A virus (A/Puerto
Rico/8/34(H1N1))]
MNPNQKIITIGSICLVVGLISLILQIGNIISIWISHSIQTGSQNHTGICNQNIITYKNSTWVKDTTSVIL
TGNSSLCPIRGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSSGTVKDRSPY
RALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILR
TQESECACVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDN
WHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPEDGTGSCGPVYVDGANGVKGFSYRYGNGVWIGRTKSH
SSRHGFEMIWDPNGWTETDSKFSVRQDVVAMTDWSGYSGSFVQHPELTGLDCMRPCFWVELIRGRPKEKT
IWTSASSISFCGVNSDTVDWSWPDGAELPFSIDK
>gi|89779326|gb|ABD77678.1| neuraminidase [Influenza A virus (A/Puerto
Rico/8/34(H1N1))]
MNPNQKIITIGSICLVVGLISLILQIGNIISIWISHSIQTGSQNHTGICNQNIITYKNSTWVKDTTSVIL
TGNSSLCPIRGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSSGTVKDRSPY
RALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILR
TQESECACVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDN
WHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPEDGTGSCGPVYVDGANGVKGFSYRYGNGVWIGRTKSH
SSRHGFEMIWDPNGWTETDSKFSVRQDVVAMTDWSGYSGSFVQHPELTGLDCMRPCFWVELIRGRPKEKT
IWTSASSISFCGVNSDTVDWSWPDGAELPFSIDK
>gi|125976186|gb|ABN59415.1| neuraminidase [Influenza A virus (A/Alaska/1935(H1N1))]
MNPNQKIITIGSICLVVGLISLILQIGNIISIWISHSIQTGSQNHTGICNQNIITYKNSTWVKDTTSVIL
TGNSSLCPIRGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSSGTVKDRSPY
RALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILR
TQESECACVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECSCYPDTGKVMCVCRDN
WHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPEDGTGSCGPVYVDGANGVKGFSYRYGNGVWIGRTKSH
SSRHGFEMIWDPNGWTETDSKFSVRQDVVAMTDWSGYSGSFVQHPELTGLDCMRPCFWVELIRGRPKEKT
IWTSASSISFCGVNSDTVDWSWPDGAELPFSIDK
>gi|194294067|gb|ACF40128.1| neuraminidase [Influenza A virus (A/New
Jersey/13/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303430|gb|ACD85790.1| neuraminidase [Influenza A virus
(A/Indiana/04/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303428|gb|ACD85789.1| neuraminidase [Influenza A virus
(A/Oklahoma/03/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
```

```
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303442|gb|ACD85796.1| neuraminidase [Influenza A virus
(A/Illinois/06/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|193084915|gb|ACF10347.1| neuraminidase [Influenza A virus (A/Ohio/02/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|193084909|gb|ACF10344.1| neuraminidase [Influenza A virus
(A/Tennessee/03/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKNNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|194294071|gb|ACF40130.1| neuraminidase [Influenza A virus (A/South
Carolina/01/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|195661089|gb|ACG50711.1| neuraminidase [Influenza A virus
(A/Johannesburg/14/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTKVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|195661083|gb|ACG50708.1| neuraminidase [Influenza A virus
(A/Johannesburg/12/2008(H1N1))]
QKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNINNTKV
VAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKH
SNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITG
TIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECSCYPD
TGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFSYKYG
NGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRPCFWV
ELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|195661085|gb|ACG50709.1| neuraminidase [Influenza A virus
(A/CapeTown/26/2008(H1N1))]
QKIITIGSISIAIGIISLLLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENNTWVNHTYVNINNTNV
VAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKH
SNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITG
TIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECSCYPD
TGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFSYKYG
NGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRPCFWV
ELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|195661087|gb|ACG50710.1| neuraminidase [Influenza A virus
(A/Johannesburg/21/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLLLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENNTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDRAELPFTIDK
```

```
>gi|195661091|gb|ACG50712.1| neuraminidase [Influenza A virus
(A/Johannesburg/33/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTKVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|195661093|gb|ACG50713.1| neuraminidase [Influenza A virus
(A/Johannesburg/35/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTKVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVICVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|195661095|gb|ACG50714.1| neuraminidase [Influenza A virus
(A/Johannesburg/36/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|195661097|gb|ACG50715.1| neuraminidase [Influenza A virus
(A/Johannesburg/45/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYMALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|89148082|gb|ABD62784.1| neuraminidase [Influenza A virus (A/Melbourne/35(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQAGSSTWVNQTYVNISNTNVVAGPDATSVILT
GNSSLCPIRGWAIYSKDNGIRIGSKGDIFVIREPFISCSHLECRAFFLTQGALLNDKHSNGTVKDRSPYR
ALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNGIITETIKSWRKKILRT
QESECACVNGSCFTIMTDGPSDGPASYKIFKIEKGKVTKSIELDAPNSHYEECSCYPDTGKVMCVCRDNW
HGSNRPWVSFDQNLDYQIGYICSGVFGDSPRPKDGTGSCGPVSVDGANGVKGFSYRYGNGVWIGRTKSKS
SRHGFEMIWDPNGWTETDSRFSVRQDVVAMTDWSGYSGSFVQHPELTGLDCMRPCFWVELIRGQPKEKTI
WTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|133754194|gb|ABO38387.1| neuraminidase [Influenza A virus (A/Phila/1935(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGICNQSIITYKNSTWVNQTYVNIS
NTNVVAGQDTTSVILTGNSSLCPIRGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNEAVAVLKYNG
IITETIKSWRKKILRTQESECACVNGSCFTIMTDGPSDGLASYKIFKIEKGKVTKSIELNAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGTGSCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSTSSRHGFEMIWDPNGWTETDSKFSVRQDVVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGQPKEKTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|133754137|gb|ABO38354.1| neuraminidase [Influenza A virus (A/Henry/1936(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGICNQNIITYKNSTWVNQTYVNIS
NTNVVAGQDTTSVILTGNSSLCPIRGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDRHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWRKKILRTQESECACVNGSCFTIMTDGPSNGLASYKIFKIEKGKVTKSIELNAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGTGSCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSNSSRHGFEMIWDPNGWTETDSKFSVRQDVVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|112787551|gb|ABI20829.1| neuraminidase [Influenza A virus (A/Hickox/1940(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIVSIWISHSIQTGNQNHTGTCNQSIITYKNSTWVNQTYVNIS
NTNVVAGKDTTSVILAGNSSLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWRKEILRTQESECVCVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTSKVMCVCRDNWHGSNRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSNSSRQGFEMIWDPNGWTETDSNFFMKQDVVAVTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|89152219|gb|ABD62845.1| neuraminidase [Influenza A virus (A/Bel/1942(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGICNQSIITYKNSTWVNQTYVNIS
NTNVVAGKDTTSMILAGNSSLCPIRGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWKKKILRTQESECVCVNGSCFTIMTDGPSDGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGFS
YRYGDGVWIGRTKSNSSRQGFEMIWDPNGWTETDSSFFVKQDVVAMTDWSGYSGSFVQHPELTGLNCMRP
CFWVELIRGRPKEKTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
```

```
>gi|8572187|gb|AAF77045.1|AF250365_1 neuraminidase [Influenza A virus (A/Weiss/43
(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGICNQSIITYKNSTWVNQTYVNIS
NTNVVAGKGTTSVILAGNSSLCPIRGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDEAVAVLKYNG
IITETIKSWRKKILRTQESECVCVNGSCFTIMTDGPSDGQASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRSKDGKGSCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSDSSRQGFEMIWDPNGWTETDSNFFVKQDIVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKEKTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|133754175|gb|ABO38376.1| neuraminidase [Influenza A virus (A/Iowa/1943(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGTCNQSIITYKNSTWVNQTYVNIS
NTNVVAGKDTTSVILAGNSSLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWRKEILRTQESECACVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGNCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSNSSRQGFEMIWDPNGWTETDSNFFVKQDVVAVTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKEKTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|21724202|gb|AAM75501.1| neuraminidase [Influenza A virus (A/Marton/43(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGTCNQSIITYKNSTWVNQTYVNIS
NTNVVAGKDTTSVILAGNSSLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWRKEILRTQESECACVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGNCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSNSSRQGFEIIWDPNGWTETDSNFFEKQDVVAVTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKEKTTIWTSGSSISFCGVNSDTVDWSWPDDAELPLTIDK
>gi|21717610|gb|AAM76692.1|AF494252_1 neuraminidase [Influenza A virus
(A/Weiss/43(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGICNQSIITYKNSTWVNQTYVNIS
NTNVVAGKGTTSVILAGNSSLCPIRGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRTPYRALMSCPVGEAPSPYNSRFESVAWSACACHDGMGWLTIGISGPDDEAVAVLKYNG
IITETIKSWRKKILRTQESECVCVNGSCFTIMTDGPSDGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGIS
YRYGNGVWIGRTKSDSSRQGFEMIWDPNGWTETDSNFFVKQDIVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKEKTIWTSGSSISFCGVNSDTVDWSWPDDAELPLTIDK
>gi|133752887|gb|ABO38057.1| neuraminidase [Influenza A virus
(A/AA/Marton/1943(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGTCNQSIITYKNSTWVNQTYVNIS
NTNVVAGKDTTSVILAGNSSLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWRKEILRTQESECACVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGNCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSNSSRQGFEMIWDPNGWTETDSNFFVKQDVVAVTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKEKTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|89903061|gb|ABD79104.1| neuraminidase [Influenza A virus (A/Weiss/43(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGICNQSIITYKNSTWVNQTYVNIS
NTNVVAGKGTTSVILAGNSSLCPIRGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSACACHDGMGWLTIGISGPDDEAVAVLKYNG
IITETIKSWRKKILRTQESECVCVNGSCFTIMTDGPSDGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSDSSRQGFEMIWDPNGWTETDSNFFVKQDIVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKEKTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|145278815|gb|ABP49330.1| neuraminidase [Influenza A virus
(A/AA/Huston/1945(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIISIWISHSIQTGSQNHTGICNQSIITYKNSTWVNQTYVNIS
NTNVVAGKGTTPVILAGNSSLCPIRGWAIYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSACACHDGMGWLTIGISGPDDEAVAVLKYNG
IITETIKSWRKKILRTQESECVCVNGSCFTIMTDGPSDGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFDQNLDYQIGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGFS
YRYGNGVWIGRIKSNSSRQGFEMIWDPNGWTETDSSFFVKQDVVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKEKTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|89903080|gb|ABD79115.1| neuraminidase [Influenza A virus (A/Cam/46(H1N1))]
MNPNQKIITIGSICMVVGIISLIFQIGNIVSIWISHSITGTCNRSIYVNISNTNVVAGKDTTSVILAGNS
SLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNGIITGTIKSWRKEILRTQES
ECVCVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECSCYPDTSKVMCVCRDNWHGS
NRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGFSYRYGNGVWIGRTKSSSSRQ
GFEMIWDPNGWTETDSNFFMKQDVVAVTDWSGYSGSFVQHPELTGLDCMRPCFWVELIRGRPKENTIWTS
GSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|4583795|emb|CAB40419.1| neuraminidase [Influenza A virus (A/Fort Monmouth/1/47-
MA(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIVSIWISHSIQTGNQNHTGTCDQSIITYKNSTWVNQTYVNVV
AGKDTTSVILAGNSSLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHS
NGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNGIITET
IKSWRKEILRTQESECVCVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECSCYPDT
SKVMCVCRDNWHGSNRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGFSYKYGN
GVWIGRTKSNSSRQGFEMIWDPNGWTETDSNFFTKQDVVAVTDWSGYSGSFVQHPELTGLDCMRPCFWVE
LIRGRPKENTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
```

```
>gi|89782392|gb|ABD77810.1| neuraminidase [Influenza A virus
(A/FortMonmouth/1/47(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIVSIWISHSIQTGNQNHTGTCNQSIITYKNSTWVNQTYVNIS
NTNVVAGKDTTSVILAGNSSLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWRKEILRTQESECVCVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTSKVMCVCRDNWHGSNRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSNSSRQGFEMIWDPNGWTETDSNFFTKQDVVAVTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|8572171|gb|AAF77037.1|AF250357_1 neuraminidase [Influenza A virus (A/FM/1/47
(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIVSIWISHSIQTGNQNHTGTCDQSIITYKNSTWVNQTYVNVV
AGKDTTSVILAGNSSLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHS
NGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNGIITET
IKSWRKEILRTQESECVCVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECSCYPDT
SKVMCVCRDNWHGSNRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGFSYKYGN
GVWIGRTKSNSSRQGFEMIWDPNGWTETDSNFFTKQDVVAVTDWSGYSGSFVQHPELTGLDCMRPCFWVE
LIRGRPKENTIWTSGSSISFCGVNSDTVDWSWPDGAELPFTIDK
>gi|21724204|gb|AAM75502.1| neuraminidase [Influenza A virus (A/Rhodes/47(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIVSIWISHSIQTGNQNHTGTCNQSIITYKNSTWVNQTYVNIS
NTNVVAGKDTTSVILAGNSSLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWRKEILRTQESECVCVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTSKVMCVCRDNWHGSNRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGSCGPVYVDGANGVKGFS
YRYGNGVWIGRTKSNSSRQGFEMIWDPNGWTETDSNFFTKQDVVAVTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKEKTTIWTSGSSISFCGVNSDTVDWSWPDDAELPLTIDK
>gi|21717612|gb|AAM76693.1|AF494253_1 neuraminidase [Influenza A virus (A/Fort
Monmouth/1/47(H1N1))]
MNPNQKIITIGSICMVVGIISLILQIGNIVSIWISHSIQTGNQNHTGTCDQSIITYKNSTWVNQTYVNIS
NTNVVAGKDTTSVILAGNSSLCPIRGWAIYSKDNGVRIGSKGDVFVIREPFISCSHLECKTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPVGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWRKEILRTQESECVCVNGSCFTIMTDGPSGGPASYKIFKIEKGKVTKSIELDAPNSHYEECS
CYPDTSKVMCVCRDNWHGSNRPWVSFDQNLDYQMGYICSGVFGDNPRPKDGKGSCGPVNVDGADGVKGFS
YRYGNGGWIGRTKSNSSRKGFEMIWDPNGWTDPDSNFLVKQDIVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPKENTIWTSGSSISFCGVNSDTVDWSWPDDAELPLNIDK
>gi|125976167|gb|ABN59404.1| neuraminidase [Influenza A virus
(A/Albany/4835/1948(H1N1))]
MNPNQKIITIGSICMAIGIISLILQIGNIISIWVSHSIQTGSQNHTGICNQRIITYENNTWVNQTYVNIS
NTNVVAGKDTTSMILAGNSSLCPIRGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPIGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWRKQILRTQESECVCVNGSCFTIMTDGPSDGPASYRIFKIEKGKITKSIELDAPNSHYEECS
CYPDTGKVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCDPVNVDGADGVKGFS
YRYGNGVWIGRTKSNSSRKGFEMIWDPNGWTDTDGNFLVKQDVVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPREKTTIWTSGSSISFCGVNSDTVNWSWPDGAELPFTIDK
>gi|125976224|gb|ABN59437.1| neuraminidase [Influenza A virus (A/Roma/1949(H1N1))]
MNPNQKIITIGSICMAIGIISLILQIGNIISIWVSHSIQTGSQNHTGICNQRIITYENNTWVNQTHVNIS
NTNVVAGKDTTSMILAGNSSLCPIRGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPIGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWKKQILRTQESECVCVNGSCFTIMTDGPSDGPASYRIFKIEKGKITKSIELDAPNSHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCDPVNVDGADGVKGFS
YRYGNGVWIGRTKSNSSRKGFEMIWDPNGWTDTDGNFLVKQDVVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPREKTTIWTSGSSISFCGVNSDTVNWSWPDGAELPFTIDK
>gi|170181723|gb|ACB11776.1| neuraminidase [Influenza A virus (A/New
Jersey/05/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303424|gb|ACD85787.1| neuraminidase [Influenza A virus
(A/Mississippi/06/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|193084899|gb|ACF10339.1| neuraminidase [Influenza A virus
(A/Mississippi/06/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
```

```
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|188076351|gb|ACD47202.1| neuraminidase [Influenza A virus (A/New
Jersey/09/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIRSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303422|gb|ACD85786.1| neuraminidase [Influenza A virus
(A/Hawaii/06/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVEGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|188076369|gb|ACD47211.1| neuraminidase [Influenza A virus (A/New
York/01/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|170181755|gb|ACB11792.1| neuraminidase [Influenza A virus
(A/Wisconsin/01/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|170181779|gb|ACB11804.1| neuraminidase [Influenza A virus
(A/Indiana/01/2008(H1N1))]
MNPNQKIITIGSISIAIGINSLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQMGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGINSDTANWSWPDGAELPFTIDK
>gi|189303420|gb|ACD85785.1| neuraminidase [Influenza A virus
(A/Hawaii/05/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTPVTLVGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECKTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGIGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSMELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNKIRKGFEMIWDPNGWTNTDSDFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNGDIANWSWPDGAELPFTIDK
>gi|189303410|gb|ACD85780.1| neuraminidase [Influenza A virus (A/New
York/03/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|170181785|gb|ACB11807.1| neuraminidase [Influenza A virus (A/New
Jersey/06/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGAXGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|193084907|gb|ACF10343.1| neuraminidase [Influenza A virus (A/New
York/05/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
```

```
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKXRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCSPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGMPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303426|gb|ACD85788.1| neuraminidase [Influenza A virus
(A/Oklahoma/02/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303432|gb|ACD85791.1| neuraminidase [Influenza A virus (A/North
Carolina/02/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303412|gb|ACD85781.1| neuraminidase [Influenza A virus
(A/Florida/09/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDDGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGINSDTANWSWPDGAELPFTIDK
>gi|189303434|gb|ACD85792.1| neuraminidase [Influenza A virus (A/North
Carolina/04/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQIGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEEKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303418|gb|ACD85784.1| neuraminidase [Influenza A virus (A/New
Jersey/10/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303446|gb|ACD85798.1| neuraminidase [Influenza A virus
(A/Georgia/05/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|189303436|gb|ACD85793.1| neuraminidase [Influenza A virus (A/North
Carolina/05/2008(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|193084913|gb|ACF10346.1| neuraminidase [Influenza A virus
(A/Vermont/01/2008(H1N1))]
MNPNHKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNNTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGEDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNKAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPEDGEGSCNPVTVDGANGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
```

```
CFWVELVRGLPGENTTIWTSGSSVSFCGVNSDAANWSWPDGAELPFTIDK
>gi|134047394|gb|ABO52228.1| neuraminidase [Influenza A virus
(A/Memphis/15/1996(H1N1))]
MNPNQKIITIGSISIAIGIISLILQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNQTYVNIN
NTNVVAGKDKTSMTLAGNSSLCPIRGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGLGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCMNGSCFTIMTDGPSNGAASYRIFKIEKGRVTKSIELDAPNYHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YRYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSMKQDIVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|94959690|gb|ABF47652.1| neuraminidase [Influenza A virus (A/New
York/653/1996(H1N1))]
MNPNQKIITIGSISIAIGIISLILQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNQTYVNIN
NTNVVAGKDKTSMTLAGNSSLCPIRGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSRFESVAWSASACHDGLGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCMNGSCFTIMTDGPSNGAASYRIFKIEKGRVTKSIELDAPNYHYEECS
CYPNTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YRYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSMKQDIVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|94959709|gb|ABF47663.1| neuraminidase [Influenza A virus (A/New
York/640/1996(H1N1))]
MNPNQKIITIGSISIAIGIISLILQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNQTYVNIN
NTNVVAGKDKTSMTLAGNSSLCPIRGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSRFESVAWSASACHDGLGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCMNGSCFTIMTDGPSNGAASYRIFKIEKGRVTKSIELDAPNYHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YRYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSMKQDIVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|112787589|gb|ABI20851.1| neuraminidase [Influenza A virus (A/New
York/646/1996(H1N1))]
NPNQKIITIGSISIAIGIISLILQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNQTYVNINN
TNVVAGKDKTSMTLAGNSSLCPIRGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLN
DKHSNGTVKDRSPYRALMSCPLGEAPSPYNSRFESVAWSASACHDGLGWLTIGISGPDNGAVAVLKYNGI
ITETIKSWKKRILRTQESECVCMNGSCFTIMTDGPSNGAASYRIFKIEKGRVTKSIELDAPNYHYEECSC
YPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFSY
RYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSMKQDIVAMTDWSGYSGSFVQHPELTGLDCMRPC
FWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|109914463|gb|ABG47832.1| neuraminidase [Influenza A virus (A/New
York/626/1996(H1N1))]
MNPNQKIITIGSISIAIGIISLILQVGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNQTYVNIN
NTNVVAGKDKTSMTLAGNSSLCPIRGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSRFESVAWSASACHDGLGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCMNGSCFTIMTDGPSNGAASYRIFKIEKGRVTKSIELDAPNYHYEECS
CYPNTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YRYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSMKQDIVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|148276802|gb|ABQ53685.1| neuraminidase [Influenza A virus
(A/Neimenggu/63/1997(H1N1))]
MNPNQKIITIGSICMAIGIISLILQIGNIVSIWISHSIQTGSQNYTGICNQRIITYENSTWVNQTYVNIN
NTNVVAGQDTTSVALAGNSSLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPIGEAPSPYNSRFESVAWSASACHDGMGWLTIGISGPDDGAVAVLKYNG
IITETIKSWRKRILRTQESECVCVNGSCFTIMTDGPNNGPASYKIFKIEKGKITKSIELDAPNSHYEECS
CYPDAGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCDPVTVDGADGVKGFS
YRYGNGVWIGRTKSNSSRRGFEMIWDPNGWTDTDSKFLVKQDVVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELIRGRPRENTTIWTSGSSISFCGVNGDTANWSWPDGSELPFTIDK
>gi|148276804|gb|ABQ53686.1| neuraminidase [Influenza A virus
(A/Taiwan/1348/1997(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHMECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSDGAASYKIFKIEKGKVTKSIELNAPNSHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPRDGEGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFAVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|148276806|gb|ABQ53687.1| neuraminidase [Influenza A virus
(A/Austria/262/1997(H1N1))]
MNPNQKIITIGSISVAIGIISLILQIGNIISIWASHSIQTGSQNYTGICNQRIITYENSTWVNQTYVNIN
NTNVVAGKDKTSMTLAGNSSLCPIRGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSRFESVAWSASACHDGLGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKQILRTQESECVCVNGSCFTIMTDGPSDRAASYRIFKIDKGRVTKSIELDAPNYHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YRYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSMKQDVVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSETANWSWPDGAELPFTIDK
>gi|148276808|gb|ABQ53688.1| neuraminidase [Influenza A virus
(A/Durbin/113/1997(H1N1))]
MNPNQKIITIGSISVAIGIISLILQIGNIISIWASHSIQTGSQNYTGICNQRIITYENNTWVNQTYVNIN
NTNVVAGKDKISMTLAGNSSLCPIRGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
```

```
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSRFESVAWSASACHDGLGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKQILRTQESECVCVNGSCFTIMTDGPSDRAASYRIFKIEKGRVTKSIELDAPNYHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSMKQDVVAMTDWSGYSGSFVQHPELTGLDCMRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSETANWSWPDGAELPFTVDK
>gi|148276814|gb|ABQ53691.1| neuraminidase [Influenza A virus (A/Hong
Kong/364/1997(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVDGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNSHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|148356750|dbj|BAF63047.1| neuraminidase [Influenza A virus
(A/Hanoi/1928/2002(H1N1))]
MNPNQKIITIGSISIAIGIISLVLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTADWSWPDGAELPFTIDK
>gi|148356757|dbj|BAF63051.1| neuraminidase [Influenza A virus
(A/Hanoi/2006/2002(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGXIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCAISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTHGALL
NDKHSNGTVKDRSPYRAFMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|183396529|dbj|BAG28189.1| neuraminidase [Influenza A virus
(A/Morioka/27/2002(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGVCNQRIITYENSTWVNHTYVNIN
NTNVIAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKQILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQTGYICSGVFGDNPRPKDGEGSCNPVIVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPKENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|170675942|dbj|BAG14285.1| neuraminidase [Influenza A virus
(A/Morioka/17/2002(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGVCNQRIITYENSTWVNHTYVNIN
NTNVIAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKQILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGANGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPKENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|148356769|dbj|BAF63058.1| neuraminidase [Influenza A virus
(A/Hanoi/191/2002(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCAISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNEAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNPNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMVWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPKENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|82546780|gb|ABB82219.1| neuraminidase [Influenza A virus (A/New
York/494/2002(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVIAEKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSNLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDAADWSWPDGAELPFTIDK
>gi|77543347|gb|ABA87083.1| neuraminidase [Influenza A virus (A/New
York/291/2002(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQKIITYKNSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSVFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
```

```
>gi|73761479|gb|AAZ83256.1| neuraminidase [Influenza A virus (A/New
York/220/2002(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGIDSDTANWSWPDGAELPFTIDK
>gi|125664181|gb|ABN51091.1| neuraminidase [Influenza A virus
(A/Memphis/5/2003(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|122855951|gb|ABM67054.1| neuraminidase [Influenza A virus
(A/Memphis/6/2003(H1N1))]
MNPNQKIITIGSISIAIGTISLMLQIGNMISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|156123510|gb|ABU50639.1| neuraminidase [Influenza A virus
(A/Oklahoma/3/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|168825256|gb|ACA33565.1| neuraminidase [Influenza A virus
(A/California/09/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITGTIKSWKKQILRTQESECVCMNGSCFTIMTDGPSNRAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGIVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGEGSCNPVTVDGADGVKGFS
YKYDNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVNSDTANWSWPDGAELPFTIDK
>gi|158188202|gb|ABW23387.1| neuraminidase [Influenza A virus
(A/Massachusetts/08/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|156123514|gb|ABU50641.1| neuraminidase [Influenza A virus
(A/Missouri/11/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVSIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|158188218|gb|ABW23395.1| neuraminidase [Influenza A virus
(A/Memphis/13/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVSIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAXLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|168827347|gb|ACA33620.1| neuraminidase [Influenza A virus
(A/Georgia/20/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
```

```
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|168827351|gb|ACA33622.1| neuraminidase [Influenza A virus
(A/Georgia/20/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|168827349|gb|ACA33621.1| neuraminidase [Influenza A virus
(A/Georgia/20/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFYYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTNTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELP
>gi|158524906|gb|ABW71297.1| neuraminidase [Influenza A virus (A/North Carolina/UR06-
0011/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVNIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQVGYICSGVFGDNPRPKDGKGSCNPMTVDGADGVKGFS
YKYGNGVWIGRTKSNKLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|157281301|gb|ABV29560.1| neuraminidase [Influenza A virus (A/Kentucky/UR06-
0010/2006(H1N1))]
MNPNQKIITIGSISIAIGIISLMLQIGNIISIWASHSIQTGSQNHTGICNQRIITYENSTWVNHTYVSIN
NTNVVAGKDKTSVTLAGNSSLCSISGWAIYTKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPYRALMSCPLGEAPSPYNSKFESVAWSASACHDGMGWLTIGISGPDNGAVAVLKYNG
IITETIKSWKKRILRTQESECVCVNGSCFTIMTDGPSNGAASYKIFKIEKGKVTKSIELNAPNFHYEECS
CYPDTGTVMCVCRDNWHGSNRPWVSFNQNLDYQIGYICSGVFGDNPRPKDGKGSCNPVTVDGADGVKGFS
YKYGNGVWIGRTKSNRLRKGFEMIWDPNGWTDTDSDFSVKQDVVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELVRGLPRENTTIWTSGSSISFCGVDSDTANWSWPDGAELPFTIDK
>gi|127057980|dbj|BAF48642.1| neuraminidase [Influenza A virus
(A/Singapore/1/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNIKEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784784|gb|AAO46211.1| neuraminidase [Influenza A virus
(A/Singapore/1/57(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784786|gb|AAO46212.1| neuraminidase [Influenza A virus (A/Chile/13/57(H2N2))]
MNPNQKIITIGSVSLTIETVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784788|gb|AAO46213.1| neuraminidase [Influenza A virus (A/Davis/1/57(H2N2))]
MNPNQKIITIDSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDTGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784790|gb|AAO46214.1| neuraminidase [Influenza A virus
(A/ElSalvador/2/57(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
```

```
TTIEKEICPEAVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGICTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|46401570|dbj|BAD16637.1| neuraminidase [Influenza A virus
(A/Adachi/2/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVGNNNWSGYSGIFSVEGKSCINR
CFYVELIRGMPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|46401572|dbj|BAD16638.1| neuraminidase [Influenza A virus
(A/Singapore/1/57(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTHESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|49473497|gb|AAT66420.1| neuraminidase [Influenza A virus (A/Japan/305/57(H2N2))]
IITIGSVSLTIATVCFLMQIAILATTVTLHFKQHKCDSPASNQVMPCEPIIIERNITEIVYLNNTTIEKE
ICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTLDNKHSN
GTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGRLVDSIG
SWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHIGPLSGSAQHIEECSCYPRYPD
VRCICKDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVKGWAFDN
GDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINRCFYVEL
IRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|31790576|dbj|BAC77660.1| neuraminidase [Influenza A virus (A/Japan/305/57(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNPIRLSGGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHIGPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|145279043|gb|ABP49462.1| neuraminidase [Influenza A virus
(A/Albany/22/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFIMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEAVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|146760071|gb|ABQ44463.1| neuraminidase [Influenza A virus
(A/Albany/20/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|188504355|gb|ACD56294.1| neuraminidase [Influenza A virus (A/Ann
Arbor/23/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMHIAILATTVTLHFKQHECDSPASNQAMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCITGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|189230504|gb|ACD85234.1| neuraminidase [Influenza A virus
(A/Guiyang/1/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSADGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
```

```
>gi|194352167|gb|ACF54480.1| neuraminidase [Influenza A virus
(A/Singapore/1/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194352186|gb|ACF54491.1| neuraminidase [Influenza A virus (A/Singapore/1-
MA12/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVSFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194352205|gb|ACF54502.1| neuraminidase [Influenza A virus (A/Singapore/1-
MA12A/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVSFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194352224|gb|ACF54513.1| neuraminidase [Influenza A virus (A/Singapore/1-
MA12B/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVSFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194352243|gb|ACF54524.1| neuraminidase [Influenza A virus (A/Singapore/1-
MA12D/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFFMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVSFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|94481592|gb|ABF21326.1| neuraminidase [Influenza A virus (A/Japan/305/57(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHKCDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHIGPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANTNFMPI
>gi|324510|gb|AAA43413.1| neuraminidase [Influenza A virus (A/RI/5-/1957(H2N2))]
MNPNQKTITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKESRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|8250669|gb|AAA96709.2| neuraminidase [Influenza A virus (A/Leningrad/134/57
(H2N2))]
MNPNQKIITIGSVSLTIATACSLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|565252|gb|AAA96710.1| neuraminidase [Influenza A virus
(A/Leningrad/134/17/1957(H2N2))]
MNPNQKIITIGSVSLTIATACSLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
```

```
GWAFDNGDDVWMGRTISKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|565254|gb|AAA96711.1| neuraminidase [Influenza A virus
(A/Leningrad/134/47/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCSLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|106725724|gb|ABF82433.1| neuraminidase [Influenza A virus (A/RI/5+/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTVHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHIEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRNPNNERGTQGVK
GWAFDNGNDLWMGRTISKESRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|106725729|gb|ABF82434.1| neuraminidase [Influenza A virus (A/RI/5+/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTVHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLAGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGTQGVK
GWAFDNGNDLWMGTTISKDLRSGYETFKVIGGWSTPNSKSQANRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|106725732|gb|ABF82435.1| neuraminidase [Influenza A virus (A/RI/5+/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTVHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSGYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKESRSGYETFKVIGGWSTPNSKSQANRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|115279067|gb|ABI84962.1| neuraminidase [Influenza A virus
(A/Japan/305/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|133753662|gb|ABO38310.1| neuraminidase [Influenza A virus
(A/Albany/26/1957(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPTSNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNGDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKESRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|133752963|gb|ABO38101.1| neuraminidase [Influenza A virus
(A/Albany/2/1958(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|133753643|gb|ABO38299.1| neuraminidase [Influenza A virus
(A/Albany/4/1958(H2N2))]
MNPNQKIITIGSVSLTIATVCFIMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEAVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCTCRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|145279062|gb|ABP49473.1| neuraminidase [Influenza A virus
(A/Albany/1/1958(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
```

```
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|134047528|gb|ABO52305.1| neuraminidase [Influenza A virus
(A/Albany/3/1958(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKESRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|145279005|gb|ABP49440.1| neuraminidase [Influenza A virus
(A/Albany/24/1958(H2N2))]
MNPNQKIITIGSVSLTIATVCFLIQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFKVIGGWSTPNSKSQANRQVIVDKNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784792|gb|AAO46215.1| neuraminidase [Influenza A virus (A/Albany/6/58(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPTSNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNGDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKESRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784794|gb|AAO46216.1| neuraminidase [Influenza A virus (A/Malaya/16/58(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
ENKHSNGTKHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYEGR
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|134047413|gb|ABO52239.1| neuraminidase [Influenza A virus
(A/Albany/5/1958(H2N2))]
MNPNQKIITIGSVSLTIATVCFIMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEAVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784796|gb|AAO46217.1| neuraminidase [Influenza A virus (A/SaoPaolo/3/59(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LEDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVLDISMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRSQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784798|gb|AAO46218.1| neuraminidase [Influenza A virus
(A/Victoria/15681/59(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LEDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVLDISMEDYSIGSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRSQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|189230466|gb|ACD85212.1| neuraminidase [Influenza A virus
(A/Krasnodar/101/1959(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNIKEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTINKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|133982556|gb|ABO44093.1| neuraminidase [Influenza A virus
(A/Albany/1/1959(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
```

```
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVLDISMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRSQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|46401574|dbj|BAD16639.1| neuraminidase [Influenza A virus (A/Ann
Arbor/6/60(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRSPHRTLLMNELGVPFHLGTKQVCAAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHIGPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|146133815|gb|ABQ01358.1| neuraminidase [Influenza A virus
(A/Albany/1/1960(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECNSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LEDSIGSWSQNILRTQESECVCINGTCTVVMTDGNASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVLDISMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRSQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784800|gb|AAO46219.1| neuraminidase [Influenza A virus (A/Ann
Arbor/6/60(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRSPHRTLLMNELGVPFHLGTKQVCAAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHIGPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784802|gb|AAO46220.1| neuraminidase [Influenza A virus (A/England/1/61(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEAVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGICTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784804|gb|AAO46221.1| neuraminidase [Influenza A virus (A/Panama/1/61(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEAAEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGICTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784806|gb|AAO46222.1| neuraminidase [Influenza A virus (A/Taiwan/1/62(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784808|gb|AAO46223.1| neuraminidase [Influenza A virus (A/Yokosuka/3/62(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784810|gb|AAO46224.1| neuraminidase [Influenza A virus (A/Japan/170/62(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784812|gb|AAO46225.1| neuraminidase [Influenza A virus
(A/Netherlands/60/62(H2N2))]
MNPNQKIITIGFVSLIIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITKIVYLNN
TTIEKEICPEVVEYRNWSKPQCHITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSHNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHVEECSC
```

```
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNNDGSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784814|gb|AAO46226.1| neuraminidase [Influenza A virus (A/Albany/1/63(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDENATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784816|gb|AAO46227.1| neuraminidase [Influenza A virus
(A/Netherlands/65/63(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784818|gb|AAO46228.1| neuraminidase [Influenza A virus (A/Taiwan/1/64(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LMDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784820|gb|AAO46229.1| neuraminidase [Influenza A virus (A/Murakami/4/64(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIMYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPIIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|189230428|gb|ACD85190.1| neuraminidase [Influenza A virus
(A/Berlin/3/1964(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPIIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|46401576|dbj|BAD16640.1| neuraminidase [Influenza A virus (A/Taiwan/1/64(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LMDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|31790578|dbj|BAC77661.1| neuraminidase [Influenza A virus
(A/Murakami/4/64(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIMYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPIIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|189230485|gb|ACD85223.1| neuraminidase [Influenza A virus
(A/Cottbus/1/1964(H2N2))]
MNPNQKIITIGSVSLTIATACFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPIIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|94481602|gb|ABF21331.1| neuraminidase [Influenza A virus (A/Taiwan/1964(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LMDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGYPGVK
```

```
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|418078|dbj|BAA04722.1| neuraminidase [Influenza A virus (A/Kumamoto/1/65(H3N2))]
MQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNNTTIEKEICPKVVEYRNWSKPQCQ
ITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTLDNKHSNDTIHDRIPHRTLLMNEL
GVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGYEKNATASFIYDGRLVDSIGSWSQNILRTQESECVCI
NGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSCYPRYPDVRCICRDNWKGSNRPVV
DINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNHGVKGWAFDNGDDVWMGRTISKDLRSG
YETFKVIGGWSTPNSKSQINRQVIVDSNNRSGYSGIFSVEGKGCINRCFYVELIRGRRQETRVWWTSNSI
VVFCGTSGTYGKGSWPDGANINFMPI
>gi|189230447|gb|ACD85201.1| neuraminidase [Influenza A virus
(A/Potsdam/2/1965(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSISSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|188504412|gb|ACD56327.1| neuraminidase [Influenza A virus
(A/Moscow/1019/1965(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPSKCHQFALGQGTTL
ENKHSNGTKHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYGGR
LVDSIVSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784822|gb|AAO46230.1| neuraminidase [Influenza A virus
(A/NewJersey/3/65(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNLTEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784824|gb|AAO46231.1| neuraminidase [Influenza A virus (A/Albany/1/65(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHDCDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPVKCYQFALGQGTTL
DNKHSNDTVHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784826|gb|AAO46232.1| neuraminidase [Influenza A virus
(A/Pittsburgh/2/65(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPTIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPIIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784828|gb|AAO46233.1| neuraminidase [Influenza A virus (A/Kumamoto/1/65(H2N2))]
MNPNQKIITIGSVSLTIAAVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNRSGYSGIFSVEGKGCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784830|gb|AAO46234.1| neuraminidase [Influenza A virus (A/Berkeley/1/66(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784832|gb|AAO46235.1| neuraminidase [Influenza A virus
(A/California/1/66(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
```

```
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784834|gb|AAO46236.1| neuraminidase [Influenza A virus (A/Canada/1/66(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMHIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784836|gb|AAO46237.1| neuraminidase [Influenza A virus (A/Panama/1/66(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKIVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784838|gb|AAO46238.1| neuraminidase [Influenza A virus (A/Panama/1/67(H2N2))]
MNPNQKIITIGSASLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKIVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNEKGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|37784840|gb|AAO46239.1| neuraminidase [Influenza A virus (A/AnnArbor/7/67(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVVDISMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|37784842|gb|AAO46240.1| neuraminidase [Influenza A virus (A/England/10/67(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVGYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784844|gb|AAO46241.1| neuraminidase [Influenza A virus (A/Taiwan/1/67(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVGYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784846|gb|AAO46242.1| neuraminidase [Influenza A virus (A/Poland/5/67(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784848|gb|AAO46243.1| neuraminidase [Influenza A virus
(A/Montevideo/2208/67(H2N2))]
MNPNQKIITIGSVSLTIATVCFLIQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LMDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784850|gb|AAO46244.1| neuraminidase [Influenza A virus (A/Georgia/1/67(H2N2))]
MNPNQKIITIGSVSLTTATACFLTQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDSGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRFSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784852|gb|AAO46245.1| neuraminidase [Influenza A virus (A/Tokyo/3/67(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHDCDSPASNQVMPCEPIIIERNITEIVYLNN
```

```
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPVKCYQFALGQGTTL
DNKHSNDTVHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLAGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGTQGVK
GWAFDNGNDLWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784854|gb|AAO46246.1| neuraminidase [Influenza A virus
(A/Johannesburg/567/67(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TIIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRTPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIAVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784856|gb|AAO46247.1| neuraminidase [Influenza A virus
(A/Cordoba/522/67(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|133981982|gb|ABO44060.1| neuraminidase [Influenza A virus
(A/Albany/9/1967(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|146760033|gb|ABQ44441.1| neuraminidase [Influenza A virus
(A/Albany/4/1967(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKETCPKVVEYRSWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPIVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|133982576|gb|ABO44104.1| neuraminidase [Influenza A virus
(A/Albany/8/1967(H2N2))]
MNPNQKIITIGSASLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNEKGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|133755371|gb|ABO38704.1| neuraminidase [Influenza A virus
(A/Albany/6/1967(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKETCPKVVEYRSWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPIVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|133755390|gb|ABO38715.1| neuraminidase [Influenza A virus
(A/Albany/7/1967(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKETCPKVVEYRSWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPIVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|133755409|gb|ABO38726.1| neuraminidase [Influenza A virus
(A/Albany/3/1967(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKETCPKVVEYRSWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPIVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
```

```
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|189230523|gb|ACD85245.1| neuraminidase [Influenza A virus
(A/Tashkent/1046/1967(H2N2))]
MNPNQKIITIGSVSLIIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPRVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDDRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|189230542|gb|ACD85256.1| neuraminidase [Influenza A virus
(A/Johannesburg/617/1967(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TIIEKEIXPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRTPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIAVFCGTSGTYGTGSWPDGANINFMPI
>gi|1480200|gb|AAB05621.1| neuraminidase [Influenza A virus (A/Tokyo/3/1967(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPVKCYQFALGQGTTL
DNKHSNDTVHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLAGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGTQGVK
GWAFDNGNDLWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194351984|gb|ACF54392.1| neuraminidase [Influenza A virus
(A/Georgia/1/1967(H2N2))]
MNPNQKIITIGSVSLTTATACFLTQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDSGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRFSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194304561|gb|ACF41694.1| neuraminidase [Influenza A virus
(A/Berkeley/1/1968(H2N2))]
NQKIITIGSASLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNTTEIVYLNNTTI
EKEICPKVVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTLDNK
HSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGRLVD
SIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSCYPR
YPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNEKGNQGVKGWA
FDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINRCFY
VELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|133755428|gb|ABO38737.1| neuraminidase [Influenza A virus
(A/Albany/2/1968(H2N2))]
MNPNQKIITIGSASLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNEKGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|31790580|dbj|BAC77662.1| neuraminidase [Influenza A virus (A/Texas/68(H2N2))]
MNPNQKIITIGSASLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNEKGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|46401578|dbj|BAD16641.1| neuraminidase [Influenza A virus
(A/Berkeley/1/1968(H2N2))]
MNPNQKIITIGSASLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNTTEIVYLNN
TTIEKEICPKVVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNEKGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|134047432|gb|ABO52250.1| neuraminidase [Influenza A virus
(A/Albany/1/1968(H2N2))]
MNPNQKIITIGSASLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
```

```
YPRYPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNEKGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|188504374|gb|ACD56305.1| neuraminidase [Influenza A virus (A/North
Carolina/1/1968(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKSCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|188504393|gb|ACD56316.1| neuraminidase [Influenza A virus
(A/Korea/426/1968(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LMDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKRCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784858|gb|AAO46248.1| neuraminidase [Influenza A virus (A/Korea/426/68(H2N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCVAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LMDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNPGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSNNWSGYSGIFSVEGKRCINR
CFYVELIRGRQQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37784860|gb|AAO46249.1| neuraminidase [Influenza A virus (A/Berkeley/1/68(H2N2))]
MNPNQKIITIGSASLTIATVCFLMQIAILVTTVTLHFKQHECDSPASNQVMPCEPIIIERNTTEIVYLNN
TTIEKEICPKVVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPDVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNEKGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINLMPI
>gi|63054904|gb|AAY28988.1| neuraminidase [Influenza A virus (A/Canada/720/05(H2N2))]
MNPNQKIITIGSVSLTIETVCFLMQIAILATTVTLHFKQHECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPEVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNGTIHDRIPHRTLLMNELGVPFHLGTKQVCVAWSSSSCHDGKAWLHVCVTGDDRNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIKEGKIVHISPLSGSAQHIEECSC
YPRYPDVRCICRDNWKGSNRPVIDINMEDYSIDSSYVCSGLVGDTPRNDDSSSNSNCRDPNNERGNPGVK
GWAFDNGDDVWMGRTIGKDSRSGYETFKVIGGWSTPNSKSQVNRQVIVDNNNWSGYSGIFSVEGKSCINR
CFYVELIRGRPQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|106907951|gb|ABF83450.1| neuraminidase [Influenza A virus (A/Northern
Territory/60/1968(H3N2))]
NPNQKIITIGSVSLTIATVCFLMQTAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNNT
TIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTLD
NKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGRL
VDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSCY
PRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVKG
WAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINRC
FYVELIRGRKQEARVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785264|gb|AAO46470.1| neuraminidase [Influenza A virus
(A/Georgia/122/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785268|gb|AAO46472.1| neuraminidase [Influenza A virus (A/Tehran/101/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPITIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVISGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|85816057|gb|ABC84392.1| neuraminidase [Influenza A virus (A/Beijing/1/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
```

```
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|46401580|dbj|BAD16642.1| neuraminidase [Influenza A virus (A/Aichi/2/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIDKEKCPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|193805119|gb|ACF22213.1| neuraminidase [Influenza A virus (A/Hong Kong/1-
1/1968(H3N2))]
PNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNNTT
IEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTLDN
KHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGRLV
DSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSCYP
RYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVKGW
AFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINRCF
YVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|193805157|gb|ACF22235.1| neuraminidase [Influenza A virus (A/Hong Kong/1-
4/1968(H3N2))]
PNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNNTT
IEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTLDN
KHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGRLV
DSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSCYP
RYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVKGW
AFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINRCF
YVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|193805176|gb|ACF22246.1| neuraminidase [Influenza A virus (A/Hong Kong/1-
5/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|193805214|gb|ACF22268.1| neuraminidase [Influenza A virus (A/Hong Kong/1-
7/1968(H3N2))]
PNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNNTT
IEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTLDN
KHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGRLV
DSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSCYP
RYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVKGW
AFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINRCF
YVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194304637|gb|ACF41738.1| neuraminidase [Influenza A virus (A/Hong Kong/1-1-MA-
12/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMHI
>gi|194304751|gb|ACF41804.1| neuraminidase [Influenza A virus (A/Hong Kong/1-11-MA21-
3/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194352003|gb|ACF54403.1| neuraminidase [Influenza A virus (A/Hong Kong/1-1-MA-
12D/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|126567437|dbj|BAF48362.1| neuraminidase [Influenza A virus
(A/Aichi/2/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
```

```
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785250|gb|AAO46463.1| neuraminidase [Influenza A virus (A/Canada/228/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785252|gb|AAO46464.1| neuraminidase [Influenza A virus
(A/Singapore/1/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194293977|gb|ACF40083.1| neuraminidase [Influenza A virus
(A/Washington/03/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194294013|gb|ACF40101.1| neuraminidase [Influenza A virus
(A/Oregon/01/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSSPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIASSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEXTEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|189303165|gb|ACD85639.1| neuraminidase [Influenza A virus
(A/Texas/05/2008(H3N2))]
NQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSSPNNQVMLCEPTIIERNITEIVYLTNTTI
EKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTLNNV
HSNNTVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGRLVD
SIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSCYPR
YPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVKGWA
FDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINRCFY
VELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194294017|gb|ACF40103.1| neuraminidase [Influenza A virus
(A/Minnesota/06/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293993|gb|ACF40091.1| neuraminidase [Influenza A virus
(A/Washington/04/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293981|gb|ACF40085.1| neuraminidase [Influenza A virus (A/New
Jersey/15/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSSPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
```

```
>gi|194294021|gb|ACF40105.1| neuraminidase [Influenza A virus
(A/Minnesota/07/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|193084877|gb|ACF10328.1| neuraminidase [Influenza A virus
(A/Texas/06/2008(H3N2))]
MNPNHKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADLNLMPI
>gi|194294009|gb|ACF40099.1| neuraminidase [Influenza A virus (A/South
Carolina/03/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNXVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEXTEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|193084881|gb|ACF10330.1| neuraminidase [Influenza A virus (A/Iowa/01/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTITERNITEIVYLTN
TTIEKEXCPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNXVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293985|gb|ACF40087.1| neuraminidase [Influenza A virus
(A/Tennessee/04/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSSPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNXVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194294005|gb|ACF40097.1| neuraminidase [Influenza A virus
(A/Illinois/09/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNXVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|193084885|gb|ACF10332.1| neuraminidase [Influenza A virus (A/Iowa/02/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSSPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEXTEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293997|gb|ACF40093.1| neuraminidase [Influenza A virus (A/New
Jersey/14/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEKTEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194294025|gb|ACF40107.1| neuraminidase [Influenza A virus (A/New
York/09/2008(H3N2))]
MNPNQKIITIGSVSLTMSTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNXVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKDILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
```

```
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|37785256|gb|AAO46466.1| neuraminidase [Influenza A virus (A/Malaysia/1/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785258|gb|AAO46467.1| neuraminidase [Influenza A virus (A/USSR/039/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLTGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785260|gb|AAO46468.1| neuraminidase [Influenza A virus
(A/Malaysia/221/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDFPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785262|gb|AAO46469.1| neuraminidase [Influenza A virus
(A/HongKong/16/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|14009708|gb|AAK51726.1| neuraminidase [Influenza A virus (A/Hong
Kong/1/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|193805271|gb|ACF22301.1| neuraminidase [Influenza A virus (A/Hong Kong/1-
12/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|133982222|gb|ABO44071.1| neuraminidase [Influenza A virus
(A/Albany/18/1968(H3N2))]
MNPNQKIITIGFVFLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCKNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194304675|gb|ACF41760.1| neuraminidase [Influenza A virus (A/Hong Kong/1-9-MA21-
2/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDRGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194304713|gb|ACF41782.1| neuraminidase [Influenza A virus (A/Hong Kong/1-11-MA21-
1/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
```

```
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDHRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|125664200|gb|ABN51102.1| neuraminidase [Influenza A virus
(A/Albany/11/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|125664238|gb|ABN51124.1| neuraminidase [Influenza A virus
(A/Albany/19/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRVPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|194352098|gb|ACF54458.1| neuraminidase [Influenza A virus (A/Hong Kong/1-8-MA21-
3/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRISAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785254|gb|AAO46465.1| neuraminidase [Influenza A virus
(A/Philippines/3/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785266|gb|AAO46471.1| neuraminidase [Influenza A virus
(A/PuertoRico/1/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|37785270|gb|AAO46473.1| neuraminidase [Influenza A virus (A/Panama/1/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|80977933|gb|ABB54517.1| neuraminidase [Influenza A virus (A/Memphis/1/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|1517824|gb|AAB06964.1| neuraminidase
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPANNQVMPCEPIIIERNITEIVYLTN
TTIEKEICPKLVEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSRHDGKAWLHVCVTGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPVADINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGADINFMPI
>gi|134047623|gb|ABO52360.1| neuraminidase [Influenza A virus
(A/Albany/17/1968(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
```

```
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGNDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|31790582|dbj|BAC77663.1| neuraminidase [Influenza A virus (A/Hong
Kong/1/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDNGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|148628616|gb|ABQ97206.1| neuraminidase [Influenza A virus (A/Hong Kong/68(H3N2))]
MNPNQKIITIGSVSLTIATVCFLMQIAILVTTVTLHFKQYECDSPASNQVMPCEPIIIERNITEIVYLNN
TTIEKEICPKVVEYRNWSKPQCQITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDHGKCYQFALGQGTTL
DNKHSNDTIHDRIPHRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYDGR
LVDSIGSWSQNILRTQESECVCINGTCTVVMTDGSASGRADTRILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCICRDNWKGSNRPVVDINMEDYSIDSSYVCSGLVGDTPRNDDRSSNSNCRNPNNERGNQGVK
GWAFDSGDDVWMGRTISKDLRSGYETFKVIGGWSTPNSKSQINRQVIVDSDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETRVWWTSNSIVVFCGTSGTYGTGSWPDGANINFMPI
>gi|188076309|gb|ACD47181.1| neuraminidase [Influenza A virus
(A/Wisconsin/06/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LIDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|189303145|gb|ACD85629.1| neuraminidase [Influenza A virus
(A/Idaho/03/2008(H3N2))]
MNPNQKIITMGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSGHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|188076293|gb|ACD47173.1| neuraminidase [Influenza A virus
(A/Wisconsin/03/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDXVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|189303105|gb|ACD85609.1| neuraminidase [Influenza A virus
(A/Tennessee/02/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|188076307|gb|ACD47180.1| neuraminidase [Influenza A virus
(A/Wisconsin/07/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293955|gb|ACF40072.1| neuraminidase [Influenza A virus
(A/Memphis/28/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
```

```
>gi|189303153|gb|ACD85633.1| neuraminidase [Influenza A virus
(A/Wisconsin/10/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293951|gb|ACF40070.1| neuraminidase [Influenza A virus
(A/Florida/10/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSSPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|188076301|gb|ACD47177.1| neuraminidase [Influenza A virus
(A/Virginia/01/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSSPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDNNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|189303117|gb|ACD85615.1| neuraminidase [Influenza A virus
(A/Florida/07/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQTAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNXVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGK
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293959|gb|ACF40074.1| neuraminidase [Influenza A virus
(A/Georgia/07/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNKVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVITDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|188076299|gb|ACD47176.1| neuraminidase [Influenza A virus
(A/Wisconsin/08/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNIVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|193084869|gb|ACF10324.1| neuraminidase [Influenza A virus (A/North
Carolina/01/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|193084865|gb|ACF10322.1| neuraminidase [Influenza A virus (A/New
York/06/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFLQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293969|gb|ACF40079.1| neuraminidase [Influenza A virus (A/New
York/08/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFLQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
```

```
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|189303149|gb|ACD85631.1| neuraminidase [Influenza A virus
(A/Oklahoma/01/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSSPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRBRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|189303157|gb|ACD85635.1| neuraminidase [Influenza A virus
(A/Missouri/01/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNTVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293963|gb|ACF40076.1| neuraminidase [Influenza A virus
(A/Indiana/05/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSSPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNNIVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|189303161|gb|ACD85637.1| neuraminidase [Influenza A virus
(A/Georgia/04/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQTAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDXVRXRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSIVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHXEECSC
YPRYPDVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVERGDRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194293973|gb|ACF40081.1| neuraminidase [Influenza A virus
(A/Arkansas/05/2008(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCDITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVRDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCITGDDKNATASFIYNGR
LVDSVVSWSKEILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDHSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRLGYETFKVIEGWSNPKSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|68509898|gb|AAY98342.1| neuraminidase [Influenza A virus (A/New
York/329/1999(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSLPNNQVMLCEPTILERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYGGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|68509317|gb|AAY98240.1| neuraminidase [Influenza A virus (A/New
York/318/1999(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSLPNNQVMLCEPTILERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYGGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLM
>gi|67057708|gb|AAY64265.1| neuraminidase [Influenza A virus (A/New
York/259/1999(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSLPNNQVMLCEPTILERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYGGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
```

```
>gi|68525445|gb|AAY98773.1| neuraminidase [Influenza A virus (A/New
York/248/1999(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSLPNNQVMLCEPTILERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYGGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|68508605|gb|AAY98050.1| neuraminidase [Influenza A virus (A/New
York/257/1999(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSLPNNQVMLCEPTILERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYGGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|68509231|gb|AAY98200.1| neuraminidase [Influenza A virus (A/New
York/314/1999(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSLPNNQVMLCEPTILERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYGGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|71564600|gb|AAZ38465.1| neuraminidase [Influenza A virus (A/New
York/278/1999(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYDGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIVHTSKLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKSRSGYETFKVIEGWSKPNSKLQINRQVIVERGNMSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|80974029|gb|ABB53699.1| neuraminidase [Influenza A virus (A/New
York/397/1999(H3N2))]
NPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSLPNNQVMLCEPTILERNITEIVYLTNT
TIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTLN
NRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYGGRL
VDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSCY
PRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVKG
WAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINRC
FYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLM
>gi|68510063|gb|AAY98399.1| neuraminidase [Influenza A virus (A/New
York/338/1999(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSLPNNQVMLCEPTILERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYGGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|73761601|gb|AAZ83326.1| neuraminidase [Influenza A virus (A/New
York/339/1999(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECDSLPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYDGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|13548549|emb|CAC35938.1| neuramindase [Influenza A virus
(A/human/Montreal/MTL72692/00(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDENATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSLLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRTGYETFKVIEGWSKPNSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|13548551|emb|CAC35939.1| neuramindase [Influenza A virus
(A/human/Montreal/MTL327/00(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNEHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDENATASFIYNGR
```

```
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|13548555|emb|CAC35941.1| neuramindase [Influenza A virus
(A/human/Montreal/MTL500/00(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDENATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSLLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|13548565|emb|CAC35946.1| neuramindase [Influenza A virus
(A/human/Montreal/MTL169/00(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSLPNNQVMLCEPTILERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYGGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIIHISQLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKHDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|13548569|emb|CAC35948.1| neuramindase [Influenza A virus
(A/human/Montreal/MTL63286/00(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECSSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCKITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNRHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGHDENATASFIYDGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGRADTKILFIEEGKIVHISPLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLNPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKFRSGYETFKVIEGWSKPNSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|22859405|emb|CAD29990.1| neuraminidase [Influenza A virus
(A/Perugia/7/2000(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHGRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDENATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSLLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDNSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|22859395|emb|CAD29985.1| neuraminidase [Influenza A virus
(A/Denmark/41/2000(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDENATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVWWTSNSIVVFCGTSRTYGTGSWPDGADINLMPI
>gi|22859349|emb|CAD29962.1| neuraminidase [Influenza A virus (A/Hong
Kong/2/2000(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILVTTVTLHFKQYECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDENATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|149132956|gb|ABR20818.1| neuraminidase [Influenza A virus
(A/Niedersachsen/56/00(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDENATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSLLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKQETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINL
>gi|115291184|gb|ABI93086.1| neuraminidase [Influenza A virus (A/New South
Wales/27/2000(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQYECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDENATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSSLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVDRGNRSGYSGIFSVESKSCINR
CFYVELIRGRKQETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
```

```
>gi|83752056|gb|ABC43053.1| neuraminidase [Influenza A virus
(A/Canterbury/437/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQHECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLVEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|83752094|gb|ABC43075.1| neuraminidase [Influenza A virus
(A/Canterbury/439/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQHECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLVEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|84873522|gb|ABC67820.1| neuraminidase [Influenza A virus
(A/Canterbury/429/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQHECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLVEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|83751804|gb|ABC42914.1| neuraminidase [Influenza A virus
(A/Canterbury/387/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQHECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLVEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|85838433|gb|ABC86127.1| neuraminidase [Influenza A virus
(A/Canterbury/432/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQHECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLVEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194269503|gb|ACF36675.1| neuraminidase [Influenza A virus (A/Hong
Kong/CUHK51353/2003(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDENATASFIYNGR
LVDSIVSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSNPNSKLQINRQVIVDRDNRSGYSGIFSVEGKSCINR
CFYVELIRGRNQETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|194269505|gb|ACF36676.1| neuraminidase [Influenza A virus (A/Hong
Kong/CUHK51380/2003(H3N2))]
MNPNQKIITIGSVSLTISTICFFMQIAILITTVTLHFKQYEFNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLAEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNVHSNDTVHDRTPYRTLLMNELGVPFHLGTKQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYNGR
LVDSVVSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHTSTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINIKDYSIVSSYVCSGLVGDTPRKNDSSSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSNPNSKLQINRQVIVDRGNRSGYSGIFSVEGKSCINR
CFYVELIRGRNQETEVLWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|110333367|gb|ABG67637.1| neuraminidase [Influenza A virus
(A/Waikato/139/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQHECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLVEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|110333405|gb|ABG67659.1| neuraminidase [Influenza A virus
(A/Waikato/148/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQHECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLVEYRNWSKPQCNITGFAPFSRDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYNGR
```

```
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|83730009|gb|ABC42128.1| neuraminidase [Influenza A virus
(A/Canterbury/395/2003(H3N2))]
MNPNQKIITIGSVSLTIATICFLMQIAILVTTVTLHFKQHECNSPPNNQVMLCEPTIIERNITEIVYLTN
TTIEKEICPKLVEYRNWSKPQCNITGFAPFSKDNSIRLSAGGDIWVTREPYVSCDPDKCYQFALGQGTTL
NNGHSNDTVHDRTPYRTLLMNELGVPFHLGTRQVCIAWSSSSCHDGKAWLHVCVTGDDKNATASFIYNGR
LVDSIGSWSKKILRTQESECVCINGTCTVVMTDGSASGKADTKILFIEEGKIVHISTLSGSAQHVEECSC
YPRYPGVRCVCRDNWKGSNRPIVDINVKDYSIVSSYVCSGLVGDTPRKNDSFSSSHCLDPNNEEGGHGVK
GWAFDDGNDVWMGRTISEKLRSGYETFKVIEGWSKPNSKLQINRQVIVERGNRSGYSGIFSVEGKSCINR
CFYVELIRGRKEETEVWWTSNSIVVFCGTSGTYGTGSWPDGADINLMPI
>gi|2865378|gb|AAC40507.1| neuraminidase [Influenza A virus (A/Hong
Kong/156/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHIIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSXKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDGADLPFTIDK
>gi|4324308|gb|AAD16786.1| neuraminidase [Influenza A virus (A/Hong
Kong/482/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSHIIKTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNTLRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324312|gb|AAD16790.1| neuraminidase [Influenza A virus (A/Hong
Kong/516/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSHIIKTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNTLRTQES
ECACVNGSCFTVMTDGPNNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGSPKEKTIWTS
GSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|4324314|gb|AAD16792.1| neuraminidase [Influenza A virus (A/Hong
Kong/538/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSHIIKTWHPNQPEPCKQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNTLRTQES
ECACVNGSCFTVMTDGPNNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324317|gb|AAD16795.1| neuraminidase [Influenza A virus (A/Hong
Kong/491/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSPIIQAWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324319|gb|AAD16797.1| neuraminidase [Influenza A virus (A/Hong
Kong/532/1997(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSHIIQAWHPNQPEPCNQSINFYTEQAAASVTLAGYS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSTFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324322|gb|AAD16800.1| neuraminidase [Influenza A virus (A/Hong
Kong/542/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSPIIQDWHPNQPEPCNQSINFYTEQAATSVTSAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTINSWRNNILKTPES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAVTDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPLTIDK
```

```
>gi|8307791|gb|AAF74324.1|AF084274_1 neuraminidase subtype 1 [Influenza A virus
(A/Hong Kong/485/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHIIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSVSFCGVNSDTMGWSWPDGAELPFTIDK
>gi|8307787|gb|AAF74322.1|AF084272_1 neuraminidase subtype 1 [Influenza A virus
(A/Hong Kong/482/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSHIIKTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNTLRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|8307793|gb|AAF74325.1|AF084275_1 neuraminidase subtype 1 [Influenza A virus
(A/Hong Kong/486/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSHIIKTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNTLRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDGAELPYTIDK
>gi|3335423|gb|AAC32089.1| neuraminidase subtype 1 [Influenza A virus (A/Hong
Kong/156/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHIIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|4324310|gb|AAD16788.1| neuraminidase [Influenza A virus (A/Hong
Kong/486/97(H5N1))]
MNPNQKIITIGSICMVVGIINLMLQIGNTISVWVSHIIKTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIKEPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNTLRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324321|gb|AAD16799.1| neuraminidase [Influenza A virus (A/Hong
Kong/514/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHIIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDKSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYGTLM
SCPVGETPSPYNSRFESVAWSASACHDSISWLTIGISGPDNGAVAVLKYNGMITDTIKSWRKNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVDSDTVGWSWPDDAELPFTIDK
>gi|8307785|gb|AAF74321.1|AF084271_1 neuraminidase subtype 1 [Influenza A virus
(A/Hong Kong/481/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHTIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYQECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|8307789|gb|AAF74323.1|AF084273_1 neuraminidase subtype 1 [Influenza A Virus
(A/Hong Kong/483/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWISHIIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNEAVAVLKYNGIITDTIRSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAVTDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|182382583|gb|ACB87566.1| neuraminidase [Influenza A virus
(A/Jiangsu/2/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQDEPIRNANFLTENAVASVTLAGNSS
LCPVRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
```

```
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCDPVSPNGAYGIKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157103052|gb|ABV23935.1| neuraminidase [Influenza A virus
(A/Nigeria/6e/07(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTERAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGASWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|162569002|gb|ABY19420.1| neuraminidase [Influenza A virus (A/Viet
Nam/HN31242/2007(H5N1))]
MNPNQKVITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQNQVEPIINTNFLTGKAVASITLAGNSS
LCPIRGWAIHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVIKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSHNGAYGVKGFSFKYGNGVWIGRTKSPNSRSG
FEMIWDPNGWSETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTVWTSG
SSISFCGVNSDTVSWSWPDGAELPFSIDK
>gi|124244208|gb|ABM92274.1| neuraminidase [Influenza A virus (A/Egypt/0636-
NAMRU3/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQCQDEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVFPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTTDK
>gi|124098908|gb|ABM90469.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1031RE2/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|124098582|gb|ABM90436.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1031/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|124098853|gb|ABM90447.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1031T/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|124098932|gb|ABM90480.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1032/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVIKSVELDATNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|124098881|gb|ABM90458.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1031T2/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
```

```
>gi|124098984|gb|ABM90502.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1032T/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVIKSVELDATNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|124098957|gb|ABM90491.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1032N/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVIKSVELDATNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|124099031|gb|ABM90524.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1046T/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVVSVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|124099009|gb|ABM90513.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1046/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVVSVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|124099058|gb|ABM90535.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1047/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVVSVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|124099084|gb|ABM90546.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC1047S/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVVSVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|2833659|gb|AAC34264.1| neuraminidase [Influenza A virus (A/Hong
Kong/156/97(H5N1))]
QKQEIKMNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHIIQTWHPNQPEPCNQSINFYTEQAAASV
TLAGNSSLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRS
PYRTLMSCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNI
LRTQESECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCR
DNWHGSNRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTK
STSSRSGFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKE
KTIWTSGSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324309|gb|AAD16787.1| neuraminidase [Influenza A virus (A/Hong
Kong/488/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSHIIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNTLRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324311|gb|AAD16789.1| neuraminidase [Influenza A virus (A/Hong
Kong/507/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSHIIKTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNTLRTQES
```

```
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGTCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324320|gb|AAD16798.1| neuraminidase [Influenza A virus (A/Hong
Kong/483/1997(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWISHIIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNEAVAVLKYNGIITDTIRSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAVTDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324315|gb|AAD16793.1| neuraminidase [Influenza A virus (A/Hong
Kong/481/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHTIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324316|gb|AAD16794.1| neuraminidase [Influenza A virus (A/Hong
Kong/485/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHIIQTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSVSFCGVNSDTMGWSWPDDAELPFTIDK
>gi|4324318|gb|AAD16796.1| neuraminidase [Influenza A virus (A/Hong
Kong/503/97(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNIISVWVSHIIQAWHSNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVMREPFISCSHLECRTFFLTQGALLNNKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYSDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGWTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|4324313|gb|AAD16791.1| neuraminidase [Influenza A virus (A/HongKong/97/98(H5N1))]
MNPNQKIITIGSICMVVGIISLMLQIGNTISVWVSHIIKTWHPNQPEPCNQSINFYTEQAAASVTLAGNS
SLCPISGWAIYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPYRTLM
SCPVGEAPSPYNSRFESVAWSASACHDGISWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNTLRTQES
ECACVNGSCFTVMTDGPSNEQASYKIFKIEKGRVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGS
NRPWVSFNQNLEYQIGYICSGVFGDSPRPNDGTGSCGPVSLNGAYGVKGFSFKYGNGVWIGRTKSTSSRS
GFEMIWDPNGLTETDSSFSLKQDIIAITDWSGYSGSFIQHPELTGLNCMRPCFWVELIRGRPKEKTIWTS
GSSISFCGVNSDTVGWSWPDDAELPFTIDK
>gi|47834892|gb|AAT39081.1| neuraminidase [Influenza A virus (A/HK/212/03 (H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNIMRTQESECACVNGSCFTVMTDGPSNGQASYKIFRIEKGKVVKSAELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYRIGYICSGVFGDNPRPNDGTGSCGPVSPKGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|148340810|gb|ABQ58981.1| neuraminidase [Influenza A virus
(A/Beijing/01/2003(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACINGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELVRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|71013506|dbj|BAE07203.1| neuraminidase [Influenza A virus (A/Hong
Kong/213/03(H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNIMRTQESECACVNGSCFTVMTDGPSNGQASYKIFRIEKGKVVKSAELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYRIGYICSGVFGDNPRPNDGTGSCGPVSPKGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|47834894|gb|AAT39082.1| neuraminidase [Influenza A virus (A/HK/213/03 (H5N1))]
PNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNISNT
NFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLND
```

```
KHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGII
TDTIKSWRNNIMRTQESECACVNGSCFTVMTDGPSNGQASYKIFRIEKGKVVKSAELNAPNYHYEECSCY
PDAGEITCVCRDNWHGSNRPWVSFNQNLEYRIGYICSGVFGDNPRPNDGTGSCGPVSPKGAYGIKGFSFK
YGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCF
WVELIRGRPKESTIWTSGSSISFC
>gi|145284413|gb|ABP52010.1| neuraminidase [Influenza A virus (A/Hong
Kong/213/2003(H5N1))]
MNPNQKITTIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQAEPCNQSIITYENNTWVNQTYVNIS
NTNFLTEKAVASVTLAGNSSLCPISGWAVYSKDNGIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALL
NDKHSNGTVKDRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNG
IITDTIKSWRNNIMRTQESECACVNGSCFTVMTDGPSNGQASYKIFRIEKGKVVKSAELNAPNYHYEECS
CYPDAGEITCVCRDNWHGSNRPWVSFNQNLEYRIGYICSGVFGDNPRPNDGTGSCGPVSPKGAYGIKGFS
FKYGNGVWIGRTKSTNSRSGFEMIWDPNGWTGTDSNFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRP
CFWVELIRGRPKESTIWTSGSSISFCGVNSDTVGWSWPDDAELPLT
>gi|145284415|gb|ABP52011.1| neuraminidase [Influenza A virus
(A/Thailand/16/2004(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWASG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|145284421|gb|ABP52014.1| neuraminidase [Influenza A virus
(A/Thailand/Chaiyaphum/622/2004(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|72398597|gb|AAZ72716.1| neuramindase [Influenza A virus (A/Viet Nam/HG-
178/2004(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWIETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVSSDTVGWSWPDGAELPFTIDK
>gi|93008563|gb|ABE97712.1| neuraminidase [Influenza A virus
(A/Vietnam/CL01/2004(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|93008571|gb|ABE97716.1| neuraminidase [Influenza A virus
(A/Vietnam/CL26/2004(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAE
>gi|134306634|gb|ABO72355.1| neuraminidase [Influenza A virus
(A/Prachinburi/6231/2004(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTENQHKAEPISNTNLLTEKTVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGAGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSGTVGWSWPDGAELPFTIDK
>gi|46360357|gb|AAS89005.1| neuraminidase [Influenza A virus (A/Thailand/3(SP-
83)/2004(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQQKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWIETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
```

```
>gi|113497374|gb|ABI36476.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC644/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSTQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|113497245|gb|ABI36446.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC669P/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWISFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157955437|gb|ABW06116.1| neuraminidase [Influenza A virus
(A/Indonesia/583H/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWISFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELP
>gi|113497198|gb|ABI36435.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC669/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWISFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|113497296|gb|ABI36457.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC699/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157955475|gb|ABW06138.1| neuraminidase [Influenza A virus
(A/Indonesia/604H/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDG
>gi|113972297|gb|ABI49398.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC739/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|113972316|gb|ABI49409.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC742/2006(H5N1))]
MNPNRKIITIGSICMVIGMVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELVAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTASWSWPDGAELPFTIDK
>gi|118864141|gb|ABL31746.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC835/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGNSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRKNILRTQESE
```

```
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|118864192|gb|ABL31757.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC836/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|118864235|gb|ABL31768.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC836T/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|122913049|gb|ABM68050.1| neuraminidase [Influenza A virus (A/Egypt/12374-
NAMRU3/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQCQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|118864393|gb|ABL31782.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC887/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|118574893|gb|ABL07021.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC938E/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASITLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|118574874|gb|ABL07010.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC938/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASITLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMKKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|118574912|gb|ABL07032.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC940/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMVSTWVSHSIQTGNQYQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|122913045|gb|ABM68048.1| neuraminidase [Influenza A virus (A/Egypt/14725-
NAMRU3/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWISHSIQTGNQCQAGPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIRESFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDSWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
```

```
>gi|122913047|gb|ABM68049.1| neuraminidase [Influenza A virus (A/Egypt/14724-
NAMRU3/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWISHSIQTGNQCQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDSWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|162569004|gb|ABY19421.1| neuraminidase [Influenza A virus (A/Viet
Nam/HN31242/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQNQVEPIINTNFLTGKAVASITLAGNSS
LCPIRGWAIHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVIKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSHNGAYGVKGFSFKYGNGVWIGRTKSPNSRSG
FEMIWDPNGWSETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTVWTSG
SSISFCGVNSDTVSWSWPDGAELPFSIDK
>gi|182382601|gb|ACB87576.1| neuraminidase [Influenza A virus
(A/Jiangsu/1/2007(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNIISIWVSHSIQTGNQHQDEPIRNANFLTENAVASVTLAGNSS
LCPVRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELNAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCDPVSPNGAYGIKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|85680902|gb|ABC72646.1| neuraminidase [Influenza A virus
(A/Thailand/676/2005(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQQKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGSLLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMDKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|116295114|gb|ABJ98530.1| neuraminidase [Influenza A virus
(A/Thailand/RPNP/2005(H5N1))]
KQEFKMNPNKKIITIGSICMVTGMVSLMLQIGNLISIWLSRSIHTGNQQKAEPISNTNFLTEKAVASVKL
AGNSSLCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGSLLNDKHSNGTVKDRSPH
RTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDSGAVAVLKYNGIITDTIKSWRNNTLR
TQESECACVNGSCFTVMTDGPSNGQASHKIFKWKKGKWLNQSQLDAPNYHYEECSCYPDAGEITCVCRDN
WHGSNRPWVSFNQNLGYQIGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRTKST
NSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLNCIRPCFWVELIRGRPKEST
IWTSGSSISFCGVNSDTVGGSWP
>gi|126361912|gb|ABO10178.1| neuraminidase [Influenza A virus (A/Viet
Nam/JP4207/2005(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGNQHQAEPISNTNFLNEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|78096578|dbj|BAE46950.1| neuraminidase [Influenza A virus
(A/Hanoi/30408/2005(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQIGNMISIWVSHSIHTGNQHQSEPISNTKFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVVKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|95116895|gb|ABF56651.1| neuraminidase [Influenza A virus
(A/Vietnam/PEV16T/2005(H5N1))]
MNPNQKIITIGSICMVTGIVSLMLQVGNMISIWVSHSIHTGSQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|116295106|gb|ABJ98526.1| neuraminidase [Influenza A virus
(A/Thailand/NKNP/2005(H5N1))]
KTIEIITIGSICMVTGMVSLMLQIGNLDLNMGQPFYSHRAQHKAEPISNTNFLTEKAVASVKLAGNSSLC
PINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLQCRTFFLTQGALLNDKHSNGTVKDRSPHRTLMSCP
VGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESECA
```

```
CVNGSCFTVMTDGPSNGQASHKIFQNGKRGKWVKSVQLDAPHYHYEECSRYPDAREITCVCRDNWHGSNR
PWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSGF
EMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSGS
SISFCGVNSEAVGWSWPDGAELPFT
>gi|116295110|gb|ABJ98528.1| neuraminidase [Influenza A virus
(A/Thailand/RPFE/2005(H5N1))]
FSGSQKQEFKMNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAXPISNTNFLTEKAV
ASVKLAGNSSLCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVK
DRSPHRTLMSCPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWR
NNILRTQESECACVNGSCFTVMTDGPSNGQASHKIFKMEKGKGLVELDAPNYHYEECSCSPDAGEITCVC
RDNWHGSNRPWVSFNQNLEYQIGYICSGVFGDTPRPNDGTGSCGPVSSNGTYGVKGFSFKYGNGVWIGRT
KSTNSRSGFEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLNCIRPCFWVELIRGRPK
ERAIWNSGNSISFYGEEKHTVGWSWP
>gi|116295120|gb|ABJ98533.1| neuraminidase [Influenza A virus
(A/Thailand/NA60/2005(H5N1))]
MNPNKKIITIGSICMVTGMVSLMLQIGNLISIWVSHSIHTGNQHKAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGACFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDKY
>gi|126361908|gb|ABO10176.1| neuraminidase [Influenza A virus
(A/Cambodia/JP52a/2005(H5N1))]
MNPNQKIITIGSICMVTGIASLMLQIGNMISIWVSHSIHTGNQHQAEPISNTNFLTEKAVASVKLAGNSS
LCPINGWAVYSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASHKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSSNGAHGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTETDSRFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVGWSWPDGAELPFTIDK
>gi|157955787|gb|ABW06314.1| neuraminidase [Influenza A virus
(A/Indonesia/245H/2005(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITNWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|113707438|gb|ABI16506.1| neuraminidase [Influenza A virus
(A/China/GD01/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMVSLWVSHSIQTGNQHQVEPISNTNFLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGMITDTIKSWRNNILRTQESE
CVCVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSPSSRSG
FEMIWDPNGWTETDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157103086|gb|ABV23953.1| neuraminidase [Influenza A virus (A/Azerbaijan/001-
161/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTIKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157103100|gb|ABV23961.1| neuraminidase [Influenza A virus (A/Azerbaijan/011-
162/2006(H5N1))]
NPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSSL
CPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTIKDRSPHRTLMSC
PVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESEC
ACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSNR
PWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSGF
EMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSGS
SISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157103119|gb|ABV23972.1| neuraminidase [Influenza A virus (A/Azerbaijan/008-
208/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTIKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAE
```

```
>gi|157103135|gb|ABV23981.1| neuraminidase [Influenza A virus (A/Azerbaijan/006-
207/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTIKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTI
>gi|148340545|gb|ABQ58918.1| neuraminidase [Influenza A virus
(A/Turkey/651242/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157103072|gb|ABV23945.1| neuraminidase [Influenza A virus (A/Azerbaijan/002-
115/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTIKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157103596|gb|ABV24001.1| neuraminidase [Influenza A virus
(A/Iraq/755/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSS
LCPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157955698|gb|ABW06265.1| neuraminidase [Influenza A virus
(A/Indonesia/292H/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|148340541|gb|ABQ58916.1| neuraminidase [Influenza A virus
(A/Turkey/12/2006(H5N1))]
NPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQRQAEPISNTKFLTEKAVASVTLAGNSSL
CPISGWAVYSKDNSIRIGSRGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMSC
PVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESEC
ACVNGSCFTVMTDGPSSGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSNR
PWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPVSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSGF
EMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSGS
SISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|113496518|gb|ABI36298.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC582/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQKGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157955603|gb|ABW06210.1| neuraminidase [Influenza A virus
(A/Indonesia/538H/2006(H5N1))]
MNPNQKIITIGSICMAIGTVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHSECRTFFLTQGALLNDKHSNETVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFT
>gi|157955565|gb|ABW06188.1| neuraminidase [Influenza A virus
(A/Indonesia/536H/2006(H5N1))]
MNPNQKIITIGSICMAIGTVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHSECRTFFLTQGALLNDKHSNETVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
```

```
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDG
>gi|157955641|gb|ABW06232.1| neuraminidase [Influenza A virus
(A/Indonesia/534H/2006(H5N1))]
MNPNQKIITIGSICMAIGTVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHSECRTFFLTQGALLNDKHSNETVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFT
>gi|113495792|gb|ABI36146.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC594/2006(H5N1))]
MNPNQKIITIGSICMAIGTVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHSECRTFFLTQGALLNDKHSNETVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|113495851|gb|ABI36157.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC595/2006(H5N1))]
MNPNQKIITIGSICMAIGTVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHSECRTFFLTQGALLNDKHSNETVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|157955584|gb|ABW06199.1| neuraminidase [Influenza A virus
(A/Indonesia/535H/2006(H5N1))]
MNPNQKIITIGSICMAIGTVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHSECRTFFLTQGALLNDKHSNETVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTID
>gi|157955529|gb|ABW06168.1| neuraminidase [Influenza A virus
(A/Indonesia/542H/2006(H5N1))]
MNPNQKIITIGSICMVIGIVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNNIRIGSKGDVFVIREPFISCSHLECRTFFLTQGALLNDKHSNGTVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNEAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSPNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|113495963|gb|ABI36179.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC597/2006(H5N1))]
MNPNQKIITIGSICMAIGTVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHSECRTFFLTQGALLNDKHSNETVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
>gi|113495914|gb|ABI36168.1| neuraminidase [Influenza A virus
(A/Indonesia/CDC596/2006(H5N1))]
MNPNQKIITIGSICMAIGTVSLMLQIGNMISIWVSHSIQTGNQHQAESISNTNPLTEKAVASVTLAGNSS
LCPIRGWAVHSKDNSIRIGSKGDVFVIREPFISCSHSECRTFFLTQGALLNDKHSNETVKDRSPHRTLMS
CPVGEAPSPYNSRFESVAWSASACHDGTSWLTIGISGPDNGAVAVLKYNGIITDTIKSWRNNILRTQESE
CACVNGSCFTVMTDGPSNGQASYKIFKMEKGKVVKSVELDAPNYHYEECSCYPDAGEITCVCRDNWHGSN
RPWVSFNQNLEYQIGYICSGVFGDNPRPNDGTGSCGPMSSNGAYGVKGFSFKYGNGVWIGRTKSTNSRSG
FEMIWDPNGWTGTDSSFSVKQDIVAITDWSGYSGSFVQHPELTGLDCIRPCFWVELIRGRPKESTIWTSG
SSISFCGVNSDTVSWSWPDGAELPFTIDK
```

Lampiran 4 : Hasil Alignment

```
Alignment: E:\1_Data Penelitian\9_Ridlo\Data\database\Ha\HA1\human\H1N1.aln
....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        10         20         30         40         50         60
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|56605625|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|62291|emb
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|89779321|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|126599271
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|125976181
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|194304803
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|133754132
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIPPL QLGKCNIAGW gi|133754189
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|89148077|
DTICIGYHAN NSTDTVDTIF EKNVAVTHSV NLLEDRHNGK LCKLKGIAPL QLGKCNITGW gi|94960371|
DTICIGYHAN NSTDTVDTIF EKNVAVTHSV NLLEDRHNGK LCKLKGIAPL QLGKCNITGW gi|324200|gb
DTICIGYHAN NSTDTVDTIF EKNVAVTHSV NLLEDRHNGK LCKLKGIAPL QLGKCNIIGW gi|194352371
DTICIGYHAN NSTDTVDTIL EKNVAVTHSV NLLEDRHNGK LCKLKGIAPL QLGKCNITGW gi|94481538|
DTICIGYHAN NSTDTVDTLL EKNVTVTHSV NLLEDSHNGK LCKLKGIAPL QLGKCNIAGW gi|89782156|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|133752882
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|133754170
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLRKCNIAGW gi|145278810
DTICIGYHAN NSTDTVDTIL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|89152215|
DTICIGYHAN NSTDTVDTIL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|89903056|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303378
DTICIGYHAN NSTDTVDTVX EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|188076435
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|193084911
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303374
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGLAPL QLGNCSVAGW gi|189303360
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303392
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303362
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|188076427
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303372
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|193084897
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303368
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|188076425
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|194294061
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|170181715
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|194294063
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303386
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303388
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|170181707
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|193084905
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303366
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|170786954
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|194294065
DTICIGYHAN NSTDTVDTVL XKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|194294069
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303400
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|188076441
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|170181783
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303384
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303390
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303376
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|188076459
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|189303398
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENNHNGK LCLLKGIAPL QLGNCSVAGW gi|189303382
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENNHNGK LCLLKGIAPL QLGNCSVAGW gi|189303380
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDNHNGK LCLLKGIAPL QLGNCSVAGW gi|189303370
DTICISYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|158830221
DTICIGYHAN NSTDTIDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|158830241
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|158830237
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|158830223
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|115607822
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|158830225
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|158830231
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGSCSVAGW gi|158830233
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|158830227
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|158830235
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|145278924
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|115607803
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEGSHNGK LCLLKGIAPL QLGNCSVAGW gi|115607765
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|115607784
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|117571148
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|14587061|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|14587059|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSI NLLENSHNGK LCLLKGIAPL QLGNCSVAGW gi|89033079|
```

```
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|112789450
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|112789469
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDRHNGK LCLLKGIAPL QLGNCSVAGW gi|14587051|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDRHNGK LCLLKGIAPL QLGNCSVAGW gi|14587053|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDRHNGK LCLLKGIAPL QLGNCSVAGW gi|14587055|
DPICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCLLKGIAPL QLGNCSVAGW gi|14587049|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGTAPL QLGNCSVAGW gi|134047389
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGTAPL QLGNCSVAGW gi|112787584
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGTAPL QLGNCSVAGW gi|94959685|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGTAPL QLGNCSVAGW gi|109914458
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGTAPL QLGNCSVAGW gi|94959704|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENSHNGK LCRLKGTAPL QLGNCSVAGW gi|120434212
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGKAPL QLGNCNIAGW gi|86788144|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGKAPL QLGKCNIAGW gi|89114296|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|112787546
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|89903075|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|89782382|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|406042|gb
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|145279077
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|148897951
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|146760085
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|146133734
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|134047484
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|89112489|
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|125976162
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|145278791
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCNIAGW gi|125976219
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCRLKGIAPL QLGKCSIAGW gi|324122|gb
DTICIGYHAN NSTDTVDTVL EKNVTVTHSV NLLEDSHNGK LCKLKGIAPL QLGKCNIAGW gi|4325039|g
DTLCIGYHAN NSTDTVDTVL EKNVTVTHSV NLLENKHDGK LCKLRGIAPL HLGKCNIAGW gi|112456302
*.:**.**** *****:**:   ***:****: ****. *:** ** *:* .** :* .*.: ** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         70         80         90        100        110        120
LLGNPECDPL LPVRSWSYIV ETPNSENGIC YPGDFIDYEE LREQLSSVSS FERFEIFPKE gi|56605625|
LLGNPECDPL LPVRSWSYIV ETPNSENGIC YPGDFIDYEE LREQLSSVSS FERFEIFPKE gi|62291|emb
LLGNPECDPL LPVRSWSYIV ETPNSENGIC YPGDFIDYEE LREQLSSVSS FERFEIFPKE gi|89779321|
LLGNPECDPL LPVRSWSYIV ETPNSENGIC YPGDFIDYEE LREQLSSVSS FERFEIFPKE gi|126599271
LLGNPECDPL LPVRSWSYIV ETPNSENGIC YPGDFIDYEE LREQLSSVSS FERFEIFPKE gi|125976181
LLGNPECDPL LPVRSWSYIV ETPNSENGIC YPGDFIDYEE LREQLSSVSS FERFEIFPKE gi|194304803
LLGNPECDPL LPARSWSYIV ETPNSENGIC YPGAFIDYEE LREQLSSVSS FERFEIFPKE gi|133754132
LLGNPECDSL LPARSWSYIV ETPNSENGAC YPGDFINYEE LREQLSSVSS FERFEIFPKE gi|133754189
LLGNPECDSL LPASSWSYIV ETPNSKNGIC YPGDFIDYEE LREQLSSVSS FERFEIFPKE gi|89148077|
LLGNPECDSL LPARSWSYIV ETPNSENGAC YPGDFIDYEE LREQLSSVSS LERFEIFPKE gi|94960371|
LLGNPECDSL LPARSWSYIV ETPNSENGAC YPGDFIDYEE LREQLSSVSS LERFEIFPKE gi|324200|gb
LLGNPECDSL LPARSWSYIV ETPNSENGAC YPGDFIDYEE LREQLSSVSS LERFEIFPKE gi|194352371
LLGNPECDSL LPARSWSYIV ETPNSENGAC YPGDFIDYEE LREQLSSVSS LERFEIFPKE gi|94481538|
LLGNPECDSL LPARSWSYIV ETPNSENGAC YPGDFIDYEE LKEQLSSVSS LERFEIFPKE gi|89782156|
ILGNPECESL LSERSWSYIV ETPNSENGTC YPGDFIDYEE LREQLSSVSS FERFEIFSKE gi|133752882
ILGNPECESL LSERSWSYIV ETPNSENGTC YPGDFIDYEE LREQLSSVSS FERFEIFSKE gi|133754170
ILGNPECESL LSERSWSYIV ETPNSENGTC YPGDFTNYEE LREQLSSVSS FERFEIFPKE gi|145278810
ILGNPECESL LSERSWSYIV ETPNSENGTC YPGDFIDYEE LREQLSSVTS FERFEIFPKE gi|89152215|
ILGNPECESL LSERSWSYIV EIPNSENGTC YPGDFTDYEE LREQLSSVSS FERFEIFPKE gi|89903056|
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303378
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|188076435
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSISS FERFEIFPKE gi|193084911
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LRKQLSSVSS FERFEIFPKE gi|189303374
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303360
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303392
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303362
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|188076427
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303372
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|193084897
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303368
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|188076425
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|194294061
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREXLSSVSS FERFEIFPKE gi|170181715
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|194294063
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303386
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303388
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|170181707
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|193084905
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303366
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|170786954
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|194294065
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|194294069
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303400
```

```
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|188076441
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|170181783
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303384
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303390
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303376
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|188076459
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303398
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEMFPKE gi|189303382
ILGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303380
VLGNPECELL ISKESWSYIV EKPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|189303370
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|158830221
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|158830241
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|158830237
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|158830223
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|115607822
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|158830225
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|158830231
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|158830233
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSISS FERFEIFPKE gi|158830227
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|158830235
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|145278924
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|115607803
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|115607765
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|115607784
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|117571148
ILGNPECELL IPKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|14587061|
ILGNPECELL IPKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|14587059|
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGHFADYEE LREQLSSVSS FERFEIFPKE gi|89033079|
ILGNPECESL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|112789450
ILGNPECESL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|112789469
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|14587051|
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|14587053|
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|14587055|
ILGNPECELL ISKESWSYIV ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|14587049|
ILGNPECESL FSKESWSYIA ETPNPENGTC YPGYFADYEE LKEQLSSVSS FERFEIFPKE gi|134047389
ILGNPECESL FSKESWSYIA ETPNPENGTC YPGYFADYEE LKEQLSSVSS FERFEIFPKE gi|112787584
ILGNPECESL FSKESWSYIA ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|94959685|
ILGNPECESL FSKESWSYIA ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|109914458
ILGNPECESL FSKESWSYIA ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|94959704|
ILGNPECESL FSKESWSYIA ETPNPENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|120434212
VLGNPECESL LSNRSWSYIA ETPNSENGTC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|86788144|
VLGNPECESL LSNRSWSYIA ETPNSENGIC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|89114296|
ILGNPECESL LSKRSWSYIA ETPNSENGTC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|112787546
ILGNPECESL LSKRSWSYIA ETPNSENGAC YPGDFADYEE LREQLSSVSS FERFEIFPKG gi|89903075|
ILGNPECESL LSKRSWSYIA ETPNSENGTC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|89782382|
ILGNPECESL LSKRSWSYIA ETPNSENGAC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|406042|gb
ILGNPECESL LSNRSWSYIA ETPNSENGTC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|145279077
ILGNPECESL LSNRSWSYIA ETPNSENGTC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|148897951
ILGNPECESL LSNRSWSYIA ETPNSENGTC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|146760085
ILGNPECESL LSNRSWSYIA ETPNSENGTC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|146133734
ILGNPECESL LSNRSWSYIA ETPNSENGIC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|134047484
ILGNPECESL LSNRSWSYIA ETPNSENGIC YPGDFADYEE LREQLSSVSS FERFEIFPKE gi|89112489|
ILGNPECESL FSKKSWSYIA ETPNSENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|125976162
ILGNPECESL FSKKSWSYIA ETPNSENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|145278791
ILGNPECESL FSKKSWSYIA ETPNSENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|125976219
ILGNPECESL VSKKSWSYIA ETPNSENGTC YPGYFADYEE LREQLSSVSS FERFEIFPKE gi|324122|gb
LLGNPECDLL LTASSWSYIV ETSNSENGTC YPGDFIDYEE LREQLSSVSS FEKFEIFPKT gi|4325039|g
ILGNPECESL FTTSSWSYIV ETPNSDNGTC YPGDFINYEE LREHLSSVSS FERFEIFPKA gi|112456302
:******: * ..  *****. * .*..** * *** * :*** *:: ***::* :*:**:*.*  Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        130        140        150        160        170        180
SSWPNHNTTK GVTAACSHAG KSSFYRNLLW LTEKEGSYPK LKNSYVNKKG KEVLVLWGIH gi|56605625|
SSWPNHNTTK GVTAACSHAG KSSFYRNLLW LTEKEGSYPK LKNSYVNKKG KEVLVLWGIH gi|62291|emb
SSWPNHN-TN GVTAACSHEG KSSFYRNLLW LTEKEGSYPK LKNSYVNKKG KEVLVLWGIH gi|89779321|
SSWPNHN-TN GVTAACSHEG KSSFYRNLLW LTEKEGSYPK LKNSYVNKKG KEVLVLWGIH gi|126599271
SSWPNHN-TN GVTAACSHEG KSSFYRNLLW LTEKEGSYPK LKNSYVNKKG KEVLVLWGIH gi|125976181
SSWPNHN-TN GVTAACSHEG KSSFYRNLLW LTEKEGSYPN LKNSYVNKKG KEVLVLWGIH gi|194304803
SSWPNHNTNI GVTAACSHAG KSSFYRNLLW LTKKGGSYPK LKNSYVNKKG KEVLVLWGIH gi|133754132
SSWPKHNTTK GVTAACSHAG KSSFYRNLLW LTKKEDSYPK LKNSYVNKKG KEVLVLWGVH gi|133754189
SSWPKHNTTK GVTAACSHAG KSSFYRNLLW LTKKEDSYPK LSNSYVNKKG KEVLVLWGVH gi|89148077|
SSWPNH-TFN GVTVSCSHRG KSSFYRNLLW LTKKGDSYPK LTNSYVNNKG KEVLVLWGVH gi|94960371|
SSWPNH-TFN GVTVSCSHRG KSSFYRNLLW LTKKGDSYPK LTNSYVNNKG KEVLVLWGVH gi|324200|gb
SSWPNH-TFN GVTASCSHRG KSSFYRNLLW LTKKGDSYPK LTNSYVNNKG KEVLVLWGVH gi|194352371
SSWPNH-TFN GVTASCSHRG KSSFYRNLIW LTKKGDSYPK LTNSYVNNKG KEVLVLWGVH gi|94481538|
SSWPNHNTLK GVTASCSHGG KSSFYRNLLW LTKXGDSYPK LNNSYVNNKG KEVLVLWGVH gi|89782156|
SSWPKHNTTR GVTAACSHAG KSSFYRNLLW LTEKDGSYPN LNNSYVNKKG KEVLVLWGVH gi|133752882
```

```
SSWPKH-TTG GVTAACSHAG KSSFYRNLLW LTEKDGSYPN LNNSYVNKKG KEVLVLWGVH gi|133754170
SSWPKHNTTR GVTAACSHAG KSSFYRNLLW LTEKDGSYPN LNNSYVNKKG KEVLVLWGVH gi|145278810
TSWPKHNTTK GVTAACSHAG KCSFYRNLLW LTEKDGSYPN LNNSYVNKKG KEVLVLWGVH gi|89152215|
SSWPKHNTAR GVTAACSHAG KSSFYRNLLW LTEKDGSYPN LKNSYVNKKG KEVLVLWGVH gi|89903056|
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303378
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|188076435
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|193084911
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPS LSKSYANNKE KEVLVLWGVH gi|189303374
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPX LSKSYANNKE KEVLVLWGVH gi|189303360
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303392
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303362
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|188076427
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303372
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|193084897
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303368
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|188076425
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|194294061
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|170181715
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|194294063
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LIKSYANNKE KEVLVLWGVH gi|189303386
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LRKSYANNKE KEVLVLWGVH gi|189303388
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|170181707
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|193084905
SSWPXHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303366
SSWPXHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|170786954
SSWPXHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPX LSKSYANNKE KEVLVLWGVH gi|194294065
SSWPXHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|194294069
SSWPSHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303400
SSWPKHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|188076441
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTXKNGLYPN LSKSYANNKE KEVLVLWGVH gi|170181783
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTXKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303384
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTXKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303390
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTRKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303376
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTRKNGLYPN LSKSYANNKE KEVLVLWGVH gi|188076459
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTRKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303398
GSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTGKNGLYPN LXKSYANNKE KEVLVLWGVH gi|189303382
SSWPNHTVT- GVSASCSHNG ESSFYRNLLW LTRKNGLYPN LSKSYANNKE KEVLVLWGVH gi|189303380
SSWPNHTVT- GVSASCSHNG ESSFYKNLLW LTGKNGLYPN LSKSYANNKK KEVLVLWGVH gi|189303370
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|158830221
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|158830241
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|158830237
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|158830223
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|115607822
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|158830225
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|158830231
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|158830233
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|158830227
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|158830235
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGIH gi|145278924
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|115607803
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|115607765
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYANNKE KEVLVLWGVH gi|115607784
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|117571148
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|14587061|
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTGKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|14587059|
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTKKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|89033079|
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|112789450
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|112789469
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|14587051|
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|14587053|
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|14587055|
SSWPNHTVT- GVSASCSHNG KSSFYRNLLW LTEKNGLYPN LSKSYVNNKE KEVLVIWGVH gi|14587049|
SSWPNHTVTK GVTASCSHNG KSSFYKNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|134047389
SSWPNHTVTK GVTASCSHNG KSSFYKNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|112787584
SSWPNHTVTK GVTASCSHNG KSSFYKNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|94959685|
SSWPNHTVTK GVTASCSHNG KSSFYKNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|109914458
SSWPNHTVTK GVTASCSHNG KSSFYKNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGIH gi|94959704|
SSWPNHTVTK GVTASCSHNG KSSFYKNLLW LTEKNGLYPN LSKSYVNNKE KEVLVLWGVH gi|120434212
RSWPNH-TTR GVTAACPHAR KSSFYKNLVW LTEANGSYPN LSRSYVNNQE KEVLVLWGVH gi|86788144|
RSWPKHNTIR GVTAACSHAG KSSFYKNLVW LTEANGSYPA LSTSYVNNQE KEVLVLWGVH gi|89114296|
RSWPNHNINI GVTAACSHAG KSSFYKNLLW LTEKDGSYPN LNKSYVNKKE KEVLVLWGVH gi|112787546
RSWPEHNIDI GVTAACSHAG KSSFYKNLLW LTEKDGSYPN LNKSYVNKKE KEVLILWGVH gi|89903075|
RSWPKHNITR GVTAACSHAG KSSFYKNLLW LTETNGSYPK LSKSYVNNKE KEVLVLWGVH gi|89782382|
RSWPKHNITR GVTAACSHAG KSSFYKNLLW LTETDGSYPK LSKSYVNNKE KEVLVLWGVH gi|406042|gb
RSWPKHNITR GVTAACSHAK KSSFYKNLLW LTEANGSYPN LSKSYVNNKE KEVLVLWGVH gi|145279077
RSWPKHNITR GVTAACSHAK KSSFYKNLLW LTEANGSYPN LSKSYVNNKE KEVLVLWGVH gi|148897951
RSWPKHNITR GVTAACSHAK KSSFYKNLLW LTEANGSYPN LSKSYVNNKE KEVLVLWGVH gi|146760085
```

```
RSWPKHNITR GVTAACSHAK KSSFYKNLLW LTEANGSYPN LSKSYVNNKE KEVLVLWGVH gi|146133734
SSWPKHNITR GVTVACSHAK KSSFYKNLLW LTEANGLYPS LSKSYVNDRE KEVLVLWGVH gi|134047484
SSWPKHNITR GVTVACSHAK KSSFYKNLLW LTEANGLYPS LSKSYVNDRE KEVLVLWGVH gi|89112489|
RSWPKHNITR GVTAACSHKG KSSFYRNLLW LTEKNGSYPN LNKSYVNNKE KEVLVLWGVH gi|125976162
RSWPKHNITR GVTAACSHKG KSSFYRNLLW LTEKNGSYPN LKKSYVNNKE KEVLVLWGVH gi|145278791
RSWPKHNVTR GVTAACSHKG KSSFYRNLLW LTEKDGSYPN LSKSYVNNKE KEVLVLWGVH gi|125976219
RSWPKHNVTR GVTASCSHKG KSSFYRNLLW LTEKNGSYPN LSKSYVNNKE KEVLVLWGVH gi|324122|gb
SSWPNHETTK GVTAACSYAG ASSFYRNLLW LTKKGSSYPK LSKSYVNNKG KEVLVLWGVH gi|4325039|g
NSWPYHDTNK GVTAACPYAG ANSFYRNLIW LVKKGNSYPK LSKSYINNKK KEVLVIWGIH gi|112456302
 *** *     **:.:*.:     ***:**:* *.   . **  *  ** *.:  ****::**:* Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       190        200        210        220        230        240
HPSNSKDQQN IYQNENAYVS VVTSNYNRRF TPEIAERPKV RDQAGRMNYY WTLLKPGDTI gi|56605625|
HPSNSKDQQN IYQNENAYVS VVTSNYNRRF TPEIAERPKV RDQAGRMNYY WTLLKPGDTI gi|62291|emb
HPPNSKEQQN LYQNENAYVS VVTSNYNRRF TPEIAERPKV RDQAGRMNYY WTLLKPGDTI gi|89779321|
HPPNSKEQQN LYQNENAYVS VVTSNYNRRF TPEIAERPKV RDQAGRMNYY WTLLKPGDTI gi|126599271
HPPNSKEQQN LYQNENAYVS VVTSNYNRRF TPEIAERPKV RDQAGRMNYY WTLLKPGDTI gi|125976181
HPSNSKEQQN LYQNENAYVS VVTSNYNRRF TPEIAERPKV RDQAGRMNYY WTLLKPGDTI gi|194304803
HPSNSKDQQT LYQNENAYVS VVSSNYNRRF TPEIAERPEV RDQAGRMNYY WTLLEPGDTI gi|133754132
HPSSSKEQQT LYQNENAYVS VVSSNYNRRF TPEIAERPKV RDQTGRMNYY WTLLEPGDTI gi|133754189
HPSNSKEQQT LYQNENAYVS VVSSNYNRRF TPEIAERPKV RDQAGRMNYY WTLLEPGDTI gi|89148077|
HPSSSDEQQS LYSNGNAYVS VASSNYNRRF TPEIAARPKV KDQHGRMNYY WTLLEPGDTI gi|94960371|
HPSSSDEQQS LYSNGNAYVS VASSNYNRRF TPEIAARPKV KDQHGRMNYY WTLLEPGDTI gi|324200|gb
HPSSSDEQQS LYSNGNAYVS VASSNYNRRF TPEIAARPKV KDQHGRMNYY WTLLEPGDTI gi|194352371
HPSSSDEQQS LYSNGNAYVS VASSNYNRRF TPEIAARPKV RDQHGRMNYY WTLLEPGDTI gi|94481538|
HPSSSNEQQS LYHNVNAYVS VVSSNYNRRF TPEIAARPKV RDQPGRMNYY WTLLEPGDTI gi|89782156|
HPSNIKDQQT LYQKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRMNYY WTLLKPGDTI gi|133752882
HPSNIKDQQT LYQKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRINYY WTLLKPGDTI gi|133754170
HPSNIKDQQT LYQKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRMNYY WTLLKPGDTI gi|145278810
HPSNIKDQQT LYQKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRMNYY WTLLEPGDTI gi|89152215|
HPSSIKEQQT LYQKENAYVS VVSSNYNRRF TPEIAERPKV RDQAGRMNYY WTLLEPGDTI gi|89903056|
HPPNIGBQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303378
HPPNIGBQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|188076435
HPPNIGBQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|193084911
HPPNIGBQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303374
HPPNIGBQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303360
HPPNIGBQKA LYHTENAYVS VVSSHYSRKF APEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303392
HPPNIGXQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303362
HPPNIGVQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPRDTI gi|188076427
HPPNIGNQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303372
HPPNIGGQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDXEGRINYY WTLLEPGDTI gi|193084897
HPPNIGNQKT LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303368
HPPNIGBQKT LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|188076425
HPPDIGDQKT LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|194294061
HPPNIGDQKT LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|170181715
HPPNIGDQNT LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|194294063
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303386
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303388
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYH WTLLEPGDTI gi|170181707
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|193084905
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303366
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|170786954
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|194294065
HPPNIGDQKT LYHTENAYVS VMSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|194294069
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303400
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|188076441
HPPNIGDQKT LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|170181783
HPPNIVBQKT LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303384
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303390
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303376
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|188076459
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303398
HPPNIGDQKA LYHTENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303382
HPPNIGBQKA LYHTENAYVS VVSSHYSRKF IPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303380
HPPNIGBQMT LYHKENAYVS VVSSHYSRKF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|189303370
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|158830221
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|158830241
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|158830237
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|158830223
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|115607822
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|158830225
HPPNIGDQRA LYHTENAHVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|158830231
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|158830233
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|158830227
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|158830235
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|145278924
```

```
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|115607803
HPPNIGBQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|115607765
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|115607784
HPPNIGDQRA LYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|117571148
HPPNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIVKRPKV RDQEGRINYY WTLLEPGDTI gi|14587061|
HPPNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIVKRPKV RDQEGRINYY WTLLEPGDTI gi|14587059|
HPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIVKRPKV RDQEGRINYY WTLLEPGDTI gi|89033079|
HPSNIGVQRA IYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|112789450
HPSNIGVQRA IYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|112789469
NPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|14587051|
NPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|14587053|
NPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIAKRPKV RGQEGRINYY WTLLEPGDTI gi|14587055|
HPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|14587049|
HPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|134047389
HPSNIGDQRA IYHTENAHVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|112787584
HPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEITKRPKV RDQEGRINYY WTLLEPGDTI gi|94959685|
HPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEITKRPKV RNQEGRINYY WTLLEPGDTI gi|109914458
HPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|94959704|
HPSNIGDQRA IYHTENAYVS VVSSHYSRRF TPEIAKRPKV RDQEGRINYY WTLLEPGDTI gi|120434212
HPSNIEEQRA LYRKDNAYVS VVSSNYNRRF TPEIAKRPKV RDQSGRMNYY WTLLEPGDTI gi|86788144|
HPSNIEEQRT LYRKDNAYVS VVSSNYNRRF TPEIAKRPKV RDQPGRMNYY WTLLEPGDTI gi|89114296|
HPSNIENQKT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRMNYY WTLLEPGDTI gi|112787546
HPPNIENQKT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRINYY WTLLEPGDTI gi|89903075|
HPSNIEDQKT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRMNYY WTLLEPGDTI gi|89782382|
HPSNIEDQKT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRINYY WTLLEPGDTI gi|406042|gb
HPSNIEDQRT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRMNYY WTLLEPGDKI gi|145279077
HPSNIEDQRT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRMNYY WTLLEPGDKI gi|148897951
HPSNIEDQRT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRMNYY WTLLEPGDKI gi|146760085
HPSKIEDQRT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRMNYY WTLLEPGDKI gi|146133734
HPSNIEDQRT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQPGRMNYY WTLLEPGDKI gi|134047484
HPSNIEDQRT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQPGRMNYY WTLLEPGDKI gi|89112489|
HPSNIEDQKT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRINYY WTLLEPGDTI gi|125976162
HPSNIEDQKT LYRKENAYVS VVSSNYNKRF TPEIAERPKV RGQAGRINYY WTLLEPGDTI gi|145278791
HPSNIEDQKT LYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRINYY WTLLEPGDTI gi|125976219
HPSNIEDQKT IYRKENAYVS VVSSNYNRRF TPEIAERPKV RGQAGRINYY WTLLEPGDTI gi|324122|gb
HPPTGTDQQS LYQNADAYVS VGSSKYNRRF TPEIAARPKV RDQAGRMNYY WTLLEPGDTI gi|4325039|g
HPPTSTDQQT LYQNADAYVF VGSSKYSKRF KPEIAARPKV RDQAGRMDYY WTLIEPGDTI gi|112456302
:*.    *   :* . :*:*  * :*:*.::*  ***. **:* :.  **::*: ***::* *.* Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        250        260        270        280        290        300
IFEANGNLIA PRYAFALSRG FGSGIITSNA SMHECNTKCQ TPLGAINSSL PFQNIHPVTI gi|56605625|
IFEANGNLIA PRYAFALSRG FGSGIITSNA SMHECNTKCQ TPLGAINSSL PFQNIHPVTI gi|62291|emb
IFEANGNLIA PMYAFALSRG FGSGIITSNA SMHECNTKCQ TPLGAINSSL PYQNIHPVTI gi|89779321|
IFEANGNLIA PMYAFALSRG FGSGIITSNA SMHECNTKCQ TPLGAINSSL PYQNIHPVTI gi|126599271
IFEANGNLIA PMYAFALSRG FGSGIITSNA SMHECNTKCQ TPLGAINSSL PYQNIHPVTI gi|125976181
IFEANGNLIA PMYAFALSRG FGSGIITSNA SMHECNTKCQ TPLGAINSSL PYQNIHPVTI gi|194304803
MFEANGNLVA PWYAFALSRG FGSGIITSNA SMHECNTKCQ TPQGAINSSL PFQNIHPVTI gi|133754132
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMHECNTKCQ TPQGAINSSL PFQNIHPVTI gi|133754189
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMHECNTKCQ TPQGAINSSL PFQNIHPVTI gi|89148077|
IFEATGNLIA PWYAFALSRG FESGIITSNA SMHECNTKCQ TPQGSINSNL PFQNIHPVTI gi|94960371|
IFEATGNLIA PWYAFALSRG FESGIITSNA SMHECNTKCQ TPQGSINSNL PFQNIHPVTI gi|324200|gb
IFEATGNLIA PWYAFALSRG FESGIITSNA SMHECNTKCQ TPQGSINSNL PFQNIHPVTI gi|194352371
IFEATGNLIA PWYAFALSRG FESGIITSNA SMHECNTKCQ TPQGSINSNL PFQNIHPVTI gi|94481538|
IFEATGNLIA PWYAFALSRG FGSGIITSNA SMHECNTKCQ TPQGAINSSL PFQNIHPVTI gi|89782156|
MFEANGNLIA PWYAFALSRG FGSGIITSNA SMHECDTKCQ TPQGAINSSL PFQNIHPVTI gi|133752882
MFEANGNLIA PWYAFALSRG FGSGIITSNA SMHECDTKCQ TPQGAINSSL PFQNIHPVTI gi|133754170
MFEANGNLIA PWYAFALSRG FGSGIITSNA SMHECDTKCQ TPQGAINSSL PFQNIHPVTI gi|145278810
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMHECNTKCQ TPQGAINSSL PFQNIHPVTI gi|89152215|
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMHECDTKCQ TPQGAINSSL PFQNIHPVTI gi|89903056|
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303378
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|188076435
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|193084911
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303374
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303360
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303392
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303362
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|188076427
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303372
IFEANGNLIA PRXAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|193084897
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303368
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|188076425
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|194294061
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|170181715
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|194294063
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303386
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMGKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303388
```

```
IFEANGNLIA PRYAFTLSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|170181707
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|193084905
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303366
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|170786954
IFEANGNLIA PRLAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|194294065
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|194294069
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303400
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|188076441
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|170181783
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303384
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303390
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303376
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|188076459
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDKCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303398
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDNCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303382
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDNCDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303380
IFEANGNLIA PRYAFALSRG FGSGIINSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|189303370
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|158830221
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|158830241
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|158830237
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|158830223
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|115607822
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|158830225
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|158830231
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|158830233
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|158830227
IFEANGNLIA PRFAFALSRG FGSGIISSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|158830235
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|145278924
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|115607803
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|115607765
IFEANGNLIA PRFAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|115607784
IFEANGNLIA PWYAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|117571148
IFEANGNLIA PWYAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|14587061|
IFEANGNLIA PWYAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|14587059|
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|89033079|
IFEANGNLIA PWYAFALSRG FESGIITSNA PMNECDAKCQ TPQGAINSSL PFQNVHPVTI gi|112789450
IFEANGNLIA PWYAFALSRG FESGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|112789469
IFEANGNLIA PWYAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|14587051|
IFEANGNLIA PWYAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|14587053|
IFEANGNLIA PWYAFALSRG FGSGIITSNA PMDECDAKCQ TPQGAINSSL PFQNVHPVTI gi|14587055|
IFEANGNLIA PWYAFALSRG FGSGIITSNA PMDECDTKCQ TPQGAINSSL PFQNVHPVTI gi|14587049|
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMGECDAKCQ TPQGAINSSL PFQNVHPVTI gi|134047389
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMGECDAKCQ TPQGAINSSL PFQNVHPVTI gi|112787584
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMGECDAKCQ TPQGAINSSL PFQNVHPVTI gi|94959685|
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMGECDAKCQ TPQGAINSSL PFQNVHPVTI gi|109914458
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMGDCDAKCQ TPQGAINSSL PFQNVHPVTI gi|94959704|
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMGECDAKCQ TPQGAINSSL PFQNVHPVTI gi|120434212
IFEATGNLIA PWYAFALSRG PGSGIITSNA PLDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|86788144|
IFEATGNLIA PWYAFALSRG PGSGIITSNA PMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|89114296|
IFEANGNLIA PWYAFALSRG LGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPFTI gi|112787546
IFEANGNLIA PWYAFALNRG IGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPFTI gi|89903075|
IFEANGNLIA PWYAFALSRG FGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|89782382|
IFEANGNLIA PWYAFALSRD FGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|406042|gb
IFEANGNLIA PWYAFALSRG LGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|145279077
IFEANGNLIA PWYAFALSRG LGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|148897951
IFEANGNLIA PWYAFALSRG LGSGIITSNA SMDECDTKCQ TPQGAINNSL PFQNIHPVTI gi|146760085
IFEANGNLIA PWYAFALSRG LGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|146133734
IFEANGNLIA PWYAFALSRG PGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|134047484
IFEANGNLIA PWYAFALSRG PGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|89112489|
IFEANGNLIA PWHAFALSRG FGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|125976162
IFEANGNLIA PWHAFALSRG FGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|145278791
IFEANGNLIA PWHAFALSRG FGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|125976219
IFEANGNLIA PWHAFALNRG FGSGIITSNA SMDECDTKCQ TPQGAINSSL PFQNIHPVTI gi|324122|gb
TFEATGNLIA PWYAFALNRG SGSGIITSDA PVHDCNTKCQ TPHGAINSSL PFQNIHPVTI gi|4325039|g
TFEATGNLVV PRYAFTMKRG SGSGIIVSDA PVHDCNTTCQ TPKGAINTSL PFQNIHPVTI gi|112456302
 ***.***:. *  **::.*.   **** *:* .: .*::.** ** *:**..* *:**:**.** Clustal Cons

....|....| ....|....| ....|..
       310        320
GECPKYVRSA KLRMVTGLRN IPSIQSR                                     gi|56605625|
GECPKYVRSA KLRMVTGLRN IPSIQSR                                     gi|62291|emb
GECPKYVRSA KLRMVTGLRN IPSIQSR                                     gi|89779321|
GECPKYVRSA KLRMVTGLRN NPSIQSR                                     gi|126599271
GECPKYVRSA KLRMVTGLRN IPSIQSR                                     gi|125976181
GECPKYVRSA KLRMVTGLRN IPSIQSR                                     gi|194304803
GECPKYVRSA KLRMVTGLRN IPSIQSR                                     gi|133754132
GECPKYVRSA KLRMVTGLRN IPSIQSR                                     gi|133754189
```

```
GECPKYVKSA KLRMVTGLRN IPSIQSR                      gi|89148077|
GECPKYVRST KLRMVTGLRN IPSIQYR                      gi|94960371|
GECPKYVRST KLRMVTGLRN IPSIQYR                      gi|324200|gb
GECPKYVRST KLRMVTGLRN IPSIQYR                      gi|194352371
GECPKYVRST KLRMVTGLRN IPSIQYR                      gi|94481538|
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|89782156|
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|133752882
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|133754170
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|145278810
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|89152215|
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|89903056|
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303378
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|188076435
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|193084911
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303374
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303360
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303392
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303362
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|188076427
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303372
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|193084897
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303368
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|188076425
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|194294061
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|170181715
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|194294063
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303386
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303388
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|170181707
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|193084905
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303366
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|170786954
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|194294065
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|194294069
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303400
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|188076441
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|170181783
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303384
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|189303390
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303376
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|188076459
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303398
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303382
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303380
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|189303370
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|158830221
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|158830241
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|158830237
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|158830223
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|115607822
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|158830225
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|158830231
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|158830233
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|158830227
GECPKYVRSA KLRMATGLRN IPSIQSR                      gi|158830235
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|145278924
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|115607803
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|115607765
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|115607784
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|117571148
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|14587061|
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|14587059|
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|89033079|
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|112789450
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|112789469
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|14587051|
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|14587053|
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|14587055|
GECPKYVRSA KLRMVTGLRN IPSIQSR                      gi|14587049|
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|134047389
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|112787584
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|94959685|
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|109914458
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|94959704|
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|120434212
GECPKYVRST KLRMVTGLRN IPSVQSR                      gi|86788144|
GECPKYVRST KLRMVTGLRN IPSIQSR                      gi|89114296|
```

```
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|112787546
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|89903075|
GECPKYVKST KLRMVTGLRN IPSIQSR                                     gi|89782382|
GECPKYVKST KLRMVTGLRN IPSIQSR                                     gi|406042|gb
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|145279077
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|148897951
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|146760085
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|146133734
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|134047484
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|89112489|
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|125976162
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|145278791
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|125976219
GECPKYVRST KLRMVTGLRN IPSIQSR                                     gi|324122|gb
GECPKYVRST KLRMATGLRN IPSIQSR                                     gi|4325039|g
GECPKYVKST KLRMATGLRN IPSIQSR                                     gi|112456302
*******:*: ****.*****  **:* *                                     Clustal Cons

Alignment: E:\1_Data Penelitian\9_Ridlo\Data\database\Ha\HA1\human\H2N2.aln
....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        10        20        30        40        50        60
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|73921184|
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|408523|gb
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133753638
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|134047408
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133753657
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGNCSIAGW gi|134047523
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|145279057
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|408525|gb
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|189230461
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|127057978
DQICIGYHAN NSTEKVDTNL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|324146|gb
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|305155|gb
DQICIGYHAN NSTEMVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|94481522|
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|63054902|
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|305117|gb
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133752958
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|145279038
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|146760066
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|305163|gb
DQICIGYHAN NSTETVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|194352181
DQICIGYHAN NSTETVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|194352200
DQICIGYHAN NSTETVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|194352219
DQICIGYHAN NSTETVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|194352238
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|194352162
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|305171|gb
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK NILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|26453383|
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK NILEKTHNGR LCKLNGIPPL ELGDCSIAGW gi|188504407
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133982551
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|146133810
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|115279062
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|145279000
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|189230499
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|408677|gb
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|305115|gb
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|188504350
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|189230518
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|194351979
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|189230423
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133755366
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133755385
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133755404
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSITGW gi|146760028
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133981962
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133982571
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|133755423
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|134047427
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|194304556
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|189230442
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|189230480
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|221326|db
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|221324|db
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|189230537
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|94481532|
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|188504388
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|188504369
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|408515|gb
```

```
DQICIGYHAN NSTEKVDTIL ERNVTVTHAK DILEKTHNGK LCKLNGIPPL ELGDCSIAGW gi|408513|gb
********** **** *** * ********** :********: ********** ***:***:** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        70         80        90        100        110        120
LLGNPECDRL LSVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|73921184|
LLGNPECDRL LSVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|408523|gb
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHFLSSVKH FEKVKILPKD gi|133753638
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHFLSSVKH FEKVKILPKD gi|134047408
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|133753657
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|134047523
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|145279057
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|408525|gb
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|189230461
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|127057978
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|324146|gb
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|305155|gb
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|94481522|
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|63054902|
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|305117|gb
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|133752958
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|145279038
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|146760066
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|305163|gb
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|194352181
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|194352200
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|194352219
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|194352238
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|194352162
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|305171|gb
LLGNPECDRL LIVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|26453383|
LLGNPECDRL LRVPEWSYIM EKENPRNGLC YPGSFNDYEE LKHLLSSVKH FEKVRILPKD gi|188504407
LLGNPECDRL LRVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|133982551
LLGNPECDRL LRVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVRILPKD gi|146133810
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|115279062
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|145279000
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVTH FEKVKILPRD gi|189230499
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|408677|gb
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKYLLSSVKH FEKVKILPKD gi|305115|gb
LLGNPECDRL LSVPEWSYIM EKENPRDGLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|188504350
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSLNDYEE LKHLLSSVKH FEKVRILPKD gi|189230518
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSLNDYEE LKHLLSSVKH FEKVRILPKD gi|194351979
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|189230423
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVRILPKD gi|133755366
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVRILPKD gi|133755385
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVRILPKD gi|133755404
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVRILPKD gi|146760028
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|133981962
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|133982571
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|133755423
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|134047427
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|194304556
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|189230442
LLGNPECDRL LRVPEWSYIM EKENPKYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|189230480
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGNFNDYEE LKHLLSSVKH FEKVKILPKD gi|221326|db
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGNFNDYEE LKHLLSSVKH FEKVKILPKD gi|221324|db
LLGNPECDRL LRVPEWSYIM EKENPRYNLC YPGSLNEYEE LKHLLSSVKH FEKVRILPKD gi|189230537
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|94481532|
LLGNPECDRL LRVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|188504388
LLGNPECDRL LRVPEWSYIM EKENPKYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|188504369
LLGNPECDRL LSVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|408515|gb
LLGNPECDRL LSVPEWSYIM EKENPRYSLC YPGSFNDYEE LKHLLSSVKH FEKVKILPKD gi|408513|gb
********** * ******** *****: .** ***.:*:*** **::****.* ****:***:* Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       130        140       150        160        170        180
RWTQHTTTGG SWACAVSGKP SFFRNMVWLT RKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|73921184|
RWTQHTTTGG SWACAVSGKP SFFRNMVWLT RKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|408523|gb
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|133753638
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|134047408
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|133753657
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|134047523
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|145279057
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT QKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|408525|gb
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT QKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|189230461
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|127057978
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KEGSDYPVAK GSYNNTSGEQ MLIIWGVHHP gi|324146|gb
```

```
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSDYPVAK GSYNNTSGEQ MLIIWGVHHP gi|305155|gb
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSDYPVAK GSYNNTSGEQ MLIIWGVHHP gi|94481522|
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAQ GSYNNTSGEQ MLIIWGVHHP gi|63054902|
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|305117|gb
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|133752958
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|145279038
RWTQHTTTGG SRACAVSGNP SFFRNMIWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|146760066
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|305163|gb
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|194352181
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|194352200
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|194352219
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|194352238
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|194352162
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKESNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|305171|gb
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|26453383|
RWTQHTTTGS SRACAVSGNP SFFRNMVWLT KKESNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|188504407
RWTQHTTTGG SRACAVSGNP SFFRNMIWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|133982551
RWTQHTTTGG SRACAVSGNP SFFRNMIWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|146133810
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|115279062
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|145279000
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT EKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|189230499
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT EKGSNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|408677|gb
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSDYPVAK GSYNNTSGEQ MLIIWGVHHP gi|305115|gb
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGSNYTVAK GSYNNTSGEQ MLIIWGVHHP gi|188504350
RWTQHTTTGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|189230518
RWTQHTTTGG SKACAVSGKP SFFRNMVWLT KKGTNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|194351979
RWTQHTTTGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|189230423
GWTQHTTSGG SKACAVSGKS SFFRNMVWLT KKGPNYPVAK RSYNNTSGEQ MLIIWGVHHP gi|133755366
GWTQHTTSGG SKACAVSGKS SFFRNMVWLT KKGPNYPVAK RSYNNTSGEQ MLIIWGVHHP gi|133755385
GWTQHTTSGG SKACAVSGKS SFFRNMVWLT KKGPNYPVAK RSYNNTSGEQ MLIIWGVHHP gi|133755404
GWTQHTTSGG SKACAVSGKS SFFRNMVWLT KKGPNYPVAK RSYNNTSGEQ MLIIWGVHHP gi|146760028
GWTQHETDGG SKACAVSGKA SFFRNMVWLT KRGPNYQVAK RSYNNTSGEQ MLIIWGVHHP gi|133981962
GWTQHKTDGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK RSYNNTSGEQ MLIIWGVHHP gi|133982571
GWTQHKTDGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK RSYNNTSGEQ MLIIWGVHHP gi|133755423
GWTQHKTDGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK RSYNNTSGEQ MLIIWGVHHP gi|134047427
GWTQHETDGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK RSYNNTSGEQ MLIIWGVHHP gi|194304556
GWTQHTTTGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK RSYNNTSGEQ MLIIWGVHHP gi|189230442
RWTQHTTTGG SKACAVSGEP SFFRNMVWLT KKGPNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|189230480
RWTQHTTTGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|221326|db
RWTQHTTTGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|221324|db
RWTQHTTTGG SKACAVSGEP SFFRNMVWLT KKGPNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|189230537
RWTQHTTTGG SMACAVSGKP SFFRNMVWLT EKGTNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|94481532|
RWTQHTTTGG SMACAVSGKP SFFRNMVWLT TKGPNYPVAQ GSYNNTSGEQ MLIIWGVHHP gi|188504388
RWTQHTTTGG SRACAVSGNP SFFRNMVWLT KKGPNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|188504369
RWTQHTTTGG SQACAVSGKP SFFRNMVWLT KKGPNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|408515|gb
GWTQHETTGG SKACAVSGKP SFFRNMVWLT KKGPNYPVAK GSYNNTSGEQ MLIIWGVHHP gi|408513|gb
 **** * *. * ******:. ******:***  . .:* **:  ********* ********** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        190        200        210        220        230        240
NDEAEQRALY QNVGTYVSVA TSTLYKRSIP EIAARPKVNG LGRRMEFSWT LLDMWDTINF gi|73921184|
NDEAEQRALY QNVGTYVSVA TSTLYKRSIP EIAARPKVNG LGRRMEFSWT LLDMWDTINF gi|408523|gb
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGGRMEFSWT LLDMWDTINF gi|133753638
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGGRMEFSWT LLDMWDTINF gi|134047408
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGGRMEFSWT LLDMWDTINF gi|133753657
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGGRMEFSWT LLDMWDTINF gi|134047523
NDETEQRTLY QNVGTYVSVS TSTLNKRSTP DIATRPKVNG LGGRMEFSWT LLDMWDTINF gi|145279057
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG QGGRMEFSWT LLDMWDTINF gi|408525|gb
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG QGGRMEFSWT LLDMWDTINF gi|189230461
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG QGGRMEFSWT LLDMWDTINF gi|127057978
IDETEQRTLY QNVGTYVSVG TSTLNKRSTP EIATRPKVNG QGGRMEFSWT LLDMWDTINF gi|324146|gb
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP EIATRPKVNG QGGRMEFSWT LLDMWDTINF gi|305155|gb
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP EIATRLKVNG QGGRMEFSWT LLDMWDTINF gi|94481522|
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP EIATRPKVNG QGGRMEFSWT LLDMWDTINF gi|63054902|
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG QGGRMEFSWT LLDMWDTINF gi|305117|gb
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG QGGRMEFSWT LLDMWDTINF gi|133752958
NDETEQRTLY QNVGTYVSVG TPTLNKRSTP DIATRPKVNG QGGRMEFSWT LLDMWDTINF gi|145279038
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|146760066
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVDG LGSRMEFSWT LLDMWDTINF gi|305163|gb
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|194352181
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|194352200
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|194352219
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|194352238
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|194352162
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|305171|gb
IDETEQITLY QNVGTYVSVG TSTLNKRSTP EIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|26453383|
IDETEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|188504407
```

```
NDETEQRTLY QNVGTYVSVV TSTLNKRSTP KIATRPKVNG LGGRMEFSWT LLDMWDTINF gi|133982551
IDETEQRTLY QNVETYVSVV TSTLNKRSTP KIATRPKVNG LGGRMEFSWT LLDMWDTINF gi|146133810
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP EIATRPKVNG LGGRMEFSWT LLDMWDTINF gi|115279062
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP EIATRPKVNG LGGRMEFSWT LLDMWDTINF gi|145279000
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP EIATRPKVNG LGSRMEFSWI LLDMWDTINF gi|189230499
NDEKEQRTLY QNVGTYVSVG TSTLNKRSTP DIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|408677|gb
NDETEQRTLY QNVGTYVSVG TSTLNKRSTP EIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|305115|gb
NDETEQRTLY QNVGTYVSVS TSTLNKRSTP EIATRPKVNG LGSRMEFSWT LLDMWDTINF gi|188504350
KDEAEQRALY QEVGTYVSAS TSTLNKRSIP EIAARPEVNG LGSRMEFSWT LLDVWDTINF gi|189230518
IDEAEQRALY QEVGTYVSAS TSTLNKRSIP EIAARPEVNG LGSRMEFSWT LLDVWDTINF gi|194351979
KDEAEQRALY QEVGTYVSAS TSTLNKRSTP EIAARPEVNG LGSRMEFSWT LLDVWDTINF gi|189230423
KDEAEQRALY QKVGTYVSAS TSTLNKRSTP EIAARPEVNG LGSRMEFSWT LLDVWDTINF gi|133755366
KDEAEQRALY QKVGTYVSAS TSTLNKRSTP EIAARPEVNG LGSRMEFSWT LLDVWDTINF gi|133755385
NDEAEQRALY QKVGTYVSAS TSTLNKRSTP EIAARPEVNG LGSRMEFSWT LLDVWDTINF gi|133755404
NDEAEQSALY QKVGTYVSAS TSTLNKRSTP EIAARPEVNG LGSRMEFSWT LLDVWDTINF gi|146760028
KDEAEQRALY QKVGTYVSAS TSTLNKRSTP EIAARPEVNG LESRMEFSWT LLDVWDTINF gi|133981962
NDEAEQRALY QKVGTYVSAS TSTLNKRSTP EIAARPEVSG LGSRMEFSWT LLDVWDTISF gi|133982571
NDEAEQRALY QKVGTYVSAS TSTLNKRSTP EIAARPEVSG LGSRMEFSWT LLDVWDTISF gi|133755423
NDEAEQRALY QKVGTYVSAS TSTLNKRSTP EIAARPEVSG LGSRMEFSWT LLDVWDTISF gi|134047427
NDEAEQRALY QEVGTYVSAS TSTLNKRSTP EIAARPKVSG LGSRMEFSWT LLDVWDTISF gi|194304556
TDEAEQRALY QEVGTYVSAS TSTLNKRSTP EIAARPEVNG LRSRMEFSWT LLDVWDTINF gi|189230442
KDEAEQRALY QNVGTYVSAS TSTLNKRSTP EIAARPEVNG LGSRMEFSWT LLDVWDTINF gi|189230480
NDEAEQRALY QEVGTYVSAS TSTLNKRSIP EIAARPKVNG LGSRMEFSWT LLDVWDTINF gi|221326|db
NDEAEQRALY QEVGTYVSAS TSTLNKRSIP EIAARPKVNG LGSRMEFSWT LLDVWDTINF gi|221324|db
NDEAEQRALY QKVGTYVSAS TSTLNKRSIP EIAARPKVNG LGSRMEFFWT LLDVWDTINF gi|189230537
NDEAEQRALY QKVGTYVSAS TSTLNKRSIP EIAARPKVNG LGSRMEFSWT LLDMWDTINF gi|94481532|
NDEAEQRALY QKVGTYVSAS TSTLYKRSIP EIAARPKVNG LGSRMEFSWT LLDMWDTINF gi|188504388
IDEAEQIALY QKVGTYVSAS TSTLNKRSTP EIAARPEVNG LGSRMEFSWT LLDMWDTINF gi|188504369
NDEAEQRALY QKVGTYVSEA TSTLNKRSTP EIAARPKVSG LGSRMEFSWT LLDVWDTISF gi|408515|gb
NDEAEQRALY QEVGTYVSEA TSTLNKRSTP EIAARPKVSG LGSRMEFSWT LLDMWDTISF gi|408513|gb
 ** ** :** *:* ****   *.** *** * .**:* :*.*    **** *  ***:****.* Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        250        260        270        280        290        300
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|73921184|
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|408523|gb
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133753638
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|134047408
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133753657
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|134047523
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|145279057
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|408525|gb
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|189230461
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|127057978
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|324146|gb
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|305155|gb
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|94481522|
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|63054902|
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|305117|gb
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133752958
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|145279038
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|146760066
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|305163|gb
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|194352181
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|194352200
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|194352219
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|194352238
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|194352162
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|305171|gb
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|26453383|
ESTGNLIAPE YGFKISKRGS SGIMKTERTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|188504407
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133982551
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|146133810
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|115279062
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|145279000
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|189230499
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|408677|gb
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|305115|gb
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|188504350
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|189230518
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|194351979
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|189230423
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133755366
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133755385
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133755404
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|146760028
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133981962
```

```
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133982571
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|133755423
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|134047427
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|194304556
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|189230442
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|189230480
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|221326|db
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|221324|db
ESTGNLVVPE YGFKISKRGS SGIMKTEGTL GNCETKCQTP LGAINTTLPF HNVHPLTIGE gi|189230537
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|94481532|
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|188504388
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|188504369
ESTGNLIAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|408515|gb
ESTGNLVAPE YGFKISKRGS SGIMKTEGTL ENCETKCQTP LGAINTTLPF HNVHPLTIGE gi|408513|gb
******:.** ********** ******* **  ********* ********** ********** Clustal Cons

....|....| ....|....| ....|
        310        320
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|73921184|
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|408523|gb
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133753638
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|134047408
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133753657
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|134047523
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|145279057
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|408525|gb
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|189230461
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|127057978
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|324146|gb
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|305155|gb
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|94481522|
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|63054902|
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|305117|gb
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133752958
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|145279038
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|146760066
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|305163|gb
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|194352181
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|194352200
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|194352219
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|194352238
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|194352162
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|305171|gb
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|26453383|
CPKYVKSEKL VLATGLRNVP QIEPR                                       gi|188504407
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133982551
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|146133810
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|115279062
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|145279000
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|189230499
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|408677|gb
CPRYVKSEKL VLATGLRNVP QIESR                                       gi|305115|gb
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|188504350
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|189230518
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|194351979
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|189230423
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133755366
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133755385
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133755404
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|146760028
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133981962
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133982571
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|133755423
CPKYVKSEKL VLATGPRNVP QIESR                                       gi|134047427
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|194304556
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|189230442
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|189230480
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|221326|db
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|221324|db
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|189230537
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|94481532|
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|188504388
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|188504369
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|408515|gb
CPKYVKSEKL VLATGLRNVP QIESR                                       gi|408513|gb
**:******* ***** **** ***.*                                       Clustal Cons
```

```
Alignment: E:\1_Data Penelitian\9_Ridlo\Data\database\Ha\HA1\human\H3N2.aln
....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         10         20         30         40         50         60
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|193084867
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|189303155
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|188076387
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293957
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293953
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|189303103
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194294007
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194294003
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|193084879
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194294015
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194580029
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|188076381
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293975
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194294019
QKLPGNDNST ATLCLGHHAV PNGTMVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293991
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194294023
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|193084875
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICNSPHQILD gi|194293971
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|189303139
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293995
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|189303151
QKFPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194294011
KKFPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293949
QKFPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|188076407
QKFPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293961
QKFPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|189303163
QKFPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|193084883
QKFPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293979
QKFPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293983
QKFPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|189303147
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|194293999
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|189303159
QKLPGNDNST ATLCLGHHAV PNGTIVKTIA NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|189303115
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|189303143
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGE ICDSPHQILD gi|193084863
QKLPGNDNST ATLCLGHHAV PNGTIVKTIT NDQIEVTNAT ELVQSSSTGG ICDSPHQILD gi|73921186|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|90571879|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|89923293|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|14030469|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|14030467|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|89938645|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|194268913
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|194268917
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|194268573
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|194268581
QKLPGNDNST ATLCLGHHAV PNGTLVNTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|194268575
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDNPHRILD gi|194268911
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDNPHRILD gi|194268915
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|194268907
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|89789541|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|14030471|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQGSSTGR ICDSPHRILD gi|109675432
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQGSSTGR ICDSPHRILD gi|91126541|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQGSSTGR ICDSPHRILD gi|89784791|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|194268899
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHRILD gi|194268561
QKLPGNDNSM ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|14486408|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|92090510|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|46981871|
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICNSPHQILD gi|115607670
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICNSPHQILD gi|115521636
QKLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|115521598
QKLPGNDNST ATLCLGHHAV SNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|94481528|
QKLPGNDNST ATLCLGHHAV SNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|194352295
QKLPGNDNST ATLCLGHHAV SNGTLVKTIT NDQIEVTNAT ELVQSSSTGR ICDSPHQILD gi|92090508|
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|85816052|
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|193805114
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|193805171
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|193805209
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|193805266
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|194352017
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|14009692|
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|148910822
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|148910824
```

```
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|194352074
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|194304765
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|194352112
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|134047618
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|194352093
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|126567435
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|194304632
QDLPGNDNNT ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|106907813
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|60753|emb
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|194304670
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|194304651
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|194304746
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|118420992
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|145279136
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT NDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|125664195
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|80977928|
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|125664233
QDLPGNDNST ATLCLGHHAV PNGTLVKTIT DDQIEVTNAT ELVQSSSTGK ICNNPHRILD gi|148628604
QDLPGKGNNT ATLCLGHHAV PNGTLVKTIT DDQVEVTNAT ELVQNLSMGK ICSNPHRILD gi|14275704|
:.:**:.*.  ********** .***:*:**: :**:****** ****. * *  **..**:*** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         70        80        90       100       110       120
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|193084867
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|189303155
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|188076387
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293957
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293953
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|189303103
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194294007
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194294003
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|193084879
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194294015
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194580029
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|188076381
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER XKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293975
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194294019
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293991
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194294023
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|193084875
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293971
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|189303139
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293995
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|189303151
GENCTLIDAL LGDPQCDGFQ NKNWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194294011
GENCTLIDAL LGDPQCDGFQ NKNWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293949
GENCTLIDAL LGDPQCDGFQ NKNWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|188076407
GENCTLIDAL LGDPQCDGFQ NKNWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293961
GENCTLIDAL LGDPQCDGFQ NKNWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|189303163
GENCTLIDAL LGDPQCDGFQ NKNWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|193084883
GENCTLIDAL LGDPQCDGFQ NKNWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293979
GENCTLIDAL LGDPQCDGFQ NKNWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293983
GENCTLIDAL LGDPQCDGFQ NKNWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|189303147
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194293999
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|189303159
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|189303115
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSKCYPY DVPDYASLRS LVASSGTLEF gi|189303143
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|193084863
GENCTLIDAL LGDPQCDGFQ NKKWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|73921186|
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|90571879|
GKNCTLIDAL LGDPHCDGFQ NKKWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|89923293|
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|14030469|
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|14030467|
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|89938645|
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194268913
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194268917
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194268573
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194268581
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194268575
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194268911
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194268915
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER STAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194268907
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSDCYPY DVPDYASLRS LVASSGTLEF gi|89789541|
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER TKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|14030471|
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|109675432
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|91126541|
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|89784791|
```

```
GKNCTLIDAL LGDPHCDDFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194268899
GKNCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYVSLRS LVASSGTLEF gi|194268561
GENCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|14486408|
GENCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|92090510|
GENCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|46981871|
GENCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|115607670
GENCTLIDAL LGDPHCDGFQ NKEWDLFVER RKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|115521636
GENCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|115521598
GENCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|94481528|
GENCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|194352295
GENCTLIDAL LGDPHCDGFQ NKEWDLFVER SKAYSNCYPY DVPDYASLRS LVASSGTLEF gi|92090508|
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|85816052|
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|193805114
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|193805171
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|193805209
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|193805266
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|194352017
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|14009692|
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|148910822
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|148910824
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|194352074
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|194304765
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|194352112
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|134047618
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|194352093
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|126567435
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|194304632
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|106907813
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|60753|emb
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|194304670
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|194304651
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|194304746
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|118420992
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|145279136
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|125664195
GINCTLIDAL LGDPHCDVFQ DETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|80977928|
GINCTLIDAL LGDPHCDVFQ DETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|125664233
GIDCTLIDAL LGDPHCDVFQ NETWDLFVER SKAFSNCYPY DVPDYASLRS LVASSGTLEF gi|148628604
GANCTLIDAL LGDPHCDGFQ NEKWDLFIER SKAFSNCYPY DVPEHASLRS LIASSGTLEF gi|14275704|
* :******* ****:** ** :: ****:**  .*:*.**** ***::.**** *:******** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       130       140       150       160       170       180
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|193084867
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|189303155
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|188076387
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194293957
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194293953
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|189303103
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194294007
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194294003
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|193084879
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194294015
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194580029
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|188076381
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194293975
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194294019
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194293991
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194294023
NNESFNWTGV TQNGTSSXCI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|193084875
NNESFNWTGV TQNGTSSXCI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194293971
NNESFNWTGV TQNGTSSSCI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|189303139
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|194293995
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEQFDKLYIW gi|189303151
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NENFDKLYIW gi|194294011
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NENFDKLYIW gi|194293949
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NENFDKLYIW gi|188076407
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NENFDKLYIW gi|194293961
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NENFDKLYIW gi|189303163
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NENFDKLYIW gi|193084883
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NENFDKLYIW gi|194293979
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN DENFDKLYIW gi|194293983
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NENFDKLYIW gi|189303147
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NEEFDKLYIW gi|194293999
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHSKFK YPALNVTMPN NEEFDKLYIW gi|189303159
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEKFDKLYIW gi|189303115
NNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEKFDKLYIW gi|189303143
```

```
KNESFNWTGV TQNGTSSACI RRSNNSFFSR LNWLTHLKFK YPALNVTMPN KEKFDKLYIW gi|193084863
NNESFNWTGV TQNGTSSACK RRSNNSFFSR LNWLTHLKFK YPALNVTMPN NEKFDKLYIW gi|73921186|
TKEGFNWTGV AQDGTSYACK RGSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|90571879|
TKEGFNWTGV AQDGTSYACK RGSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|89923293|
TKEGFNWTGV AQDGTSYACK RGSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|14030469|
TKEGFNWTGV AQDGTSYACK RGSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|14030467|
TKEGFNWTGV AQDGTSYACK RGSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|89938645|
TNEGFNWTGV AQDGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268913
TNEGFNWTGV AQDGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268917
TNEGFNWTGV AQDGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268573
TNEGFNWTGV AQDGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268581
TNEGFNWTGV AQDGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268575
TNEGFNWTGV AQDGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268911
TNEGFNWTGV AQDGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268915
TNEGFNWTGV AQDGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268907
TNEGFNWTGV AQDGTSYACK RGSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|89789541|
TNEGFNWTGV AQNGTSYACK RGSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|14030471|
NNESFNWTGV AQNGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|109675432
NNESFNWTGV AQNGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|91126541|
NNESFNWTGV AQNGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|89784791|
NNESFNWTGV AQNGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268899
NNESFNWTGV AQNGTSYACK RRSVKSFFSR LNWLHKLEYK YPALNVTMPN NDKFDKLYIW gi|194268561
NNESFNWTGV AQNGTSSACK RRSIKSFFSR LNWLHQLKYR YPALNVTMPN NDKFDKLYIW gi|14486408|
NNESFNWTGV AQNGTSSACK RRSIKSFFSR LNWLHQLENR YPALNVTMPN NDKFDKLYIW gi|92090510|
NNESFNWTGV AQNGTSSSCK RRSIKSFFSR LNWLHQLKYR YPALNVTMPN NDKFDKLYIW gi|46981871|
NNESFNWTGV AQNGTSSACK RRSIKSFFSR LNWLHQLKYK YPALNVTMPN NEKFDKLYIW gi|115607670
NNESFNWTGV AQNGTSSACK RRSIKSFFSR LNWLHQLKYK YPALNVTMPN NEKFDKLYIW gi|115521636
NNESFNWTGV AQNGTSSACK RRSNKSFFSR LNWLHQLKYK YPALNVTMPN NEKFDKLYIW gi|115521598
NNESFNWTGV AQNGTSSACK RRSNKSFFSR LNWLHQLKYK YPALNVTMPN NEKFDKLYIW gi|94481528|
NNESFNWTGV AQNGTSSACK RRSNKSFFSR LNWLHQLKYK YPALNVTMPN NEKFDKLYIW gi|194352295
NNESFNWTGV AQNGTSSACK RRSNNSFFSR LNWLHQLKYK YPALNVTMPN NEKFDKLYIW gi|92090508|
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|85816052|
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|193805114
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|193805171
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|193805209
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|193805266
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|194352017
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|14009692|
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|148910822
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|148910824
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|194352074
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|194304765
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|194352112
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|134047618
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|194352093
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|126567435
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|194304632
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|106907813
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|60753|emb
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|194304670
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|194304651
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|194304746
ITEGFTWTGV TQNGGSNACK RGPSSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|118420992
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|145279136
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|125664195
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|80977928|
ITEGFTWTGV TQNGGSNACK RGPGSGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|125664233
ITEGFTWTGV TQNGGSNACK RGPGNGFFSR LNWLTKSGST YPVLNVTMPN NDNFDKLYIW gi|148628604
VNESFNWTGV TQNGGSNACK RGPDSSFFSR LNWLYKSGNT YPMLNVTMPN SDGFDKLYIW gi|14275704|
 .*.*.**** :*:* *  *  * . ..**** **** :      ** ******* .: ******* Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        190        200        210        220        230        240
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|193084867
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|189303155
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|188076387
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194293957
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194293953
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|189303103
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194294007
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194294003
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|193084879
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194294015
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194580029
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|188076381
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194293975
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIXSR PRVRNIPSRI SIYWTIVKPG gi|194294019
```

```
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR XRXRNIPSRI SIYWTIVKPG gi|194293991
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR XRVRNIPSRI SIYWTIVKPG gi|194294023
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|193084875
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRDIPSRI SIYWTIVKPG gi|194293971
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|189303139
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRDIPSRI SIYWTIVKPG gi|194293995
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRBIPSRI SIYWTIVKPG gi|189303151
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194294011
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194293949
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|188076407
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194293961
GIHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PXVRNIPSRI SIYWTIVKPG gi|189303163
GIHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|193084883
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIRSR PRVRNIPSRI SIYWTIVKPG gi|194293979
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194293983
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRDIPSRI SIYWTIVKPG gi|189303147
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|194293999
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|189303159
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRNIPSRI SIYWTIVKPG gi|189303115
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR PRVRDIPSRI SIYWTIVKPG gi|189303143
GVHHPGTDND QIFLYAQASG RITVSTKRSQ QTVIPNIGSR LRVRDIPSRI SIYWTIVKPG gi|193084863
GVHHPGTDND QISLYAQASG RITVSTKRSQ QTVIPSIGSR PRIRDVPSRI SIYWTIVKPG gi|73921186|
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|90571879|
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|89923293|
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|14030469|
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|14030467|
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|89938645|
GVHHPSTDSD QTSLYVHASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268913
GVHHPSTDSD QTSLYVHASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268917
GVHHPSTDSD QTSLYVHASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268573
GVHHPSTDSD QTSLYVHASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268581
GVHHPSTDSD QTSLYVHASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268575
GVHHPSTDSD QTSLYVHASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268911
GVHHPSTDSD QTSLYVHASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268915
GIHHPSTDSD QTSLYVHASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268907
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|89789541|
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|14030471|
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|109675432
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|91126541|
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|89784791|
GVHHPSTDSD QTSLYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268899
GVHHPSTDSD QTSLYAQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|194268561
GVHHPSTDSD QTSLYAQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|14486408|
GVHHPSTDSV QTSVYVQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|92090510|
GVHHPSTDSD QTSLYTQASG RVTVSTKRSQ QTVIPNIGSR PWVRGISSRI SIYWTIVKPG gi|46981871|
GVHHPSTDSD QISLYAQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|115607670
GVHHPSTDSD QISLYAQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|115521636
GIHHPSTDSD QISLYAQASG RVTVSTKRSQ QTVIPNIGSR PWVRGVSSRI SIYWTIVKPG gi|115521598
GVHHPSTDSD QISIYAQASG RVTVSTKRSQ QTVIPNIGSS PWVRGVSSRI SIYWTIVKPG gi|94481528|
GVHHPSTDSD QISIYAQASG RVTVSTKRSQ QTVIPNIGSS PWVRGVSSRI SIYWTIVKPG gi|194352295
GVHHPSTDSD QISIYAQASG RVTVSTKRSQ QTVIPNIGSI PWVRGVSSRI SIYWTIVKPG gi|92090508|
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|85816052|
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|193805114
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|193805171
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|193805209
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|193805266
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|194352017
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|14009692|
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|148910822
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|148910824
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|194352074
GVHHPSTNQE QTSLYVQASG RVTVSTRRSR QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|194304765
GVHHPSTNQE QTSLYVQASG RVTVSTRRSR QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|194352112
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|134047618
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIESR PWVRGLSSRI SIYWTIVNPG gi|194352093
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIESR PWVRGLSSRI SIYWTIVKPG gi|126567435
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIWSR PWVRGLSSRI SIYWTIVKPG gi|194304632
GVHHPSTNQE QTSLYVQASG GVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|106907813
GIHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|60753|emb
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|194304670
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI NIYWTIVKPG gi|194304651
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|194304746
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVGGLSSRI SIYWTIVKPG gi|118420992
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|145279136
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|125664195
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|80977928|
GVHHPSTNQE QTSLYVQASG RVTVSTRRSQ QTIIPNIGSR PWVRGLSSRI SIYWTIVKPG gi|125664233
```

```
GVHHPSTNQE QTSLYVQESG RVTVSTRRSQ QSIIPNIGSR PWVRGQSSRI SIYWTIVKPG gi|148628604
GVHHPSTDRE QINLYVQASG KITVSTKRSQ QTIIPNVGSR PWVRGLSSRI SIYWTIVKPG gi|14275704|
*:***.*:   *  :*.: **  :****:**: *::**.: *        .*** .******:** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        250        260        270        280        290        300
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|193084867
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|189303155
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|188076387
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293957
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293953
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|189303103
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194294007
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194294003
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|193084879
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194294015
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194580029
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNINRI gi|188076381
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293975
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194294019
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293991
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194294023
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|193084875
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293971
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|189303139
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293995
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|189303151
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194294011
DIILINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293949
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|188076407
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293961
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|189303163
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|193084883
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293979
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293983
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|189303147
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194293999
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|189303159
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|189303115
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|189303143
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|193084863
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|73921186|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSISN DKPFQNVNRI gi|90571879|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSISN DKPFQNVNRI gi|89923293|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|14030469|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|14030467|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|89938645|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|194268913
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|194268917
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|194268573
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|194268581
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|194268575
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|194268911
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|194268915
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|194268907
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGNCNSE CITPNGSIPN DKPFQNVNRI gi|89789541|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGNCNSE CITPNGSIPN DKPFQNVNRI gi|14030471|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|109675432
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|91126541|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIDNCNSE CITPNGSIPN DKPFQNVNRI gi|89784791|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGNCNSE CITPNGSIPN DKPFQNVNRI gi|194268899
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194268561
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|14486408|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|92090510|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|46981871|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|115607670
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|115521636
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|115521598
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|94481528|
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|194352295
DILLINSTGN LIAPRGYFKI RSGKSSIMRS DAPIGKCNSE CITPNGSIPN DKPFQNVNRI gi|92090508|
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|85816052|
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|193805114
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|193805171
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|193805209
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|193805266
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|194352017
```

```
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|14009692|
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|148910822
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|148910824
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|194352074
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|194304765
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|194352112
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCIFE CITPNGSIPN DKPFQNVNKI gi|134047618
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|194352093
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|126567435
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|194304632
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|106907813
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|60753|emb
DVLVINSNGN LIAPRGYFKM RNGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|194304670
DVLVINSNGN LIAPRGYFKM RNGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|194304651
DVLEINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|194304746
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|118420992
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|145279136
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|125664195
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|80977928|
DVLVINSNGN LIAPRGYFKM RTGKSSIMRS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|125664233
DVLVINSNGN LIAPRGYFKM RTGKSSIMSS DAPIDTCISE CITPNGSIPN DKPFQNVNKI gi|148628604
DILIISSNGN LIAPRGYFKV HTGKSSIMRS DAPIETCSSE CITPNGSIPN DKPFQNVNKI gi|14275704|
*:: *.*.** *********: :.****** * **** .*  * ********.* ******:*:* Clustal Cons

....|....| ....|....| ....|....
       310        320
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|193084867
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|189303155
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|188076387
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293957
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293953
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|189303103
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194294007
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194294003
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|193084879
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194294015
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194580029
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|188076381
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293975
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194294019
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293991
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194294023
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|193084875
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293971
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|189303139
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293995
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|189303151
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194294011
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293949
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|188076407
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293961
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|189303163
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|193084883
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293979
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293983
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|189303147
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194293999
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|189303159
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|189303115
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|189303143
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|193084863
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|73921186|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|90571879|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|89923293|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|14030469|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|14030467|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|89938645|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194268913
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194268917
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194268573
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194268581
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194268575
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194268911
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194268915
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|194268907
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|89789541|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                     gi|14030471|
```

```
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|109675432
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|91126541|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|89784791|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|194268899
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|194268561
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|14486408|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|92090510|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|46981871|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|115607670
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|115521636
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|115521598
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|94481528|
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|194352295
TYGACPRYVK QNTLKLATGM RNVPEKQTR                                   gi|92090508|
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|85816052|
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|193805114
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|193805171
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|193805209
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|193805266
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|194352017
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|14009692|
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|148910822
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|148910824
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|194352074
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|194304765
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|194352112
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|134047618
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|194352093
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|126567435
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|194304632
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|106907813
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|60753|emb
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|194304670
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|194304651
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|194304746
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|118420992
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|145279136
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|125664195
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|80977928|
TYGTCPKYVK QNTLKLATGM RNVPEKQTR                                   gi|125664233
TYGACPKYVK QNTLKLATGM RNVPEKQTR                                   gi|148628604
TYGACPKYVK QNTLKLATGM RNIPEKQTR                                   gi|14275704|
***:**:*** ********** **:******                                   Clustal Cons


Alignment: D:\bwt skripsi\cari data\Data\database\Ha\HA1\human\H5N1.aln
....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         10         20         30         40         50         60
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1134946
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1579558
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1579558
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1185748
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1185748
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1240988
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1188643
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1134946
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1134947
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1134947
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1134947
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1134947
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1134946
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1579558
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1134946
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1586048
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1188641
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILKDCSVAGW gi|1134952
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILKDCSVAGW gi|1134952
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1188642
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1188641
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1185749
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1188643
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1579558
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1134944
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILERTHNGK LCDLNGVKPL ILRDCSVAGW gi|3421260
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILERTHNGK LCDLNGVKPL ILRDCSVAGW gi|4457129
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILERTHNGK LCDLNGVKPL ILRDCSVAGW gi|8307805
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILERTHDGK LCDLNGVKPL ILRDCSVAGW gi|4457132
```

```
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILERTHNGK LCDLNGVKPL ILRDCSVAGW gi|4457134
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILERTHNGK LCDLNGVKPL ILRDCSVAGW gi|4457138
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILERTHNGK LCDLNGVKPL ILRDCSVAGW gi|4457136
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILERTHNGK LCDLNGVKPL ILRDCSVAGW gi|8307803
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLNGVKPL ILRDCSVAGW gi|9009324
DQICIGSHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1483408
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|5029605
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1187227
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|5440228
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1452844
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|4657841
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1452844
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1569922
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1452844
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1598959
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|5861843
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|5029605
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1452844
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1452844
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW gi|1591449
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|7809657
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|9300839
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1263619
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1263619
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1263619
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILKDCSVAGW gi|9300840
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1162951
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|8568091
DQICIGYHAN LSTERVDTIR EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1162951
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|7101349
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1452844
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1487677
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1823825
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|8713794
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCNLDGVKPL ILRDCSVAGW gi|1458436
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCNLDGVKPL ILRDCSVAGW gi|1458436
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1458436
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1458436
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1458436
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1571030
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1458436
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1458436
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1458436
DQICIGYHAN NSTEQVDTIM EKNVTVTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW gi|1458436
****** ***  ***:****  ********** ****:.*:** **:*:***** **:******* Clustal Co

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        70         80         90        100        110        120
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134946
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1579558
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1579558
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1185748
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1185748
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1240988
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKG gi|1188643
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134946
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134947
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134947
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134947
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134947
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134946
LLGNPMCDEF INVPEWSYIV EKANPTNGLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1579558
LLGNPMCDEF INVPEWSYIV EKANPTNGLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134946
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1586048
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1188641
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134952
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134952
```

```
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1188642
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1188641
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1185749
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1188643
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1579558
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS gi|1134944
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|3421260
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|4457129
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|8307805
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|4457132
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|4457134
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGNFNDYEE LKHLLSRINH FEKIQMIPKS gi|4457138
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|4457136
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|8307803
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGDFNDYEE LKHLLSRTNH FEKIQIIPKS gi|9009324
LLGNPMCDEF INVPEWSYIV EKASPANDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1483408
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|5029605
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1187227
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|5440228
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1452844
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|4657841
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1452844
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1569922
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1452844
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1598959
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|5861843
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|5029605
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1452844
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1452844
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1591449
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|7809657
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFDDYEE LKHLLSRINH FEKIQIIPKS gi|9300839
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1263619
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1263619
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1263619
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|9300840
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1162951
LLGNPMCDEF INVPEWSYIV EKPNPANDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|8568091
LLGNPMCDEF INVPEWSYIV EKANPANDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1162951
LLGNPMCDEF INVPEWSYIV EKANPANDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKN gi|7101349
LLGNPMCDEF INVPEWSYIV EKANPANDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKN gi|1452844
LLGNPMCDEF INVPEWSYIV EKANPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|1487677
LLGNPMCDEF INVPEWSYIV EKANPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|1823825
LLGNPMCDEF INVPEWSYIV EKANPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|8713794
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKN gi|1458436
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKN gi|1458436
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGNFNNYEE LKHLLSRINH FEKIQIIPKS gi|1458436
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|1458436
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|1458436
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGNFNDYEE LKHLLSRINH FEKIQIIPKS gi|1571030
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGTFNDYEE LKHLLSRINH FEKIQIIPKS gi|1458436
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1458436
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1458436
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS gi|1458436
********** :********* ** .*.*.** *** *::*** ******* ** *****:***. Clustal Co

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        130        140        150        160        170        180
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134946
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1579558
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1579558
SWSDHEASSG VSSACPYLGS PSFFRNVVWL TKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1185748
SWSDHEASSG VSSACPYLGS PSFFRNVVWL TKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1185748
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1240988
SWSDHEASSG VSSACPYLRS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1188643
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134946
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134947
```

```
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134947
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134947
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134947
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134946
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1579558
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134946
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1586048
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1188641
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134952
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KESYNNTNQE DLLVLWGIHH gi|1134952
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1188642
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1188641
SWSDHEASSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1185749
SWSDHEXSSG VSSACPYLGS PSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1188643
SWSDHEASSG VSSACPYLGS SSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1579558
SWSDHEASSG VSSACPYLGS SSFFRNVVWL IKKNSTYPTI KKSYNNTNQE DLLVLWGIHH gi|1134944
SWSNHDASSG VSSACPYLGR SSFFRNVVWL IKKNSAYPTI KRSYNNTNQE DLLVLWGIHH gi|3421260
SWSNHDASSG VSSACPYLGR SSFFRNVVWL IKKNSAYPTI KRSYNNTNQE DLLVLWGIHH gi|4457129
SWSNHDASSG VSSACPYLGR SSFFRNVVWL IKKNSAYPTI KRSYNNTNQE DLLVLWGIHH gi|8307805
SWSNHDASSG VSSACPYLGR SSFFRNVVWL IKKNSAYPTI KRSYNNTNQE DLLVLWGIHH gi|4457132
SWSNHDASSG VSSACPYLGR SSFFRNVVWL IKKNSSYPTI KRSYNNTNQE DLLVLWGIHH gi|4457134
SWSNHDASSG LSSACPYLGK SSFFRNVVWL IKKNSSYPTI KRSYNNTNQE DLLVLWGIHH gi|4457138
SWSNHDASSG VSSACPYLGR SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|4457136
SWSNHDASSG VSSACPYLGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|8307803
SWSNHDASSG VSSACPYHGR SSFFRNVVWL IKKNSAYPTI KRSYNNTNQE DLLVLWGIHH gi|9009324
SWSNHEASSG VSSACPYLGR PSFFRNVVWL IKKNNTYPTI KRSYNNTNQE DLLVLWGIHH gi|1483408
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|5029605
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1187227
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|5440228
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1452844
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|4657841
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1452844
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1569922
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1452844
SWSSHEVSLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1598959
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|5861843
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|5029605
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1452844
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1452844
SWSSHEASLG VSSACPYQGK FSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWSSHEASLG VSSACPYQGK TSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWSSHEASLG VSSACPYQGK PSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWSSHEASLG VSSACPYQGK PSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IEKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IEKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWSSHEASLG VSSACPYQGK SSFFRNVVWL INKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
YWSSHEASLG VSSACPYQGK SSFFRNVVWL TKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWSSHEASLG VSSACPYQGE SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSAYPTI KRSYNNTNQE DLLVLWGIHH gi|1591449
SWLSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|7809657
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVMWGIHH gi|9300839
SWSSHEASLG VSAACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVMWGIHH gi|1263619
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVMWGIHH gi|1263619
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVMWGIHH gi|1263619
SWSSHEASLG VSSACPYQGR SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVMWGIHH gi|9300840
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKTSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1162951
SWSSHEASVG VSSVCPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|8568091
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH gi|1162951
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNNAYPTI KRSYNNTNQE DLLVLWGIHH gi|7101349
SWSSHEASLG VSSACPYQGK SSFFRNVVWL IKKNNAYPTI KRSYNNTNQE DLLVLWGIHH gi|1452844
SWSDHEASSG VSSACPYQGT PSFFRNVIWL IKKNNTYPTI KRSYNNTNQE DLLILWGIHH gi|1487677
SWSDHEASSG VSSACPYQGT PSFFRNVVWL IKKNNTYPTI KRSYNNTNQE NLLILWGIHH gi|1823825
SWSDHEASSG GSSACPYQGT PSFFRNVVWL IKKNNTYPTI KRSYNNTNQE DLLILWGIHH gi|8713794
SWSDHEAS-G VSSACPYQGR SSFFRNVVWL TKRDNAYPTI KRSYNNTNQE DLLVLWGIHH gi|1458436
SWSDHEAS-G VSSACPYQGR SSFFRNVVWL TKKDNAYPTI KRSYNNTNQE DLLVLWGIHH gi|1458436
SWSDHEASSG VSSACPYQGR SSFFRNVVWL IKKDNAYPTI KRSYNNTNQE DLLILWGIHH gi|1458436
SWSDHEASSG VSSACPYQGR SSFFRNVVWL IKKDNAYPTI KRSYNNTNQE DLLVLWGIHH gi|1458436
SWSDHEASSG VSSACPYQGR SSFFRNVVWL IKKDNAYPTI KRSYNNTNQE DLLVLWGIHH gi|1458436
SWSDHEASSG VSSACPYQGR SSFFRNVVWL IKKDNAYPTI KRSYNNTNQE DLLVLWGIHH gi|1571030
SWSDHEASSG VSSACPHQGR SSFFRNVVWL IKKNNAYPTI KISYNNTNQE DLLVLWGIHH gi|1458436
SWSDYEASSG VSSACPYQGR SSFFRNVVWL IKKNNAYPTI KRSYNNTNQE DLLVLWGIHH gi|1458436
SWSDYEASSG VSSACPYQGR SSFFRNVVWL IKKNNAYPTI KRSYNNTNQE DLLVLWGIHH gi|1458436
SWSDYEASSG VSSACPYQGR SSFFRNVVWL IKKNNAYPTI KRSYNNTNQE DLLVLWGIHH gi|1458436
 * .:: * *  *:.**:     ******:**  :: .:**** * ******** :**::***** Clustal Co

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
```

```
       190        200        210        220        230        240
PNDGAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1134946
PNDGAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1579558
PNDVAEQTRL YQNPATYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1579558
PNNEAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1185748
PNNEAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1185748
PNNEAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1240988
PNNEAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1188643
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILNPNDAIN gi|1134946
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILNPNDAIN gi|1134947
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILNPNDAIN gi|1134947
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILNPNDAIN gi|1134947
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILNPNDAIN gi|1134947
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILNPNDAIN gi|1134946
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1579558
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1134946
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1586048
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1188641
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1134952
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1134952
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW AILKPNDAIN gi|1188642
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW AILKPNDAIN gi|1188641
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW AILKPNDAIN gi|1185749
PNDAAEQTKL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW AILKPNDAIN gi|1188643
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1579558
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1134944
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PEIATRPKVN GQSGRMEFFW TILKPNDAIN gi|3421260
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PEIATRPKVN GQSGRMEFFW TILKPNDAIN gi|4457129
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PEIATRPKVN GQSGRMEFFW TILKPNDAIN gi|8307805
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PEIATRPKVN GQSGRMEFFW TILKPNDAIN gi|4457132
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PEIATRPKVN GQSGRMEFFW TILKPNDAIN gi|4457134
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PEIATRPKVN GQSGRMEFFW TILKPNDAIN gi|4457138
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PEIATRPKVN GQSGRMEFFW TILKPNDAIN gi|4457136
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PEIATRPKVN GQSGRIEFFW TILKPNDAIN gi|8307803
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PEIATRPKVN GQSGRMEFFW TILKPNDAIN gi|9009324
PNDEAEQIKL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMEFFW AILKPNDAIN gi|1483408
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|5029605
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSEVN GQSGRMEFFW TILKPNDAIN gi|1187227
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|5440228
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1452844
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|4657841
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1452844
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1569922
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1452844
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1598959
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|5861843
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|5029605
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1452844
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1452844
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNNAAEQTEL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTEL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1591449
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|7809657
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|9300839
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1263619
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1263619
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRIEFFW TILKPNDAIN gi|1263619
PNDAAEQTRL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|9300840
PNDAAEQTRL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1162951
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|8568091
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1162951
PNDAAEQTRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQNGRMEFFW TILKPNDAIN gi|7101349
PNDAAEQTRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQNGRMEFFW TILKPNDAIN gi|1452844
SNDAAEQTKL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMDFFW TILKPNDAIN gi|1487677
SNDAAEQIKL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMDFFW TILKPNDAIN gi|1823825
SNDAAEQTKL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMDFFW TILKPNDAIN gi|8713794
PNDAAEQXRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQXGRMEFFW TILKSNDAIN gi|1458436
PNDAAEQTRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKSNDAIN gi|1458436
PNDAAEQTRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKSNDAIN gi|1458436
```

```
PNDAAEQTRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKSNDAIN gi|1458436
PNDAAEQTRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRIEFFW TILKSNDAIN gi|1458436
PSDAAEQTRL YRNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKPNDAIN gi|1571030
PNDAAEQTRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKSNDAIN gi|1458436
PNDAAEQIRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKSNDAIN gi|1458436
PNDAAEQIRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKSNDAIN gi|1458436
PNDAAEQIRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN GQSGRMEFFW TILKSNDAIN gi|1458436
..: *** .* *:**:****: ********** *.****.:** ** **::*** :**:.***** Clustal Co

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        250        260        270        280        290        300
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134946
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1579558
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1579558
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YSNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1185748
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YSNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1185748
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1240988
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1188643
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134946
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134947
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134947
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134947
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134947
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134946
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1579558
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134946
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1586048
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1188641
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134952
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134952
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1188642
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1188641
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1185749
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1188643
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1579558
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1134944
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|3421260
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|4457129
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|8307805
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|4457132
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|4457134
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|4457138
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|4457136
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|8307803
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|9009324
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1483408
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|5029605
FESNGNFVAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1187227
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|5440228
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1452844
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|4657841
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1452844
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1569922
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1452844
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1598959
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|5861843
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|5029605
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1452844
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1452844
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1591449
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|7809657
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|9300839
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP LHNIHPLTIG gi|1263619
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1263619
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1263619
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|9300840
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1162951
```

```
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|8568091
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1162951
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|7101349
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG gi|1452844
FESNGNFIAP EYAYKIVKKG DSAILKSEVE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1487677
FESNGNFIAP EYAYKIVKEG DSAIMKSEVE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1823825
FESNGNFIAP EYAYKIVKKG DSAIMKSEVE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|8713794
FESNGNFIAP ENAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1458436
FESNGNFIAP ENAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1458436
FESNGNFIAP ENAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1458436
FESNGNFIAP ENAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1458436
FESNGNFIAP ENAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1458436
FESNGNFIAP ENAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1571030
FESNGNFIAP ENAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1458436
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1458436
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1458436
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG gi|1458436
*******:** * ******:* **:*:***:* *.******** *:******** :********* Clustal Co

....|....| ....|....| ....|....| .
       310        320        330
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1134946
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1579558
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1579558
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1185748
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1185748
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1240988
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1188643
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1134946
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1134947
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1134947
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1134947
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1134947
ECPKYVKSNR LVLAKGLRNS PQRESRRKKR -                                gi|1134946
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1579558
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1134946
ECPKYVKSNR SVLATGLRNS PQRESRRKKR -                                gi|1586048
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1188641
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1134952
ECPKYVKSNK LVLATGLRNS PQRESRRKKR -                                gi|1134952
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1188642
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1188641
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1185749
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1188643
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1579558
ECPKYVKSNR LVLATGLRNS PQRESRRKKR -                                gi|1134944
ECPKYVKSNR LVLATGLRNT PQRERRRKKR -                                gi|3421260
ECPKYVKSNR LVLATGLRNT PQRERRRKKR -                                gi|4457129
ECPKYVKSNR LVLATGLRNT PQRERRRKKR -                                gi|8307805
ECPKYVKSNR LVLATGLRNT PHRERRRKKR -                                gi|4457132
ECPKYVKSNR LVLATGLRNT PQRERRRKKR -                                gi|4457134
ECPKYVKSNR LVLATGLRNT PHRERRRKKR -                                gi|4457138
ECPKYVKSNR LVLATGLRNT PQRERRRKKR -                                gi|4457136
ECPKYVKSNR LVLATGLRNA PQRERRRKKR -                                gi|8307803
ECPKYVKSNR LVLATGLRNT PQRERRRKKR -                                gi|9009324
ECPKYVKSNR LVLATGLRNA PQREGRRKKR -                                gi|1483408
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|5029605
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1187227
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|5440228
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1452844
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|4657841
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1452844
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1569922
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1452844
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1598959
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|5861843
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|5029605
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1452844
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1452844
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
```

```
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRETRAIAG -                                gi|1591449
ECPKYVKSNR LVLATGLRNS PQRERRKKR- -                                gi|7809657
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|9300839
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1263619
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1263619
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1263619
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|9300840
ECPKYVKSNR LVLATGLRNS PQKERRRKKR -                                gi|1162951
ECPKYVKSNR LVLATGLRNS PQREKRRKKR -                                gi|8568091
ECPTYVKSNR LVLAPGLRNS PQREXRRKKR -                                gi|1162951
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|7101349
ECPKYVKSNR LVLATGLRNS PQRERRRKKR -                                gi|1452844
ECPKYVKSNK LVLATGLRNS PLRERRRKR- -                                gi|1487677
ECPKYVKSNK LVLATGLRNS PLRERRRKRA -                                gi|1823825
ECPKYVKSNK LVLATGLRNS PLRERRRKR- -                                gi|8713794
ECPKYVKSNR LVLATGLRNS PQGERRRKKR A                                gi|1458436
ECPKYVKSNR LVLATGLRNS PQGERRRKKR A                                gi|1458436
ECPKYVKSNR LVLATGLRNS PQGERRRKKR -                                gi|1458436
ECPKYVKSNR LVLATGLRNS PQGERRRKKR -                                gi|1458436
ECPKYVKSNR LVLATGLRNS PQGERRRKKR -                                gi|1458436
ECPKYVKSNR LVLATGLRNS PQGERRRKKR -                                gi|1571030
ECPKYVKSNR LVLATGLRNS PQGERRRKKR -                                gi|1458436
ECPKYVKSNR LVLATGLRNS PQGERRRRKR -                                gi|1458436
ECPKYVKSNR LVLATGLRNS PQGERRRRKR -                                gi|1458436
ECPKYVKSNR LVLATGLRNS PQGERRRRKR -                                gi|1458436
***.*****:  *** ****: *  * *                                      Clustal Co
```

Neuraminidase

```
Alignment: G:\bwt skripsi\cari data\Data\database\Na\human\h1n1.aln
....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         10         20         30         40         50         60
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303446
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303436
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303426
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|194294067
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303430
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303428
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303442
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|193084915
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303424
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|193084899
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|188076369
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303410
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQI GSQNNTGICN QRIITYENST gi|189303434
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|193084909
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|188076351
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303422
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|193084907
MNPNHKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|193084913
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303412
----QKIITI GSISIAIGII SLLLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENNT gi|195661085
MNPNQKIITI GSISIAIGII SLLLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENNT gi|195661087
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|194294071
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|195661095
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|195661089
----QKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|195661083
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|195661091
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|195661093
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|170181723
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|170181755
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303432
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|189303418
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|195661097
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|170181785
MNPNQKIITI GSISIAIGIN SLMLQIGNII SIWASHSIQT GSQNNTGICN QRIITYENST gi|170181779
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|168825256
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|189303420
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGVCN QRIITYENST gi|183396529
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGVCN QRIITYENST gi|170675942
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|156123514
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|158188218
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|157281301
MNPNQKIITI GSISIAIGTI SLMLQIGNMI SIWASHSIQT GSQNHTGICN QRIITYENST gi|122855951
```

```
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|125664181
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|158524906
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|73761479|
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|156123510
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|158188202
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|168827347
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|168827349
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|168827351
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|148276804
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|148276814
MNPNQKIITI GSISIAIGII SLVLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|148356750
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|82546780|
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QKIITYKNST gi|77543347|
MNPNQKIITI GSISIAIGII SLMLQIGXII SIWASHSIQT GSQNHTGICN QRIITYENST gi|148356757
MNPNQKIITI GSISIAIGII SLMLQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|148356769
MNPNQKIITI GSISIAIGII SLILQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|94959690|
MNPNQKIITI GSISIAIGII SLILQVGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|109914463
MNPNQKIITI GSISIAIGII SLILQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|94959709|
-NPNQKIITI GSISIAIGII SLILQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|112787589
MNPNQKIITI GSISIAIGII SLILQIGNII SIWASHSIQT GSQNHTGICN QRIITYENST gi|134047394
MNPNQKIITI GSISVAIGII SLILQIGNII SIWASHSIQT GSQNYTGICN QRIITYENST gi|148276806
MNPNQKIITI GSISVAIGII SLILQIGNII SIWASHSIQT GSQNYTGICN QRIITYENNT gi|148276808
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GNQN------ -------HTG gi|94960376|
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GNQN------ -------HTG gi|414313|gb
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GNQN------ -------HTG gi|324482|gb
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GNQN------ -------HTG gi|194352376
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GNQN------ -------HTG gi|94481608|
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GNQN------ -------HTG gi|414309|gb
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GNQN------ -------HTG gi|414311|gb
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GNQN------ -------HTG gi|89782161|
MNPNQKIITI GSICLVVGLI SLILQIGNII SIWISHSIQT GSQN------ -------HTG gi|194304808
MNPNQKIITI GSICLVVGLI SLILQIGNII SIWISHSIQT GSQN------ -------HTG gi|126599291
MNPNQKIITI GSICLVVGLI SLILQIGNII SIWISHSIQT GSQN------ -------HTG gi|89779326|
MNPNQKIITI GSICLVVGLI SLILQIGNII SIWISHSIQT GSQN------ -------HTG gi|125976186
MNPNQKITTI GSICLVVGLI SLILQIGNII SIWISHSIQT GSQN------ -------HTG gi|21693173|
MNPNQKIITI GSICLVVGLI SLILQIGNII SIWISHSIQT GSQN------ -------HTG gi|324508|gb
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQN------ -------HTG gi|133754137
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQA GS-------- --------ST gi|89148082|
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQNHTGICN QSIITYKNST gi|133754194
MNPNQKIITI GSICMVVGII SLILQIGNII SIWVSHSIQT GNQNHPETCN QSIITYENNT gi|8572169|g
MNPNQKIITI GSICMVVGII SLILQIGNIV SIWISHSIQT GNQNHTGTCN QSIITYKNST gi|89782392|
MNPNQKIITI GSICMVVGII SLILQIGNIV SIWISHSIQT GNQNHTGTCN QSIITYKNST gi|21724204|
MNPNQKIITI GSICMVVGII SLILQIGNIV SIWISHSIQT GNQNHTGTCN QSIITYKNST gi|112787551
MNPNQKIITI GSICMVVGII SLILQIGNIV SIWISHSIQT GNQNHTGTCD QSIITYKNST gi|4583795|e
MNPNQKIITI GSICMVVGII SLILQIGNIV SIWISHSIQT GNQNHTGTCD QSIITYKNST gi|8572171|g
MNPNQKIITI GSICMVVGII SLIFQIGNIV SIWISHSIT- ------GTCN RSI------- gi|89903080|
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQNHTGTCN QSIITYKNST gi|133754175
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQNHTGTCN QSIITYKNST gi|133752887
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQNHTGTCN QSIITYKNST gi|21724202|
MNPNQKIITI GSICMVVGII SLILQIGNIV SIWISHSIQT GNQNHTGTCD QSIITYKNST gi|21717612|
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQNHTGICN QSIITYKNST gi|21717610|
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQNHTGICN QSIITYKNST gi|89903061|
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQNHTGICN QSIITYKNST gi|8572187|g
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQNHTGICN QSIITYKNST gi|145278815
MNPNQKIITI GSICMVVGII SLILQIGNII SIWISHSIQT GSQNHTGICN QSIITYKNST gi|89152219|
MNPNQKIITI GSICMAIGII SLILQIGNII SIWVSHSIQT GSQNHTGICN QRIITYENNT gi|125976167
MNPNQKIITI GSICMAIGII SLILQIGNII SIWVSHSIQT GSQNHTGICN QRIITYENNT gi|125976224
MNPNQKIITI GSICMAIGII SLILQIGNIV SIWISHSIQT GSQNYTGICN QRIITYENST gi|148276802
    :** ** ***.:.:*   **::*:* :: *** ****                         Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         70         80         90        100        110        120
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303446
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303436
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303426
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|194294067
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303430
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303428
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303442
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|193084915
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303424
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|193084899
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|188076369
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303410
WVNHTYVNIN NTNVVAG--- ---------- EEKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303434
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|193084909
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|188076351
```

```
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303422
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|193084907
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|193084913
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303412
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|195661085
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|195661087
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|194294071
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|195661095
WVNHTYVNIN NTKVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|195661089
WVNHTYVNIN NTKVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|195661083
WVNHTYVNIN NTKVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|195661091
WVNHTYVNIN NTKVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|195661093
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|170181723
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|170181755
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303432
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|189303418
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|195661097
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|170181785
WVNHTYVNIN NTNVVAG--- ---------- EDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|170181779
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|168825256
WVNHTYVNIN NTNVVAG--- ---------- KDKTPVTLVG NSSLCSISGW AIYTKDNSIR gi|189303420
WVNHTYVNIN NTNVIAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|183396529
WVNHTYVNIN NTNVIAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|170675942
WVNHTYVSIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|156123514
WVNHTYVSIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|158188218
WVNHTYVSIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|157281301
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|122855951
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|125664181
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|158524906
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|73761479|
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|156123510
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|158188202
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|168827347
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|168827349
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|168827351
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|148276804
WVNHTYVNIN NTNVVDG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|148276814
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|148356750
WVNHTYVNIN NTNVIAE--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|82546780|
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCSISGW AIYTKDNSIR gi|77543347|
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCAISGW AIYTKDNSIR gi|148356757
WVNHTYVNIN NTNVVAG--- ---------- KDKTSVTLAG NSSLCAISGW AIYTKDNSIR gi|148356769
WVNQTYVNIN NTNVVAG--- ---------- KDKTSMTLAG NSSLCPIRGW AIYTKDNSIR gi|94959690|
WVNQTYVNIN NTNVVAG--- ---------- KDKTSMTLAG NSSLCPIRGW AIYTKDNSIR gi|109914463
WVNQTYVNIN NTNVVAG--- ---------- KDKTSMTLAG NSSLCPIRGW AIYTKDNSIR gi|94959709|
WVNQTYVNIN NTNVVAG--- ---------- KDKTSMTLAG NSSLCPIRGW AIYTKDNSIR gi|112787589
WVNQTYVNIN NTNVVAG--- ---------- KDKTSMTLAG NSSLCPIRGW AIYTKDNSIR gi|134047394
WVNQTYVNIN NTNVVAG--- ---------- KDKTSMTLAG NSSLCPIRGW AIYTKDNSIR gi|148276806
WVNQTYVNIN NTNVVAG--- ---------- KDKISMTLAG NSSLCPIRGW AIYTKDNSIR gi|148276808
ICNQGSITYK ---VVAG--- ---------- QDSTSVILTG NSSLCPIRGW AIHSKDNGIR gi|94960376|
ICNQGSITYK ---VVAG--- ---------- QDSTSVILTG NSSLCPIRGW AIHSKDNGIR gi|414313|gb
ICNQGSITYK ---VVAG--- ---------- QDSTSVILTG NSSLCPIRGW AIHSKDNGIR gi|324482|gb
ICNQGSITYK ---VVAG--- ---------- QDSTSVILTG NSSLCPIRGW AIHSKDNGIR gi|194352376
ICNQGSITYK ---VVAG--- ---------- QDSTSVILTG NSSLCPIRGW AIHSKDNGIR gi|94481608|
ICNQGIITHK ---VVAG--- ---------- QDSTSVILTG NSSLCPIRGW AIHSKDNGIR gi|414309|gb
ICNQGIITYN ---VVAG--- ---------- QDSTSVILTG NSSLCPIRGW AIHSKDNGIR gi|414311|gb
ICNQGIITYN ---VVAG--- ---------- QDSTSVILTG NSSLCPIRGW AIHSKDNGIR gi|89782161|
ICNQNIITYK NSTWV----- ---------- KDTTSVILTG NSSLCPIRGW AIYSKDNSIR gi|194304808
ICNQNIITYK NSTWV----- ---------- KDTTSVILTG NSSLCPIRGW AIYSKDNSIR gi|126599291
ICNQNIITYK NSTWV----- ---------- KDTTSVILTG NSSLCPIRGW AIYSKDNSIR gi|89779326|
ICNQNIITYK NSTWV----- ---------- KDTTSVILTG NSSLCPIRGW AIYSKDNSIR gi|125976186
ICNQNIITYK NSTWV----- ---------- KDTTSVILTG NSSLCPIRGW AIYSKDNSIR gi|21693173|
ICNQNIITYK NSTWV----- ---------- KDTTSVILTG NSSLCPIRGW AIYSKDNSIR gi|324508|gb
ICNQNIITYK NSTWVNQTYV NISNTNVVAG QDTTSVILTG NSSLCPIRGW AIYSKDNSIR gi|133754137
WVNQTYVNIS NTNVVAG--- ---------- PDATSVILTG NSSLCPIRGW AIYSKDNGIR gi|89148082|
WVNQTYVNIS NTNVVAG--- ---------- QDTTSVILTG NSSLCPIRGW AIYSKDNGIR gi|133754194
WVNQTYVNIS NTNVVAG--- ---------- QDATSVILTG NSSLCPISGW AIYSKDNGIR gi|8572169|g
WVNQTYVNIS NTNVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|89782392|
WVNQTYVNIS NTNVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|21724204|
WVNQTYVNIS NTNVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|112787551
WVNQTYV--- --NVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|4583795|e
WVNQTYV--- --NVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|8572171|g
-----YVNIS NTNVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|89903080|
WVNQTYVNIS NTNVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|133754175
WVNQTYVNIS NTNVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|133752887
WVNQTYVNIS NTNVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|21724202|
WVNQTYVNIS NTNVVAG--- ---------- KDTTSVILAG NSSLCPIRGW AIYSKDNGVR gi|21717612|
```

```
WVNQTYVNIS NTNVVAG--- ---------- KGTTSVILAG NSSLCPIRGW AIYSKDNGIR gi|21717610|
WVNQTYVNIS NTNVVAG--- ---------- KGTTSVILAG NSSLCPIRGW AIYSKDNGIR gi|89903061|
WVNQTYVNIS NTNVVAG--- ---------- KGTTSVILAG NSSLCPIRGW AIYSKDNGIR gi|8572187|g
WVNQTYVNIS NTNVVAG--- ---------- KGTTPVILAG NSSLCPIRGW AIYSKDNGIR gi|145278815
WVNQTYVNIS NTNVVAG--- ---------- KDTTSMILAG NSSLCPIRGW AIYSKDNGIR gi|89152219|
WVNQTYVNIS NTNVVAG--- ---------- KDTTSMILAG NSSLCPIRGW AIYSKDNSIR gi|125976167
WVNQTHVNIS NTNVVAG--- ---------- KDTTSMILAG NSSLCPIRGW AIYSKDNSIR gi|125976224
WVNQTYVNIN NTNVVAG--- ---------- QDTTSVALAG NSSLCPISGW AIYSKDNSIR gi|148276802
      :        :                    .: *.* *****.* ** **::***.:* Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        130        140        150        160        170        180
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303446
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303436
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303426
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|194294067
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303430
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303428
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303442
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|193084915
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303424
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|193084899
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|188076369
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303410
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303434
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|193084909
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|188076351
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303422
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKXRSPYRA LMSCPLGEAP gi|193084907
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|193084913
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303412
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|195661085
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|195661087
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|194294071
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|195661095
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|195661089
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|195661083
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|195661091
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|195661093
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|170181723
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|170181755
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303432
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303418
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYMA LMSCPLGEAP gi|195661097
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|170181785
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|170181779
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|168825256
IGSKGDVFVI REPFISCSHL ECKTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|189303420
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|183396529
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|170675942
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|156123514
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|158188218
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|157281301
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|122855951
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|125664181
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|158524906
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|73761479|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|156123510
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|158188202
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|168827347
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|168827349
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|168827351
IGSKGDVFVI REPFISCSHM ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|148276804
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|148276814
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|148356750
IGSKGDVFVI REPFISCSNL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|82546780|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|77543347|
IGSKGDVFVI REPFISCSHL ECRTFFLTHG ALLNDKHSNG TVKDRSPYRA FMSCPLGEAP gi|148356757
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|148356769
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|94959690|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|109914463
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|94959709|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|112787589
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|134047394
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|148276806
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPLGEAP gi|148276808
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSRG TFKDRSPYRA LMSCPVGEAP gi|94960376|
```

```
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSRG TFKDRSPYRA LMSCPVGEAP gi|414313|gb
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSRG TFKDRSPYRA LMSCPVGEAP gi|324482|gb
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSRG TFKDRSPYRA LMSCPVGEAP gi|194352376
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSKG TVKDRSPYRA LMSCPVGEAP gi|94481608|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSYG TSKDRSPYRA LMSCPVGEAP gi|414309|gb
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|414311|gb
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|89782161|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSSG TVKDRSPYRA LMSCPVGEAP gi|194304808
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSSG TVKDRSPYRA LMSCPVGEAP gi|126599291
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSSG TVKDRSPYRA LMSCPVGEAP gi|89779326|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSSG TVKDRSPYRA LMSCPVGEAP gi|125976186
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|21693173|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDRHSNG TVKDRSPYRA LMSCPVGEAP gi|324508|gb
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDRHSNG TVKDRSPYRA LMSCPVGEAP gi|133754137
IGSKGDIFVI REPFISCSHL ECRAFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|89148082|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|133754194
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRT LMSCPVGEAP gi|8572169|g
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|89782392|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|21724204|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|112787551
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|4583795|e
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|8572171|g
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRT LMSCPVGEAP gi|89903080|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|133754175
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|133752887
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|21724202|
IGSKGDVFVI REPFISCSHL ECKTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|21717612|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRTPYRA LMSCPVGEAP gi|21717610|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|89903061|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|8572187|g
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|145278815
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPVGEAP gi|89152219|
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPIGEAP gi|125976167
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPIGEAP gi|125976224
IGSKGDVFVI REPFISCSHL ECRTFFLTQG ALLNDKHSNG TVKDRSPYRA LMSCPIGEAP gi|148276802
******:*** ********:: **::****:* *****:** * * * *:** : :****:**** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        190        200        210        220        230        240
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303446
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303436
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303426
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|194294067
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303430
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303428
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303442
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|193084915
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303424
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|193084899
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|188076369
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303410
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303434
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|193084909
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIR SWKKQILRTQ gi|188076351
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303422
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|193084907
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|193084913
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303412
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|195661085
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|195661087
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|194294071
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|195661095
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|195661089
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|195661083
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|195661091
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|195661093
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|170181723
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|170181755
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303432
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303418
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|195661097
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|170181785
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|170181779
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|168825256
SPYNSKFESV AWSASACHDG IGWLTIGISG PDNGAVAVLK YNGIITGTIK SWKKQILRTQ gi|189303420
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKQILRTQ gi|183396529
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKQILRTQ gi|170675942
```

```
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|156123514
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAXLK YNGIITETIK SWKKRILRTQ gi|158188218
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|157281301
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|122855951
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|125664181
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|158524906
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|73761479|
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|156123510
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|158188202
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|168827347
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|168827349
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|168827351
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|148276804
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|148276814
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|148356750
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|82546780|
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|77543347|
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|148356757
SPYNSKFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|148356769
SPYNSRFESV AWSASACHDG LGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|94959690|
SPYNSRFESV AWSASACHDG LGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|109914463
SPYNSRFESV AWSASACHDG LGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|94959709|
SPYNSRFESV AWSASACHDG LGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|112787589
SPYNSKFESV AWSASACHDG LGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKRILRTQ gi|134047394
SPYNSRFESV AWSASACHDG LGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKQILRTQ gi|148276806
SPYNSRFESV AWSASACHDG LGWLTIGISG PDNGAVAVLK YNGIITETIK SWKKQILRTQ gi|148276808
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKNILRTQ gi|94960376|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKNILRTQ gi|414313|gb
SPYNSRFESV AWSASACHDG VGWLTIGISG PDDGAVAVLK YNRIITETIK SWRKNILRTQ gi|324482|gb
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKNILRTQ gi|194352376
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKNILRTQ gi|94481608|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|414309|gb
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|414311|gb
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|89782161|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|194304808
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|126599291
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|89779326|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|125976186
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|21693173|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|324508|gb
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|133754137
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITETIK SWRKKILRTQ gi|89148082|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNEAVAVLK YNGIITETIK SWRKKILRTQ gi|133754194
SPYNSRFESV AWSASACHDG MGWLTIGISG PDNGAVAVLK YNGIITDTIK SWRNNILRTQ gi|8572169|g
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKEILRTQ gi|89782392|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKEILRTQ gi|21724204|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKEILRTQ gi|112787551
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKEILRTQ gi|4583795|e
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKEILRTQ gi|8572171|g
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITGTIK SWRKEILRTQ gi|89903080|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKEILRTQ gi|133754175
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKEILRTQ gi|133752887
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKEILRTQ gi|21724202|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKEILRTQ gi|21717612|
SPYNSRFESV AWSACACHDG MGWLTIGISG PDDEAVAVLK YNGIITETIK SWRKKILRTQ gi|21717610|
SPYNSRFESV AWSACACHDG MGWLTIGISG PDDEAVAVLK YNGIITETIK SWRKKILRTQ gi|89903061|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDEAVAVLK YNGIITETIK SWRKKILRTQ gi|8572187|g
SPYNSRFESV AWSACACHDG MGWLTIGISG PDDEAVAVLK YNGIITETIK SWRKKILRTQ gi|145278815
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWKKKILRTQ gi|89152219|
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKQILRTQ gi|125976167
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWKKQILRTQ gi|125976224
SPYNSRFESV AWSASACHDG MGWLTIGISG PDDGAVAVLK YNGIITETIK SWRKRILRTQ gi|148276802
*****:**** ****.***** :********* **: *** ** ** *** **: **::.***** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        250        260        270        280        290        300
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303446
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303436
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303426
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|194294067
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303430
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303428
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303442
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|193084915
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303424
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|193084899
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|188076369
```

```
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303410
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303434
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|193084909
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|188076351
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303422
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|193084907
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|193084913
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|189303412
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|195661085
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|195661087
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|194294071
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|195661095
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|195661089
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|195661083
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|195661091
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|195661093
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|170181723
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|170181755
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|189303432
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|189303418
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|195661097
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|170181785
ESECVCMNGS CFTIMTDGPS NKAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGI gi|170181779
ESECVCMNGS CFTIMTDGPS NRAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGI gi|168825256
ESECVCMNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSM ELNAPNFHYE ECSCYPDTGT gi|189303420
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|183396529
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|170675942
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|156123514
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|158188218
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|157281301
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|122855951
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|125664181
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|158524906
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|73761479|
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|156123510
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|158188202
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGT gi|168827347
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGT gi|168827349
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFYYE ECSCYPDTGT gi|168827351
ESECVCVNGS CFTIMTDGPS DGAASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGT gi|148276804
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGT gi|148276814
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|148356750
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|82546780|
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|77543347|
ESECVCVNGS CFTIMTDGPS NGAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|148356757
ESECVCVNGS CFTIMTDGPS NEAASYKIFK IEKGKVTKSI ELNAPNFHYE ECSCYPDTGT gi|148356769
ESECVCMNGS CFTIMTDGPS NGAASYRIFK IEKGRVTKSI ELDAPNYHYE ECSCYPNTGT gi|94959690|
ESECVCMNGS CFTIMTDGPS NGAASYRIFK IEKGRVTKSI ELDAPNYHYE ECSCYPNTGT gi|109914463
ESECVCMNGS CFTIMTDGPS NGAASYRIFK IEKGRVTKSI ELDAPNYHYE ECSCYPDTGT gi|94959709|
ESECVCMNGS CFTIMTDGPS NGAASYRIFK IEKGRVTKSI ELDAPNYHYE ECSCYPDTGT gi|112787589
ESECVCMNGS CFTIMTDGPS NGAASYRIFK IEKGRVTKSI ELDAPNYHYE ECSCYPDTGT gi|134047394
ESECVCVNGS CFTIMTDGPS DRAASYRIFK IDKGRVTKSI ELDAPNYHYE ECSCYPDTGT gi|148276806
ESECVCVNGS CFTIMTDGPS DRAASYRIFK IEKGRVTKSI ELDAPNYHYE ECSCYPDTGT gi|148276808
ESECTCVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|94960376|
ESECTCVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|414313|gb
ESECTCVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|324482|gb
ESECTCVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|194352376
ESECTCVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|94481608|
ESECTCVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|414309|gb
ESECTCVNGS CFTIMTDGPS NGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|414311|gb
ESECTCVNGS CFTIMTDGPS NGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|89782161|
ESECACVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|194304808
ESECACVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|126599291
ESECACVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|89779326|
ESECACVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|125976186
ESECACVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|21693173|
ESECACVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|324508|gb
ESECACVNGS CFTIMTDGPS NGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|133754137
ESECACVNGS CFTIMTDGPS DGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTGK gi|89148082|
ESECACVNGS CFTIMTDGPS DGLASYKIFK IEKGKVTKSI ELNAPNSHYE ECSCYPDTGK gi|133754194
ESECACVNGS CFTIMTDGPS NGQASYKILK IEKGKVTKSI ELNAPNYHYE ECSCYPDTGK gi|8572169|g
ESECVCVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTSK gi|89782392|
ESECVCVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTSK gi|21724204|
ESECVCVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTSK gi|112787551
ESECVCVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTSK gi|4583795|e
ESECVCVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTSK gi|8572171|g
ESECVCVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTSK gi|89903080|
```

```
ESECACVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTGK gi|133754175
ESECACVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTGK gi|133752887
ESECACVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTGK gi|21724202|
ESECVCVNGS CFTIMTDGPS GGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTSK gi|21717612|
ESECVCVNGS CFTIMTDGPS DGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTGK gi|21717610|
ESECVCVNGS CFTIMTDGPS DGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTGK gi|89903061|
ESECVCVNGS CFTIMTDGPS DGQASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTGK gi|8572187|g
ESECVCVNGS CFTIMTDGPS DGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTGK gi|145278815
ESECVCVNGS CFTIMTDGPS DGPASYKIFK IEKGKVTKSI ELDAPNSHYE ECSCYPDTGK gi|89152219|
ESECVCVNGS CFTIMTDGPS DGPASYRIFK IEKGKITKSI ELDAPNSHYE ECSCYPDTGK gi|125976167
ESECVCVNGS CFTIMTDGPS DGPASYRIFK IEKGKITKSI ELDAPNSHYE ECSCYPDTGT gi|125976224
ESECVCVNGS CFTIMTDGPN NGPASYKIFK IEKGKITKSI ELDAPNSHYE ECSCYPDAGT gi|148276802
****.*:*** *********. .  ***:*:* *:**::***: **:*** :** ******::.  Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       310        320        330        340        350        360
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303446
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303436
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303426
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|194294067
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303430
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303428
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303442
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|193084915
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303424
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|193084899
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|188076369
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303410
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303434
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|193084909
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|188076351
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVEGANGVK gi|189303422
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCSP VTVDGANGVK gi|193084907
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|193084913
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303412
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|195661085
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|195661087
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|194294071
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|195661095
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|195661089
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|195661083
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|195661091
VICVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|195661093
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|170181723
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|170181755
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303432
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|189303418
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|195661097
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PEDGEGSCNP VTVDGAXGVK gi|170181785
VMCVCRDNWH GSNRPWVSFN QNLDYQMGYI CSGVFGDNPR PEDGEGSCNP VTVDGANGVK gi|170181779
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|168825256
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|189303420
VMCVCRDNWH GSNRPWVSFN QNLDYQTGYI CSGVFGDNPR PKDGEGSCNP VIVDGANGVK gi|183396529
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGANGVK gi|170675942
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|156123514
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|158188218
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|157281301
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|122855951
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|125664181
VMCVCRDNWH GSNRPWVSFN QNLDYQVGYI CSGVFGDNPR PKDGKGSCNP MTVDGADGVK gi|158524906
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|73761479|
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|156123510
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|158188202
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|168827347
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|168827349
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCNP VTVDGADGVK gi|168827351
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PRDGEGSCNP VTVDGADGVK gi|148276804
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|148276814
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|148356750
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|82546780|
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|77543347|
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|148356757
VMCVCRDNWH GSNRPWVSFN PNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|148356769
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|94959690|
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|109914463
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|94959709|
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|112787589
```

```
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|134047394
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|148276806
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGEGSCNP VTVDGADGVK gi|148276808
VMCVCRDNWH GSNRPWVSFD QNLDYKIGYI CSGVFGDNPR PKDGTGSCGP VSADGANGVK gi|94960376|
VMCVCRDNWH GSNRPWVSFD QNLDYKIGYI CSGVFGDNPR PKDGTGSCGP VSADGANGVK gi|414313|gb
VMCVCRDNWH GSNRPWVSFD QNLDYKIGYI CSGVFGDNPR PKDGTGSCGP VSADGANGVK gi|324482|gb
VMCVCRDNWH GSNRPWVSFD QNLDYKIGYI CSGVFGDNPR PKDGTGSCGP VSADGANGVK gi|194352376
VMCVCRDNWH GSNRPWVSFD QNLDYKIGYI CSGVFGDNPR PKDGTGSCGP VSADGANGVK gi|94481608|
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGTGSCGP VSADGANGVK gi|414309|gb
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGPGSCGP VSADGANGVK gi|414311|gb
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGTGSCGP VSADGANGVK gi|89782161|
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PEDGTGSCGP VYVDGANGVK gi|194304808
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PEDGTGSCGP VYVDGANGVK gi|126599291
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PEDGTGSCGP VYVDGANGVK gi|89779326|
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PEDGTGSCGP VYVDGANGVK gi|125976186
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PEDGTGSCGP VYVDGANGVK gi|21693173|
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGTGSCGP VYVDGANGVK gi|324508|gb
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGTGSCGP VYVDGANGVK gi|133754137
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDSPR PKDGTGSCGP VSVDGANGVK gi|89148082|
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGTGSCGP VYVDGANGVK gi|133754194
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PNDGTGSCGP VSSNGANGIK gi|8572169|g
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|89782392|
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|21724204|
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|112787551
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|4583795|e
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|8572171|g
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|89903080|
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGNCGP VYVDGANGVK gi|133754175
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGNCGP VYVDGANGVK gi|133752887
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGNCGP VYVDGANGVK gi|21724202|
VMCVCRDNWH GSNRPWVSFD QNLDYQMGYI CSGVFGDNPR PKDGKGSCGP VNVDGADGVK gi|21717612|
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|21717610|
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|89903061|
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR SKDGKGSCGP VYVDGANGVK gi|8572187|g
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|145278815
VMCVCRDNWH GSNRPWVSFD QNLDYQIGYI CSGVFGDNPR PKDGKGSCGP VYVDGANGVK gi|89152219|
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCDP VNVDGADGVK gi|125976167
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCDP VNVDGADGVK gi|125976224
VMCVCRDNWH GSNRPWVSFN QNLDYQIGYI CSGVFGDNPR PKDGKGSCDP VTVDGADGVK gi|148276802
*:******** *********:  ****: *** *******.** ..** *.*.* :  :** *:* Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       370        380        390        400        410        420
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303446
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303436
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303426
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|194294067
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303430
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303428
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303442
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|193084915
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303424
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|193084899
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|188076369
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303410
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303434
GFSYKYDNGV WIGRTKNNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|193084909
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|188076351
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303422
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|193084907
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|193084913
GFSYKYDDGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303412
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|195661085
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|195661087
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|194294071
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|195661095
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|195661089
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|195661083
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|195661091
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|195661093
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|170181723
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|170181755
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303432
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|189303418
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|195661097
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|170181785
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|170181779
```

```
GFSYKYDNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|168825256
GFSYKYGNGV WIGRTKSNKI RKGFEMIWDP NGWTNTDSDF SVKQDIVAIT DWSGYSGSFV gi|189303420
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|183396529
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|170675942
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|156123514
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|158188218
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|157281301
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|122855951
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|125664181
GFSYKYGNGV WIGRTKSNKL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|158524906
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|73761479|
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|156123510
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|158188202
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|168827347
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|168827349
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTNTDSDF SVKQDVVAIT DWSGYSGSFV gi|168827351
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF AVKQDVVAIT DWSGYSGSFV gi|148276804
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|148276814
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|148356750
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|82546780|
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSVF SVKQDVVAIT DWSGYSGSFV gi|77543347|
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|148356757
GFSYKYGNGV WIGRTKSNRL RKGFEMVWDP NGWTDTDSDF SVKQDVVAIT DWSGYSGSFV gi|148356769
GFSYRYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SMKQDIVAMT DWSGYSGSFV gi|94959690|
GFSYRYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SMKQDIVAMT DWSGYSGSFV gi|109914463
GFSYRYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SMKQDIVAMT DWSGYSGSFV gi|94959709|
GFSYRYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SMKQDIVAMT DWSGYSGSFV gi|112787589
GFSYRYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SMKQDIVAMT DWSGYSGSFV gi|134047394
GFSYRYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SMKQDVVAMT DWSGYSGSFV gi|148276806
GFSYKYGNGV WIGRTKSNRL RKGFEMIWDP NGWTDTDSDF SMKQDVVAMT DWSGYSGSFV gi|148276808
GFSYKYGNGV WIGRTKSDSS RHGFEMIWDP NGWTETDSRF SMRQDVVAMT DRSGYSGSFV gi|94960376|
GFSYKYGNGV WIGRTKSDSS RHGFEMIWDP NGWTETDSRF SMRQDVVAMT DRSGYSGSFV gi|414313|gb
GFSYKYGNGV WIGRTKSDSS RHGFEMIWDP NGWTETDSRF SMRQDVVAIT NRSGYSGSFV gi|324482|gb
GFSYKYGNGV WIGRTKSDSS RHGFEMIWDP NGWTETDSRF SMRQDVVAMT DRSGYSGSFV gi|194352376
GFSYKYGNGV WIGRTKSDSS RHGFEMIWDP NGWTETDSRF SMRQDVVAMT DRSGYSGSFV gi|94481608|
GFSYRYGNGV WIGRTKSDSS RHGFEMIWDP NGWTETDSRF SVRQDVVAMT DRSGYSGSFV gi|414309|gb
GFSYRYGNGV WIGRTKSDSS RHGFEMIWDP NGWTETDSRF SVRQDVVAMT DRSGYSGSFV gi|414311|gb
GFSYRYGNGV WIGRTKSDSS RHGFEMIWDP NGWTETDSRF SVRQDVVAMT DRSGYSGSFV gi|89782161|
GFSYRYGNGV WIGRTKSHSS RHGFEMIWDP NGWTETDSKF SVRQDVVAMT DWSGYSGSFV gi|194304808
GFSYRYGNGV WIGRTKSHSS RHGFEMIWDP NGWTETDSKF SVRQDVVAMT DWSGYSGSFV gi|126599291
GFSYRYGNGV WIGRTKSHSS RHGFEMIWDP NGWTETDSKF SVRQDVVAMT DWSGYSGSFV gi|89779326|
GFSYRYGNGV WIGRTKSHSS RHGFEMIWDP NGWTETDSKF SVRQDVVAMT DWSGYSGSFV gi|125976186
GFSYRYGNGV WIGRTKSHSS RHGFEMIWDP NGWTETDSKF SVRQDVVAMT DWSGYSGSFV gi|21693173|
GFSYRYGNGV WIGRTKSHSS RHGFEMIWDP NGWTETDSKF SVRQDVVAMT DWSGYSGSFV gi|324508|gb
GFSYRYGNGV WIGRTKSNSS RHGFEMIWDP NGWTETDSKF SVRQDVVAMT DWSGYSGSFV gi|133754137
GFSYRYGNGV WIGRTKSKSS RHGFEMIWDP NGWTETDSRF SVRQDVVAMT DWSGYSGSFV gi|89148082|
GFSYRYGNGV WIGRTKSTSS RHGFEMIWDP NGWTETDSKF SVRQDVVAMT DWSGYSGSFV gi|133754194
GFSFRYDNGV WIGRTKSTSS RSGFEMIWDP NGWTETDSSF SVRQDIVAIT DWSGYSGSFV gi|8572169|g
GFSYRYGNGV WIGRTKSNSS RQGFEMIWDP NGWTETDSNF FTKQDVVAVT DWSGYSGSFV gi|89782392|
GFSYRYGNGV WIGRTKSNSS RQGFEMIWDP NGWTETDSNF FTKQDVVAVT DWSGYSGSFV gi|21724204|
GFSYRYGNGV WIGRTKSNSS RQGFEMIWDP NGWTETDSNF FMKQDVVAVT DWSGYSGSFV gi|112787551
GFSYKYGNGV WIGRTKSNSS RQGFEMIWDP NGWTETDSNF FTKQDVVAVT DWSGYSGSFV gi|4583795|e
GFSYKYGNGV WIGRTKSNSS RQGFEMIWDP NGWTETDSNF FTKQDVVAVT DWSGYSGSFV gi|8572171|g
GFSYRYGNGV WIGRTKSSSS RQGFEMIWDP NGWTETDSNF FMKQDVVAVT DWSGYSGSFV gi|89903080|
GFSYRYGNGV WIGRTKSNSS RQGFEMIWDP NGWTETDSNF FVKQDVVAVT DWSGYSGSFV gi|133754175
GFSYRYGNGV WIGRTKSNSS RQGFEMIWDP NGWTETDSNF FVKQDVVAVT DWSGYSGSFV gi|133752887
GFSYRYGNGV WIGRTKSNSS RQGFEIIWDP NGWTETDSNF FEKQDVVAVT DWSGYSGSFV gi|21724202|
GFSYRYGNGG WIGRTKSNSS RKGFEMIWDP NGWTDPDSNF LVKQDIVAMT DWSGYSGSFV gi|21717612|
GISYRYGNGV WIGRTKSDSS RQGFEMIWDP NGWTETDSNF FVKQDIVAMT DWSGYSGSFV gi|21717610|
GFSYRYGNGV WIGRTKSDSS RQGFEMIWDP NGWTETDSNF FVKQDIVAMT DWSGYSGSFV gi|89903061|
GFSYRYGNGV WIGRTKSDSS RQGFEMIWDP NGWTETDSNF FVKQDIVAMT DWSGYSGSFV gi|8572187|g
GFSYRYGNGV WIGRIKSNSS RQGFEMIWDP NGWTETDSSF FVKQDVVAMT DWSGYSGSFV gi|145278815
GFSYRYGDGV WIGRTKSNSS RQGFEMIWDP NGWTETDSSF FVKQDVVAMT DWSGYSGSFV gi|89152219|
GFSYRYGNGV WIGRTKSNSS RKGFEMIWDP NGWTDTDGNF LVKQDVVAMT DWSGYSGSFV gi|125976167
GFSYRYGNGV WIGRTKSNSS RKGFEMIWDP NGWTDTDGNF LVKQDVVAMT DWSGYSGSFV gi|125976224
GFSYRYGNGV WIGRTKSNSS RRGFEMIWDP NGWTDTDSKF LVKQDVVAMT DWSGYSGSFV gi|148276802
*:*::*.:*  **** *.    * ***::*** ****:.*. *   :**:**:* : ******** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        430        440        450        460        470        480
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303446
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303436
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303426
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|194294067
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303430
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303428
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303442
```

```
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|193084915
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303424
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|193084899
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|188076369
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303410
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303434
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|193084909
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|188076351
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303422
QHPELTGLDC IRPCFWVELV RGMPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|193084907
QHPELTGLDC IRPCFWVELV RGLPGENTTI WTSGSSVSFC GVNSDAANWS WPDGAELPFT gi|193084913
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GINSDTANWS WPDGAELPFT gi|189303412
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|195661085
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDRAELPFT gi|195661087
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|194294071
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|195661095
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|195661089
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|195661083
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|195661091
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|195661093
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|170181723
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|170181755
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303432
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|189303418
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|195661097
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|170181785
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GINSDTANWS WPDGAELPFT gi|170181779
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|168825256
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNGDIANWS WPDGAELPFT gi|189303420
QHPELTGLDC IRPCFWVELV RGLPKENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|183396529
QHPELTGLDC IRPCFWVELV RGLPKENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|170675942
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|156123514
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|158188218
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|157281301
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|122855951
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|125664181
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|158524906
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GIDSDTANWS WPDGAELPFT gi|73761479|
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|156123510
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|158188202
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|168827347
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELP-- gi|168827349
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVDSDTANWS WPDGAELPFT gi|168827351
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|148276804
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|148276814
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTADWS WPDGAELPFT gi|148356750
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDAADWS WPDGAELPFT gi|82546780|
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|77543347|
QHPELTGLDC IRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|148356757
QHPELTGLDC IRPCFWVELV RGLPKENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|148356769
QHPELTGLDC MRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|94959690|
QHPELTGLDC MRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|109914463
QHPELTGLDC MRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|94959709|
QHPELTGLDC MRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|112787589
QHPELTGLDC MRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSDTANWS WPDGAELPFT gi|134047394
QHPELTGLDC MRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSETANWS WPDGAELPFT gi|148276806
QHPELTGLDC MRPCFWVELV RGLPRENTTI WTSGSSISFC GVNSETANWS WPDGAELPFT gi|148276808
QHPELTGLDC MRPCFWVELI RGLPEE-DAI WTSGSIISFC GVNSDTVDWS WPDGAELPFT gi|94960376|
QHPELTGLDC MRPCFWVELI RGLPEE-DAI WTSGSIISFC GVNGDTVDWS WPDGAELPFT gi|414313|gb
QHPELTGLDC MRPCFWVELI RGLPEE-DAI WTSGSIISFC GVNSDTVDWS WPDGAELPFT gi|324482|gb
QHPELTGLDC MRPCFWVELI RGLPEE-NAI WTSGSIISFC GVNSDTVDWS WPDGAELPFT gi|194352376
QHPELTGLDC MRPCFWVELI RGLPEE-DAV WTSGSIISFC GVNSDTVDWS WPDGAELPFT gi|94481608|
QHPELTGLDC MRPCFWVELI RGQPEE-ETI WTSGSIISFC GVNSDTVDWS WPDGAELPFT gi|414309|gb
QHPELTGLDC MRPCFWVELI RGRPEE-ETI WTSGSIISFC GVNSDTVDWS WPDGAELPFT gi|414311|gb
QHPELTGLDC MRPCFWVELI RGRPEE-ETI WTSGSIISFC GVNSDTVDWS WPDGAELPFT gi|89782161|
QHPELTGLDC MRPCFWVELI RGRPKE-KTI WTSASSISFC GVNSDTVDWS WPDGAELPFS gi|194304808
QHPELTGLDC MRPCFWVELI RGRPKE-KTI WTSASSISFC GVNSDTVDWS WPDGAELPFS gi|126599291
QHPELTGLDC MRPCFWVELI RGRPKE-KTI WTSASSISFC GVNSDTVDWS WPDGAELPFS gi|89779326|
QHPELTGLDC MRPCFWVELI RGRPKE-KTI WTSASSISFC GVNSDTVDWS WPDGAELPFS gi|125976186
QHPELTGLDC MRPCFWVELI RGRPKE-KTI WTSASSISFC GVNSDTVDWS WPDGAELPFS gi|21693173|
QHPELTGLDC IRPCFWVELI RGRPKE-KTI WTSASSISFC GVNSDTVDWS WPDGAELPFT gi|324508|gb
QHPELTGLDC MRPCFWVELI RGRPKE-NTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|133754137
QHPELTGLDC MRPCFWVELI RGQPKE-KTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|89148082|
QHPELTGLDC MRPCFWVELI RGQPKE-KTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|133754194
QHPELTGLDC MRPCFWVELI RGQPKE-NTI WTSGSSISFC GVNSDTVGWS WPDGAELPFS gi|8572169|g
QHPELTGLDC MRPCFWVELI RGRPKE-NTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|89782392|
QHPELTGLDC MRPCFWVELI RGRPKEKTTI WTSGSSISFC GVNSDTVDWS WPDDAELPLT gi|21724204|
```

```
QHPELTGLDC MRPCFWVELI RGRPKE-NTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|112787551
QHPELTGLDC MRPCFWVELI RGRPKE-NTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|4583795|e
QHPELTGLDC MRPCFWVELI RGRPKE-NTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|8572171|g
QHPELTGLDC MRPCFWVELI RGRPKE-NTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|89903080|
QHPELTGLDC MRPCFWVELI RGRPKEK-TI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|133754175
QHPELTGLDC MRPCFWVELI RGRPKEK-TI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|133752887
QHPELTGLDC MRPCFWVELI RGRPKEKTTI WTSGSSISFC GVNSDTVDWS WPDDAELPLT gi|21724202|
QHPELTGLDC MRPCFWVELI RGRPKE-NTI WTSGSSISFC GVNSDTVDWS WPDDAELPLN gi|21717612|
QHPELTGLDC MRPCFWVELI RGRPKE-KTI WTSGSSISFC GVNSDTVDWS WPDDAELPLT gi|21717610|
QHPELTGLDC MRPCFWVELI RGRPKE-KTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|89903061|
QHPELTGLDC MRPCFWVELI RGRPKE-KTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|8572187|g
QHPELTGLDC MRPCFWVELI RGRPKE-KTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|145278815
QHPELTGLNC MRPCFWVELI RGRPKE-KTI WTSGSSISFC GVNSDTVDWS WPDGAELPFT gi|89152219|
QHPELTGLDC MRPCFWVELI RGRPREKTTI WTSGSSISFC GVNSDTVNWS WPDGAELPFT gi|125976167
QHPELTGLDC MRPCFWVELI RGRPREKTTI WTSGSSISFC GVNSDTVNWS WPDGAELPFT gi|125976224
QHPELTGLDC MRPCFWVELI RGRPRENTTI WTSGSSISFC GVNGDTANWS WPDGSELPFT gi|148276802
********:* :********: ** * *  :: ***.* :*** *::.: ..** *** :***   Clustal Cons

...

IDK                                                                          gi|189303446
IDK                                                                          gi|189303436
IDK                                                                          gi|189303426
IDK                                                                          gi|194294067
IDK                                                                          gi|189303430
IDK                                                                          gi|189303428
IDK                                                                          gi|189303442
IDK                                                                          gi|193084915
IDK                                                                          gi|189303424
IDK                                                                          gi|193084899
IDK                                                                          gi|188076369
IDK                                                                          gi|189303410
IDK                                                                          gi|189303434
IDK                                                                          gi|193084909
IDK                                                                          gi|188076351
IDK                                                                          gi|189303422
IDK                                                                          gi|193084907
IDK                                                                          gi|193084913
IDK                                                                          gi|189303412
IDK                                                                          gi|195661085
IDK                                                                          gi|195661087
IDK                                                                          gi|194294071
IDK                                                                          gi|195661095
IDK                                                                          gi|195661089
IDK                                                                          gi|195661083
IDK                                                                          gi|195661091
IDK                                                                          gi|195661093
IDK                                                                          gi|170181723
IDK                                                                          gi|170181755
IDK                                                                          gi|189303432
IDK                                                                          gi|189303418
IDK                                                                          gi|195661097
IDK                                                                          gi|170181785
IDK                                                                          gi|170181779
IDK                                                                          gi|168825256
IDK                                                                          gi|189303420
IDK                                                                          gi|183396529
IDK                                                                          gi|170675942
IDK                                                                          gi|156123514
IDK                                                                          gi|158188218
IDK                                                                          gi|157281301
IDK                                                                          gi|122855951
IDK                                                                          gi|125664181
IDK                                                                          gi|158524906
IDK                                                                          gi|73761479|
IDK                                                                          gi|156123510
IDK                                                                          gi|158188202
IDK                                                                          gi|168827347
---                                                                          gi|168827349
IDK                                                                          gi|168827351
IDK                                                                          gi|148276804
IDK                                                                          gi|148276814
IDK                                                                          gi|148356750
IDK                                                                          gi|82546780|
IDK                                                                          gi|77543347|
IDK                                                                          gi|148356757
IDK                                                                          gi|148356769
```

```
IDK                                                               gi|94959690|
IDK                                                               gi|109914463
IDK                                                               gi|94959709|
IDK                                                               gi|112787589
IDK                                                               gi|134047394
IDK                                                               gi|148276806
VDK                                                               gi|148276808
IDK                                                               gi|94960376|
IDK                                                               gi|414313|gb
IDK                                                               gi|324482|gb
IDK                                                               gi|194352376
IDK                                                               gi|94481608|
IDK                                                               gi|414309|gb
IDK                                                               gi|414311|gb
IDK                                                               gi|89782161|
IDK                                                               gi|194304808
IDK                                                               gi|126599291
IDK                                                               gi|89779326|
IDK                                                               gi|125976186
IDK                                                               gi|21693173|
IDK                                                               gi|324508|gb
IDK                                                               gi|133754137
IDK                                                               gi|89148082|
IDK                                                               gi|133754194
IDK                                                               gi|8572169|g
IDK                                                               gi|89782392|
IDK                                                               gi|21724204|
IDK                                                               gi|112787551
IDK                                                               gi|4583795|e
IDK                                                               gi|8572171|g
IDK                                                               gi|89903080|
IDK                                                               gi|133754175
IDK                                                               gi|133752887
IDK                                                               gi|21724202|
IDK                                                               gi|21717612|
IDK                                                               gi|21717610|
IDK                                                               gi|89903061|
IDK                                                               gi|8572187|g
IDK                                                               gi|145278815
IDK                                                               gi|89152219|
IDK                                                               gi|125976167
IDK                                                               gi|125976224
IDK                                                               gi|148276802
                                                                  Clustal Cons

Alignment: D:\bwt skripsi\cari data\Data\database\Na\human\h2n2.aln
....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         10         20         30         40         50         60
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778480
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778480
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778479
MNPNQKIITI GSVSLTIETV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778478
MNPNQKIITI DSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778478
------IITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH KCDSPASNQV MPCEPIIIER gi|4947349
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH KCDSPASNQV MPCEPIIIER gi|9448159
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3179057
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|4640157
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778480
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778479
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECNSPASNQV MPCEPIIIER gi|1461338
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778479
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1339825
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1892305
MNPNQKIITI GSVSLTIATV CFLMHIAILA TTVTLHFKQH ECDSPASNQA MPCEPIIIER gi|1885043
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1270579
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1892304
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778478
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1467600
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1943521
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1337529
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1452790
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|4640157
MNPNQKIITI GSVSLTIATV CFIMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1337536
MNPNQKIITI GSVSLTIATV CFIMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1340474
MNPNQKIITI GSVSLTIATV CFIMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1452790
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1943521
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1943522
```

```
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1943522
MNPNQKIITI GSVSLTIATV CFFMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1943522
MNPNQKTITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|324510|
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1340475
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPTSNQV MPCEPIIIER gi|1337536
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPTSNQV MPCEPIIIER gi|3778479
MNPNQKIITI GSVSLTIETV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|6305490
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|4640157
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1152790
MNPNQKIITI GSVSLTIATA CSLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|8250669
MNPNQKIITI GSVSLTIATA CSLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|565252|
MNPNQKIITI GSVSLTIATV CSLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|565254|
---------- ---------- ---------- ---------- ---------- ---------- gi|3778479
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1885044
MNPNQKIITI GSVSLTIATV CFLIQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1452790
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1067257
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1067257
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1067257
MNPNQKIITI GFVSLIIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778481
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778480
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778480
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778481
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778481
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1885043
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778482
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778481
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|4640157
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1885043
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778485
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|9448160
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778482
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3179057
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1892304
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPTIIER gi|3778482
MNPNQKIITI GSVSLTIATA CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1892304
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1892304
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH DCDSPASNQV MPCEPIIIER gi|3778482
---------- ---------- ---MQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|418078|
MNPNQKIITI GSVSLTIAAV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778482
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778483
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778483
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778484
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778484
MNPNQKIITI GSVSLTIATV CFLMHIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778483
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778483
MNPNQKIITI GSVSLTTATA CFLTQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778485
MNPNQKIITI GSVSLTTATA CFLTQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1943519
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH DCDSPASNQV MPCEPIIIER gi|3778485
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1480200
MNPNQKIITI GSVSLIIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1892305
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778485
MNPNQKIITI GSVSLTIATV CFLMQIAILA TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1892305
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778484
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778485
MNPNQKIITI GSVSLTIATV CFLIQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778484
---NQKIITI GSASLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1943045
MNPNQKIITI GSASLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|4640157
MNPNQKIITI GSASLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778486
---------- ---------- ---------- ---------- ---------- ---------- gi|1340474
MNPNQKIITI GSASLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778483
MNPNQKIITI GSASLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1339825
MNPNQKIITI GSASLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1337554
MNPNQKIITI GSASLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3179058
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778484
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1339819
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1467600
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1337553
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1337553
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|1337554
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQH ECDSPASNQV MPCEPIIIER gi|3778481
                                                                  Clustal Co

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        70         80         90        100        110        120
NITEIVYLNN TTIEKEICPE AVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778480
NITEIVYLNN TTIEKEICPE AAEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778480
NITEIVYLNN TTIEKEICPE AVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778479
```

```
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778478
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778478
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|4947349
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|9448159
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNPIRLSG GGDIWVTREP gi|3179057
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|4640157
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778480
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778479
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1461338
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778479
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1339825
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA DGDIWVTREP gi|1892305
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1885043
NIKEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1270579
NIKEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1892304
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778478
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1467600
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1943521
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1337529
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1452790
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|4640157
NITEIVYLNN TTIEKEICPE AVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1337536
NITEIVYLNN TTIEKEICPE AVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1340474
NITEIVYLNN TTIEKEICPE AVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1452790
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1943521
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1943522
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1943522
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1943522
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|324510|
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1340475
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1337536
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778479
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|6305490
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|4640157
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1152790
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|8250669
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|565252|
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|565254|
---------- ---------- ---------- ---------- ---------- ---------- gi|3778479
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1885044
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1452790
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1067257
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1067257
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1067257
NITKIVYLNN TTIEKEICPE VVEYRNWSKP QCHITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778481
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778480
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778480
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778481
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778481
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1885043
NLTEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778482
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778481
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|4640157
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1885043
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778485
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|9448160
NITEIMYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778482
NITEIMYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3179057
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1892304
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778482
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1892304
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1892304
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778482
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|418078|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778482
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778483
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778483
NITEIVYLNN TTIEKEICPK VVGYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778484
NITEIVYLNN TTIEKEICPK VVGYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778484
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778483
NITEIVYLNN TTIEKEICPK IVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778483
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778485
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1943519
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778485
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1480200
NITEIVYLNN TTIEKEICPR VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1892305
NITEIVYLNN TIIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778485
```

```
NITEIVYLNN TIIEKEIXPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|1892305
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778484
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778485
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778484
NTTEIVYLNN TTIEKEICPK VVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|1943045
NTTEIVYLNN TTIEKEICPK VVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|4640157
NTTEIVYLNN TTIEKEICPK VVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778486
---------- ---------- ---------- ---------- ---------- ---------- gi|1340474
NITEIVYLNN TTIEKEICPK IVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778483
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|1339825
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|1337554
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|3179058
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778484
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|1339819
NITEIVYLNN TTIEKETCPK VVEYRSWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|1467600
NITEIVYLNN TTIEKETCPK VVEYRSWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|1337553
NITEIVYLNN TTIEKETCPK VVEYRSWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|1337553
NITEIVYLNN TTIEKETCPK VVEYRSWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|1337554
NITEIVYLNN TTIEKEICPE VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|3778481
                                                                  Clustal Co

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        130        140        150        160        170        180
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778480
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778480
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|3778479
YVSCDTGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|3778478
YVSCDTGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|3778478
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|4947349
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|9448159
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|3179057
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRSPHRTLLM NELGVPFHLG TKQVCAAWSS gi|4640157
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRSPHRTLLM NELGVPFHLG TKQVCAAWSS gi|3778480
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|3778479
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1461338
YVSCDPSKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|3778479
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1339825
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1892305
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1885043
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1270579
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1892304
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|3778478
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1467600
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1943521
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1337529
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1452790
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|4640157
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1337536
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1340474
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1452790
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVSFHLG TKQVCVAWSS gi|1943521
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVSFHLG TKQVCVAWSS gi|1943522
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVSFHLG TKQVCVAWSS gi|1943522
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVSFHLG TKQVCVAWSS gi|1943522
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|324510|
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1340475
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1337536
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|3778479
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|6305490
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|4640157
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1152790
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|8250669
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|565252|
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|565254|
---------- ---------- ---------- ---------- ---------- ---------- gi|3778479
YVSCDPSKCH QFALGQGTTL ENKHSNGTKH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1885044
YVSCDPGKCY QFALGQGTTL DNKHSNGTIH DRIPHRTLLM NELGVPFHLG TKQVCVAWSS gi|1452790
YVSCDPGKCY QFALGQGTTL DNKHSNDTVH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1067257
YVSCDPGKCY QFALGQGTTL DNKHSNGTVH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1067257
YVSCDPGKCY QFALGQGTTL DNKHSNDTVH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1067257
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778481
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778480
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778480
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778481
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778481
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|1885043
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778482
```

```
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778481
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|4640157
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|1885043
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778485
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|9448160
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778482
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3179057
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1892304
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778482
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1892304
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1892304
YVSCDPVKCY QFALGQGTTL DNKHSNDTVH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778482
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|418078|
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778482
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778483
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778483
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778484
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778484
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778483
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778483
YVSCDSGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778485
YVSCDSGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1943519
YVSCDPVKCY QFALGQGTTL DNKHSNDTVH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778485
YVSCDPVKCY QFALGQGTTL DNKHSNDTVH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1480200
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1892305
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRTPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778485
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRTPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1892305
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778484
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778485
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778484
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1943045
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|4640157
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778486
---------- ---------- ---------- ---------- ---------- ---------- gi|1340474
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778483
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1339825
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1337554
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3179058
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|3778484
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1339819
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1467600
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1337553
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1337553
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1337554
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCVAWSS gi|3778481
                                                                  Clustal Co

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       190        200        210        220        230        240
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGICTVV gi|3778480
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGICTVV gi|3778480
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGICTVV gi|3778479
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778478
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778478
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|4947349
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|9448159
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3179057
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|4640157
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778480
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LEDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778479
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LEDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1461338
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LEDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778479
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1339825
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1892305
SSCHDGKAWL HVCITGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1885043
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1270579
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1892304
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778478
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1467600
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1943521
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1337529
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1452790
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTHESEC VCINGTCTVV gi|4640157
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1337536
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1340474
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1452790
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1943521
```

```
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1943522
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1943522
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1943522
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|324510|
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1340475
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1337536
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778479
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|6305490
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|4640157
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1152790
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|8250669
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|565252|
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|565254|
---------- ---------- ---------- ---------- ---------- ---------- gi|3778479
SSCHDGKAWL HVCVTGDDRN ATASFIYGGR LVDSIVSWSQ NILRTQESEC VCINGTCTVV gi|1885044
SSCHDGKAWL HVCVTGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1452790
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1067257
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1067257
SSCHDGKAWL HVCITGDDRN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1067257
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSH NILRTQESEC VCINGTCTVV gi|3778481
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778480
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778480
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778481
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778481
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1885043
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778482
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LMDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778481
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LMDSIGSWSQ NILRTQESEC VCINGTCTVV gi|4640157
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LMDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1885043
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LMDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778485
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LMDSIGSWSQ NILRTQESEC VCINGTCTVV gi|9448160
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778482
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3179057
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1892304
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778482
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1892304
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSISSWSQ NILRTQESEC VCINGTCTVV gi|1892304
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778482
SSCHDGKAWL HVCVTGYEKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|418078|
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778482
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778483
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778483
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778484
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778484
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778483
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778483
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778485
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1943519
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778485
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1480200
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1892305
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778485
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1892305
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778484
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778485
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LMDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778484
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1943045
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|4640157
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778486
---------- ---------- ---------- ---------- ---------- ---------- gi|1340474
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778483
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1339825
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1337554
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3179058
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778484
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1339819
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1467600
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1337553
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1337553
SSCHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1337554
SSCHDGKAWL HVCVTGDDEN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|3778481
                                                                  Clustal Co
```

```
....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
```

```
        250        260        270        280        290        300
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778480
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778480
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778479
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|3778478
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|3778478
MTDGSASGRA DTRILFIKEG KIVHIGPLSG SAQHIEECSC YPRYPDVRCI CKDNWKGSNR gi|4947349
MTDGSASGRA DTRILFIKEG KIVHIGPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|9448159
MTDGSASGRA DTRILFIKEG KIVHIGPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|3179057
MTDGSASGRA DTRILFIKEG KIVHIGPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|4640157
MTDGSASGRA DTRILFIKEG KIVHIGPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|3778480
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|3778479
MTDGNASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1461338
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|3778479
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1339825
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1892305
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1885043
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1270579
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1892304
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|3778478
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1467600
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1943521
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1337529
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1452790
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|4640157
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHVEECSC YPRYPDVRCT CRDNWKGSNR gi|1337536
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1340474
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1452790
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1943521
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1943522
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1943522
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1943522
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|324510|
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1340475
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1337536
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|3778479
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|6305490
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|4640157
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1152790
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|8250669
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|565252|
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|565254|
---------- ---------- ---------- ---------- ---------- ---------- gi|3778479
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1885044
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1452790
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHIEECSC YPRYPGVRCI CRDNWKGSNR gi|1067257
MTDGSASGRA DTRILFIEEG KIVHISPLAG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|1067257
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHIEECSC YPRYPDVRCI CRDNWKGSNR gi|1067257
MTDGSASGRA DTRILFIKEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778481
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778480
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778480
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778481
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778481
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1885043
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778482
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778481
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|4640157
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1885043
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778485
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|9448160
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778482
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3179057
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1892304
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778482
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1892304
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1892304
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778482
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|418078|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778482
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778483
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778483
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778484
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778484
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778483
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778483
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778485
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|1943519
```

```
MTDGSASGRA DTRILFIEEG KIVHISPLAG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778485
MTDGSASGRA DTRILFIEEG KIVHISPLAG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|1480200
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|1892305
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778485
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|1892305
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778484
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778485
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|3778484
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1943045
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|4640157
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778486
---------- ---------- ---------- ---------- ---------- ---------- gi|1340474
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778483
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1339825
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1337554
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3179058
MTDGSASGRA DTKILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778484
MTDGSASGRA DTKILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1339819
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1467600
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1337553
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1337553
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|1337554
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPDVRCI CRDNWKGSNR gi|3778481
                                                                  Clustal Co

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       310        320        330        340        350        360
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778480
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778480
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778479
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778478
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778478
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|4947349
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|9448159
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3179057
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|4640157
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778480
PVLDISMEDY SIGSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778479
PVLDISMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1461338
PVLDISMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778479
PVLDISMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1339825
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1892305
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1885043
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1270579
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1892304
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778478
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1467600
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1943521
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1337529
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1452790
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|4640157
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1337536
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1340474
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1452790
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1943521
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1943522
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1943522
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1943522
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|324510|
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1340475
PVIDINMEDY SIDSSYVCSG LVGDTPRNGD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1337536
PVIDINMEDY SIDSSYVCSG LVGDTPRNGD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778479
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|6305490
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|4640157
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1152790
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|8250669
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|565252|
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|565254|
---------- ---------- ---------- ---------- ---------- ---------- gi|3778479
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1885044
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1452790
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRNP NNERGTQGVK GWAFDNGNDL gi|1067257
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD SSSNSNCRDP NNERGTQGVK GWAFDNGNDL gi|1067257
PVIDINMEDY SIDSGYVCSG LVGDTPRNDD SSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1067257
PVIDINMEDY SIDSSYVCSG LVGDTPRNND GSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778481
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778480
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778480
```

```
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778481
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778481
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|1885043
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778482
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|3778481
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|4640157
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|1885043
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|3778485
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGYPGVK GWAFDNGDDV gi|9448160
PIIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|3778482
PIIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|3179057
PIIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|1892304
PIIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|3778482
PIIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|1892304
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|1892304
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|3778482
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNHGVK GWAFDNGDDV gi|418078|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNPGVK GWAFDNGDDV gi|3778482
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778483
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778483
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778484
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778484
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778483
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778483
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RFSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778485
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RFSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|1943519
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGTQGVK GWAFDNGNDL gi|3778485
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGTQGVK GWAFDNGNDL gi|1480200
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|1892305
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778485
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|1892305
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778484
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778485
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778484
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNEKGNQGVK GWAFDNGDDV gi|1943045
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNEKGNQGVK GWAFDNGDDV gi|4640157
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNEKGNQGVK GWAFDNGDDV gi|3778486
---------- ---------- ---------- ---------- ---------- ---------- gi|1340474
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNEKGNQGVK GWAFDNGDDV gi|3778483
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNEKGNQGVK GWAFDNGDDV gi|1339825
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNEKGNQGVK GWAFDNGDDV gi|1337554
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNEKGNQGVK GWAFDNGDDV gi|3179058
PVVDISMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|3778484
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|1339819
PIVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|1467600
PIVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|1337553
PIVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|1337553
PIVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|1337554
PVIDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRDP NNERGNPGVK GWAFDNGDDV gi|3778481
                                                                  Clustal Co

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        370        380        390        400        410        420
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778480
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778480
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778479
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778478
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778478
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|4947349
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|9448159
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3179057
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|4640157
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778480
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778479
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1461338
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778479
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1339825
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1892305
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1885043
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1270579
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1892304
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778478
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1467600
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1943521
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1337529
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1452790
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|4640157
```

```
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1337536
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1340474
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1452790
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1943521
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1943522
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1943522
WMGRTINKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1943522
WMGRTINKES RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|324510|
WMGRTINKES RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1340475
WMGRTINKES RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1337536
WMGRTISKES RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778479
WMGRTIGKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|6305490
WMGRTISKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVGN NNWSGYSGIF SVEGKSCINR gi|4640157
WMGRTISKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1152790
WMGRTISKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|8250669
WMGRTISKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|565252|
WMGRTISKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|565254|
---------- ---------- ---------- ---------- ---------- ---------- gi|3778479
WMGRTISKDS RSGYETFKVI GGWSTPNSKS QVNRQVIVDS NNWSGYSGIF SVEGKSCINR gi|1885044
WMGRTISKDS RSGYETFKVI GGWSTPNSKS QANRQVIVDK NNWSGYSGIF SVEGKSCINR gi|1452790
WMGRTISKES RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1067257
WMGTTISKDL RSGYETFKVI GGWSTPNSKS QANRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1067257
WMGRTINKES RSGYETFKVI GGWSTPNSKS QANRQVIVDN NNWSGYSGIF SVEGKSCINR gi|1067257
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QVNRQVIVDN NNWSGYSGIF SVEGKSCINR gi|3778481
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778480
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778480
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778481
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778481
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|1885043
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778482
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778481
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|4640157
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKRCINR gi|1885043
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKRCINR gi|3778485
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|9448160
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778482
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3179057
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|1892304
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778482
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|1892304
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|1892304
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778482
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNRSGYSGIF SVEGKGCINR gi|418078|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNRSGYSGIF SVEGKGCINR gi|3778482
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778483
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778483
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778484
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778484
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778483
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778483
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778485
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1943519
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778485
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1480200
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DDRSGYSGIF SVEGKSCINR gi|1892305
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778485
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1892305
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778484
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778485
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778484
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1943045
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|4640157
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778486
---------- ---------- ---------- ---------- ---------- ---------- gi|1340474
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778483
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1339825
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1337554
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3179058
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|3778484
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1339819
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1467600
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1337553
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1337553
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1337554
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS NNWSGYSGIF SVEGKSCINR gi|3778481
                                                                  Clustal Co
```

```
....|....| ....|....| ....|....| ....|....| ....|....
        430        440        450        460
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778480
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778480
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778479
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778478
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778478
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|4947349
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANTNFMPI            gi|9448159
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3179057
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|4640157
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778480
CFYVELIRGR SQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778479
CFYVELIRGR SQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1461338
CFYVELIRGR SQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778479
CFYVELIRGR SQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1339825
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1892305
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1885043
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1270579
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1892304
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778478
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1467600
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1943521
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1337529
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1452790
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|4640157
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1337536
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1340474
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1452790
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1943521
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1943522
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1943522
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1943522
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|324510|
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1340475
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1337536
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778479
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|6305490
CFYVELIRGM PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|4640157
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1152790
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|8250669
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|565252|
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|565254|
-FYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778479
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1885044
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1452790
CFYVELIRGR PQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1067257
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1067257
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1067257
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778481
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778480
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778480
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778481
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778481
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1885043
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778482
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778481
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|4640157
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1885043
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778485
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|9448160
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778482
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3179057
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1892304
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778482
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1892304
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1892304
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778482
CFYVELIRGR RQETRVWWTS NSIVVFCGTS GTYGKGSWPD GANINFMPI            gi|418078|
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778482
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778483
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778483
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778484
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778484
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778483
```

```
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778483
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778485
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1943519
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778485
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1480200
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1892305
CFYVELIRGR KQETRVWWTS NSIAVFCGTS GTYGTGSWPD GANINFMPI            gi|3778485
CFYVELIRGR KQETRVWWTS NSIAVFCGTS GTYGTGSWPD GANINFMPI            gi|1892305
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778484
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778485
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778484
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|1943045
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|4640157
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|3778486
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|1340474
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|3778483
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|1339825
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|1337554
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|3179058
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|3778484
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINLMPI            gi|1339819
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1467600
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1337553
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1337553
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|1337554
CFYVELIRGR QQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI            gi|3778481
 ********   ********* ***.****** ****.***** *** *:***            Clustal Co

Alignment: G:\bwt skripsi\cari data\Data\database\Na\human\h3n2.aln
....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        10        20        30        40        50        60
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|188076309
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|188076307
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194293955
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194293993
MNPNHKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|193084877
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|189303105
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|193084869
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194294017
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|189303153
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|189303157
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194294021
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194293997
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194293977
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSSPNNQV MLCEPTIIER gi|194294013
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSSPNNQV MLCEPTIIER gi|193084885
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSSPNNQV MLCEPTIIER gi|194293951
---NQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSSPNNQV MLCEPTIIER gi|189303165
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSSPNNQV MLCEPTIIER gi|189303149
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSSPNNQV MLCEPTIIER gi|188076301
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSSPNNQV MLCEPTIIER gi|194293985
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSSPNNQV MLCEPTIIER gi|194293963
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSSPNNQV MLCEPTIIER gi|194293981
MNPNQKIITI GSVSLTISTI CFFLQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|193084865
MNPNQKIITI GSVSLTISTI CFFLQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194293969
MNPNQKIITI GSVSLTISTI CFFMQTAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|189303117
MNPNQKIITI GSVSLTISTI CFFMQTAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|189303161
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194294009
MNPNQKIITI GSVSLTMSTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194294025
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTITER gi|193084881
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194293959
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|188076299
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194294005
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|188076293
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194293973
MNPNQKIITM GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|189303145
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194269505
MNPNQKIITI GSVSLTISTI CFFMQIAILI TTVTLHFKQY EFNSPPNNQV MLCEPTIIER gi|194269503
MNPNQKIITI GSVSLTISTI CFFMQIAILV TTVTLHFKQY ECNSPPNNQV MLCEPTIIER gi|22859349|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSPPNNQV MLCEPTIIER gi|13548555|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSPPNNQV MLCEPTIIER gi|149132956
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSPPNNQV MLCEPTIIER gi|22859405|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSPPNNQV MLCEPTIIER gi|13548549|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSPPNNQV MLCEPTIIER gi|115291184
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQH ECNSPPNNQV MLCEPTIIER gi|83752056|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQH ECNSPPNNQV MLCEPTIIER gi|110333405
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQH ECNSPPNNQV MLCEPTIIER gi|83752094|
```

```
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQH ECNSPPNNQV MLCEPTIIER gi|84873522|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQH ECNSPPNNQV MLCEPTIIER gi|83751804|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQH ECNSPPNNQV MLCEPTIIER gi|85838433|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQH ECNSPPNNQV MLCEPTIIER gi|110333367
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQH ECNSPPNNQV MLCEPTIIER gi|83730009|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSPPNNQV MLCEPTIIER gi|22859395|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSPPNNQV MLCEPTIIER gi|71564600|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSLPNNQV MLCEPTILER gi|68509317|
-NPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSLPNNQV MLCEPTILER gi|80974029|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSLPNNQV MLCEPTILER gi|68509898|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSLPNNQV MLCEPTILER gi|67057708|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSLPNNQV MLCEPTILER gi|68525445|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSLPNNQV MLCEPTILER gi|68508605|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSLPNNQV MLCEPTILER gi|68509231|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSLPNNQV MLCEPTILER gi|68510063|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSLPNNQV MLCEPTILER gi|13548565|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECDSLPNNQV MLCEPTIIER gi|73761601|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECSSPPNNQV MLCEPTIIER gi|13548569|
MNPNQKIITI GSVSLTIATI CFLMQIAILV TTVTLHFKQY ECNSPPNNQV MLCEPTIIER gi|13548551|
--PNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|193805119
--PNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|193805157
--PNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|193805214
-NPNQKIITI GSVSLTIATV CFLMQTAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|106907951
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|85816057|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|193805176
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|194304751
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|194352003
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|37785258|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDFPASNQV MPCEPIIIER gi|37785260|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|194352098
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|126567437
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|37785250|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|37785252|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|37785256|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|37785262|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|14009708|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|193805271
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|125664200
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|37785254|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|37785270|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|31790582|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|46401580|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|194304713
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|194304637
MNPNQKIITI GFVFLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|133982222
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|148628616
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|194304675
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|37785264|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|37785266|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|80977933|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPITIER gi|37785268|
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|125664238
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPASNQV MPCEPIIIER gi|134047623
MNPNQKIITI GSVSLTIATV CFLMQIAILV TTVTLHFKQY ECDSPANNQV MPCEPIIIER gi|1517824|g
   *:****: * * **::*: **::* ***: *********: * .  ..*** * ***   ** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         70         80         90         100        110        120
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|188076309
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|188076307
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293955
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293993
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|193084877
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|189303105
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|193084869
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194294017
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|189303153
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|189303157
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194294021
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293997
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293977
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194294013
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|193084885
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293951
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|189303165
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|189303149
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|188076301
```

```
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293985
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293963
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293981
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|193084865
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293969
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|189303117
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|189303161
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194294009
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194294025
NITEIVYLTN TTIEKEXCPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|193084881
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293959
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|188076299
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194294005
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|188076293
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|194293973
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCDITGFAPF SKDNSIRLSA GGDIWVTREP gi|189303145
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|194269505
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|194269503
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|22859349|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|13548555|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|149132956
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|22859405|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|13548549|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|115291184
NITEIVYLTN TTIEKEICPK LVEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|83752056|
NITEIVYLTN TTIEKEICPK LVEYRNWSKP QCNITGFAPF SRDNSIRLSA GGDIWVTREP gi|110333405
NITEIVYLTN TTIEKEICPK LVEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|83752094|
NITEIVYLTN TTIEKEICPK LVEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|84873522|
NITEIVYLTN TTIEKEICPK LVEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|83751804|
NITEIVYLTN TTIEKEICPK LVEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|85838433|
NITEIVYLTN TTIEKEICPK LVEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|110333367
NITEIVYLTN TTIEKEICPK LVEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|83730009|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|22859395|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|71564600|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|68509317|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|80974029|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|68509898|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|67057708|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|68525445|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|68508605|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|68509231|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|68510063|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|13548565|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|73761601|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|13548569|
NITEIVYLTN TTIEKEICPK LAEYRNWSKP QCNITGFAPF SKDNSIRLSA GGDIWVTREP gi|13548551|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|193805119
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|193805157
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|193805214
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|106907951
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|85816057|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|193805176
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|194304751
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|194352003
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785258|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785260|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRISA GGDIWVTREP gi|194352098
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|126567437
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785250|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785252|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785256|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785262|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|14009708|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|193805271
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|125664200
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785254|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785270|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|31790582|
NITEIVYLNN TTIDKEKCPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|46401580|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|194304713
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|194304637
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|133982222
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|148628616
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|194304675
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785264|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785266|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|80977933|
```

```
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|37785268|
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|125664238
NITEIVYLNN TTIEKEICPK VVEYRNWSKP QCQITGFAPF SKDNSIRLSA GGDIWVTREP gi|134047623
NITEIVYLTN TTIEKEICPK LVEYRNWSKP QCKITGFAPF SKDNSIRLSA GGDIWVTREP gi|1517824|g
********.* ***:** *** :.******** **.******* *:*****:** ********** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        130        140        150        160        170        180
YVSCDPDKCY QFALGQGTTL NNVHSNDTVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|188076309
YVSCDPDKCY QFALGQGTTL NNVHSNDTVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|188076307
YVSCDPDKCY QFALGQGTTL NNVHSNDTVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293955
YVSCDPDKCY QFALGQGTTL NNVHSNDTVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293993
YVSCDPDKCY QFALGQGTTL NNVHSNDTVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|193084877
YVSCDPDKCY QFALGQGTTL NNVHSNDTVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|189303105
YVSCDPDKCY QFALGQGTTL NNVHSNDTVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|193084869
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194294017
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|189303153
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|189303157
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194294021
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293997
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293977
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194294013
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|193084885
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293951
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|189303165
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|189303149
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|188076301
YVSCDPDKCY QFALGQGTTL NNVHSNNXVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293985
YVSCDPDKCY QFALGQGTTL NNVHSNNIVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293963
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293981
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|193084865
YVSCDPDKCY QFALGQGTTL NNVHSNNTVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293969
YVSCDPDKCY QFALGQGTTL NNVHSNNXVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|189303117
YVSCDPDKCY QFALGQGTTL NNVHSNDXVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|189303161
YVSCDPDKCY QFALGQGTTL NNVHSNNXVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194294009
YVSCDPDKCY QFALGQGTTL NNVHSNNXVR BRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194294025
YVSCDPDKCY QFALGQGTTL NNVHSNNXVR XRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|193084881
YVSCDPDKCY QFALGQGTTL NNVHSNNKVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293959
YVSCDPDKCY QFALGQGTTL NNVHSNNIVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|188076299
YVSCDPDKCY QFALGQGTTL NNVHSNNXVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194294005
YVSCDPDKCY QFALGQGTTL NNVHSNDXVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|188076293
YVSCDPDKCY QFALGQGTTL NNVHSNDTVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194293973
YVSCDPDKCY QFALGQGTTL NNVHSNDTVR DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|189303145
YVSCDPDKCY QFALGQGTTL NNVHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194269505
YVSCDPDKCY QFALGQGTTL NNVHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|194269503
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|22859349|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|13548555|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|149132956
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH GRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|22859405|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|13548549|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|115291184
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TRQVCIAWSS gi|83752056|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TRQVCIAWSS gi|110333405
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TRQVCIAWSS gi|83752094|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TRQVCIAWSS gi|84873522|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TRQVCIAWSS gi|83751804|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TRQVCIAWSS gi|85838433|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TRQVCIAWSS gi|110333367
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TRQVCIAWSS gi|83730009|
YVSCDPDKCY QFALGQGTTL NNGHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|22859395|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|71564600|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|68509317|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|80974029|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|68509898|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|67057708|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|68525445|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|68508605|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|68509231|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|68510063|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|13548565|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|73761601|
YVSCDPDKCY QFALGQGTTL NNRHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|13548569|
YVSCDPDKCY QFALGQGTTL NNEHSNDTVH DRTPYRTLLM NELGVPFHLG TKQVCIAWSS gi|13548551|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|193805119
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|193805157
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|193805214
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|106907951
```

```
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|85816057|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|193805176
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|194304751
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|194352003
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785258|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785260|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|194352098
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|126567437
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785250|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785252|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785256|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785262|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|14009708|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|193805271
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|125664200
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785254|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785270|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|31790582|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|46401580|
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|194304713
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|194304637
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|133982222
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|148628616
YVSCDRGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|194304675
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785264|
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785266|
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|80977933|
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|37785268|
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRVPHRTLLM NELGVPFHLG TRQVCIAWSS gi|125664238
YVSCDHGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|134047623
YVSCDPGKCY QFALGQGTTL DNKHSNDTIH DRIPHRTLLM NELGVPFHLG TRQVCIAWSS gi|1517824|g
***** .*** ********** :* ***: ::  * *:***** ********** *:******** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        190        200        210        220        230        240
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LIDSVVSWSK EILRTQESEC VCINGTCTVV gi|188076309
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|188076307
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194293955
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194293993
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|193084877
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|189303105
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|193084869
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194294017
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|189303153
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|189303157
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194294021
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194293997
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194293977
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|194294013
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|193084885
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|194293951
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|189303165
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|189303149
SSCHDGKAWL HVCITGDDNN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|188076301
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|194293985
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|194293963
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|194293981
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|193084865
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|194293969
SSCHDGKAWL HVCITGDDKN ATASFIYNGK LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|189303117
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|189303161
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194294009
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK DILRTQESEC VCINGTCTVV gi|194294025
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|193084881
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194293959
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|188076299
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194294005
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|188076293
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSVVSWSK EILRTQESEC VCINGTCTVV gi|194293973
SSCHDGKAWL HVCITGDDKN ATASFIYNGR LVDSIVSWSK EILRTQESEC VCINGTCTVV gi|189303145
SSCHDGKAWL HVCVTGDDKN ATASFIYNGR LVDSVVSWSK KILRTQESEC VCINGTCTVV gi|194269505
SSCHDGKAWL HVCVTGDDEN ATASFIYNGR LVDSIVSWSK KILRTQESEC VCINGTCTVV gi|194269503
SSCHDGKAWL HVCVTGDDEN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|22859349|
SSCHDGKAWL HVCVTGDDEN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|13548555|
SSCHDGKAWL HVCVTGDDEN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|149132956
SSCHDGKAWL HVCVTGDDEN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|22859405|
SSCHDGKAWL HVCVTGDDEN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|13548549|
```

```
SSCHDGKAWL HVCVTGDDEN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|115291184
SSCHDGKAWL HVCVTGDDKN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|83752056|
SSCHDGKAWL HVCVTGDDKN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|110333405
SSCHDGKAWL HVCVTGDDKN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|83752094|
SSCHDGKAWL HVCVTGDDKN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|84873522|
SSCHDGKAWL HVCVTGDDKN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|83751804|
SSCHDGKAWL HVCVTGDDKN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|85838433|
SSCHDGKAWL HVCVTGDDKN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|110333367
SSCHDGKAWL HVCVTGDDKN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|83730009|
SSCHDGKAWL HVCVTGDDEN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|22859395|
SSCHDGKAWL HVCVTGHDEN ATASFIYDGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|71564600|
SSCHDGKAWL HVCVTGHDEN ATASFIYGGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|68509317|
SSCHDGKAWL HVCVTGHDEN ATASFIYGGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|80974029|
SSCHDGKAWL HVCVTGHDEN ATASFIYGGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|68509898|
SSCHDGKAWL HVCVTGHDEN ATASFIYGGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|67057708|
SSCHDGKAWL HVCVTGHDEN ATASFIYGGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|68525445|
SSCHDGKAWL HVCVTGHDEN ATASFIYGGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|68508605|
SSCHDGKAWL HVCVTGHDEN ATASFIYGGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|68509231|
SSCHDGKAWL HVCVTGHDEN ATASFIYGGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|68510063|
SSCHDGKAWL HVCVTGHDEN ATASFIYGGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|13548565|
SSCHDGKAWL HVCVTGHDEN ATASFIYDGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|73761601|
SSCHDGKAWL HVCVTGHDEN ATASFIYDGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|13548569|
SSCHDGKAWL HVCVTGDDEN ATASFIYNGR LVDSIGSWSK KILRTQESEC VCINGTCTVV gi|13548551|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|193805119
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|193805157
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|193805214
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|106907951
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|85816057|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|193805176
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|194304751
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|194352003
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785258|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785260|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|194352098
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|126567437
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785250|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785252|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785256|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785262|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|14009708|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|193805271
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|125664200
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785254|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785270|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|31790582|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|46401580|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|194304713
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|194304637
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|133982222
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|148628616
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|194304675
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785264|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785266|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|80977933|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|37785268|
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|125664238
SSCHDGKAWL HVCITGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|134047623
SSRHDGKAWL HVCVTGDDKN ATASFIYDGR LVDSIGSWSQ NILRTQESEC VCINGTCTVV gi|1517824|g
** ******* ***:**.*:* *******.*: *:**: ***: .********* ********** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       250        260        270        280        290        300
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|188076309
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|188076307
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293955
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293993
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|193084877
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|189303105
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|193084869
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194294017
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|189303153
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|189303157
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194294021
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293997
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293977
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194294013
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|193084885
```

```
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293951
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|189303165
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|189303149
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|188076301
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293985
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293963
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293981
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|193084865
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293969
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|189303117
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHXEECSC YPRYPDVRCV CRDNWKGSNR gi|189303161
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194294009
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194294025
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|193084881
ITDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293959
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|188076299
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194294005
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|188076293
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194293973
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|189303145
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194269505
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|194269503
MTDGSASGKA DTKILFIEEG KIVHTSTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|22859349|
MTDGSASGKA DTKILFIEEG KIVHTSLLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|13548555|
MTDGSASGKA DTKILFIEEG KIVHTSLLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|149132956
MTDGSASGKA DTKILFIEEG KIVHTSLLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|22859405|
MTDGSASGKA DTKILFIEEG KIVHTSLLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|13548549|
MTDGSASGKA DTKILFIEEG KIVHTSSLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|115291184
MTDGSASGKA DTKILFIEEG KIVHISTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|83752056|
MTDGSASGKA DTKILFIEEG KIVHISTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|110333405
MTDGSASGKA DTKILFIEEG KIVHISTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|83752094|
MTDGSASGKA DTKILFIEEG KIVHISTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|84873522|
MTDGSASGKA DTKILFIEEG KIVHISTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|83751804|
MTDGSASGKA DTKILFIEEG KIVHISTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|85838433|
MTDGSASGKA DTKILFIEEG KIVHISTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|110333367
MTDGSASGKA DTKILFIEEG KIVHISTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|83730009|
MTDGSASGKA DTKILFIEEG KIVHISTLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|22859395|
MTDGSASGRA DTKILFIEEG KIVHTSKLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|71564600|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|68509317|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|80974029|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|68509898|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|67057708|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|68525445|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|68508605|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|68509231|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|68510063|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|13548565|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|73761601|
MTDGSASGRA DTKILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|13548569|
MTDGSASGRA DTKILFIEEG KIIHISQLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|13548551|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|193805119
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|193805157
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|193805214
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|106907951
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|85816057|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|193805176
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|194304751
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|194352003
MTDGSASGRA DTRILFIEEG KIVHISPLTG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785258|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785260|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|194352098
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|126567437
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785250|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785252|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785256|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785262|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|14009708|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|193805271
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|125664200
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785254|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785270|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|31790582|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|46401580|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|194304713
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|194304637
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|133982222
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|148628616
```

```
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|194304675
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785264|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785266|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|80977933|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|37785268|
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|125664238
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCI CRDNWKGSNR gi|134047623
MTDGSASGRA DTRILFIEEG KIVHISPLSG SAQHVEECSC YPRYPGVRCV CRDNWKGSNR gi|1517824|g
:*******:* **:******* **:* * *:* **** ***** *****.***: ********** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       310        320        330        340        350        360
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|188076309
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|188076307
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293955
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293993
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|193084877
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|189303105
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|193084869
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194294017
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|189303153
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|189303157
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194294021
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293997
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293977
PIVDINIKDH SIASSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194294013
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|193084885
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293951
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|189303165
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|189303149
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|188076301
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293985
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293963
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293981
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|193084865
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293969
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|189303117
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|189303161
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194294009
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194294025
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|193084881
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293959
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|188076299
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194294005
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|188076293
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194293973
PIVDINIKDH SIVSSYVCSG LVGDTPRKND SSSSGHCLDP NNEEGGHGVK GWAFDDGNDV gi|189303145
PIVDINIKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194269505
PIVDINIKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|194269503
PIVDINIKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|22859349|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|13548555|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|149132956
PIVDINVKDY SIVSSYVCSG LVGDTPRKND NSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|22859405|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|13548549|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|115291184
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SFSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|83752056|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SFSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|110333405
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SFSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|83752094|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SFSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|84873522|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SFSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|83751804|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SFSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|85838433|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SFSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|110333367
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SFSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|83730009|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SFSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|22859395|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLDP NNEEGGHGVK GWAFDDGNDV gi|71564600|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|68509317|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|80974029|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|68509898|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|67057708|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|68525445|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|68508605|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|68509231|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|68510063|
PIVDINVKDY SIVSSYVCSG LVGDTPRKHD SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|13548565|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|73761601|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|13548569|
PIVDINVKDY SIVSSYVCSG LVGDTPRKND SSSSSHCLNP NNEEGGHGVK GWAFDDGNDV gi|13548551|
```

```
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|193805119
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|193805157
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|193805214
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|106907951
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|85816057|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|193805176
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|194304751
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|194352003
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785258|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785260|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|194352098
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|126567437
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785250|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785252|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785256|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785262|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|14009708|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|193805271
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|125664200
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785254|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785270|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|31790582|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|46401580|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|194304713
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|194304637
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCKNP NNERGNQGVK GWAFDNGDDV gi|133982222
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDSGDDV gi|148628616
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|194304675
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785264|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785266|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|80977933|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|37785268|
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|125664238
PVVDINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGNDV gi|134047623
PVADINMEDY SIDSSYVCSG LVGDTPRNDD RSSNSNCRNP NNERGNQGVK GWAFDNGDDV gi|1517824|g
*:.***::*: ** ******* *******:.*   *..:* :* ***.*.:*** *****.*:** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       370        380        390        400        410        420
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|188076309
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|188076307
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293955
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293993
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|193084877
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|189303105
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|193084869
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194294017
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|189303153
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|189303157
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194294021
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293997
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293977
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194294013
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|193084885
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293951
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|189303165
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|189303149
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|188076301
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293985
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293963
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293981
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|193084865
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293969
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|189303117
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVER GDRSGYSGIF SVEGKSCINR gi|189303161
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194294009
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194294025
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|193084881
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293959
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|188076299
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194294005
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|188076293
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194293973
WMGRTISEKS RLGYETFKVI EGWSNPKSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|189303145
WMGRTISEKL RSGYETFKVI EGWSNPNSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|194269505
WMGRTISEKL RSGYETFKVI EGWSNPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|194269503
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|22859349|
```

```
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|13548555|
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|149132956
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|22859405|
WMGRTISEKL RTGYETFKVI EGWSKPNSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|13548549|
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVDR GNRSGYSGIF SVESKSCINR gi|115291184
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVER GNRSGYSGIF SVEGKSCINR gi|83752056|
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVER GNRSGYSGIF SVEGKSCINR gi|110333405
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVER GNRSGYSGIF SVEGKSCINR gi|83752094|
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVER GNRSGYSGIF SVEGKSCINR gi|84873522|
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVER GNRSGYSGIF SVEGKSCINR gi|83751804|
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVER GNRSGYSGIF SVEGKSCINR gi|85838433|
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVER GNRSGYSGIF SVEGKSCINR gi|110333367
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVER GNRSGYSGIF SVEGKSCINR gi|83730009|
WMGRTISEKL RSGYETFKVI EGWSKPNSKL QINRQVIVER GNRSGYSGIF SVEGKSCINR gi|22859395|
WMGRTISEKS RSGYETFKVI EGWSKPNSKL QINRQVIVER GNMSGYSGIF SVEGKSCINR gi|71564600|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|68509317|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|80974029|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|68509898|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|67057708|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|68525445|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|68508605|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|68509231|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|68510063|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|13548565|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|73761601|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR GNRSGYSGIF SVEGKSCINR gi|13548569|
WMGRTISEKF RSGYETFKVI EGWSKPNSKL QINRQVIVDR DNRSGYSGIF SVEGKSCINR gi|13548551|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|193805119
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|193805157
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|193805214
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|106907951
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|85816057|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|193805176
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|194304751
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|194352003
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785258|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785260|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|194352098
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|126567437
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785250|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785252|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785256|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785262|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|14009708|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|193805271
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|125664200
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785254|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785270|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|31790582|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|46401580|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DHRSGYSGIF SVEGKSCINR gi|194304713
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|194304637
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|133982222
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|148628616
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|194304675
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785264|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785266|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|80977933|
WMGRTISKDL RSGYETFKVI SGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|37785268|
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|125664238
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|134047623
WMGRTISKDL RSGYETFKVI GGWSTPNSKS QINRQVIVDS DNRSGYSGIF SVEGKSCINR gi|1517824|g
*******:.  * ********  ***.*:**  ********:  .. ******* ***.****** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....
        430        440        450        460
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|188076309
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|188076307
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293955
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293993
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADLNLMPI             gi|193084877
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|189303105
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|193084869
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194294017
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|189303153
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|189303157
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194294021
```

```
CFYVELIRGR KEKTEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293997
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293977
CFYVELIRGR KEXTEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194294013
CFYVELIRGR KEXTEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|193084885
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293951
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|189303165
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|189303149
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|188076301
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293985
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293963
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293981
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|193084865
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293969
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|189303117
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|189303161
CFYVELIRGR KEXTEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194294009
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194294025
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|193084881
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293959
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|188076299
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194294005
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|188076293
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194293973
CFYVELIRGR KEETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|189303145
CFYVELIRGR NQETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194269505
CFYVELIRGR NQETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|194269503
CFYVELIRGR KQETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|22859349|
CFYVELIRGR KQETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|13548555|
CFYVELIRGR KQETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINL---             gi|149132956
CFYVELIRGR KQETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|22859405|
CFYVELIRGR KQETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|13548549|
CFYVELIRGR KQETEVLWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|115291184
CFYVELIRGR KEETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|83752056|
CFYVELIRGR KEETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|110333405
CFYVELIRGR KEETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|83752094|
CFYVELIRGR KEETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|84873522|
CFYVELIRGR KEETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|83751804|
CFYVELIRGR KEETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|85838433|
CFYVELIRGR KEETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|110333367
CFYVELIRGR KEETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|83730009|
CFYVELIRGR KEETEVWWTS NSIVVFCGTS RTYGTGSWPD GADINLMPI             gi|22859395|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|71564600|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLM--             gi|68509317|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLM--             gi|80974029|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|68509898|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|67057708|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|68525445|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|68508605|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|68509231|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|68510063|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|13548565|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|73761601|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|13548569|
CFYVELIRGR KQETEVWWTS NSIVVFCGTS GTYGTGSWPD GADINLMPI             gi|13548551|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|193805119
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|193805157
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|193805214
CFYVELIRGR KQEARVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|106907951
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|85816057|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|193805176
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|194304751
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|194352003
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785258|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785260|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|194352098
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|126567437
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785250|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785252|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785256|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785262|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|14009708|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|193805271
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|125664200
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785254|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785270|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|31790582|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|46401580|
```

```
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|194304713
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMHI             gi|194304637
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|133982222
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|148628616
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|194304675
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785264|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785266|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|80977933|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|37785268|
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|125664238
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GANINFMPI             gi|134047623
CFYVELIRGR KQETRVWWTS NSIVVFCGTS GTYGTGSWPD GADINFMPI             gi|1517824|g
********** :: :.* *** **********  ********* **::*:                Clustal Cons


Alignment: G:\bwt skripsi\cari data\Data\database\Na\human\h5n1.aln
....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         10         20         30         40         50         60
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|124099031
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|124099009
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|124099058
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|124099084
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|157955787
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|113497245
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|157955437
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|113497198
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|113972297
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|118864192
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|118864235
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|157955698
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|157955529
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|118864141
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|124098908
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|124098582
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|124098853
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|124098881
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|118864393
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|124098932
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|124098984
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|124098957
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|118574893
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|118574874
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|113497296
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|157955475
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQK GNQHQAES-- gi|113496518
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSTQK GNQHQAES-- gi|113497374
---------- MNPNRKIITI GSICMVIGMV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|113972316
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMV STWVSHSIQT GNQYQAES-- gi|118574912
---------- MNPNQKIITI GSICMAIGTV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|157955603
---------- MNPNQKIITI GSICMAIGTV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|157955565
---------- MNPNQKIITI GSICMAIGTV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|157955641
---------- MNPNQKIITI GSICMAIGTV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|157955584
---------- MNPNQKIITI GSICMAIGTV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|113495792
---------- MNPNQKIITI GSICMAIGTV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|113495851
---------- MNPNQKIITI GSICMAIGTV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|113495963
---------- MNPNQKIITI GSICMAIGTV SLMLQIGNMI SIWVSHSIQT GNQHQAES-- gi|113495914
---------- MNPNQKVITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQNQVEP-- gi|162569002
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQNQVEP-- gi|162569004
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMV SLWVSHSIQT GNQHQVEP-- gi|113707438
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|157103086
---------- -NPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|157103100
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|157103119
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|157103135
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|157103072
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|157103052
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQCQDEP-- gi|124244208
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQCQAEP-- gi|122913049
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|148340545
---------- -NPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|148340541
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|157103596
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNII SIWISHSIQT GNQCQAGP-- gi|122913045
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNII SIWISHSIQT GNQCQAEP-- gi|122913047
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNMI SIWVSHSIQT GNQRQAEP-- gi|148340810
---------- MNPNKKIITI GSICMVTGMV SLMLQIGNLI SIWVSHSIHT GNQHKAEP-- gi|145284421
---------- MNPNKKIITI GSICMVTGMV SLMLQIGNLI SIWVSHSIHT GNQHKAEP-- gi|116295120
-----KQEFK MNPNKKIITI GSICMVTGMV SLMLQIGNLI SIWLSRSIHT GNQQKAEP-- gi|116295114
FSGSQKQEFK MNPNKKIITI GSICMVTGMV SLMLQIGNLI SIWVSHSIHT GNQHKAXP-- gi|116295110
```

```
---------- MNPNKKIITI GSICMVTGMV SLMLQIGNLI SIWVSHSIHT GNQQKAEP-- gi|85680902|
---------- MNPNKKIITI GSICMVTGMV SLMLQIGNLI SIWVSHSIHT GNQQKAEP-- gi|46360357|
---------- MNPNKKIITI GSICMVTGMV SLMLQIGNLI SIWVSHSIHT ENQHKAEP-- gi|134306634
---------- --KTIEIITI GSICMVTGMV SLMLQIGNLD LNMGQPFYSH RAQHKAEP-- gi|116295106
---------- MNPNKKIITI GSICMVTGMV SLMLQIGNLI SIWVSHSIHT GNQHKAEP-- gi|145284415
---------- MNPNQKIITI GSICMVTGIV SLMLQVGNMI SIWVSHSIHT GNQHQAEP-- gi|93008563|
---------- MNPNQKIITI GSICMVTGIV SLMLQVGNMI SIWVSHSIHT GNQHQAEP-- gi|93008571|
---------- MNPNQKIITI GSICMVTGIV SLMLQVGNMI SIWVSHSIHT GNQHQAEP-- gi|126361912
---------- MNPNQKIITI GSICMVTGIV SLMLQVGNMI SIWVSHSIHT GSQHQAEP-- gi|95116895|
---------- MNPNQKIITI GSICMVTGIV SLMLQVGNMI SIWVSHSIHT GNQHQAEP-- gi|72398597|
---------- MNPNQKIITI GSICMVTGIA SLMLQIGNMI SIWVSHSIHT GNQHQAEP-- gi|126361908
---------- MNPNQKIITI GSICMVTGIV SLMLQIGNMI SIWVSHSIHT GNQHQSEP-- gi|78096578|
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNII SIWVSHSIQT GNQHQDEP-- gi|182382583
---------- MNPNQKIITI GSICMVIGIV SLMLQIGNII SIWVSHSIQT GNQHQDEP-- gi|182382601
---------- --PNQKITTI GSICMVIGIV SLMLQIGNII SIWVSHSIQT GNQHQAEPCN gi|47834894|
---------- MNPNQKITTI GSICMVIGIV SLMLQIGNII SIWVSHSIQT GNQHQAEPCN gi|145284413
---------- MNPNQKITTI GSICMVIGIV SLMLQIGNII SIWVSHSIQT GNQHQAEPCN gi|47834892|
---------- MNPNQKITTI GSICMVIGIV SLMLQIGNII SIWVSHSIQT GNQHQAEPCN gi|71013506|
---------- MNPNQKIITI GSICMVVGII NLMLQIGNTI SVWVSHIIKT WHPNQPEP-- gi|4324310|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSHIIKT WHPNQPEP-- gi|4324311|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSHIIKT WHPNQPEP-- gi|4324313|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSHIIKT WHPNQPEP-- gi|4324308|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSHIIKT WHPNQPEP-- gi|4324312|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSHIIKT WHPNQPEP-- gi|4324314|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSHIIKT WHPNQPEP-- gi|8307787|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSHIIKT WHPNQPEP-- gi|8307793|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSHIIQT WHPNQPEP-- gi|4324309|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSPIIQA WHPNQPEP-- gi|4324317|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSPIIQD WHPNQPEP-- gi|4324322|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNTI SVWVSHIIQA WHPNQPEP-- gi|4324319|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSHIIQA WHSNQPEP-- gi|4324318|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSHIIQT WHPNQPEP-- gi|8307791|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSHIIQT WHPNQPEP-- gi|4324316|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSHIIQT WHPNQPEP-- gi|4324321|g
----QKQEIK MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSHIIQT WHPNQPEP-- gi|2833659|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSHTIQT WHPNQPEP-- gi|4324315|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWISHIIQT WHPNQPEP-- gi|8307789|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWISHIIQT WHPNQPEP-- gi|4324320|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSHIIQT WHPNQPEP-- gi|3335423|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSHTIQT WHPNQPEP-- gi|8307785|g
---------- MNPNQKIITI GSICMVVGII SLMLQIGNII SVWVSHIIQT WHPNQPEP-- gi|2865378|g
              . :: ** *****. *   .****:**       .          :  .   Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
         70         80         90        100        110        120
---------- --------IS NTNPLTEKAV VSVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124099031
---------- --------IS NTNPLTEKAV VSVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124099009
---------- --------IS NTNPLTEKAV VSVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124099058
---------- --------IS NTNPLTEKAV VSVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124099084
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|157955787
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|113497245
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|157955437
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|113497198
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|113972297
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|118864192
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|118864235
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|157955698
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|157955529
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|118864141
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124098908
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124098582
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124098853
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124098881
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|118864393
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124098932
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124098984
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|124098957
---------- --------IS NTNPLTEKAV ASITLAGNSS LCPIRGWAVH SKDNNIRIGS gi|118574893
---------- --------IS NTNPLTEKAV ASITLAGNSS LCPIRGWAVH SKDNNIRIGS gi|118574874
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|113497296
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|157955475
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|113496518
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|113497374
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|113972316
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNNIRIGS gi|118574912
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNSIRIGS gi|157955603
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNSIRIGS gi|157955565
```

```
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNSIRIGS gi|157955641
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNSIRIGS gi|157955584
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNSIRIGS gi|113495792
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNSIRIGS gi|113495851
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNSIRIGS gi|113495963
---------- --------IS NTNPLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNSIRIGS gi|113495914
---------- --------II NTNFLTGKAV ASITLAGNSS LCPIRGWAIH SKDNSIRIGS gi|162569002
---------- --------II NTNFLTGKAV ASITLAGNSS LCPIRGWAIH SKDNSIRIGS gi|162569004
---------- --------IS NTNFLTEKAV ASVTLAGNSS LCPIRGWAVH SKDNSIRIGS gi|113707438
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|157103086
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|157103100
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|157103119
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|157103135
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|157103072
---------- --------IS NTKFLTERAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|157103052
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|124244208
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|122913049
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|148340545
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|148340541
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|157103596
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|122913045
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNSIRIGS gi|122913047
---------- --------IS NTKFLTEKAV ASVTLAGNSS LCPISGWAVH SKDNSIRIGS gi|148340810
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|145284421
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|116295120
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|116295114
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|116295110
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|85680902|
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|46360357|
---------- --------IS NTNLLTEKTV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|134306634
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|116295106
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVH SKDNSIRIGS gi|145284415
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|93008563|
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|93008571|
---------- --------IS NTNFLNEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|126361912
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|95116895|
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|72398597|
---------- --------IS NTNFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|126361908
---------- --------IS NTKFLTEKAV ASVKLAGNSS LCPINGWAVY SKDNSIRIGS gi|78096578|
---------- --------IR NANFLTENAV ASVTLAGNSS LCPVRGWAVH SKDNSIRIGS gi|182382583
---------- --------IR NANFLTENAV ASVTLAGNSS LCPVRGWAVH SKDNSIRIGS gi|182382601
QSIITYENNT WVNQTYVNIS NTNFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNGIRIGS gi|47834894|
QSIITYENNT WVNQTYVNIS NTNFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNGIRIGS gi|145284413
QSIITYENNT WVNQTYVNIS NTNFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNGIRIGS gi|47834892|
QSIITYENNT WVNQTYVNIS NTNFLTEKAV ASVTLAGNSS LCPISGWAVY SKDNGIRIGS gi|71013506|
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324310|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324311|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324313|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324308|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324312|g
---------- -------CKQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324314|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|8307787|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|8307793|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324309|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324317|g
---------- -------CNQ SINFYTEQAA TSVTSAGNSS LCPISGWAIY SKDNSIRIGS gi|4324322|g
---------- -------CNQ SINFYTEQAA ASVTLAGYSS LCPISGWAIY SKDNSIRIGS gi|4324319|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324318|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|8307791|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324316|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDKSIRIGS gi|4324321|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|2833659|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324315|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|8307789|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|4324320|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|3335423|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|8307785|g
---------- -------CNQ SINFYTEQAA ASVTLAGNSS LCPISGWAIY SKDNSIRIGS gi|2865378|g
                      . :  . .:. .*:. ** ** ***: ***:: ***:.***** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        130        140        150        160        170        180
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124099031
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124099009
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124099058
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124099084
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|157955787
```

```
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|113497245
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|157955437
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|113497198
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|113972297
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|118864192
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|118864235
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|157955698
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|157955529
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|118864141
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124098908
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124098582
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124098853
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124098881
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|118864393
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124098932
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124098984
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124098957
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|118574893
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|118574874
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|113497296
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|157955475
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|113496518
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|113497374
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|113972316
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|118574912
KGDVFVIREP FISCSHSECR TFFLTQGALL NDKHSNETVK DRSPHRTLMS CPVGEAPSPY gi|157955603
KGDVFVIREP FISCSHSECR TFFLTQGALL NDKHSNETVK DRSPHRTLMS CPVGEAPSPY gi|157955565
KGDVFVIREP FISCSHSECR TFFLTQGALL NDKHSNETVK DRSPHRTLMS CPVGEAPSPY gi|157955641
KGDVFVIREP FISCSHSECR TFFLTQGALL NDKHSNETVK DRSPHRTLMS CPVGEAPSPY gi|157955584
KGDVFVIREP FISCSHSECR TFFLTQGALL NDKHSNETVK DRSPHRTLMS CPVGEAPSPY gi|113495792
KGDVFVIREP FISCSHSECR TFFLTQGALL NDKHSNETVK DRSPHRTLMS CPVGEAPSPY gi|113495851
KGDVFVIREP FISCSHSECR TFFLTQGALL NDKHSNETVK DRSPHRTLMS CPVGEAPSPY gi|113495963
KGDVFVIREP FISCSHSECR TFFLTQGALL NDKHSNETVK DRSPHRTLMS CPVGEAPSPY gi|113495914
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|162569002
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|162569004
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|113707438
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTIK DRSPHRTLMS CPVGEAPSPY gi|157103086
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTIK DRSPHRTLMS CPVGEAPSPY gi|157103100
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTIK DRSPHRTLMS CPVGEAPSPY gi|157103119
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTIK DRSPHRTLMS CPVGEAPSPY gi|157103135
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTIK DRSPHRTLMS CPVGEAPSPY gi|157103072
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|157103052
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|124244208
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|122913049
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|148340545
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|148340541
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|157103596
RGDVFVIRES FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|122913045
RGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|122913047
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|148340810
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|145284421
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|116295120
KGDVFVIREP FISCSHLECR TFFLTQGSLL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|116295114
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|116295110
KGDVFVIREP FISCSHLECR TFFLTQGSLL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|85680902|
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|46360357|
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|134306634
KGDVFVIREP FISCSHLQCR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|116295106
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|145284415
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|93008563|
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|93008571|
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|126361912
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|95116895|
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|72398597|
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|126361908
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|78096578|
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|182382583
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|182382601
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|47834894|
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|145284413
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|47834892|
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPHRTLMS CPVGEAPSPY gi|71013506|
KGDVFVIKEP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324310|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324311|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324313|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324308|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324312|g
```

```
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324314|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|8307787|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|8307793|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324309|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324317|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324322|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324319|g
KGDVFVMREP FISCSHLECR TFFLTQGALL NNKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324318|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|8307791|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324316|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYGTLMS CPVGETPSPY gi|4324321|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|2833659|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324315|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|8307789|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|4324320|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|3335423|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|8307785|g
KGDVFVIREP FISCSHLECR TFFLTQGALL NDKHSNGTVK DRSPYRTLMS CPVGEAPSPY gi|2865378|g
:*****::*. ****** :** *******:** *:**** *:* ****: **** *****:**** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        190        200        210        220        230        240
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124099031
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124099009
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124099058
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124099084
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157955787
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113497245
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157955437
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113497198
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113972297
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|118864192
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|118864235
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157955698
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157955529
NSRFESVAWS ASACHDGNSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR KNILRTQESE gi|118864141
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124098908
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124098582
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124098853
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124098881
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|118864393
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124098932
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124098984
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124098957
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|118574893
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|118574874
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113497296
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157955475
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113496518
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113497374
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113972316
NSRFESVAWS ASACHDGTSW LTIGISGPDN EAVAVLKYNG IITDTIKSWR NNILRTQESE gi|118574912
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157955603
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157955565
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157955641
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157955584
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113495792
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113495851
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113495963
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|113495914
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|162569002
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|162569004
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG MITDTIKSWR NNILRTQESE gi|113707438
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157103086
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157103100
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157103119
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157103135
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157103072
NSRFESVAWS ASACHDGASW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157103052
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|124244208
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|122913049
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|148340545
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|148340541
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|157103596
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|122913045
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|122913047
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|148340810
```

```
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|145284421
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|116295120
NSRFESVAWS ASACHDGTSW LTIGISGPDS GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|116295114
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|116295110
NSRFESVAWS ASACHDGTSW LTIGISGPDS GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|85680902|
NSRFESVAWS ASACHDGTSW LTIGISGPDS GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|46360357|
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|134306634
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|116295106
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|145284415
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|93008563|
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|93008571|
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|126361912
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|95116895|
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|72398597|
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|126361908
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVVKYNG IITDTIKSWR NNILRTQESE gi|78096578|
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|182382583
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|182382601
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNIMRTQESE gi|47834894|
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNIMRTQESE gi|145284413
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNIMRTQESE gi|47834892|
NSRFESVAWS ASACHDGTSW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNIMRTQESE gi|71013506|
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|4324310|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|4324311|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|4324313|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|4324308|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|4324312|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|4324314|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|8307787|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|8307793|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNTLRTQESE gi|4324309|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|4324317|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTINSWR NNILKTPESE gi|4324322|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|4324319|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|4324318|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|8307791|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|4324316|g
NSRFESVAWS ASACHDSISW LTIGISGPDN GAVAVLKYNG MITDTIKSWR KNILRTQESE gi|4324321|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|2833659|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|4324315|g
NSRFESVAWS ASACHDGISW LTIGISGPDN EAVAVLKYNG IITDTIRSWR NNILRTQESE gi|8307789|g
NSRFESVAWS ASACHDGISW LTIGISGPDN EAVAVLKYNG IITDTIRSWR NNILRTQESE gi|4324320|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|3335423|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|8307785|g
NSRFESVAWS ASACHDGISW LTIGISGPDN GAVAVLKYNG IITDTIKSWR NNILRTQESE gi|2865378|g
********** ******. ** *********.  ****:**** :*****.*** :* ::* *** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        250        260        270        280        290        300
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|124099031
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|124099009
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|124099058
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|124099084
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157955787
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113497245
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157955437
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113497198
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113972297
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|118864192
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|118864235
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157955698
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157955529
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|118864141
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|124098908
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|124098582
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|124098853
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|124098881
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|118864393
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVIKSVEL DATNYHYEEC SCYPDAGEIT gi|124098932
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVIKSVEL DATNYHYEEC SCYPDAGEIT gi|124098984
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVIKSVEL DATNYHYEEC SCYPDAGEIT gi|124098957
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|118574893
CACVNGSCFT VMTDGPSNGQ ASYKIFKMKK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|118574874
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113497296
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157955475
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113496518
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113497374
```

```
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL VAPNYHYEEC SCYPDAGEIT gi|113972316
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|118574912
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157955603
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157955565
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157955641
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157955584
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113495792
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113495851
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113495963
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113495914
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVIKSVEL DAPNYHYEEC SCYPDAGEIT gi|162569002
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVIKSVEL DAPNYHYEEC SCYPDAGEIT gi|162569004
CVCVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|113707438
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157103086
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157103100
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157103119
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157103135
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157103072
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157103052
CACVNGSCFT VMTDGPSSGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|124244208
CACVNGSCFT VMTDGPSSGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|122913049
CACVNGSCFT VMTDGPSSGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|148340545
CACVNGSCFT VMTDGPSSGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|148340541
CACVNGSCFT VMTDGPSSGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|157103596
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|122913045
CACVNGSCFT VMTDGPSSGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|122913047
CACINGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|148340810
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|145284421
CACVNGACFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|116295120
CACVNGSCFT VMTDGPSNGQ ASHKIFKWKK -GKWLNQSQL DAPNYHYEEC SCYPDAGEIT gi|116295114
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKGL--VEL DAPNYHYEEC SCSPDAGEIT gi|116295110
CACVNGSCFT VMTDGPSNGQ ASHKIFKMDK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|85680902|
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|46360357|
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|134306634
CACVNGSCFT VMTDGPSNGQ ASHKIFQNGK RGKWVKSVQL DAPHYHYEEC SRYPDAREIT gi|116295106
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|145284415
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|93008563|
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|93008571|
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|126361912
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|95116895|
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|72398597|
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|126361908
CACVNGSCFT VMTDGPSNGQ ASHKIFKMEK -GKVVKSVEL DAPNYHYEEC SCYPDAGEIT gi|78096578|
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|182382583
CACVNGSCFT VMTDGPSNGQ ASYKIFKMEK -GKVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|182382601
CACVNGSCFT VMTDGPSNGQ ASYKIFRIEK -GKVVKSAEL NAPNYHYEEC SCYPDAGEIT gi|47834894|
CACVNGSCFT VMTDGPSNGQ ASYKIFRIEK -GKVVKSAEL NAPNYHYEEC SCYPDAGEIT gi|145284413
CACVNGSCFT VMTDGPSNGQ ASYKIFRIEK -GKVVKSAEL NAPNYHYEEC SCYPDAGEIT gi|47834892|
CACVNGSCFT VMTDGPSNGQ ASYKIFRIEK -GKVVKSAEL NAPNYHYEEC SCYPDAGEIT gi|71013506|
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324310|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324311|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324313|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324308|g
CACVNGSCFT VMTDGPNNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324312|g
CACVNGSCFT VMTDGPNNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324314|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|8307787|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|8307793|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324309|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324317|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324322|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324319|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYSDAGEIT gi|4324318|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|8307791|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324316|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324321|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|2833659|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324315|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|8307789|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|4324320|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|3335423|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYQEC SCYPDAGEIT gi|8307785|g
CACVNGSCFT VMTDGPSNEQ ASYKIFKIEK -GRVVKSVEL NAPNYHYEEC SCYPDAGEIT gi|2865378|g
*.*:**:*** ******.. * **:***:  *  *: :   :*  *.:***:** *  .** *** Clustal Cons


....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
```

```
        310        320        330        340        350        360
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124099031
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124099009
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124099058
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124099084
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|157955787
CVCRDNWHGS NRPWISFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|113497245
CVCRDNWHGS NRPWISFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|157955437
CVCRDNWHGS NRPWISFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|113497198
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|113972297
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|118864192
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|118864235
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|157955698
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|157955529
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|118864141
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124098908
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124098582
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124098853
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124098881
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|118864393
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124098932
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124098984
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|124098957
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|118574893
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|118574874
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|113497296
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|157955475
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|113496518
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|113497374
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|113972316
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS PNGAYGVKGF gi|118574912
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS SNGAYGVKGF gi|157955603
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS SNGAYGVKGF gi|157955565
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS SNGAYGVKGF gi|157955641
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS SNGAYGVKGF gi|157955584
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS SNGAYGVKGF gi|113495792
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS SNGAYGVKGF gi|113495851
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS SNGAYGVKGF gi|113495963
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPMS SNGAYGVKGF gi|113495914
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS HNGAYGVKGF gi|162569002
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS HNGAYGVKGF gi|162569004
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|113707438
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|157103086
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|157103100
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|157103119
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|157103135
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|157103072
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|157103052
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVF PNGAYGVKGF gi|124244208
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|122913049
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|148340545
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|148340541
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|157103596
CVCRDSWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|122913045
CVCRDSWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|122913047
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS PNGAYGVKGF gi|148340810
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|145284421
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|116295120
CVCRDNWHGS NRPWVSFNQN LGYQIGYICS GVFGDTPRPN DGTGSCGPVS SNGTYGVKGF gi|116295114
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDTPRPN DGTGSCGPVS SNGTYGVKGF gi|116295110
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDTPRPN DGTGSCGPVS SNGTYGVKGF gi|85680902|
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|46360357|
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGAGSCGPVS SNGAYGVKGF gi|134306634
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|116295106
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|145284415
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|93008563|
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|93008571|
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|126361912
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|95116895|
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|72398597|
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAHGVKGF gi|126361908
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCGPVS SNGAYGVKGF gi|78096578|
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCDPVS PNGAYGIKGF gi|182382583
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDNPRPN DGTGSCDPVS PNGAYGIKGF gi|182382601
CVCRDNWHGS NRPWVSFNQN LEYRIGYICS GVFGDNPRPN DGTGSCGPVS PKGAYGIKGF gi|47834894|
CVCRDNWHGS NRPWVSFNQN LEYRIGYICS GVFGDNPRPN DGTGSCGPVS PKGAYGIKGF gi|145284413
CVCRDNWHGS NRPWVSFNQN LEYRIGYICS GVFGDNPRPN DGTGSCGPVS PKGAYGIKGF gi|47834892|
```

```
CVCRDNWHGS NRPWVSFNQN LEYRIGYICS GVFGDNPRPN DGTGSCGPVS PKGAYGIKGF gi|71013506|
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324310|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGTCGPVS LNGAYGVKGF gi|4324311|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324313|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324308|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324312|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324314|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|8307787|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|8307793|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324309|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324317|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324322|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324319|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324318|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|8307791|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324316|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324321|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|2833659|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324315|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|8307789|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|4324320|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|3335423|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|8307785|g
CVCRDNWHGS NRPWVSFNQN LEYQIGYICS GVFGDSPRPN DGTGSCGPVS LNGAYGVKGF gi|2865378|g
*****.**** ****:***** * *:****** *****.**** **:*:*.*:   :*::*:*** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
       370        380        390        400        410        420
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124099031
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124099009
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124099058
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124099084
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITNW SGYSGSFVQH gi|157955787
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113497245
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157955437
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113497198
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113972297
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|118864192
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|118864235
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157955698
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157955529
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|118864141
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124098908
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124098582
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124098853
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124098881
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|118864393
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124098932
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124098984
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124098957
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|118574893
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|118574874
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113497296
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157955475
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113496518
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113497374
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113972316
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|118574912
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157955603
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157955565
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157955641
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157955584
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113495792
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113495851
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113495963
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|113495914
SFKYGNGVWI GRTKSPNSRS GFEMIWDPNG WSETDSSFSV KQDIVAITDW SGYSGSFVQH gi|162569002
SFKYGNGVWI GRTKSPNSRS GFEMIWDPNG WSETDSSFSV KQDIVAITDW SGYSGSFVQH gi|162569004
SFKYGNGVWI GRTKSPSSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|113707438
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157103086
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157103100
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157103119
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157103135
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157103072
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157103052
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|124244208
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|122913049
```

```
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|148340545
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|148340541
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|157103596
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|122913045
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|122913047
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSSFSV KQDIVAITDW SGYSGSFVQH gi|148340810
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|145284421
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|116295120
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|116295114
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|116295110
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|85680902|
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WIETDSSFSV KQDIVAITDW SGYSGSFVQH gi|46360357|
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|134306634
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|116295106
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|145284415
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|93008563|
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|93008571|
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|126361912
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|95116895|
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WIETDSSFSV KQDIVAITDW SGYSGSFVQH gi|72398597|
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSRFSV KQDIVAITDW SGYSGSFVQH gi|126361908
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|78096578|
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|182382583
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTETDSSFSV KQDIVAITDW SGYSGSFVQH gi|182382601
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSNFSV KQDIVAITDW SGYSGSFVQH gi|47834894|
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSNFSV KQDIVAITDW SGYSGSFVQH gi|145284413
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSNFSV KQDIVAITDW SGYSGSFVQH gi|47834892|
SFKYGNGVWI GRTKSTNSRS GFEMIWDPNG WTGTDSNFSV KQDIVAITDW SGYSGSFVQH gi|71013506|
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324310|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324311|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG LTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324313|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324308|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324312|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324314|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|8307787|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|8307793|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324309|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324317|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAVTDW SGYSGSFIQH gi|4324322|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSTFSL KQDIIAITDW SGYSGSFIQH gi|4324319|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324318|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|8307791|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324316|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324321|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|2833659|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|4324315|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAVTDW SGYSGSFIQH gi|8307789|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAVTDW SGYSGSFIQH gi|4324320|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|3335423|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSL KQDIIAITDW SGYSGSFIQH gi|8307785|g
SFKYGNGVWI GRTKSTSSRS GFEMIWDPNG WTETDSSFSX KQDIIAITDW SGYSGSFIQH gi|2865378|g
********** *****..*** *********     *** **  ****:*:*:* *******:** Clustal Cons

....|....| ....|....| ....|....| ....|....| ....|....| ....|....|
        430        440        450        460        470        480
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124099031
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124099009
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124099058
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124099084
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|157955787
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113497245
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELP----- gi|157955437
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113497198
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113972297
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|118864192
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|118864235
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|157955698
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|157955529
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|118864141
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124098908
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124098582
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124098853
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124098881
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|118864393
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124098932
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124098984
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|124098957
```

```
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|118574893
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|118574874
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113497296
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD G--------- gi|157955475
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113496518
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113497374
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTASWSWPD GAELPFTIDK gi|113972316
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|118574912
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFT--- gi|157955603
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD G--------- gi|157955565
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFT--- gi|157955641
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTID- gi|157955584
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113495792
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113495851
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113495963
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113495914
PELTGLDCIR PCFWVELIRG RPKESTVWTS GSSISFCGVN SDTVSWSWPD GAELPFSIDK gi|162569002
PELTGLDCIR PCFWVELIRG RPKESTVWTS GSSISFCGVN SDTVSWSWPD GAELPFSIDK gi|162569004
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|113707438
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|157103086
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|157103100
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAE------- gi|157103119
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTI-- gi|157103135
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|157103072
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|157103052
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTTDK gi|124244208
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|122913049
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|148340545
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|148340541
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|157103596
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|122913045
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|122913047
PELTGLDCIR PCFWVELVRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|148340810
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|145284421
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|116295120
PELTGLNCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGGSWP- ---------- gi|116295114
PELTGLNCIR PCFWVELIRG RPKERAIWNS GNSISFYGEE KHTVGWSWP- ---------- gi|116295110
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|85680902|
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|46360357|
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SGTVGWSWPD GAELPFTIDK gi|134306634
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SEAVGWSWPD GAELPFT--- gi|116295106
PELTGLDCIR PCFWVELIRG RPKESTIWAS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|145284415
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|93008563|
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAE------- gi|93008571|
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|126361912
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|95116895|
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVS SDTVGWSWPD GAELPFTIDK gi|72398597|
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|126361908
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|78096578|
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|182382583
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVSWSWPD GAELPFTIDK gi|182382601
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFC--- ---------- ---------- gi|47834894|
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD DAELPLT--- gi|145284413
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|47834892|
PELTGLDCIR PCFWVELIRG RPKESTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|71013506|
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324310|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324311|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324313|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324308|g
PELTGLNCMR PCFWVELIRG SPKEKTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|4324312|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324314|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|8307787|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD GAELPYTIDK gi|8307793|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324309|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324317|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPLTIDK gi|4324322|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324319|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324318|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSVSFCGVN SDTMGWSWPD GAELPFTIDK gi|8307791|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSVSFCGVN SDTMGWSWPD DAELPFTIDK gi|4324316|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVD SDTVGWSWPD DAELPFTIDK gi|4324321|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|2833659|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324315|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|8307789|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD DAELPFTIDK gi|4324320|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|3335423|g
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD GAELPFTIDK gi|8307785|g
```

```
PELTGLNCMR PCFWVELIRG RPKEKTIWTS GSSISFCGVN SDTVGWSWPD GADLPFTIDK gi|2865378|g
******:*:* *******:**  *** ::* * *.*:**                           Clustal Cons

.

-                                                                 gi|124099031
-                                                                 gi|124099009
-                                                                 gi|124099058
-                                                                 gi|124099084
-                                                                 gi|157955787
-                                                                 gi|113497245
-                                                                 gi|157955437
-                                                                 gi|113497198
-                                                                 gi|113972297
-                                                                 gi|118864192
-                                                                 gi|118864235
-                                                                 gi|157955698
-                                                                 gi|157955529
-                                                                 gi|118864141
-                                                                 gi|124098908
-                                                                 gi|124098582
-                                                                 gi|124098853
-                                                                 gi|124098881
-                                                                 gi|118864393
-                                                                 gi|124098932
-                                                                 gi|124098984
-                                                                 gi|124098957
-                                                                 gi|118574893
-                                                                 gi|118574874
-                                                                 gi|113497296
-                                                                 gi|157955475
-                                                                 gi|113496518
-                                                                 gi|113497374
-                                                                 gi|113972316
-                                                                 gi|118574912
-                                                                 gi|157955603
-                                                                 gi|157955565
-                                                                 gi|157955641
-                                                                 gi|157955584
-                                                                 gi|113495792
-                                                                 gi|113495851
-                                                                 gi|113495963
-                                                                 gi|113495914
-                                                                 gi|162569002
-                                                                 gi|162569004
-                                                                 gi|113707438
-                                                                 gi|157103086
-                                                                 gi|157103100
-                                                                 gi|157103119
-                                                                 gi|157103135
-                                                                 gi|157103072
-                                                                 gi|157103052
-                                                                 gi|124244208
-                                                                 gi|122913049
-                                                                 gi|148340545
-                                                                 gi|148340541
-                                                                 gi|157103596
-                                                                 gi|122913045
-                                                                 gi|122913047
-                                                                 gi|148340810
-                                                                 gi|145284421
Y                                                                 gi|116295120
-                                                                 gi|116295114
-                                                                 gi|116295110
-                                                                 gi|85680902|
-                                                                 gi|46360357|
-                                                                 gi|134306634
-                                                                 gi|116295106
-                                                                 gi|145284415
-                                                                 gi|93008563|
-                                                                 gi|93008571|
-                                                                 gi|126361912
-                                                                 gi|95116895|
-                                                                 gi|72398597|
-                                                                 gi|126361908
-                                                                 gi|78096578|
-                                                                 gi|182382583
```

```
-                                                                gi|182382601
-                                                                gi|47834894|
-                                                                gi|145284413
-                                                                gi|47834892|
-                                                                gi|71013506|
-                                                                gi|4324310|g
-                                                                gi|4324311|g
-                                                                gi|4324313|g
-                                                                gi|4324308|g
-                                                                gi|4324312|g
-                                                                gi|4324314|g
-                                                                gi|8307787|g
-                                                                gi|8307793|g
-                                                                gi|4324309|g
-                                                                gi|4324317|g
-                                                                gi|4324322|g
-                                                                gi|4324319|g
-                                                                gi|4324318|g
-                                                                gi|8307791|g
-                                                                gi|4324316|g
-                                                                gi|4324321|g
-                                                                gi|2833659|g
-                                                                gi|4324315|g
-                                                                gi|8307789|g
-                                                                gi|4324320|g
-                                                                gi|3335423|g
-                                                                gi|8307785|g
-                                                                gi|2865378|g
                                                                 Clustal Cons
```

Lampiran 5 :

Conserve Region

```
BioEdit version 7.0.8.0 (6/17/07)
Conserved region search
Alignment file: G:\bwt skripsi\cari
data\Data\database\Ha\HA1\human\H1N1.aln
10/30/2008 1:33:27 PM

Minimum segment length (actual for each
sequence): 10
Maximum average entropy: 0.2
Maximum entropy per position: 0.2
Gaps limited to 2 per segment
Contiguous gaps limited to 1 in any segment

3 conserved regions found

Region 1: Position 7 to 18
Consensus:
7 YHANNSTDTVDT 18

Segment Length: 12
Average entropy (Hx): 0.0597
Position 7      : 0.0551
Position 8      : 0.0551
Position 9      : 0.0551
Position 10     : 0.0551
Position 11     : 0.0551
Position 12     : 0.0551
Position 13     : 0.0551
Position 14     : 0.0551
Position 15     : 0.0551
Position 16     : 0.1101
Position 17     : 0.0551
Position 18     : 0.0551


Region 2: Position 97 to 110
Consensus:
97 DYEELREQLSSVSS 110

Segment Length: 14
Average entropy (Hx): 0.0934
Position 97     : 0.1875
Position 98     : 0.0551
Position 99     : 0.0551
Position 100    : 0.0551
Position 101    : 0.0551
Position 102    : 0.1875
Position 103    : 0.1101
Position 104    : 0.1197
Position 105    : 0.0551
Position 106    : 0.0551
Position 107    : 0.0551
Position 108    : 0.1514
Position 109    : 0.1101
Position 110    : 0.0551


Region 3: Position 316 to 327
Consensus:
316 TGLRNIPSIQSR 327

Segment Length: 12
Average entropy (Hx): 0.0705
Position 316    : 0.0551
Position 317    : 0.0551
Position 318    : 0.0551
Position 319    : 0.0551
Position 320    : 0.0551
Position 321    : 0.0648
Position 322    : 0.0551
Position 323    : 0.0551
Position 324    : 0.1101
Position 325    : 0.0551
Position 326    : 0.1748
Position 327    : 0.0551

BioEdit version 7.0.8.0 (6/17/07)
Conserved region search
Alignment file: G:\bwt skripsi\cari
data\Data\database\Ha\HA1\human\H2N2.aln
10/30/2008 1:37:07 PM

Minimum segment length (actual for each
sequence): 10
Maximum average entropy: 0.2
Maximum entropy per position: 0.2
Gaps limited to 2 per segment
Contiguous gaps limited to 1 in any segment

8 conserved regions found

Region 1: Position 1 to 14
Consensus:
1 DQICIGYHANNSTE 14

Segment Length: 14
Average entropy (Hx): 0.0871
Position 1      : 0.0871
Position 2      : 0.0871
Position 3      : 0.0871
Position 4      : 0.0871
Position 5      : 0.0871
Position 6      : 0.0871
Position 7      : 0.0871
Position 8      : 0.0871
Position 9      : 0.0871
Position 10     : 0.0871
Position 11     : 0.0871
Position 12     : 0.0871
Position 13     : 0.0871
Position 14     : 0.0871


Region 2: Position 16 to 30
Consensus:
16 VDTILERNVTVTHAK 30

Segment Length: 15
Average entropy (Hx): 0.0882
Position 16     : 0.0871
Position 17     : 0.0871
Position 18     : 0.0871
Position 19     : 0.1039
```

```
Position 20     : 0.0871
Position 21     : 0.0871
Position 22     : 0.0871
Position 23     : 0.0871
Position 24     : 0.0871
Position 25     : 0.0871
Position 26     : 0.0871
Position 27     : 0.0871
Position 28     : 0.0871
Position 29     : 0.0871
Position 30     : 0.0871


Region 3: Position 32 to 71
Consensus:
32
ILEKTHNGKLCKLNGIPPLELGDCSIAGWLLG
NPECDRLL 71

Segment Length: 40
Average entropy (Hx): 0.0936
Position 32     : 0.0871
Position 33     : 0.0871
Position 34     : 0.0871
Position 35     : 0.0871
Position 36     : 0.0871
Position 37     : 0.0871
Position 38     : 0.0871
Position 39     : 0.0871
Position 40     : 0.1739
Position 41     : 0.0871
Position 42     : 0.0871
Position 43     : 0.0871
Position 44     : 0.0871
Position 45     : 0.0871
Position 46     : 0.0871
Position 47     : 0.0871
Position 48     : 0.0871
Position 49     : 0.0871
Position 50     : 0.0871
Position 51     : 0.0871
Position 52     : 0.0871
Position 53     : 0.0871
Position 54     : 0.1739
Position 55     : 0.0871
Position 56     : 0.0871
Position 57     : 0.0871
Position 58     : 0.1739
Position 59     : 0.0871
Position 60     : 0.0871
Position 61     : 0.0871
Position 62     : 0.0871
Position 63     : 0.0871
Position 64     : 0.0871
Position 65     : 0.0871
Position 66     : 0.0871
Position 67     : 0.0871
Position 68     : 0.0871
Position 69     : 0.0871
Position 70     : 0.0871
Position 71     : 0.0871


Region 4: Position 73 to 85
Consensus:
73 VPEWSYIMEKENP 85

Segment Length: 13
Average entropy (Hx): 0.0871
Position 73     : 0.0871
Position 74     : 0.0871
Position 75     : 0.0871
Position 76     : 0.0871
Position 77     : 0.0871
Position 78     : 0.0871
Position 79     : 0.0871
Position 80     : 0.0871
Position 81     : 0.0871
Position 82     : 0.0871
Position 83     : 0.0871
Position 84     : 0.0871
Position 85     : 0.0871


Region 5: Position 162 to 180
Consensus:
162 SYNNTSGEQMLIIWGVHHP 180

Segment Length: 19
Average entropy (Hx): 0.0871
Position 162    : 0.0871
Position 163    : 0.0871
Position 164    : 0.0871
Position 165    : 0.0871
Position 166    : 0.0871
Position 167    : 0.0871
Position 168    : 0.0871
Position 169    : 0.0871
Position 170    : 0.0871
Position 171    : 0.0871
Position 172    : 0.0871
Position 173    : 0.0871
Position 174    : 0.0871
Position 175    : 0.0871
Position 176    : 0.0871
Position 177    : 0.0871
Position 178    : 0.0871
Position 179    : 0.0871
Position 180    : 0.0871


Region 6: Position 224 to 233
Consensus:
224 RMEFSWTLLD 233

Segment Length: 10
Average entropy (Hx): 0.0905
Position 224    : 0.0871
Position 225    : 0.0871
Position 226    : 0.0871
Position 227    : 0.0871
Position 228    : 0.1039
Position 229    : 0.0871
Position 230    : 0.1039
Position 231    : 0.0871
Position 232    : 0.0871
Position 233    : 0.0871


Region 7: Position 249 to 270
Consensus:
249 PEYGFKISKRGSSGIMKTEGTL 270

Segment Length: 22
```

```
Average entropy (Hx): 0.0879
Position 249     : 0.0871
Position 250     : 0.0871
Position 251     : 0.0871
Position 252     : 0.0871
Position 253     : 0.0871
Position 254     : 0.0871
Position 255     : 0.0871
Position 256     : 0.0871
Position 257     : 0.0871
Position 258     : 0.0871
Position 259     : 0.0871
Position 260     : 0.0871
Position 261     : 0.0871
Position 262     : 0.0871
Position 263     : 0.0871
Position 264     : 0.0871
Position 265     : 0.0871
Position 266     : 0.0871
Position 267     : 0.0871
Position 268     : 0.1039
Position 269     : 0.0871
Position 270     : 0.0871


Region 8: Position 272 to 323
Consensus:
272
NCETKCQTPLGAINTTLPFHNVHPLTIGECPK
YVKSEKLVLATGLRNVPQIE 323

Segment Length: 52
Average entropy (Hx): 0.0891
Position 272     : 0.0871
Position 273     : 0.0871
Position 274     : 0.0871
Position 275     : 0.0871
Position 276     : 0.0871
Position 277     : 0.0871
Position 278     : 0.0871
Position 279     : 0.0871
Position 280     : 0.0871
Position 281     : 0.0871
Position 282     : 0.0871
Position 283     : 0.0871
Position 284     : 0.0871
Position 285     : 0.0871
Position 286     : 0.0871
Position 287     : 0.0871
Position 288     : 0.0871
Position 289     : 0.0871
Position 290     : 0.0871
Position 291     : 0.0871
Position 292     : 0.0871
Position 293     : 0.0871
Position 294     : 0.0871
Position 295     : 0.0871
Position 296     : 0.0871
Position 297     : 0.0871
Position 298     : 0.0871
Position 299     : 0.0871
Position 300     : 0.0871
Position 301     : 0.0871
Position 302     : 0.0871
Position 303     : 0.1739
Position 304     : 0.0871
Position 305     : 0.0871
Position 306     : 0.0871
Position 307     : 0.0871
Position 308     : 0.0871
Position 309     : 0.0871
Position 310     : 0.0871
Position 311     : 0.0871
Position 312     : 0.0871
Position 313     : 0.0871
Position 314     : 0.0871
Position 315     : 0.0871
Position 316     : 0.1039
Position 317     : 0.0871
Position 318     : 0.0871
Position 319     : 0.0871
Position 320     : 0.0871
Position 321     : 0.0871
Position 322     : 0.0871
Position 323     : 0.0871

BioEdit version 7.0.8.0 (6/17/07)
Conserved region search
Alignment file: G:\bwt skripsi\cari
data\Data\database\Ha\HA1\human\H3N2.aln
10/30/2008 1:36:49 PM

Minimum segment length (actual for each
sequence): 10
Maximum average entropy: 0.2
Maximum entropy per position: 0.2
Gaps limited to 2 per segment
Contiguous gaps limited to 1 in any segment

8 conserved regions found

Region 1: Position 10 to 20
Consensus:
10 TATLCLGHHAV 20

Segment Length: 11
Average entropy (Hx): 0.0599
Position 10     : 0.0694
Position 11     : 0.0589
Position 12     : 0.0589
Position 13     : 0.0589
Position 14     : 0.0589
Position 15     : 0.0589
Position 16     : 0.0589
Position 17     : 0.0589
Position 18     : 0.0589
Position 19     : 0.0589
Position 20     : 0.0589


Region 2: Position 32 to 44
Consensus:
32 DQIEVTNATELVQ 44

Segment Length: 13
Average entropy (Hx): 0.0634
Position 32     : 0.0589
Position 33     : 0.0589
Position 34     : 0.1177
Position 35     : 0.0589
Position 36     : 0.0589
Position 37     : 0.0589
Position 38     : 0.0589
Position 39     : 0.0589
```

```
Position 40      : 0.0589
Position 41      : 0.0589
Position 42      : 0.0589
Position 43      : 0.0589
Position 44      : 0.0589


Region 3: Position 64 to 74
Consensus:
64 CTLIDALLGDP 74

Segment Length: 11
Average entropy (Hx): 0.0589
Position 64      : 0.0589
Position 65      : 0.0589
Position 66      : 0.0589
Position 67      : 0.0589
Position 68      : 0.0589
Position 69      : 0.0589
Position 70      : 0.0589
Position 71      : 0.0589
Position 72      : 0.0589
Position 73      : 0.0589
Position 74      : 0.0589


Region 4: Position 107 to 120
Consensus:
107 SLRSLVASSGTLEF 120

Segment Length: 14
Average entropy (Hx): 0.0631
Position 107     : 0.0589
Position 108     : 0.0589
Position 109     : 0.0589
Position 110     : 0.0589
Position 111     : 0.0589
Position 112     : 0.1177
Position 113     : 0.0589
Position 114     : 0.0589
Position 115     : 0.0589
Position 116     : 0.0589
Position 117     : 0.0589
Position 118     : 0.0589
Position 119     : 0.0589
Position 120     : 0.0589


Region 5: Position 232 to 241
Consensus:
232 IYWTIVKPGD 241

Segment Length: 10
Average entropy (Hx): 0.0648
Position 232     : 0.0589
Position 233     : 0.0589
Position 234     : 0.0589
Position 235     : 0.0589
Position 236     : 0.0589
Position 237     : 0.0589
Position 238     : 0.1177
Position 239     : 0.0589
Position 240     : 0.0589
Position 241     : 0.0589


Region 6: Position 249 to 259
Consensus:
249 GNLIAPRGYFK 259

Segment Length: 11
Average entropy (Hx): 0.0589
Position 249     : 0.0589
Position 250     : 0.0589
Position 251     : 0.0589
Position 252     : 0.0589
Position 253     : 0.0589
Position 254     : 0.0589
Position 255     : 0.0589
Position 256     : 0.0589
Position 257     : 0.0589
Position 258     : 0.0589
Position 259     : 0.0589


Region 7: Position 263 to 274
Consensus:
263 GKSSIMRSDAPI 274

Segment Length: 12
Average entropy (Hx): 0.0598
Position 263     : 0.0589
Position 264     : 0.0589
Position 265     : 0.0589
Position 266     : 0.0589
Position 267     : 0.0589
Position 268     : 0.0589
Position 269     : 0.0694
Position 270     : 0.0589
Position 271     : 0.0589
Position 272     : 0.0589
Position 273     : 0.0589
Position 274     : 0.0589


Region 8: Position 308 to 329
Consensus:
308 YVKQNTLKLATGMRNVPEKQTR 329

Segment Length: 22
Average entropy (Hx): 0.0616
Position 308     : 0.0589
Position 309     : 0.0589
Position 310     : 0.0589
Position 311     : 0.0589
Position 312     : 0.0589
Position 313     : 0.0589
Position 314     : 0.0589
Position 315     : 0.0589
Position 316     : 0.0589
Position 317     : 0.0589
Position 318     : 0.0589
Position 319     : 0.0589
Position 320     : 0.0589
Position 321     : 0.0589
Position 322     : 0.0589
Position 323     : 0.1177
Position 324     : 0.0589
Position 325     : 0.0589
Position 326     : 0.0589
Position 327     : 0.0589
Position 328     : 0.0589
Position 329     : 0.0589
```

```
BioEdit version 7.0.8.0 (6/17/07)
Conserved region search
Alignment file: G:\bwt skripsi\cari
data\Data\database\Ha\HA1\human\H5N1.aln
10/30/2008 1:36:06 PM

Minimum segment length (actual for each
sequence): 10
Maximum average entropy: 0.2
Maximum entropy per position: 0.2
Gaps limited to 2 per segment
Contiguous gaps limited to 1 in any segment

10 conserved regions found

Region 1: Position 1 to 34
Consensus:
1
DQICIGYHANNSTEQVDTIMEKNVTVTHAQDI
LE 34

Segment Length: 34
Average entropy (Hx): 0.0675
Position 1      : 0.0646
Position 2      : 0.0646
Position 3      : 0.0646
Position 4      : 0.0646
Position 5      : 0.0646
Position 6      : 0.0646
Position 7      : 0.0763
Position 8      : 0.0646
Position 9      : 0.0646
Position 10     : 0.0646
Position 11     : 0.0763
Position 12     : 0.0646
Position 13     : 0.0646
Position 14     : 0.0646
Position 15     : 0.1290
Position 16     : 0.0646
Position 17     : 0.0646
Position 18     : 0.0646
Position 19     : 0.0646
Position 20     : 0.0763
Position 21     : 0.0646
Position 22     : 0.0646
Position 23     : 0.0646
Position 24     : 0.0646
Position 25     : 0.0646
Position 26     : 0.0646
Position 27     : 0.0646
Position 28     : 0.0646
Position 29     : 0.0646
Position 30     : 0.0646
Position 31     : 0.0646
Position 32     : 0.0646
Position 33     : 0.0646
Position 34     : 0.0646


Region 2: Position 54 to 70
Consensus:
54 DCSVAGWLLGNPMCDEF 70

Segment Length: 17
Average entropy (Hx): 0.0646
Position 54     : 0.0646
Position 55     : 0.0646
Position 56     : 0.0646
Position 57     : 0.0646
Position 58     : 0.0646
Position 59     : 0.0646
Position 60     : 0.0646
Position 61     : 0.0646
Position 62     : 0.0646
Position 63     : 0.0646
Position 64     : 0.0646
Position 65     : 0.0646
Position 66     : 0.0646
Position 67     : 0.0646
Position 68     : 0.0646
Position 69     : 0.0646
Position 70     : 0.0646


Region 3: Position 72 to 82
Consensus:
72 NVPEWSYIVEK 82

Segment Length: 11
Average entropy (Hx): 0.0646
Position 72     : 0.0646
Position 73     : 0.0646
Position 74     : 0.0646
Position 75     : 0.0646
Position 76     : 0.0646
Position 77     : 0.0646
Position 78     : 0.0646
Position 79     : 0.0646
Position 80     : 0.0646
Position 81     : 0.0646
Position 82     : 0.0646


Region 4: Position 95 to 119
Consensus:
95 FNDYEELKHLLSRINHFEKIQIIPK 119

Segment Length: 25
Average entropy (Hx): 0.0728
Position 95     : 0.0646
Position 96     : 0.1290
Position 97     : 0.1290
Position 98     : 0.0646
Position 99     : 0.0646
Position 100    : 0.0646
Position 101    : 0.0646
Position 102    : 0.0646
Position 103    : 0.0646
Position 104    : 0.0646
Position 105    : 0.0646
Position 106    : 0.0646
Position 107    : 0.0646
Position 108    : 0.0763
Position 109    : 0.0646
Position 110    : 0.0646
Position 111    : 0.0646
Position 112    : 0.0646
Position 113    : 0.0646
Position 114    : 0.0646
Position 115    : 0.0646
Position 116    : 0.1290
Position 117    : 0.0646
Position 118    : 0.0646
Position 119    : 0.0646
```

```
Region 5: Position 163 to 173
Consensus:
163 SYNNTNQEDLL 173

Segment Length: 11
Average entropy (Hx): 0.0704
Position 163     : 0.0646
Position 164     : 0.0646
Position 165     : 0.0646
Position 166     : 0.0646
Position 167     : 0.0646
Position 168     : 0.0646
Position 169     : 0.0646
Position 170     : 0.0646
Position 171     : 0.1290
Position 172     : 0.0646
Position 173     : 0.0646


Region 6: Position 190 to 199
Consensus:
190 LYQNPTTYIS 199

Segment Length: 10
Average entropy (Hx): 0.0775
Position 190     : 0.0646
Position 191     : 0.0646
Position 192     : 0.1290
Position 193     : 0.0646
Position 194     : 0.0646
Position 195     : 0.1290
Position 196     : 0.0646
Position 197     : 0.0646
Position 198     : 0.0646
Position 199     : 0.0646


Region 7: Position 201 to 211
Consensus:
201 GTSTLNQRLVP 211

Segment Length: 11
Average entropy (Hx): 0.0646
Position 201     : 0.0646
Position 202     : 0.0646
Position 203     : 0.0646
Position 204     : 0.0646
Position 205     : 0.0646
Position 206     : 0.0646
Position 207     : 0.0646
Position 208     : 0.0646
Position 209     : 0.0646
Position 210     : 0.0646
Position 211     : 0.0646


Region 8: Position 236 to 251
Consensus:
236 NDAINFESNGNFIAPE 251

Segment Length: 16
Average entropy (Hx): 0.0686
Position 236     : 0.0646
Position 237     : 0.0646
Position 238     : 0.0646
Position 239     : 0.0646
Position 240     : 0.0646
Position 241     : 0.0646
Position 242     : 0.0646
Position 243     : 0.0646
Position 244     : 0.0646
Position 245     : 0.0646
Position 246     : 0.0646
Position 247     : 0.0646
Position 248     : 0.1290
Position 249     : 0.0646
Position 250     : 0.0646
Position 251     : 0.0646


Region 9: Position 253 to 262
Consensus:
253 AYKIVKKGDS 262

Segment Length: 10
Average entropy (Hx): 0.0710
Position 253     : 0.0646
Position 254     : 0.0646
Position 255     : 0.0646
Position 256     : 0.0646
Position 257     : 0.0646
Position 258     : 0.0646
Position 259     : 0.1290
Position 260     : 0.0646
Position 261     : 0.0646
Position 262     : 0.0646


Region 10: Position 283 to 303
Consensus:
283 GAINSSMPFHNIHPLTIGECP 303

Segment Length: 21
Average entropy (Hx): 0.0676
Position 283     : 0.0646
Position 284     : 0.0646
Position 285     : 0.0646
Position 286     : 0.0646
Position 287     : 0.0646
Position 288     : 0.0646
Position 289     : 0.0646
Position 290     : 0.0646
Position 291     : 0.1290
Position 292     : 0.0646
Position 293     : 0.0646
Position 294     : 0.0646
Position 295     : 0.0646
Position 296     : 0.0646
Position 297     : 0.0646
Position 298     : 0.0646
Position 299     : 0.0646
Position 300     : 0.0646
Position 301     : 0.0646
Position 302     : 0.0646
Position 303     : 0.0646

BioEdit version 7.0.8.0 (6/17/07)
Conserved region search
Alignment file: I:\cari
data\database\Na\human\h1n1.aln
1/11/2002 12:57:19 PM
```

```
Minimum segment length (actual for each
sequence): 15
Maximum average entropy: 0.2
Maximum entropy per position: 0.2
Gaps limited to 2 per segment
Contiguous gaps limited to 1 in any segment

3 conserved regions found

Region 1: Position 120 to 158
Consensus:
120
RIGSKGDVFVIREPFISCSHLECRTFFLTQGAL
LNDKHS 158

Segment Length: 39
Average entropy (Hx): 0.0676
Position 120    : 0.0555
Position 121    : 0.0555
Position 122    : 0.0555
Position 123    : 0.0555
Position 124    : 0.0555
Position 125    : 0.0555
Position 126    : 0.0555
Position 127    : 0.1110
Position 128    : 0.0555
Position 129    : 0.0555
Position 130    : 0.0555
Position 131    : 0.0555
Position 132    : 0.0555
Position 133    : 0.0555
Position 134    : 0.0555
Position 135    : 0.0555
Position 136    : 0.0555
Position 137    : 0.0555
Position 138    : 0.0555
Position 139    : 0.1110
Position 140    : 0.1110
Position 141    : 0.0555
Position 142    : 0.0555
Position 143    : 0.1526
Position 144    : 0.1110
Position 145    : 0.0555
Position 146    : 0.0555
Position 147    : 0.0555
Position 148    : 0.0555
Position 149    : 0.1110
Position 150    : 0.0555
Position 151    : 0.0555
Position 152    : 0.0555
Position 153    : 0.0555
Position 154    : 0.0555
Position 155    : 0.0555
Position 156    : 0.1526
Position 157    : 0.0555
Position 158    : 0.0555


Region 2: Position 301 to 319
Consensus:
301 VMCVCRDNWHGSNRPWVSF 319

Segment Length: 19
Average entropy (Hx): 0.0585
Position 301    : 0.0555
Position 302    : 0.1110
Position 303    : 0.0555
Position 304    : 0.0555
Position 305    : 0.0555
Position 306    : 0.0555
Position 307    : 0.0555
Position 308    : 0.0555
Position 309    : 0.0555
Position 310    : 0.0555
Position 311    : 0.0555
Position 312    : 0.0555
Position 313    : 0.0555
Position 314    : 0.0555
Position 315    : 0.0555
Position 316    : 0.0555
Position 317    : 0.0555
Position 318    : 0.0555
Position 319    : 0.0555


Region 3: Position 413 to 430
Consensus:
413 SGYSGSFVQHPELTGLDC 430

Segment Length: 18
Average entropy (Hx): 0.0586
Position 413    : 0.0555
Position 414    : 0.0555
Position 415    : 0.0555
Position 416    : 0.0555
Position 417    : 0.0555
Position 418    : 0.0555
Position 419    : 0.0555
Position 420    : 0.0555
Position 421    : 0.0555
Position 422    : 0.0555
Position 423    : 0.0555
Position 424    : 0.0555
Position 425    : 0.0555
Position 426    : 0.0555
Position 427    : 0.0555
Position 428    : 0.0555
Position 429    : 0.1110
Position 430    : 0.0555

BioEdit version 7.0.8.0 (6/17/07)
Conserved region search
Alignment file: I:\cari
data\database\Na\human\h2n2.aln
1/11/2002 1:00:48 PM

Minimum segment length (actual for each
sequence): 10
Maximum average entropy: 0.2
Maximum entropy per position: 0.2
Gaps limited to 2 per segment
Contiguous gaps limited to 1 in any segment

2 conserved regions found

Region 1: Position 432 to 443
Consensus:
432 QETRVWWTSNSI 443

Segment Length: 12
Average entropy (Hx): 0.0560
Position 432    : 0.0560
Position 433    : 0.0560
Position 434    : 0.0560
```

```
Position 435     : 0.0560
Position 436     : 0.0560
Position 437     : 0.0560
Position 438     : 0.0560
Position 439     : 0.0560
Position 440     : 0.0560
Position 441     : 0.0560
Position 442     : 0.0560
Position 443     : 0.0560


Region 2: Position 456 to 465
Consensus:
456 GSWPDGANIN 465

Segment Length: 10
Average entropy (Hx): 0.0570
Position 456     : 0.0560
Position 457     : 0.0560
Position 458     : 0.0560
Position 459     : 0.0560
Position 460     : 0.0560
Position 461     : 0.0560
Position 462     : 0.0560
Position 463     : 0.0560
Position 464     : 0.0659
Position 465     : 0.0560

BioEdit version 7.0.8.0 (6/17/07)
Conserved region search
Alignment file: I:\cari
data\database\Na\human\h3n2.aln
1/11/2002 12:58:14 PM

Minimum segment length (actual for each
sequence): 15
Maximum average entropy: 0.2
Maximum entropy per position: 0.2
Gaps limited to 2 per segment
Contiguous gaps limited to 1 in any segment

7 conserved regions found

Region 1: Position 94 to 125
Consensus:
94
ITGFAPFSKDNSIRLSAGGDIWVTREPYVSCD
125

Segment Length: 32
Average entropy (Hx): 0.0590
Position 94      : 0.0555
Position 95      : 0.0555
Position 96      : 0.0555
Position 97      : 0.0555
Position 98      : 0.0555
Position 99      : 0.0555
Position 100     : 0.0555
Position 101     : 0.0555
Position 102     : 0.1110
Position 103     : 0.0555
Position 104     : 0.0555
Position 105     : 0.0555
Position 106     : 0.0555
Position 107     : 0.0555
Position 108     : 0.1110
Position 109     : 0.0555
Position 110     : 0.0555
Position 111     : 0.0555
Position 112     : 0.0555
Position 113     : 0.0555
Position 114     : 0.0555
Position 115     : 0.0555
Position 116     : 0.0555
Position 117     : 0.0555
Position 118     : 0.0555
Position 119     : 0.0555
Position 120     : 0.0555
Position 121     : 0.0555
Position 122     : 0.0555
Position 123     : 0.0555
Position 124     : 0.0555
Position 125     : 0.0555


Region 2: Position 156 to 171
Consensus:
156 RTLLMNELGVPFHLGT 171

Segment Length: 16
Average entropy (Hx): 0.0555
Position 156     : 0.0555
Position 157     : 0.0555
Position 158     : 0.0555
Position 159     : 0.0555
Position 160     : 0.0555
Position 161     : 0.0555
Position 162     : 0.0555
Position 163     : 0.0555
Position 164     : 0.0555
Position 165     : 0.0555
Position 166     : 0.0555
Position 167     : 0.0555
Position 168     : 0.0555
Position 169     : 0.0555
Position 170     : 0.0555
Position 171     : 0.0555


Region 3: Position 173 to 193
Consensus:
173 QVCIAWSSSSCHDGKAWLHVC 193

Segment Length: 21
Average entropy (Hx): 0.0560
Position 173     : 0.0555
Position 174     : 0.0555
Position 175     : 0.0555
Position 176     : 0.0555
Position 177     : 0.0555
Position 178     : 0.0555
Position 179     : 0.0555
Position 180     : 0.0555
Position 181     : 0.0555
Position 182     : 0.0555
Position 183     : 0.0653
Position 184     : 0.0555
Position 185     : 0.0555
Position 186     : 0.0555
Position 187     : 0.0555
Position 188     : 0.0555
Position 189     : 0.0555
Position 190     : 0.0555
Position 191     : 0.0555
```

```
Position 192    : 0.0555
Position 193    : 0.0555


Region 4: Position 222 to 248
Consensus:
222 ILRTQESECVCINGTCTVVMTDGSASG
248

Segment Length: 27
Average entropy (Hx): 0.0576
Position 222    : 0.0555
Position 223    : 0.0555
Position 224    : 0.0555
Position 225    : 0.0555
Position 226    : 0.0555
Position 227    : 0.0555
Position 228    : 0.0555
Position 229    : 0.0555
Position 230    : 0.0555
Position 231    : 0.0555
Position 232    : 0.0555
Position 233    : 0.0555
Position 234    : 0.0555
Position 235    : 0.0555
Position 236    : 0.0555
Position 237    : 0.0555
Position 238    : 0.0555
Position 239    : 0.0555
Position 240    : 0.0555
Position 241    : 0.1110
Position 242    : 0.0555
Position 243    : 0.0555
Position 244    : 0.0555
Position 245    : 0.0555
Position 246    : 0.0555
Position 247    : 0.0555
Position 248    : 0.0555


Region 5: Position 268 to 285
Consensus:
268 LSGSAQHVEECSCYPRYP 285

Segment Length: 18
Average entropy (Hx): 0.0592
Position 268    : 0.0555
Position 269    : 0.1110
Position 270    : 0.0555
Position 271    : 0.0555
Position 272    : 0.0555
Position 273    : 0.0555
Position 274    : 0.0555
Position 275    : 0.0653
Position 276    : 0.0555
Position 277    : 0.0555
Position 278    : 0.0555
Position 279    : 0.0555
Position 280    : 0.0555
Position 281    : 0.0555
Position 282    : 0.0555
Position 283    : 0.0555
Position 284    : 0.0555
Position 285    : 0.0555


Region 6: Position 415 to 431
Consensus:
415 KSCINRCFYVELIRGRK 431

Segment Length: 17
Average entropy (Hx): 0.0613
Position 415    : 0.0555
Position 416    : 0.0555
Position 417    : 0.0555
Position 418    : 0.0555
Position 419    : 0.0555
Position 420    : 0.0555
Position 421    : 0.0555
Position 422    : 0.0555
Position 423    : 0.0555
Position 424    : 0.0555
Position 425    : 0.0555
Position 426    : 0.0555
Position 427    : 0.0555
Position 428    : 0.0555
Position 429    : 0.0555
Position 430    : 0.0555
Position 431    : 0.1526


Region 7: Position 438 to 462
Consensus:
438 WTSNSIVVFCGTSGTYGTGSWPDGA 462

Segment Length: 25
Average entropy (Hx): 0.0559
Position 438    : 0.0555
Position 439    : 0.0555
Position 440    : 0.0555
Position 441    : 0.0555
Position 442    : 0.0555
Position 443    : 0.0555
Position 444    : 0.0555
Position 445    : 0.0555
Position 446    : 0.0555
Position 447    : 0.0555
Position 448    : 0.0555
Position 449    : 0.0555
Position 450    : 0.0555
Position 451    : 0.0653
Position 452    : 0.0555
Position 453    : 0.0555
Position 454    : 0.0555
Position 455    : 0.0555
Position 456    : 0.0555
Position 457    : 0.0555
Position 458    : 0.0555
Position 459    : 0.0555
Position 460    : 0.0555
Position 461    : 0.0555
Position 462    : 0.0555

BioEdit version 7.0.8.0 (6/17/07)
Conserved region search
Alignment file: I:\cari
data\database\Na\human\h5n1.aln
1/11/2002 12:58:39 PM

Minimum segment length (actual for each
sequence): 15
Maximum average entropy: 0.2
Maximum entropy per position: 0.2
Gaps limited to 2 per segment
```

```
Contiguous gaps limited to 1 in any segment

5 conserved regions found

Region 1: Position 138 to 156
Consensus:
138 ECRTFFLTQGALLNDKHSN 156

Segment Length: 19
Average entropy (Hx): 0.0665
Position 138    : 0.1110
Position 139    : 0.0555
Position 140    : 0.0555
Position 141    : 0.0555
Position 142    : 0.0555
Position 143    : 0.0555
Position 144    : 0.0555
Position 145    : 0.0555
Position 146    : 0.0555
Position 147    : 0.0555
Position 148    : 0.1526
Position 149    : 0.0555
Position 150    : 0.0555
Position 151    : 0.0555
Position 152    : 0.1110
Position 153    : 0.0555
Position 154    : 0.0555
Position 155    : 0.0555
Position 156    : 0.0555


Region 2: Position 166 to 196
Consensus:
166
RTLMSCPVGEAPSPYNSRFESVAWSASACHD
196

Segment Length: 31
Average entropy (Hx): 0.0576
Position 166    : 0.0653
Position 167    : 0.0555
Position 168    : 0.0555
Position 169    : 0.0555
Position 170    : 0.0555
Position 171    : 0.0555
Position 172    : 0.0555
Position 173    : 0.0555
Position 174    : 0.0555
Position 175    : 0.0555
Position 176    : 0.1110
Position 177    : 0.0555
Position 178    : 0.0555
Position 179    : 0.0555
Position 180    : 0.0555
Position 181    : 0.0555
Position 182    : 0.0555
Position 183    : 0.0555
Position 184    : 0.0555
Position 185    : 0.0555
Position 186    : 0.0555
Position 187    : 0.0555
Position 188    : 0.0555
Position 189    : 0.0555
Position 190    : 0.0555
Position 191    : 0.0555
Position 192    : 0.0555
Position 193    : 0.0555
Position 194    : 0.0555
Position 195    : 0.0555
Position 196    : 0.0555


Region 3: Position 307 to 323
Consensus:
307 WHGSNRPWVSFNQNLEY 323

Segment Length: 17
Average entropy (Hx): 0.0640
Position 307    : 0.0555
Position 308    : 0.0555
Position 309    : 0.0555
Position 310    : 0.0555
Position 311    : 0.0555
Position 312    : 0.0555
Position 313    : 0.0555
Position 314    : 0.0555
Position 315    : 0.1890
Position 316    : 0.0555
Position 317    : 0.0555
Position 318    : 0.0555
Position 319    : 0.0555
Position 320    : 0.0555
Position 321    : 0.0555
Position 322    : 0.0653
Position 323    : 0.0555

Region 4: Position 358 to 375
Consensus:
358 KGFSFKYGNGVWIGRTKS 375

Segment Length: 18
Average entropy (Hx): 0.0555
Position 358    : 0.0555
Position 359    : 0.0555
Position 360    : 0.0555
Position 361    : 0.0555
Position 362    : 0.0555
Position 363    : 0.0555
Position 364    : 0.0555
Position 365    : 0.0555
Position 366    : 0.0555
Position 367    : 0.0555
Position 368    : 0.0555



Position 369    : 0.0555
Position 370    : 0.0555
Position 371    : 0.0555
Position 372    : 0.0555
Position 373    : 0.0555
Position 374    : 0.0555
Position 375    : 0.0555


Region 5: Position 430 to 444
Consensus:
430 RPCFWVELIRGRPKE 444

Segment Length: 15
Average entropy (Hx): 0.0599
Position 430    : 0.0555
Position 431    : 0.0555
```

Position 432 : 0.0555
Position 433 : 0.0555
Position 434 : 0.0555
Position 435 : 0.0555
Position 436 : 0.0555
Position 437 : 0.0555
Position 438 : 0.1110
Position 439 : 0.0555
Position 440 : 0.0555
Position 441 : 0.0653
Position 442 : 0.0555
Position 443 : 0.0555
Position 444 : 0.0555

Lampiran 6 : Pohon filogenetik

Haemagglutinin

Neuraminidase