AMINO ACIDS, NUCLEOTIDES AND VECTORS EXPRESSING THE SAME AND USES THEREOF IN PREVENTING SARBECOVIRUS INFECTION

FIELD

[0001] The present invention generally relates to proteins and their use in the treatment and/or prevention of Severe Acute Respiratory Syndrome (SARS)-related coronavirus infections, particularly sarbecovirus infections.

BACKGROUND

[0002] The following discussion of the background to the invention is intended to facilitate an understanding of the present invention only. It should be appreciated that the discussion is not an acknowledgement or admission that any of the material referred to was published, known or part of the common general knowledge of the person skilled in the art in any jurisdiction as at the priority date of the invention.

[0003] Since 2002, we had three major human infectious diseases caused by coronaviruses (CoVs), SARS coronavirus (SARS-CoV) in 2002-2003 (Peiris *et al.* Nat Med 2004, 10:S88-97), Middle East Respiratory Syndrome coronavirus (MERS-CoV) since 2012 (Zaki *et al.* N Engl J Med 2012, 367:1814-1820) and the ongoing COVID-19 or SARS coronavirus 2 (SARS-CoV-2) (Wang *et al*. Lancet 2020, 395:470-473). All of these diseases have caused devastating economic and human losses globally. For SARS-CoV and MERS-CoV, we still don't have a licensed vaccine to protect us from future infections. For SARS-CoV-2, the unprecedented speed of vaccine development has resulted in many licensed vaccines for human use (Fauci, Science 2021, 372:109).

[0004] However, the recent emergence of SARS-CoV-2 variants such as the SARS-CoV-2 B.1.1.7/20I/501Y.V1 detected in the UK; the South African SARS-CoV-2 B.1.351/20H/501Y.V2, the Brazil SARS-CoV-2 P.1/20J/501Y.V3/B.1.1.248, and the U.S. SARS-CoV-2 B.1.1427/B.1.429 (Mascola *et al*. JAMA 2021, 325:1261-1262; Zhang *et al*. JAMA 2021, 325(13):1324-1326) and the observed reduction of immune protection against new variants from vaccines based on the original virus strain raised a new challenge on the need for a broad spectrum protection against all known and future SARS-CoV-2 variants.

[0005] Furthermore, there are many more coronaviruses circulating in wildlife reservoirs such as the SC2r-CoV RaTG13 in bats and the SC2r-CoV GX-P5L in pangolins (Wang *et al*.

Curr Opin Virol 2019, 34:79-89; Zhou *et al*. Nature 2020, 579:270-273; Lam *et al*. Nature 2020, 583:282-285).

[0006] In addition, there is a high chance of future outbreaks (SARS3, SARS4, etc.) caused by different but related coronaviruses (Calistri *et al*. Microorganisms 2021, 9).

[0007] The current classification of coronaviruses is shown in Figure 1. Four genera, alpha, beta, delta and gamma have been identified. The most transmissible coronaviruses for human infections are from the sarbecoviruses group. It was also found that all sarbecoviruses use the angiotensin-converting enzyme 2 (ACE2) as an entry receptor to human host cells.

[0008] Accordingly, there exists a need for prophylactic or therapeutic vaccine for the treatment and/or prevention of current and any future infections caused by sarbecoviruses.

SUMMARY

[0009] Amino acid constructs, nucleotides, vectors and immunogenic composition containing or expressing the amino acid sequences used in preventing and/or treating a sarbecovirus infection is envisioned.

[0010] According to an aspect of the present disclosure, there is provided an amino acid construct comprising an amino acid sequence having at least 75% sequence identity to at least two different sarbecovirus Spike proteins, or a fragment thereof.

[0011] According to another aspect there is a nucleic acid encoding the amino acid construct as described herein above.

[0012] According to another aspect there is an immunogenic composition comprising the amino acid construct as described herein above or the nucleic acid as described herein above.

[0013] According to another aspect there is a viral vector comprising the nucleic acid as described herein above.

[0014] According to another aspect there is an amino acid construct as described herein above, a nucleic acid as described herein above, an immunogenic composition as described herein above, a viral vector as described herein above or vaccine formulations suitable for use in the treatment or prevention of sarbecovirus infections.

[0015] According to another aspect there is a use of an amino acid construct as described herein above, a nucleic acid as described herein above, an immunogenic composition as described herein above, a viral vector as described herein above in the manufacture of a medicament for the treatment or prevention of sarbecovirus infections.

[0016] According to another aspect there is a method for treating and/or preventing an infection caused by sarbecoviruses comprising administering a vaccine molecule comprising an amino acid construct as described herein above, a nucleic acid as described herein above, an immunogenic composition as described herein above, or a viral vector as described herein above to a subject.

[0017] According to another aspect there is method of making an amino acid construct as described herein above, comprising: a) comparing amino acid sequences from at least two different sarbecovirus spike proteins or a fragment thereof; b) identifying identical amino acid in the sequences from the at least two different sarbecovirus spike proteins or fragments thereof; c) removing any different amino acids from the sequences of the at least two different sarbecovirus spike proteins or fragments thereof to identify a unique amino acid sequence; and d) forming the amino construct of the unique amino acid sequence wherein the amino construct has at least 75% sequence identity to the at least two different sarbecovirus Spike proteins, or a fragment thereof.

[0018] Other aspects and features will become apparent to those of ordinary skill in the art upon review of the following description of specific embodiments in conjunction with the accompanying figures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] In the figures, which illustrate, by way of example only, embodiments of the present invention,

[0020] Figure 1 illustrates the family tree of four known coronavirus genera;

[0021] Figure 2 illustrates the consensus groups established taking into consideration of phylogenetic relationship and ACE2 receptor usages;

[0022] Figure 3 illustrates the design method to generate amino acid consensus sequences;

[0023] Figure 4 illustrates a surrogate virus neutralization test (sVNT) which allowed a

rapid and multiplex determination of Nabs;

[0024] Figure 5 illustrates a **A)** multiplex sVNT on the Luminex platform **B)** showing that six RBD proteins are able to bind the hACE2 receptor molecule in the following order (from high to low affinity): SARS-CoV-2 B.1.351 > SARS-CoV-2 B.1.1.7 = SC2r-CoV GX-P5L (pangolin) > SARS-CoV-2 > SARS-CoV > SC2r-CoV RaTG13 (bat);

[0025] Figure 6 illustrates a multiplex sVNT on six different RBDs (from left to right: SARS-CoV-2 WT, UK, SA strains; Bat virus RaTG13; Pangolin virus GX-P5L; SARS-CoV). **A)** SARS patient (N=11); **B)** COVID-19 patient (N=40); **C)** Healthy-vaccinated (N=20). Serum samples were taken two weeks after second dose; **D)** SARS-vaccinated (N=9). Sera from SARS survivors taken 21-62 days after the first vaccination. All serum samples were tested at a single dilution of 1:20. A cut-off of 30% was set as previously determined.

[0026] Figure 7 illustrates a titration of neutralizing antibody levels (NT50) in different groups against six sarbecoviruses. Serum samples were tested at dilutions from 1:20 to 1:20480 by a 4-fold serial titration.

[0027] Figure 8 illustrates a confirmation of boosting pan-sarbecovirus cross-neutralizing antibodies in the SARS-vaccinated group. Figure 8A shows the pan-sarbecovirus neutralization of mAb 5B7D7 against SARS-CoV-2 variants of concern, bat SC2r-CoV RaTG13, Pangolin SC2r-CoV GX-P5L and SARS-CoV measured by the multiplex sVNT. Figure 8B illustrates an inhibition of 5B7D7 binding to different RBDs by the four different panels of sera.

[0028] Figure 9 illustrates neutralization patterns from rabbit hyper immune sera targeting different beta coronavirus RBD proteins.

DETAILED DESCRIPTION

[0029] The present disclosure provides proteins comprising an amino acid sequence from sarbecovirus Spike proteins. Such polypeptides are exemplified below.

[0030] Throughout this document, unless otherwise indicated to the contrary, the terms “comprising”, “consisting of”, “having” and the like, are to be construed as non-exhaustive, or in other words, as meaning “including, but not limited to”.

[0031] Furthermore, throughout the specification, unless the context requires otherwise, the word “include” or variations such as “includes” or “including” will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

[0032] Unless defined otherwise, all technical and scientific terms used herein have the same meaning as is commonly understood by a skilled person to which the subject matter herein belongs.

[0033] According to various embodiments there is an amino acid construct comprising an amino acid sequence having at least 75% sequence identity to at least two different sarbecovirus Spike proteins, or a fragment thereof.

[0034] Throughout the description, it is to be appreciated that the term ‘Sarbecovirus’ and its plural form include any beta coronavirus that uses angiotensin converting enzyme 2 (ACE2) receptor as entry into cells. In various embodiments, the sarbecovirus comprises any beta coronavirus that uses ACE2 receptor as entry into cells. In various embodiments, the sarbecovirus comprises any beta coronavirus that uses human ACE2 receptor as entry into human cells. In various embodiments, the sarbecovirus comprises any known or new sarbecovirus. In various embodiments, the sarbecovirus is selected from the group comprising or consisting of SARS-CoV, SARS-CoV-2, SARS-CoV-2 B.1.1.7, SARS-CoV-2 B.1.351, SC2r-CoV RaTG13, and SC2r-CoV GX-P5L.

[0035] In various embodiments, the sarbecovirus Spike protein refers to a wild type spike protein identified or isolated from any of sarbecovirus as listed above and a fragment thereof refers to a wild type sarbecovirus receptor binding domain (RBD) of the spike protein that binds to the ACE2 receptor. In various embodiments, the sarbecovirus Spike protein comprises a SARS-CoV spike protein having an amino acid sequence set forth in SEQ ID NO:1. In various embodiments, the sarbecovirus Spike protein comprises a SARS-CoV2 spike protein having an amino acid sequence set forth in SEQ ID NO:2. In various embodiments, the fragment of the spike protein comprises a SARS-CoV, RBD having an amino acid sequence set forth in SEQ ID NO:4. In various embodiments, the fragment of the spike protein comprises a SARS-CoV2, RBD having an amino acid sequence set forth in SEQ ID NO:7. In various embodiments, the fragment of the spike protein comprises an amino acid sequence set forth in SEQ ID NO:3 or SEQ ID NO: 5. In various embodiments, the amino acid construct has at least 75%, including one of 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or even 99.9% sequence identity to at least two different sarbecovirus Spike proteins, or a fragment thereof. In various embodiments, the

amino acid construct has at least 75%, including one of 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or even 99.9% sequence identity to both a wild type of a spike protein or a fragment thereof of a first sarbecovirus and a spike protein or a fragment thereof of a second sarbecovirus. In various embodiments, the first sarbecovirus may comprise SARS-CoV and the second sarbecovirus may comprise SC1r-CoV. In various embodiments, the first sarbecovirus may comprise SARS-CoV and the second sarbecovirus may comprise SARS-CoV-2 B.1.1.7. In various embodiments, the first sarbecovirus may comprise SARS-CoV and the second sarbecovirus may comprise SARS-CoV-2 B.1.351. In various embodiments, the first sarbecovirus may comprise SARS-CoV-2 and the second sarbecovirus may comprise SC2r-CoV. In various embodiments, the first sarbecovirus may comprise SARS-CoV-2 and the second sarbecovirus may comprise SC2r-CoV. In various embodiments, the first sarbecovirus may be selected from any one of SARS-CoV-2, Brazil SARS-CoV-2 variant P.1 also known as 20J/501Y.V3/B.1.1.248, UK SARS-CoV-2 variant B.1.1.7, South African SARS-CoV-2 variant B.1.351 also known as 20H/501Y.V2, or 501Y.V2 variant, Indian SARS-CoV-2 variant B1.617, SC2r-CoV RaTG13, and SC2r-CoV GX-P5L and the second sarbecovirus may be selected from any one of SARS-CoV, SARS-CoV-2, SARS-CoV-2 B.1.1.7, SARS-CoV-2 B.1.351, SARS-CoV-2 B1.617, SC2r-CoV RaTG13, and SC2r-CoV GX-P5L provided it is different from the first sarbecovirus.

[0036] Throughout the description, it is to be appreciated that the term ‘isolated’ include those purified by standard purification methods. It does not require absolute purity and can include protein, peptide, nucleic acid or vaccine molecules that are at least 80%, 85%, 90%, 95%, 98%, or 99% isolated.

[0037] In various embodiments, the at least two different sarbecovirus Spike proteins or fragment comprises an amino acid sequence having at least 75%, including one of 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or even 99.9% sequence identity to a sarbecovirus Spike protein, and an amino acid sequence having at least 75%, including one of 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or even 99.9% sequence identity to two or more different sarbecovirus Spike proteins or fragment thereof. In various embodiments, the at least two different sarbecovirus Spike proteins or fragment comprise a sarbecovirus Spike protein and a fragment of a different sarbecovirus Spike protein.

[0038] In various embodiments, the fragment comprises a receptor binding domain fragment of a sarbecovirus Spike protein.

[0039] In various embodiments, the amino acid sequence comprises or consists of any one of sequence selected from SEQ ID NOs: 10 to 163 or any combination thereof.

[0040] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 10.

[0041] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 11.

[0042] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 12.

[0043] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 13.

[0044] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 14.

[0045] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 15.

[0046] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 16.

[0047] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 17.

[0048] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 18.

[0049] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 19.

[0050] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 20.

[0051] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 21.

[0052] In various embodiments, the amino acid construct comprises a consensus sequence set forth in SEQ ID NO: 22.

[0053] In various embodiments, the amino acid construct comprises an oligomeric polypeptide. In various embodiments, the oligomeric polypeptide comprises a hetero-oligomer.

[0054] In various embodiments, the polypeptide is a fusion dimer.

[0055] According to various embodiments there is a nucleic acid encoding the amino acid construct as described herein above.

[0056] In various embodiments, the nucleic acid comprises a messenger ribonucleic acid (mRNA).

[0057] In various embodiments, the nucleic acid is a RNA. The term 'RNA' includes a ribonucleic acid (RNA) polynucleotide having an open reading frame encoding a polypeptide of the amino acid construct capable of inducing an immune response against one or more sarbecovirus infections. In various embodiment, it includes at least one ribonucleic acid (RNA) polynucleotide having an open reading frame that encodes two or more the amino acid constructs that can elicit an immune response against sarbecovirus infections.

[0058] According to various embodiments there is an immunogenic composition comprising amino acid construct as described herein above or the nucleic acid as described herein above.

[0059] In various embodiments, the immunogenic composition includes a recombinant sarbecovirus spike ectodomain trimer that elicits, or induces a measurable response against the sarbecovirus when administered to a subject. For *in vivo* use, the immunogenic composition will typically include the recombinant coronavirus spike ectodomain trimer or a nucleic acid molecule encoding a protomer of the recombinant coronavirus spike ectodomain trimer in a pharmaceutically acceptable carrier and may also include other agents, such as an adjuvant.

[0060] In various embodiments, the adjuvant includes MF59, Adjuvant System 03 (A S03) or CpG 1018.

[0061] In various embodiments, the immunogenic composition comprises at least two amino acid constructs capable of eliciting or inducing a measurable response against the

sarbecovirus when administered to a subject. In various embodiments the subject or individual is an animal, such as a mammal such as a human at risk of coming into contact with a sarbecovirus infection.

[0062] In various embodiments, the immunogenic composition is an RNA vaccine. The term 'RNA vaccine' includes a vaccine having a ribonucleic acid (RNA) polynucleotide having an open reading frame encoding the amino acid construct capable of inducing an immune response against sarbecovirus infections. In various embodiments, the immunogenic composition includes at least one ribonucleic acid (RNA) polynucleotide having an open reading frame that encodes two or more the amino acid constructs that can elicit an immune response against sarbecovirus infections.

[0063] In various embodiments, the immunogenic composition comprises the amino acid construct as described herein above, or the nucleic acid as described herein above enclosed in a lipid nanoparticles. In various embodiments, the immunogenic composition is a mRNA vaccine comprising lipid nanoparticles. In various embodiments, the immunogenic composition comprises a pre-fusion stabilized spike-RBD-adjuvant trimer.

[0064] In various embodiments, the amino acid construct having at least 75% sequence identity to sarbecovirus RBD fragment comprises a recombinant RBD (rRBD). In various embodiments, the immunogenic composition comprises two dimeric formats selected from tandem dimer and rRBD-Fc fusion dimer.

[0065] In various embodiments, the immunogenic composition comprises a carrier. In various embodiments, the carrier is any one of a lipid nanoparticle (LNP), a polymeric nanoparticle, a lipid carrier such as a lipidoid, a liposome, a lipoplex, a peptide carrier, a nanoparticle mimic, a nanotube, or a conjugate.

[0066] According to various embodiments there is a viral vector comprising a nucleic acid as described herein above.

[0067] In various embodiments, the vector is selected from a recombinant measles virus vector, a vesicular stomatitis virus (VSV) vector, a vaccinia virus vector or an adenovirus vector.

[0068] According to various embodiments there is an amino acid construct as described herein above for use in the treatment or prevention of sarbecovirus infections.

[0069] According to various embodiments there is an immunogenic composition as described herein above for use in the treatment and/or prevention of sarbecovirus infections.

[0070] According to various embodiments there is use of an amino acid construct as described herein above in the manufacture of a medicament for the treatment and/or prevention of sarbecovirus infections.

[0071] According to various embodiments there is use of an immunogenic composition as described herein above in the manufacture of a medicament for the treatment and/or prevention of sarbecovirus infections.

[0072] According to various embodiments there is use of a method of treating and/or preventing an infection caused by sarbecovirus comprising administering a vaccine molecule comprising an amino acid construct as described herein above, an immunogenic composition as described herein above, or a viral vector as described herein above to a subject.

[0073] In various embodiments, a method for inducing an immune response to a mammalian subject comprises administering a therapeutically effective amount of the immunogenic composition as described herein above, to the mammalian subject.

[0074] According to various embodiments, there is a method of making an amino acid construct as described herein above, the method comprising: a) comparing amino acid sequences from at least two different sarbecovirus spike proteins or fragments thereof; b) identifying identical amino acid in the sequences from the at least two different sarbecovirus spike proteins or fragments thereof; c) removing any different amino acids from the sequences of the at least two different sarbecovirus spike proteins or fragments thereof to identify a unique amino acid sequence; and d) forming the amino construct of unique amino acid sequence wherein the amino construct has at least 75% sequence identity to the at least two different sarbecovirus Spike protein, or a fragment thereof.

[0075] In various embodiments, the at least two different sarbecovirus spike proteins or fragments thereof comprise any one of 2, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, and 170 different sarbecovirus spike proteins or fragments thereof. In various embodiments the at least two different sarbecovirus spike proteins or fragments thereof comprise a plurality of sarbecovirus spike proteins or fragments thereof. In various embodiments, the plurality of sarbecovirus spike proteins or fragments thereof comprise 50-100, 80-150, 100-200 different sarbecovirus spike proteins or fragments thereof. In various

embodiments step a) comprises comparing amino acid sequences from a plurality of different sarbecovirus spike proteins or fragments thereof, and step b) comprises identifying amino acid sequences from the plurality of different sarbecovirus spike proteins or fragments thereof above a predetermined sequence identity to the majority of the plurality of different sarbecovirus spike proteins or fragments thereof and step c) comprises removing any amino acids sequences from the plurality of different sarbecovirus spike proteins or fragments thereof below a predetermined sequence identity to the majority of the plurality of different sarbecovirus spike proteins or fragments thereof. In various embodiments the predetermined sequence identity is 85% or 90% or 95%, or 96% or 97%, or 98% or 99%.

[0076] In various embodiments, the method further comprising identifying a fragment within the unique amino acid sequence that corresponds to a receptor binding domain of the at least two different sarbecovirus spike proteins to form a unique amino acid fragment sequence; and forming the amino construct of the combined the unique amino acid fragment sequence with the unique amino acid sequence.

[0077] In various embodiments, forming the amino construct in step d) comprises forming a nucleic acid encoding the amino acid construct, able to express the amino acid construct.

[0078] In various embodiments, the nucleic acid comprises a messenger ribonucleic acid (mRNA).

[0079] In various embodiments, the amino acid construct or a nucleic acid encoding the amino acid construct able to express the amino acid construct is prepared as an immunogenic composition.

[0080] In various embodiments, the immunogenic composition comprises an adjuvant.

[0081] In various embodiments, the nucleic acid is prepared in a viral vector.

[0082] In various embodiments, the vector is selected from a recombinant measles virus vector, a vesicular stomatitis virus (VSV) vector, a vaccinia virus vector or an adenovirus vector.

[0083] Throughout the description, it is to be appreciated that the term ‘polypeptide’, used interchangeably with protein or peptide, includes amino acid polymers including naturally occurring amino acid polymers and non-naturally occurring amino acid polymers. A polypeptide has an amino terminal (N-terminal) end and a carboxy terminal (C-terminal) end.

[0084] In various embodiments the amino acid construct comprises a consensus amino acid sequence as set forth in SEQ ID NO: 10; SEQ ID NO: 11; SEQ ID NO: 12; SEQ ID NO: 13; SEQ ID NO: 14; SEQ ID NO: 15; SEQ ID NO: 16; SEQ ID NO: 17, SEQ ID NO: 18; SEQ ID NO: 19; SEQ ID NO: 20; SEQ ID NO: 21 or SEQ ID NO: 22.

[0085] In various embodiments, the amino acid construct having at least 75% sequence identity to a sarbecovirus spike protein, comprises amino acid sequence as set forth in SEQ ID NO:1; SEQ ID NO: 10; SEQ ID NO: 11; SEQ ID NO: 12; SEQ ID NO: 13; SEQ ID NO: 14; SEQ ID NO: 15; SEQ ID NO: 16; SEQ ID NO: 17.

[0086] In various embodiments, there is the amino acid construct having at least 75% sequence identity to a sarbecovirus receptor binding domain (RBD) protein comprises a consensus amino acid sequence as set forth in SEQ ID NO: 4; SEQ ID NO: 18; SEQ ID NO: 19; SEQ ID NO: 20; SEQ ID NO: 21; or SEQ ID NO: 22.

[0087] In various embodiments, the amino acid construct having at least 75% sequence identity to a sarbecovirus spike protein may have a minimum length of one of 25, 50, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000, 1,100 or 1,200 amino acids, and may have a maximum length of one of 50, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000, 1,100 or 1,200 amino acids.

[0088] In various embodiments, the amino acid construct having at least 75% sequence identity to a sarbecovirus receptor binding domain (RBD) protein may have a minimum length of one of 10, 20, 30, 40, 50, 100, 150, 200 amino acids, and may have a maximum length of one of 20, 10, 20, 30, 40, 50, 100, 150, 200 amino acids.

[0089] Examples

[0090] Sequences:

SEQ ID NO:	DESCRIPTION	AMINO ACID SEQUENCE
1	SARS-CoV spike protein	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPVIPFKDGIY FAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVVIRACNFE LCDNPFFAVSKPMGTQTHTMIFDNAFNCTFEYISDAFSLDVSE KSGNFKHLREFVFKNKDGFLYVYKGYQPIDVVRDLPSGFNTLK PIFKLPLGINITNFRAILTAFSPAQDTWGTSAAAYFVGYLKPTTF MLKYDENGTITDAVDCSQNPLAELKCSVKSFEIDKGIYQTSNF RVVPSGDVVRFPNITNLCPFGEVFNATKFPSVYAWERKKISNC VADYSVLYNSTFFSTFKCYGVSATKLNDLCFSNVYADSFVVKG DDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWNTRNIDATST

		GNYNYKYRYLRHGKLRPFERDISNVPFSPDGKPCTPPALNCY WPLNDYGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTD LIKNQCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAEHVDTSYE CDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGADSSIAYSNN TIAIPTNFSISITTEVMPVSMAKTSVDCNMYICGDSTECANLLLQ YGSFCTQLNRALSGIAAEQDRNTREVFAQVKQMYKTPTLKYF GGFNFSQILPDPLKPTKRSFIEDLLFNKVTLADAGFMKQYGEC LGDINARDLICAQKFNGLTVLPPLLTDDMIAAYTAALVSGTATA GWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKQIANQ FNKAISQIQESLTTTSTALGKLQDVVNQNAQALNTLVKQLSSNF GAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRA AEIRASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAP HGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNG TSWFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVYDPLQPE LDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNE VAKNLNESLIDLQELGKYEQYIKWPWYVWLGFIAGLIAIVMVTIL LCCMTSCCSCLKGACSCGSCCKFDEDDSEPVLKGVKLHYT
2	SARS-CoV-2 spike protein	MFLLTTKRTMFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTR GVYYPDKVFRSSVLHSTQDLFLPFFSNVTWFHAIHVSGTNGTK RFDNPVLPFNDGVYFASTEKSNIIRGWIFGTTLDSKTQSLLIVN NATNVVIKVCEFQFCNDPFLGVYYHKNNKSWMESEFRVYSSA NNCTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSK HTPINLVRDLPQGFSALEPLVDLPIGINITRFQTLLALHRSYLTP GDSSSGWTAGAAAYYVGYLQPRTFLLKYNENGTITDAVDCAL DPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP FGEVFNATRFASVYAWNRKRISNCVADYSVLYNSASFSTFKC YGVSPTKLNDLCFTNVYADSFVIRGDEVRQIAPGQTGKIADYN YKLPDDFTGCVIAWNSNNLDSKVGGNYNYLYRLFRKSNLKPF ERDISTEIYQAGSTPCNGVEGFNCYFPLQSYGFQPTNGVGYQ PYRVVVLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLTGT GVLTESNKKFLPFQQFGRDIADTTDAVRDPQTLEILDITPCSFG GVSVITPGTNTSNQVAVLYQDVNCTEVPVAIHADQLTPTWRVY STGSNVFQTRAGCLIGAEHVNNSYECDIPIGAGICASYQTQTN SPRRARSVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTT EILPVSMTKTSVDCTMYICGDSTECSNLLLQYGSFCTQLNRAL TGIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQILPDPSK PSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKF NGLTVLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFA MQMAYRFNGIGVTQNVLYENQKLIANQFNSAIGKIQDSLSSTA SALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLNDILSRLD KVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKM SECVLGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPA QEKNFTTAPAICHDGKAHFPREGVFVSNGTHWFVTQRNFYEP QIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFKEELDKYF KNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQ ELGKYEQYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLK GCCSCGSCCKFDEDDSEPVLKGVKLHYT
3	SARS-CoV spike protein S1 subunit	SDLDRCTTFDDVQAPNYTQHTSSMRGVYYPDEIFRSDTLYLT QDLFLPFYSNVTGFHTINHTFDNPVIPFKDGIYFAATEKSNVVR GWVFGSTMNNKSQSVIIINNSTNVVIRACNFELCDNPFFAVSK PMGTQTHTMIFDNAFNCTFEYISDAFSLDVSEKSGNFKHLREF VFKNKDGFLYVYKGYQPIDVVRDLPSGFNTLKPIFKLPLGINITN

		FRAILTAFSPAQDTWGTSAAAYFVGYLKPTTFMLKYDENGTIT DAVDCSQNPLAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRF PNITNLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNST FFSTFKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPGQ TGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRYL RHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLNDYGFYT TTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQCVNFNF NGLTGTGVLTPSSKRFQPFQQFGRDVSDFTDSVRDPKTSEIL DISPCSFGGVSVITPGTNASSEVAVLYQDVNCTDVSTAIHADQ LTPAWRIYSTGNNVFQTQAGCLIGAEHVDTSYECDIPIGAGICA SYHTVSLLR
4	SARS-CoV spike protein RBD	RVVPSGDVVRFPNITNLCPFGEVFNATKFPSVYAWERKKISNC VADYSVLYNSTFFSTFKCYGVSATKLNDLCFSNVYADSFVVKG DDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWNTRNIDATST GNYNYKYRYLRHGKLRPFERDISNVPFSPDGKPCTPPALNCY WPLNDYGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTD LIKNQCVNF
5	SARS-CoV-2 spike protein S1 subunit	SQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFRSSVLHSTQDL FLPFFSNVTWFHAIHVSGTNGTKRFDNPVLPFNDGVYFASTEK SNIIRGWIFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLG VYYHKNNKSWMESEFRVYSSANNCTFEYVSQPFLMDLEGKQ GNFKNLREFVFKNIDGYFKIYSKHTPINLVRDLPQGFSALEPLV DLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQ PRTFLLKYNENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQT SNFRVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRKRI SNCVADYSVLYNSASFSTFKCYGVSPTKLNDLCFTNVYADSFV IRGDEVRQIAPGQTGKIADYNYKLPDDFTGCVIAWNSNNLDSK VGGNYNYLYRLFRKSNLKPFERDISTEIYQAGSTPCNGVEGFN CYFPLQSYGFQPTNGVGYQPYRVVVLSFELLHAPATVCGPKK STNLVKNKCVNFNFNGLTGTGVLTESNKKFLPFQQFGRDIADT TDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQDVN CTEVPVAIHADQLTPTWRVYSTGSNVFQTRAGCLIGAEHVNN SYECDIPIGAGICASYQTQTNSPRRAR
6	SARS-CoV-2 spike protein RBD	RVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRKRISNC VADYSVLYNSASFSTFKCYGVSPTKLNDLCFTNVYADSFVIRG DEVRQIAPGQTGKIADYNYKLPDDFTGCVIAWNSNNLDSKVG GNYNYLYRLFRKSNLKPFERDISTEIYQAGSTPCNGVEGFNCY FPLQSYGFQPTNGVGYQPYRVVVLSFELLHAPATVCGPKKST NLVKNKCVNF
7	SARS-CoV-2 spike protein RBD	PNITNLCPFGEVFNATRFASVYAWNRKRISNCVADYSVLYNSA SFSTFKCYGVSPTKLNDLCFTNVYDSFVIRGDEVRQIAPGQTG KIADYNYKLPDDFTGCVIAWNSNNLDSKVGGNYNYLYRLFRKS NLKPFERDISTEIYQAGSTPCNGVEGFNCYFPLQSYGFQPTNG VGYQPYRVVVLSFELLHAPATVCGPKKS
8	SARS-CoV-2 spike protein S1 subunit	MLLVNQSHQGFNKEHTSKMVSAIVLYVLLAAAAHSAFAQCVNL TTRTQLPPAYTNSFTRGVYYPDKVFRSSVLHSTQDLFLPFFSN VTWFHAIHVSGTNGTKRFDNPVLPFNDGVYFASTEKSNIIRGW IFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLGVYYHKN NKSWMESEFRVYSSANNCTFEYVSQPFLMDLEGKQGNFKNL REFVFKNIDGYFKIYSKHTPINLVRDLPQGFSALEPLVDLPIGINI TRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLL KYNENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRV QPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRKRISNCVA DYSVLYNSASFSTFKCYGVSPTKLNDLCFTNVYADSFVIRGDE

		VRQIAPGQTGKIADYNYKLPDDFTGCVIAWNSNNLDSKVGGN YNYLYRLFRKSNLKPFERDISTEIYQAGSTPCNGVEGFNCYFP LQSYGFQPTNGVGYQPYRVVVLSFELLHAPATVCGPKKSTNL VKNKCVNFNFNGLTGTGVLTESNKKFLPFQQFGRDIADTTDAV RDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQDVNCTEV PVAIHADQLTPTWRVYSTGSNVFQTRAGCLIGAEHVNNSYEC DIPIGAGICASYQTQTNSPRRAR
9	SARS-CoV spike protein RBD	MNITNLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNST FFSTFKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPGQ TGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRYL RHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLNDYGFYT TTGIGYQPYRVVVLSFELLNAPATYLSLNTAAAL
10	Artificial Sarbecovirus spike consensus 1	MFIFLFFLTLVSGSTIEKCTTFDDVQPPNYTQFLSSHRGVYYPD DIFRSDVLHLTQDHFLPFDSNVTGFITFGLNFDNPIIPFKDGIYF AATEKSNVIRGWVFGSTMNNKSQSVIIMNNSTNVVIRACNFEL CDNPFFAVSKPNNTQIPSYIFBNAFNCTFEYVSDDFNLDVGEK PGNFKHLREFVFKNKDGFLYVYSGYQPIDVASGLPSGFNALKP IFKLPLGINITNFRTLLTAFPPRPDYWGTSAAAYFVGYLKPTTF MLKYDENGTITDAVDCSQNPLAELKCSVKSFEIDKGIYQTSNF RVVPSGDVVRFPNITNLCPFGEVFNATKFPSVYAWERKRISNC VADYSVLYNSTFFSTFKCYGVSATKLNDLCFSNVYADSFVVKG DDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWNTRNIDATST GNYNYKYRYLRHGKLRPFERDISNVPFSPDGKPCTPPALNCY WPLNDYGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTD LIKNQCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNCT DVPVAIHADQLTPAWRVYSTGNNVFQTQAGCLIGAEHVDTSY ECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGADSSIAYS NNTIAIPTNFSISITTEVMPVSMAKTSVDCNMYICGDSTECANLL LQYGSFCTQLNRALSGIAVEQDRNTREVFAQVKQMYKTPTLK DFGGFNFSQILPDPLKPTKRSFIEDLLFNKVTLADAGFMKQYG ECLGDINARDLICAQKFNGLTVLPPLLTDDMIAAYTAALVSGTA TAGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKQIA NQFNKAISQIQESLTTTSTALGKLQDVVNQNAQALNTLVKQLS SNFGAISSVLNDILSRLDPPEAEVQIDRLITGRLQSLQTYVTQQ LIRAAEIRASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQ AAPHGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVF NGTSWFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTVYDPLQ PELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRL NEVAKNLNESLIDLQELGKYEQYIKWPWYVWLGFIAGLIAIVMV TILLCCMTSCCSCLKGACSCGSCCKFDEDDSEPVLKGVKLHY T
11	Artificial Sarbecovirus spike consensus 2	MFIFLLFFTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPVIPFKDGIY FAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVVIRACNFE LCDNPFFVVSKPMGTRTHTMIFDNAFNCTFEYISDAFSLDVSE KSGNFKHLREFVFKNKDGFLYVYKGYQPIDVVRDLPSGFNTLK PIFKLPLGIKITNFRAILTAFSPAQGTWGTSAAAYFVGYLKPTTF MLKYDENGTITDAVDCSQNPLAELKCSVKSFEIDKGIYQTSNF RVVPSGDVVRFPNITNLCPFGEVFNATKFPSVYAWERKRISNC VADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNVYADSFVVKG DDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWNTRNIDATST GNHNYKYRYLRHGKLRPFERDISNVPFSPDGKPCTPPAPNCY WPLRGYGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTD

		LIKNQCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPRSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAEHVDTSYE CDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGADSSIAYSN NTIAIPTNFSISITTEVMPVSMTKTSVDCNMYICGDSTECANLLL QYGSFCRQLNRALSGIAAEQDRNTREVFVQVKQMYKTPTLKD FGGFNFSQILPDPLKPTKRSFIEDLLFNKVTLADAGFMKQYGE CLGDINARDLICAQKFNGLTVLPPLLTVDMIAAYTAALVSGTAT AGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKQIAN QFNKAISQIQESLTTTSTALGKLQDVVNQNAQALNTLVKQLSS NFGAISSVLNDILSRLDPPEAEVQIDRLITGRLQSLQTYVTQQLI RAAEIRASANLAATKMSECVLGQSKRVGFCGKGYHLMSFPQA APHGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFS GTSWFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVYDPLQP ELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEEIDRLN EVAKNLNESLIDLQELGKYEQYIKWPWYVWLGFIAGLIAIVMVTI LLCCMTSCCSCLKGACSCGSCCKFDEDDSEPVLKGVKLHYT
12	Artificial Sarbecovirus spike consensus 3	MFIFLFFLTLVSGSDLESCTTFDDVQAPNYPQHSSSRRGVYYP DEIFRSDTLYLTQDLFLPFDSNVTGFHTINHRFDNPVIPFKDGV YFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVVIRACNF ELCDNPFFAVSKPTGTQTHTMIFBNAFNCTFEYISDSFSLDVAE KSGNFKHLREFVFKNKDGFLYVYKGYQPIDVVRDLPSGFNILK PIFKLPLGINITNFRAILTAFLPAQDTWGTSAAAYFVGYLKPATF MLKYDENGTITDAVDCSQNPLAELKCSVKSFEIDKGIYQTSNF RVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRISNC VADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNVYADSFVVKG DDVRQIAPGQTGVIADYNYKLPDDFTGCVLAWNTRNIDATQT GNYNYKYRSLRHGKLRPFERDISNVPFSPDGKPCTPPAFNCY WPLNDYGFYTTNGIGYQPYRVVVLSFELLNAPATVCGPKLSTD LIKNQCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNCT DVPVAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAEHVDTSYE CDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGADSSIAYSN NTIAIPTNFSISITTEVMPVSMAKTSVDCNMYICGDSTECANLLL QYGSFCTQLNRALSGIAVEQDRNTREVFAQVKQMYKTPTLKD FGGFNFSQILPDPLKPTKRSFIEDLLFNKVTLADAGFMKQYGE CLGDINARDLICAQKFNGLTVLPPLLTDDMIAAYTAALVSGTAT AGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKQIAN QFNKAISQIQESLTTTSTALGKLQDVVNQNAQALNTLVKQLSS NFGAISSVLNDILSRLDPPEAEVQIDRLITGRLQSLQTYVTQQLI RAAEIRASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQA APHGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFN GTSWFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVYDPLQP ELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLN EVAKNLNESLIDLQELGKYEQYIKWPWYVWLGFIAGLIAIVMVTI LLCCMTSCCSCLKGACSCGSCCKFDEDDSEPVLKGVKLHYT
13	Artificial Sarbecovirus spike consensus 4	MFIFLFFLTLVSGSTIEKCTTFDDVQPPNYTQFLSSHRGVYYPD DIFRSDVLHLTQDHFLPFDSNVTGFITFGLNFDNPIIPFKDGIYF AATEKSNVIRGWVFGSTMNNKSQSVIIMNNSTNVVIRACNFEL CDNPFFAVSKPNNTQIPSYIFBNAFNCTFEYVSDDFNLDVGEK PGNFKHLREFVFKNKDGFLYVYSGYQPIDVASGLPSGFNALKP IFKLPLGINITNFRTLLTAFPPRPDYWGTSAAAYFVGYLKPTTF MLKYDENGTITDAVDCSQNPLAELKCSVKSFEIDKGIYQTSNF RVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRISNC

		VADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNVYADSFVVKG DDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWNTRNIDATST GNYNYKYRSLRHGKLRPFERDISNVPFSPDGKPCTPPAFNCY WPLNDYGFFTTNGIGYQPYRVVVLSFELLNAPATVCGPKLSTD LIKNQCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNCT DVPVAIHADQLTPAWRVYSTGNNVFQTQAGCLIGAEHVDTSY ECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGADSSIAYS NNTIAIPTNFSISITTEVMPVSMAKTSVDCNMYICGDSTECANLL LQYGSFCTQLNRALSGIAVEQDRNTREVFAQVKQMYKTPTLK DFGGFNFSQILPDPLKPTKRSFIEDLLFNKVTLADAGFMKQYG ECLGDINARDLICAQKFNGLTVLPPLLTDDMIAAYTAALVSGTA TAGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKQIA NQFNKAISQIQESLTTTSTALGKLQDVVNQNAQALNTLVKQLS SNFGAISSVLNDILSRLDPPEAEVQIDRLITGRLQSLQTYVTQQ LIRAAEIRASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQ AAPHGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVF NGTSWFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTVYDPLQ PELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRL NEVAKNLNESLIDLQELGKYEQYIKWPWYVWLGFIAGLIAIVMV TILLCCMTSCCSCLKGACSCGSCCKFDEDDSEPVLKGVKLHY T
14	Artificial Sarbecovirus spike consensus 5	MFVFLFLLLPLVSSQCVNLTTRTGIPPGYTNSSTRGVYYPDKVF RSSVLHLTQDLFLPFFSNVTWFNAINYQGGFKRFDNPVLPFND GVYFASTEKSNIIRGWIFGTTLDARTQSLLIVNNATNVVIKVCEF QFCTDPFLGVYYHNNNKTWVENEFRVYSSANNCTFEYVSQP FLMDLEGKQGNFKNLREFVFKNVDGYFKIYSKHTPIDLVRDLP RGFSALEPLVDLPIGINITRFQTLLALHRSYLTPGKLESGWTTG AAAYYVGYLQPRTFLLSYNENGTITDAVDCALDPLSETKCTLK SLTVEKGIYQTSNFRVQPTISIVRFPNITNLCPFGEVFNATRFAS VYAWNRKRISNCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCF TNVYADSFVVRGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIA WNSVKQDALTGGNYNYLYRLFRKSKLKPFERDISTEIYQAGST PCNGVVGLNCYYPLQRYGFHPTTGVGYQPYRVVVLSFELLNA PATVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTESNKKFLPF QQFGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSN QVAVLYQDVNCTEVPVAIHADQLTPTWRVYSTGSNVFQTRAG CLIGAEHVNNSYECDIPIGAGICASYQTQTNSPRRARSVNSQSI IAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVD CTMYICGDSIECSNLLLQYGSFCTQLNRALTGIAVEQDKNTQE VFAQVKQIYKTPPIKDFGGFNFSQILPDPSKPSKRSFIEDLLFNK VTLADAGFIKQYGDCLGDIAARDLICAQKFNGLTVLPPLLTDEM IAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVT QNVLYENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNQN AQALNTLVKQLSSNFGAISSVLNDILSRLDPPEAEVQIDRLITGR LQSLQTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVDFC GKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHEG KAHFPREGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGSCD VVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISG INASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYI WLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSCGSCCKFDED DSEPVLKGVKLHYT
15	Artificial Sarbecovirus	MFVFLFLLLPLVSSQCVNLTTRTGIPPGYTNSSTRGVYYPDKVF RSSVLHLTQDLFLPFFSNVTWFNAINYQGGFKRFDNPVLPFND

	spike consensus 6	GVYFASTEKSNIIRGWIFGTTLDARTQSLLIVNNATNVVIKVCEF QFCTDPFLGVYYHNNNKTWVENEFRVYSSANNCTFEYVSQP FLMDLEGKQGNFKNLREFVFKNVDGYFKIYSKHTPIDLVRDLP RGFSALEPLVDLPIGINITRFQTLLALHRSYLTPGKLESGWTTG AAAYYVGYLQPRTFLLSYNENGTITDAVDCALDPLSETKCTLK SFTVEKGIYQTSNFRVQPTESIVRFPNITNLCPFGEVFNATRFA SVYAWNRKRISNCVADYSVLYNSASFSTFKCYGVSPTKLNDL CFTNVYADSFVIRGDEVRQIAPGQTGKIADYNYKLPDDFTGCVI AWNSNNLDSKVGGNYNYLYRLFRKSNLKPFERDISTEIYQAGS TPCNGVEGFNCYFPLQSYGFQPTNGVGYQPYRVVVLSFELLH APATVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTESNKKFLPF QQFGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSN QVAVLYQDVNCTEVPVAIHADQLTPTWRVYSTGSNVFQTRAG CLIGAEHVNNSYECDIPIGAGICASYQTQTNSPRRARSVNSQSI IAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVD CTMYICGDSIECSNLLLQYGSFCTQLNRALTGIAVEQDKNTQE VFAQVKQIYKTPPIKDFGGFNFSQILPDPSKPSKRSFIEDLLFNK VTLADAGFIKQYGDCLGDIAARDLICAQKFNGLTVLPPLLTDEM IAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVT QNVLYENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNQN AQALNTLVKQLSSNFGAISSVLNDILSRLDPPEAEVQIDRLITGR LQSLQTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVDFC GKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHEG KAHFPREGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGSCD VVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISG INASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYI WLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSCGSCCKFDED DSEPVLKGVKLHYT
16	Artificial Sarbecovirus spike consensus 7	MFVFLFLLLPLVSSQCVNLTTRTGIPPGYTNSSTRGVYYPDKVF RSSILHLTQDLFLPFFSNVTWFNTINYQGGFKKFDNPVLPFND GVYFASTEKSNIIRGWIFGTTLDNTTQSLLIVNNATNVVIKVCEF QFCTDPFLGVYYHNNNKTWVENEFRVYSSANNCTFEYVSQP FLMDLEGKQGNFKNLREFVFKNVDGYFKIYSKHTPIDLVRDLP RGFSALEPLVDLPIGINITRFQTLLALHRSYLTPGKLESGWTTG AAAYYVGYLQQRTFLLSYNENGTITDAVDCSLDPLSETKCTLK SLTVEKGIYQTSNFRVQPTISIVRFPNITNLCPFGEVFNATKFAS VYAWNRKRISNCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCF TNVYADSFVVRGDEVRQIAPGQTGVIADYNYKLPDDFTGC VIAWNSVKQDAKTGGNYNYLYRLFRKSKLKPFERDISTEIYQA GSTPCNGVVGLNCYYPLERYGFHPTNGVGYQPYRVVVLSFEL LNAPATVCGPKLSTTLVKNKCVNFNFNGLTGTGVLTTSKKKFL PFQQFGRDISDTTDAVRDPQTLEILDITPCSFGGVSVITPGTNT SNQVAVLYQDVNCTEVPMAIHADQLTPTWRVYSTGANVFQTR AGCLIGAEHVNNSYECDIPIGAGICASYHTQTNSRSVNSQSIIA YTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCT MYICGDSIECSNLLLQYGSFCTQLNRALTGIAVEQDKNTQEVF AQVKQIYKTPPIKDFGGFNFSQILPDPSKPSKRSFIEDLLFNKVT LADAGFIKQYGDCLGDIAARDLICAQKFNGLTVLPPLLTDEMIA QYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQN VLYENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNQNAQ ALNTLVKQLSSNFGAISSVLNDILSRLDPPEAEVQIDRLITGRLQ SLQTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVDFCGK GYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHEGKA HFPREGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGSCDVVI

		GIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINA SVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYIWL GFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSE PVLKGVKLHYT
17	Artificial Sarbecovirus spike consensus 8	MFIFLFFLTLVSSQCVNFDDRTPPPPTQTNSSTRGVYYPDDIF RSSVLHLTQDLFLPFFSNVTWFHTINYRFDNPVIPFKDGVYFAA TEKSNVIRGWIFGSTMDNKSQSVIIVNNSTNVVIRVCNFQLCDN PFFAVYNKTWTQIESRVYSNAFNCTFEYVSKSFLLDLGEKQGN FKHLREFVFKNKDGFLKVYSGYTPIDLVRDLPSGFNALKPIFKL PLGINITNFRTLLTAFRPGQSGWGTSAAAYFVGYLKPRTFMLK YDENGTITDAVDCSQDPLAELKCTLKSFEVEKGIYQTSNFRVQ PTKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRISNCVAD YSVLYNSTSFSTFKCYGVSPTKLNDLCFSNVYADSFVVKGDD VRQIAPGQTGVIADYNYKLPDDFTGCVLAWNTRNIDATTGGNY NYLYRLFRHSKLKPFERDISNVIYSPGGKPCTPPGFNCYWPLN DYGFYPTNGVGYQPYRVVVLSFELLNAPATVCGPKLSTDLVK NKCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTDSVR DPKTLEILDISPCSFGGVSVITPGTNTSSZVAVLYQDVNCTDVP VAIHADQLTPAWRVYSTGNNVFQTQAGCLIGAEHVNNSYECDI PIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAENSIAYSNNSIA IPTNFSISVTTEVLPVSMTKTSVDCTMYICGDSTECSNLLLQYG SFCTQLNRALSGIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGF NFSQILPDPSKPSKRSFIEDLLFNKVTLADAGFMKQYGDCLGDI NARDLICAQKFNGLTVLPPLLTDEMIAAYTAALVSGTATAGWT FGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKQIANQFNK AISQIQESLTTTSTALGKLQDVVNQNAQALNTLVKQLSSNFGAI SSVLNDILSRLDPPEAEVQIDRLITGRLQSLQTYVTQQLIRAAEI RASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPHG VVFLHVTYVPSQERNFTTAPAICHEGKAHFPREGVFVSNGTH WFITQRNFYSPQIITTDNTFVSGSCDVVIGIVNNTVYDPLQPEL DSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEV AKNLNESLIDLQELGKYEQYIKWPWYVWLGFIAGLIAIVMVTIM LCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVLKGVKLHYT
18	Artificial Sarbecovirus RBD consensus 1	SNFRVVPSGDVVRFPNITNLCPFGEVFNATKFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNVYADSFV VKGDDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWNTRNIDA TSTGNHNYKYRYLRHGKLRPFERDISNVPFSPDGKPCTPPAP NCYWPLRGYGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPK LSTDLIKNQCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVS DFTDSVRDPKTSEIL
19	Artificial Sarbecovirus RBD consensus 2	SNFRVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNVYADSFV VKGDDVRQIAPGQTGVIADYNYKLPDDFTGCVLAWNTRNIDAT QTGNYNYKYRSLRHGKLRPFERDISNVPFSPDGKPCTPPAFN CYWPLNDYGYTTNGIGYQPYRVVVLSFELLNAPATVCGPKLS TDLIKNQCVNFNFNGLTGTGVLTPSSRFQPFQQFGRDVSDFT DSVRDPKTSEIL
20	Artificial Sarbecovirus RBD consensus 3	SNFRVQPTISIVRFPNITNLCPFGEVFNATRFASVYAWNRKRIS NCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCFTNVYADSFVV RGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNSVKQDAL TGGNYNYLYRLFRKSKLKPFERDISTEIYQAGSTPCNGVVGLN CYYPLQRYGFHPTTGVGYQPYRVVVLSFELLNAPATVCGPKK STNLVKNKCVNFNFNGLTGTGVLTESNKKFLPFQQFGRDIADT TDAVRDPQTLEIL

21	Artificial Sarbecovirus RBD consensus 4	SNFRVQPTISIVRFPNITNLCPFGEVFNATKFASVYAWNRKRIS NCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCFTNVYADSFVV RGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNSVKQDAK TGGNYNYLYRLFRKSKLKPFERDISTEIYQAGSTPCNGVVGLN CYYPLERYGFHPTNGVGYQPYRVVVLSFELLNAPATVCGPKL STTLVKNKCVNFNFNGLTGTGVLTTSKKKFLPFQQFGRDISDT TDAVRDPQTLEIL
22	Artificial Sarbecovirus RBD consensus 5	SNFRVQPTKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCFSNVYADSFV VKGDDVRQIAPGQTGVIADYNYKLPDDFTGCVLAWNTRNIDAT TGGNYNYLYRLFRHSKLKPFERDISNVIYSPGGKPCTPPGFNC YWPLNDYGFYPTNGVGYQPYRVVVLSFELLNAPATVCGPKLS TDLVKNKCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDF TDSVRDPKTLEIL
23	Coronavirus BtRs-BetaCoV/YN2018B Spike protein (Genbank: QDF43825)	MKLLVLVFATLVSSYTIEKCTDFDDRTPPSNTQFLSSHRGVYY PDDIFRSNVLHLVQDHFLPFDSNVTRFITFGLNFDNP IIPFRDGVYFAATEKSNVIRGWVFGSTMNNKSQSVIIMNNSTNL VIRACNFELCDNPFFVVLRSNNTQIPSYIFNNAFNC TFEYVSKDFNLDIGEKPGNFKDLREFVFRNKDGFLHVYSGYQ PISAASGLPTGFNALKPIFKLPLGINITNFRTLLTAFP PNPGYWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQN PLAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNI TNLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNSTSFS TFKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAP GQTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYR SLRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYWPLN DYGFFTTNGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKN QCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFT DSVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNC TDVPVAIHADQLTPAWRIYSTGNNVFQTQAGCLIGA EHVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGA DSSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVD CNMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTR EVFAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSF IEDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIP FAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTT TSTALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVL NDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASA NLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAP HGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNG TSWFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTV YDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQK EIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVW LGFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDS EPVLKGVKLHYT
24	Bat SARS-like coronavirus Spike protein (Genbank: ATO98218)	MKLLVLVFATLVSSYTIEKCLDFDDRTPPANTQFLSSHRGVYY PDDIFRSNVLHLVQDHFLPFDSNVTRFITFGLNFDNP IIPFRDGIYFAATEKSNVIRGWVFGSTMNNKSQSVIIMNNSTNL VIRACNFELCDNPFFVVLKSNNTQIPSYIFNNAFNC TFEYVSKDFNLDLGEKPGNFKDLREFVFRNKDGFLHVYSGYQ PISAASGLPTGFNALKPIFKLPLGINITNFRTLLTAFP PRPDYWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQN PLAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNI

		TNLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNSTSFS TFKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAP GQTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYR SLRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYWPLN DYGFFTTNGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKN QCVNFNFNGLTGTGVLTSSSKRFQPFQQFGRDVSDFT DSVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNC TDVPVAIHADQLTPAWRIYSTGNNVFQTQAGCLIGA EHVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGA DSSIVYSNNTIAIPTNFSISITTEVMPVSMAKTSVD CNMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTR EVFAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSF IEDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIP FAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTT TSTALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVL NDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASA NLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAP HGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNG TSWFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTV YDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQK EIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVW LGFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDS EPVLKGVKLHYT
25	Bat SARS-like coronavirus Spike protein (Genbank: ATO98231)	MKLLVLVFATLVSSYTIEKCLDFDDRTPPANTQFLSSHRGVYY PDDIFRSNVLHLVQDHFLPFDSNVTRFITFGLNFDNP IIPFRDGIYFAATEKSNVIRGWVFGSTMNNKSQSVIIMNNSTNL VIRACNFELCDNPFFVVLKSNNTQIPSYIFNNAFNC TFEYVSKDFNLDLGEKPGNFKDLREFVFRNKDGFLHVYSGYQ PISAASGLPTGFNALKPIFKLPLGINITNFRTLLTAFP PRPDYWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQN PLAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNI TNLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNSTSFS TFKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAP GQTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYR SLRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYWPLN DYGFFTTNGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKN QCVNFNFNGLTGTGVLTSSSKRFQPFQQFGRDVSDFT DSVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNC TDVPVAIHADQLTPAWRIYSTGNNVFQTQAGCLIGA EHVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGA DSSIVYSNNTIAIPTNFSISITTEVMPVSMAKTSVD CNMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTR EVFAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSF IEDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIP FAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTT TSTALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVL NDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASA NLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAP HGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNG TSWFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTV YDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQK EIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVW

		LGFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDP EPVLKGVKLHYT
26	Bat SARS-like coronavirus RsSHC014 Spike protein (Genbank: AGZ48806)	MKLLVLVFATLVSSYTIEKCLDFDDRTPPANTQFLSSHRGVYY PDDIFRSNVLHLVQDHFLPFDSNVTRFITFGLNFDNP IIPFRDGIYFAATEKSNVIRGWVFGSTMNNKSQSVIIMNNSTNL VIRACNFELCDNPFFVVLKSNNTQIPSYIFNNAFNC TFEYVSKDFNLDLGEKPGNFKDLREFVFRNKDGFLHVYSGYQ PISAASGLPTGFNALKPIFKLPLGINITNFRTLLTAFP PRPDYWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQN PLAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNI TNLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNSTSFS TFKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAP GQTGVIADYNYKLPDDFLGCVLAWNTNSKDSSTSGNYNYLYR WVRRSKLNPYERDLSNDIYSPGGQSCSAVGPNCYNPLR PYGFFTTAGVGHQPYRVVVLSFELLNAPATVCGPKLSTDLIKN QCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFT DSVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNC TDVPVAIHADQLTPSWRVYSTGNNVFQTQAGCLIGA EHVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGA DSSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVD CNMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTR EVFAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSF IEDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIP FAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTT TSTALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVL NDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASA NLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAP HGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNG TSWFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTV YDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQK EIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVW LGFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDS EPVLKGVKLHYT
27	Bat SARS-like coronavirus Spike protein (Genbank: ATO98132)	MKLLVLVFATLVSSYTIEKCLDFDDRTPPANTQFLSSHRGVYY PDDIFRSNVLHLVQDHFLPFDSNVTRFITFGLNFDNP IIPFRDGIYFAATEKSNVIRGWVFGSTMNNKSQSVIIMNNSTNL VIRACNFELCDNPFFVVLKSNNTQIPSYIFNNAFNC TFEYVSKDFNLDLGEKPGNFKDLREFVFRNKDGFLHVYSGYQ PISAASGLPTGFNALKPIFKLPLGINITNFRTLLTAFP PRPDYWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQN PLAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNI TNLCPFGEVFNATTFPSVYAWERKRISNCVADYSILYNSTSFS TFKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAP GQTGVIADYNYKLPDDFLGCVLAWNTNSKDSSTSGNYNYLYR WVRRSKLNPYERDLSNDIYSPGGQSCSAVGPNCYNPLR PYGFFTTAGVGHQPYRVVVLSFELLNAPATVCGPKLSTDLIKN QCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFT DSVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNC TDVPVAIHADQLTPSWRVYSTGNNVFQTQAGCLIGA EHVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGA DSSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVD CNMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTR EVFAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSF

		IEDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIP FAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTT TSTALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVL NDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASA NLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAP HGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNG TSWFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTV YDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQK EIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVW LGFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDS EPVLKGVKLHYT
28	Bat SARS-like coronavirus Rs3367 Spike protein (Genbank: AGZ48818)	MKLLVLVFATLVSSYTIEKCLDFDDRTPPANTQFLSSHRGVYY PDDIFRSNVLHLVQDHFLPFDSNVTRFITFGLNFDNP IIPFKDGIYFAATEKSNVIRGWVFGSTMNNKSQSVIIMNNSTNL VIRACNFELCDNPFFVVLKSNNTQIPSYIFNNAFNC TFEYVSKDFNLDLGEKPGNFKDLREFVFRNKDGFLHVYSGYQ PISAASGLPTGFNALKPIFKLPLGINITNFRTLLTAFP PRPDYWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQN PLAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNI TNLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNSTSFS TFKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAP GQTGVIADYNYKLPDDFTGCVLAWNTRNIDATQTGNYNYKYR SLRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYWPLN DYGFYITNGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFT DSVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNC TDVPVAIHADQLTPSWRVYSTGNNVFQTQAGCLIGA EHVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGA DSSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVD CNMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTR EVFAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSF IEDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIP FAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTT TSTALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVL NDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASA NLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAP HGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNG TSWFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTV YDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQK EINRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVW LGFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDS EPVLKGVKLHYT
29	Bat SARS-like coronavirus WIV1 Spike protein (Genbank: AGZ48828)	MKLLVLVFATLVSSYTIEKCLDFDDRTPPANTQFLSSHRGVYY PDDIFRSNVLHLVQDHFLPFDSNVTRFITFGLNFDNP IIPFKDGIYFAATEKSNVIRGWVFGSTMNNKSQSVIIMNNSTNL VIRACNFELCDNPFFVVLKSNNTQIPSYIFNNAFNC TFEYVSKDFNLDLGEKPGNFKDLREFVFRNKDGFLHVYSGYQ PISAASGLPTGFNALKPIFKLPLGINITNFRTLLTAFP PRPDYWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQN PLAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNI TNLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNSTSFS TFKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAP

		GQTGVIADYNYKLPDDFTGCVLAWNTRNIDATQTGNYNYKYR SLRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYWPLN DYGFYITNGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFT DSVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNC TDVPVAIHADQLTPSWRVHSTGNNVFQTQAGCLIGA EHVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGA DSSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVD CNMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTR EVFAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSF IEDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIP FAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTT TSTALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVL NDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASA NLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAP HGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNG TSWFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTV YDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQK EIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVW LGFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDS EPVLKGVKLHYT
30	SARS coronavirus Tor2 Spike glycoprotein (Genbank: YP_009825051)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCAFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

31	Bat SARS-like coronavirus Spike protein (Genbank: ATO98157)	MFIFLFFLTLTSGSDLESCTTFDDVQAPNYPQHSSSRRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHRFDNPV IPFKDGVYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNV VIRACNFELCDNPFFAVSKPTGTQTHTMIFDNAFNCT FEYISDSFSLDVAEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNILKPIFKLPLGINITNFRAILTAFLP AQDTWGTSAAAYFVGYLKPATFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNIT NLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFLGCVLAWNTNSKDSSTSGNYNYLYRW VRRSKLNPYERDLSNDIYSPGGQSCSAIGPNCYNPLRP YGFFTTAGVGHQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTSSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNCT DVPVAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTREV FAQVKQMYKTPALKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDVNARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTCVPSQERNFTTAPAICHEGKAYFPREGVFVFNGT SWFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
32	SARS-like coronavirus WIV16 Spike protein (Genbank: ALK02457)	MFIFLFFLTLTSGSDLESCTTFDDVQAPNYPQHSSSRRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHRFDNPV IPFKDGVYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNV VIRACNFELCDNPFFAVSKPTGTQTHTMIFDNAFNCT FEYISDSFSLDVAEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNILKPIFKLPLGINITNFRAILTAFLP AQDTWGTSAAAYFVGYLKPATFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNIT NLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFTGCVLAWNTRNIDATQTGNYNYKYRS LRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYWPLND YGFYITNGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVLDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNCT DVPVAIHADQLTPSWRVYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTREV FAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
33	Bat SARS-like coronavirus Spike protein (Genbank: ATO98205)	MFIFLFFLTLTSGSDLESCTTFDDVQAPNYPQHSSSRRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHRFDNPV IPFKDGVYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNV VIRACNFELCDNPFFAVSKPTGTQTHTMIFDNAFNCT FEYISDSFSLDVAEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNILKPIFKLPLGINITNFRAILTAFLP AQDTWGTSAAAYFVGYLKPATFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVAPSKEVVRFPNIT NLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFTGCVLAWNTRNIDATQTGNYNYKYRS LRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYWPLND YGFYITNGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNTSSEVAVLYQDVNCT DVPVAIHADQLTPSWRVYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAVEQDRNTREV FAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGSCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
34	*Rhinolophus affinis* coronavirus Spike protein (Genbank: AHX37558)	MFLTCFILSFSLFCVSGDSIDTCETFDDVSPPQQNLVSSSKRG VYYPDDIYRSDVHHLVQDLFLPFNSNVVGLMSFNYRF DNPIIPFKDGVYFAATEKSNVVRGWVFGSTMNNKSQSVIIMNN STNVVIRACNFQLCDNPFFAVIRPTSQQIETILFENA FNCTFEYVSDSFLMDVGEKPGNFKHLREFIFKNKDGFLNIYSG FQNIDVANGLPSGFSLLKPLLKLPLGLNITNFRVLLT AFIPNIGTWGTSPVAYFVGYLKPTTFMLKYDYNGTIVDAVDCS QHPLAELKCSVKSFEIDKGIYQTSNFRVSPSKEVVRF PNITNLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNST SFSTFKCYGVSAIKLNDLCFSNVYADSFVVKGDDVRQ IAPGQTGVIADYNYKLPDDFMGCVLAWNTRNIDATSSGNFNYK YRSLRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYW

		PLNDYGFYTTNGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLI TNQCVNFNFNGLTGTGVLTPSLKRFQPFQQFGRDFS DFTDSVRDPKTLEVLDISPCSFGGVSVITPGTNISSEVAVLYQD VNCTDVPTAIHADQLTPAWRIYSAGVNVFQTQAGCL IGAEHVNASYECDIPIGAGICASYHTASLLRNTDQKSIVAYTMS LGAENSIAYANNSIAIPTNFSISITTEVMPVSMAKT SVDCTMYICGDSQECSNLLLQYGSFCTQLNRALSGIAVEQDK NTQEVFAQVKQIYKTPAIKDFGGFNFSQILPDPSKPTK RSFIEDLLFNKVTLADAGFMKQYGECLGDISARDLICAQKFNGL TVLPPLLTDEMIAAYTAALVSGTATAGWTFGAGAAL QIPFAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQES LTTTSTALGKLQDVVNQNAQALNTLVKQLSSNFGAIS SVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIR ASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQ AAPHGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVS NGTSWFITQRNFFSPQLITTDNTFVSGNCDVVIGIIN NTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISRINASVV NIQKEIDRLNEVAKNLNESLIDLQELGKYEQYIKWPW YVWLGFIAGLIAIVMATILLCCMTSCCSCLKGACSCGSCCKFDE DDSEPVLKGVKLHYT
35	*Rhinolophus affinis* coronavirus Spike protein (Genbank: AHX37569)	MFLTCFILIFSLFCVSGDSIDTCETFDDVSPPQQNLVSSSKRGV YYPDDIYRSDAHHLVQDLFLPFNSNVVGLMSFNYRF DNPIIPFKDGVYFAATEKSNVVRGWVFGSTMNNKSQSAIIMNN STNVVIRACNFQLCDNPFFAVIRPTSQQIETILFENA FNCTFEYVSDSFLMDVGEKPGNFKHLREFIFKNKDGFLYIYSG FQNIDVANGLPSGFSLLKPLLKLPLGLNITNFRVLLT AFIPNIGTWGTSPVAYFVGYLKPTTFMLKYDYNGTIVDAVDCS QHPLAELKCSVKSFDIDKGIYQTSNFRVSPSREVVRF PNITNLCPFGEVFNATTFPSVYAWERKRISNCVADYSVLYNST SFSTFKCYGVSAIKLNDLCFSNVYADSFVVKGDDVRQ IAPGQTGVIADYNYKLPDDFMGCVLAWNTRNIDATSSGNFHYK YRSLRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYW PLNDYGFYTTNGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLI TNQCVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVS DFTDSVRDPKTLEVLDISPCSFGGVSVITPGTNISSEVAVLYQD VNCTDVPTAIHADQLTPAWRIYSAGENVFQTQAGCL IGAEHVNASYECDIPIGAGICASYHTASLLRNTGQKSIVAYTMS LGAENSIAYANNSIAIPTNFSISITTEVMPVSMAKT SVDCTMYICGDSQECSNLLLQYGSFCTQLNRALSGIAVEQDS NTQEVFAQVKQIYKTPAIKDFGGFNFSQILPDPSKPTK RSFIEDLLFNKVTLADAGFMKQYGECLGDISARDLICAQKFNGL TVLPPLLTDEMIAAYTAALVSGTATAGWTFGAGAAL QIPFAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQES LTTTSTALGKLQDVVNQNAQALNTLVKQLSSNFGAIS SVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIR ASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQ AAPHGVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVF NGTSWFITQRNFFSPQLITTDNTFVSGNCDVVIGIIN NTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISRINASVV NIQKEIDRLNEVAKNLNESLIDLQELGKYEQYIKWPW YVWLGFIAGLIAIVMATILLCCMTSCCSCLKGACSCGSCCKFDE DDSEPVLKGVKLHYT
36	SARS-related coronavirus	MKFFILLSLLSFTTAQEGCGILSNKSNPALTQYFSSRRGFYYFD DTFRSSVRVLTTGYFLPFNSNLTGYSSRNSVTGRLI

	Spike protein (Genbank: APO40579)	QFDNPNIPFKDGLYFAATERSNVIRGWIFGSTLDNTTQSAVLF NNGTHIVINVCNFYFCQDPMLAVANGSHFKSWVFLNA TNCTYNRVHGFEIDPSPNTGSFIHLREHVFRNVDGFLYVYHNY ERVDVYDNFPQGFSVLKPIFKLPFGLNITQFKVIMTL FSPTTSSFNADASVYFVGHLKPLTMLAEFDENGTITDAVDCSQ DPLSELKCTTKSLTVEKGIYQTSNFRVSPSTEVVRFP NITNLCPFGQVFNASNFPSVYAWERLRISDCVADYAVLYNSSS SFSTFKCYGVSPTKLNDLCFSSVYADYFVVKGDDVRQ IAPAQTGVIADYNYKLPDDFTGCVLAWNTNSVDSKSGNNFYY RLFRHGKIKPYERDISNVLYNSAGGTCSSISQLGCYEP LKSYGFTPTVGVGYQPYRVVVLSFELLNAPATVCGPKKSTELV KNKCVNFNFNGLTGTGVLTSSTKKFQPFQQFGRDVSD FTDSVRDPKTFEILDISPCSYGGVSVITPGTNTSKAVAVLYQDV NCTDVPTMIHVEQVSSDWRVYAFNSYGNMFQTQAGC LVGAIYENTTYECDIPIGAGICAKFGSDKIRMGQESIVAYTMSIG EDQSIAYSNNIIAIPTNFSISVTTEVLPVSMTKTS VDCNMYICGDSTECSNLLLQYGSFCTQLNRALSGIAVEQDRN TRDVFAQTKSIYKTPNIKDFGGFNFSQILPDPKKLSYR SFIEDLLYNKVTLSDPGFMKQYGDCLGGINARDLICAQKFNGL TVLPPLLTDDMIAAYTAALISGTATAGYTFGAGAALQ IPFAMQMAYRFNGIGVTQNVLYENQKQIANQFNNAISKIQDSLT TTSAALGKLQDVINQNAVALNTLVKQLSSNFGAISS VLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRA SANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQA APHGVVFLHVTYVPSQQQNFTTAPAICHNGKAYFPREGVFVM NGTHWFITQRNFYSPQVITTDNTFESGSCDVVIGIINN TVYDPLQPELESFKQELDKYFKNHTSPDVDFGDISGINASVVDI KKEIAHLNEIAKNLNESLIDLQELGKYEQYVKWPWY VWLGFVAGIVAILMSVIMLCCMTNCCSCFKGMCSCGSCCKFD EDHSEPVSGVKLHYT
37	SARS-like coronavirus BatCoV/BB9904/BGR/2008 Spike glycoprotein (Genbank: ALJ94036)	MKVLIFLSLLSLVSAQDGCDRFSSKKTPLLTQFPSSKRGLYYF DDIFRSSTRVLTSGHFLPFNSNVTRYTTQHSAPGEWM IYFDNPNITFGDGVYFGAAERSNALRGWIFGSTMDNTTQSAIL YNNGTHIVISVCNFNLCEQPMIKVFAGRSYRSLIYTN AANCTYQRVHAFNITTATGNGNLIHFREHVFRNVDGFLYVYHN YELVNLSHTNPSFPAGFSVLKPIFKLPFGLNITFVRA IMTVFSASTSQFEADYSAYFVGHLKPLTMLVDFDENGTITDAV DCSQDPLSELKCTTKSFTVEKGIYQTSNFRVTPTTEV VRFPNITKLCPFDQVFNASSFPSVYAWERVRITDCVANYAVLY NSSVSFSTFQCYGVSPTKLNDLCFSSVYADYFIVKGD DVRQIAPSQTGVIADYNYKLPDDFTGCVIAWNTNALDSNKDFY YRLFRHGKIKPYGRDLSNIPYSPSGTCSTINNLNCFA PLKSYGFTQSSGISFQPYRVVVLSFELLNAPATVCGPKQSTEL VKDKCVNFNFNGLTGTGVLTSSSKKFQPFQQFGRDVS DFTDSVRDPKTLEILDIAPCSYGGVSVITPGTNASNSVAVLYQD VNCTDVPTMLHAEQISHDWRVYTFSSDSNIYQTQAG CLIGAAYDNSSYECDIPIGAGICAKYGISSNTRLRSNSQSIVAYT MSLGEDQSIAYSNNTIAIPMNFSISVTTEVLPVSM TKTSVDCNMYICGDSTECSNLLLQYGSFCTQLNRALAGIAVEQ DRNTRDVFAQTKAMYKTPSLKDFGGFNFSQILPDPAK PSSRSFIEDLLYNKVTLADPGFMKQYGDCLGGVNARDLICAQK FNGLTVLPPLLTDEMIAAYTAALVSGTATAGFTFGAG AALQIPFAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQI QDSLSTTTTALGKLQDVINQNAIALNTLVKQLSSNFG

		AISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAA EIRASANIAATKMSECVLGQSKRVDFCGKGYHLMS FPQAAPHGVVFLHVTYVPSQEQNFTTAPAICHGGKAHFPREG VFVTNGTHWFITQRNFYSPQPITTDNTFVSGNCDVVIG IVNNTVYDPLQPELESFKEELDKYFKNHTSQNVSLDGLNNINA SVVDIKKEIEHLNEIAKSLNESLIDLQELGKYEQYIK WPWYVWLGFIAGLIAIVMATIMLCCMTSCCSCLKGVCSCASC CKFDEDHSEPVLTGVKLHYT
38	Bat coronavirus BM48-31/BGR/2008 Spike protein (Genbank: YP_003858584)	MKFLAFLCLLGFANAQDGKCGTLSNKSPSKLTQTPSSRRGFY YFDDIFRSSIRVLTTGHFLPFNTNLTWYLTLKSNGKQR IYYDNPNINFGDGVYFGLTEKSNVFRGWIFGSTLDNTTQSAVL FNNGTHIVIDVCNFNFCADPMFAVNSGQPYKTWIYTS AANCTYHRAHAFNISTNMNPGKFKHFREHLFKNVDGFLYVYH NYEPIDLNSGFPSGFSVLKPILKLPFGLNITYVKAIMT LFSSTQSNFDADASAYFVGHLKPLTMLVDFDENGTIIDAIDCSQ DPLSELKCTTKSFTVEKGIYQTSNFRVTPTTEVVRF PNITQLCPFNEVFNITSFPSVYAWERMRITNCVADYSVLYNSS ASFSTFQCYGVSPTKLNDLCFSSVYADYFVVKGDDVR QIAPAQTGVIADYNYKLPDDFTGCVIAWNTNSLDSSNEFFYRR FRHGKIKPYGRDLSNVLFNPSGGTCSAEGLNCYKPLA SYGFTQSSGIGFQPYRVVVLSFELLNAPATVCGPKQSTELVKN KCVNFNFNGLTGTGVLTNSTKKFQPFQQFGRDVSDFT DSVRDPKTLEILDIAPCSYGGVSVITPGTNASSSVAVLYQDVNC TDVPTMLHADQISHDWRVYAFRNDGNIFQTQAGCLI GAAYDNSSYECDIPIGAGICAKYTNVSSTLVRSGGHSILAYTMS LGDNQDIVYSNNTIAIPMNFSISVTTEVLPVSMTKT SVDCNMYICGDSTECSNLLLQYGSFCTQLNRALAGIAVEQDR NTRDVFAQTKAMYKTPSLKDFGGFNFSQILPDPAKPSS RSFIEDLLYNKVTLADPGFMKQYGDCLGGVNARDLICAQKFN GLTVLPPLLTDEMIAAYTAALISGTATAGFTFGAGAAL QIPFAMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQDS LSTTTTALGKLQDVINQNAIALNTLVKQLSSNFGAIS SVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIR ASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQ AAPHGVVFLHVTYVPSQEQNFTTAPAICHEGKAHFPREGVFV TNGTHWFITQRNFYSPQPITTDNTFVSGNCDVVIGIVN NTVYDPLQPELDSFKEELDKYFKNHTSQNVSLDGLNNINASVV DIKKEIEHLNEIAKSLNESLIDLQELGKYEQYIKWPW YVWLGFIAGLIAIVMATIMLCCMTSCCSCLKGVCSCASCCKFD EDHSEPVLTGVKLHYT
39	Pangolin coronavirus Surface glycoprotein (Genbank: QLR06867)	MLFFFFLHFALVNSQCVNLTGRAAIQPSFTNSSQRGVYYPDTI FRSNTLVLSQGYFLPFYSNVSWYYALTKTNSAEKRVD NPVLDFKDGIYFAATEKSNIVRGWIFGTTLDNTSQSLLIVNNAT NVIIKVCNFQFCYDPYLSGYYHNNKTWSTREFAVYS SYANCTFEYVSKSFMLDIAGKSGLFDTLREFVFRNVDGYFKIY SKYTPVNVNSNLPIGFSALEPLVEIPAGINITKFRTL LTIHRGDPMPNNGWTVFSAAYYVGYLAPRTFMLNYNENGTIT DAVDCALDPLSEAKCTLKSLTVEKGIYQTSNFRVQPTE SIVRFPNITNLCPFGEVFNATTFASVYAWNRKRISNCVADYSVL YNSTSFSTFKCYGVSPTKLNDLCFTNVYADSFVVRG DEVRQIAPGQTGRIADYNYKLPDDFTGCVIAWNSNNLDSKVG GNYNYLYRLFRKSNLKPFERDISTEIYQAGSTPCNGVE GFNCYFPLQSYGFHPTNGVGYQPYRVVVLSFELLNAPATVCG PKQSTNLVKNKCVNFNFNGLTGTGVLTESSKKFLPFQQ

		FGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQV AVLYQDVNCTEVPVAIHADQLTPTWSVYSTGSNVFQ TRAGCLIGAEHVNNSYECDIPIGAGICASYQTQTNSRSVSSQAI IAYTMSLGAENSVAYANNSIAIPTNFTISVTTEILP VSMTKTSVDCTMYICGDSIECSNLLLQYGSFCTQLNRALTGIA VEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQILPD PSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICA QKFNGLTVLPPLLTDEMIAQYTSALLAGTITSGWTF GAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFNSAI GKIQDSLSSTASALGKLQDVVNQNAQALNTLVKQLSS NFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLI RAAEIRASANLAATKMSECVLGQSKRVDFCGKGYH LMSFPQSAPHGVVFLHVTYVPSQEKNFTTTPAICHEGKAHFPR EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGSCDV VIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGI NASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQ YIKWPWYIWLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSCGS CCKFDEDDSEPVLKGVKLHYT
40	Pangolin coronavirus Surface glycoprotein (Genbank: QLR06864)	MLFFFFLHFALVNSQCVNLTGRAAIQPSFTNSSQRGVYYPDTI FRSNTLVLSQGYFLPFYSNVSWYYALTKTNSAEKRVD NPVLDFKDGIYFAATEKSNIVRGWIFGTTLDNTSQSLLIVNNAT NVIIKVCNFQFCYDPYLSGYYHNNKTWSTREFAVYS SYANCTFEYVSKSFMLDIAGKSGLFDTLREFVFRNVDGYFKIY SKYTPVNVNSNLPIGFSALEPLVEIPAGINITKFRTL LTIHRGDPMPNNGWTVFSAAYYVGYLAPRTFMLNYNENGTIT DAVDCALDPLSEAKCTLKSLTVEKGIYQTSNFRVQPTE SIVRFPNITNLCPFGEVFNATTFASVYAWNRKRISNCVADYSVL YNSTSFSTFKCYGVSPTKLNDLCFTNVYADSFVVRG DEVRQIAPGQTGRIADYNYKLPDDFTGCVIAWNSNNLDSKVG GNYNYLYRLFRKSNLKPFERDISTEIYQAGSTPCNGVE GFNCYFPLQSYGFHPTNGVGYQPYRVVVLSFELLNAPATVCG PKQSTNLVKNKCVNFNFNGLTGTGVLTESSKKFLPFQQ FGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQV AVLYQDVNCTEVPVAIHADQLTPTWRVYSTGSNVFQ TRAGCLIGAEHVNNTYECDIPIGAGICASYQTQTNSRSVSSQAI IAYTMSLGAENSVAYANNSIAIPTNFTISVTTEILP VSMTKTSVDCTMYICGDSIECSNLLLQYGSFCTQLNRALTGIA VEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQILPD PSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICA QKFNGLTVLPPLLTDEMIAQYTSALLAGTITSGWTF GAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFNSAI GKIQDSLSSTASALGKLQDVVNQNAQALNTLVKQLSS NFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLI RAAEIRASANLAATKMSECVLGQSKRVDFCGKGYH LMSFPQSAPHGVVFLHVTYVPSQEKNFTTTPAICHEGKAHFPR EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGSCDV VIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGI NASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQ YIKWPWYIWLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSCGS CCKFDEDDSEPVLKGVKLHYT
41	Pangolin coronavirus Surface glycoprotein	MLFFFFLHFALVNSQCVNLTGRAAIQPSFTNSSQRGVYYPDTI FRSNTLVLSQGYFLPFYSNVSWYYALTKTNSAEKRVD NPVLDFKDGIYFAATEKSNIVRGWIFGTTLDNTSQSLLIVNNAT NVIIKVCNFQFCYDPYLSGYYHNNKTWSTREFAVYS

	(Genbank: QLR06866)	SYANCTFEYVSKSFMLDIAGKSGLFDTLREFVFRNVDGYFKIY SKYTPVNVNSNLPIGFSALEPLVEIPAGINITKFRTL LTIHRGDPMPNNGWTVFSAAYYVGYLAPRTFMLNYNENGTIT DAVECALDPLSEAKCTLKSLTVEKGIYQTSNFRVQPTE SIVRFPNITNLCPFGEVFNATTFASVYAWNRKRISNCVADYSVL YNSTSFSTFKCYGVSPTKLNDLCFTNVYADSFVVRG DEVRQIAPGQTGRIADYNYKLPDDFTGCVIAWNSNNLDSKVG GNYNYLYRLFRKSNLKPFERDISTEIYQAGSTPCNGVE GFNCYFPLQSYGFHPTNGVGYQPYRVVVLSFELLNAPATVCG PKQSTNLVKNKCVNFNFNGLTGTGVLTESSKKFLPFQQ FGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQV AVLYQDVNCTEVPVAIHADQLTPTWRVYSTGSNVFQ TRAGCLIGAEHVNNTYECDIPIGAGICASYQTQTNSRSVSSQAI IAYTMSLGAENSVAYANNSIAIPTNFTISVTTEILP VSMTKTSVDCTMYICGDSIECSNLLLQYGSFCTQLNRALTGIA VEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQILPD PSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICA QKFNGLTVLPPLLTDEMIAQYTSALLAGTITSGWTF GAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFNSAI GKIQDSLSSTASALGKLQDVVNQNAQALNTLVKQLSS NFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLI RAAEIRASANLAATKMSECVLGQSKRVDFCGKGYH LMSFPQSAPHGVVFLHVTYVPSQEKNFTTTPAICHEGKAHFPR EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGSCDV VIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGI NASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQ YIKWPWYIWLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSCGS CCKFDEDDSEPVLKGVKLHYT
42	Bat coronavirus RaTG13 Spike glycoprotein (Genbank: QHR63300)	MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSSTRGVYYPDKVF RSSVLHLTQDLFLPFFSNVTWFHAIHVSGTNGIKRFD NPVLPFNDGVYFASTEKSNIIRGWIFGTTLDSKTQSLLIVNNAT NVVIKVCEFQFCNDPFLGVYYHKNNKSWMESEFRVY SSANNCTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKI YSKHTPINLVRDLPPGFSALEPLVDLPIGINITRFQT LLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKYNEN GTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRV QPTDSIVRFPNITNLCPFGEVFNATTFASVYAWNRKRISNCVA DYSVLYNSTSFSTFKCYGVSPTKLNDLCFTNVYADSF VITGDEVRQIAPGQTGKIADYNYKLPDDFTGCVIAWNSKHIDAK EGGNFNYLYRLFRKANLKPFERDISTEIYQAGSKPC NGQTGLNCYYPLYRYGFYPTDGVGHQPYRVVVLSFELLNAPA TVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTESNKKFL PFQQFGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNA SNQVAVLYQDVNCTEVPVAIHADQLTPTWRVYSTGS NVFQTRAGCLIGAEHVNNSYECDIPIGAGICASYQTQTNSRSV ASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTT EILPVSMTKTSVDCTMYICGDSTECSNLLLQYGSFCTQLNRAL TGIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQ ILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDL ICAQKFNGLTVLPPLLTDEMIAQYTSALLAGTITS GWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQ FNSAIGKIQDSLSSTASALGKLQDVVNQNAQALNTLVK QLSSNFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVT QQLIRAAEIRASANLAATKMSECVLGQSKRVDFCG

		KGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGK AHFPREGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSG SCDVVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLG DISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELG KYEQYIKWPWYIWLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCC SCGSCCKFDEDDSEPVLKGVKLHYT
43	SARS-CoV2 Surface glycoprotein (Genbank: YP_009724390)	MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVF RSSVLHSTQDLFLPFFSNVTWFHAIHVSGTNGTKRFD NPVLPFNDGVYFASTEKSNIIRGWIFGTTLDSKTQSLLIVNNAT NVVIKVCEFQFCNDPFLGVYYHKNNKSWMESEFRVY SSANNCTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKI YSKHTPINLVRDLPQGFSALEPLVDLPIGINITRFQT LLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKYNEN GTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRV QPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRKRISNCVA DYSVLYNSASFSTFKCYGVSPTKLNDLCFTNVYADSF VIRGDEVRQIAPGQTGKIADYNYKLPDDFTGCVIAWNSNNLDS KVGGNYNYLYRLFRKSNLKPFERDISTEIYQAGSTPC NGVEGFNCYFPLQSYGFQPTNGVGYQPYRVVVLSFELLHAPA TVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTESNKKFL PFQQFGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNT SNQVAVLYQDVNCTEVPVAIHADQLTPTWRVYSTGS NVFQTRAGCLIGAEHVNNSYECDIPIGAGICASYQTQTNSPRR ARSVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTI SVTTEILPVSMTKTSVDCTMYICGDSTECSNLLLQYGSFCTQL NRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGF NFSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDI AARDLICAQKFNGLTVLPPLLTDEMIAQYTSALLAG TITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLI ANQFNSAIGKIQDSLSSTASALGKLQDVVNQNAQALN TLVKQLSSNFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQ TYVTQQLIRAAEIRASANLAATKMSECVLGQSKRV DFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAIC HDGKAHFPREGVFVSNGTHWFVTQRNFYEPQIITTDNT FVSGNCDVVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPD VDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDL QELGKYEQYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCL KGCCSCGSCCKFDEDDSEPVLKGVKLHYT
44	SARS-CoV2 VOC_May_01	MFVFFVLLPLVFIQCVSFTNIIHLPSSYINSFTRGVYYPDKVFRS SVLYSIRDFFLPFFSNVTWFHVIRTNVIKRFANPV LPFNDGVYFAFIDKFNIIRGWIFGTTLDSKTQSLLIVNNATNVVIK VCEFQFCNYPFYKNNKSCTKSESRVYSSATNCTF EYVSKPFFIDLVVKQGNFKNFSEFVFKNIDGYFKIYSKHTPNLV RGFPQGFLVLEPLVDLPIGINITRFQILYRSYLTPG GFFLGLTAGSAAYYVGYLQLRTFLLKYNENGTITDAVDCALDP LSEIKCTLKSFILEKGIYQTSNFRVQPTESIVRFPNI TNLCPFGEVFNATRFASVYAWNRKRISNCVADYSFLYNSASF STFKCYGVSLTKLNDLCFTNVYADSFVIRGDEVRQIAP GKTGNIADYNYKLPDDFTGCVIAWNSKKLDSKVGGNYKYRFR LFRKSNLKPFERDISTEIYQAGNKPCNGVKGFNCYSPL QPYGFQPTYGVGYQPYRVVVLSFELLHSPSTVCGPKKSTNLV KNKCVNFNFNGLIGTGVLTESNKNFLPFQQFGRDIDDI TDAVRDPQTLDILDITPCSFGGVSVITPGTNTSNQVAVLYHGV NCTEVPFAIHSDQLTPTWRVYSTGFNVFQTRAGCLIG

		VEYVNNSYECDIPIGAGICATYHTHTKSHRRARSVVSQSIIAYT MSLGVENLVVYSNNSIAIPINFTISVITEILPVSMA KTSVDCTMYICGDSTECSNLLLQYGSFCTQLNRALTVIAIEQDK NTQQVFAQVKQIYKIPPIKYFGGFNFSQILPDSSKS SKRSFIEDLFFNKVTLADAGFIKQYGDCLGDISARDLICAQKFN GLNVLPPLLTDEMIAQYTSALLSGTITSGWTLGAGA ALQIPFSMQMAYRFNGIGVTQNVLYENQKLIANQFNSAIGKIQY SFFFTAPALGKLQHVVNQNARALNTLVKQLSSNFGA ISSVLNDILARLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEI RSSANLAAIKMSECVLGQSKRVDFCGKGYHLMSF PQSAPHGVVFFHVTYVPALENNFTTSPAICHYGKAHFPREGVF VSNGTYWFLTQRNFYEPQIITIHNTFLSGNCDVVIGI VNNTVYDPLQPELDSFKEELDKYFKNHTSSYVDLVDISGINASF VNIQKEIDRLNEVANNLNESLIDLQQLGKYEQYIKW PWYIWLCFIAGLIAILIVTIMLCCITSCCSCLKGCCSCGFCCKFD EDDSELLLKGVKLHYT
45	SARS-CoV2 VOC Whole VOC surface glycoprotein (Genbank: YP_009724390)	MFVFFVLLPLVFIQCVNFTIIIHLPSSYINSFTRGVYYPDKVFRSS VLYSIRDFFLPFFSNVTWFHVIRTNVIKRFANPV LPFNDGVYFASIDKFNIIRGWIFGTTLDSKTQSLLIVNNATNVVI KVCEFQFCNYPFYKNNKSCTESESRVYSSATNCTF EYVSKPFFIDLVVKQGNFKNFSEFVFKNIDGYFKIYSKHTPNLV RGFPQGFLVLEPLVDLPIGINITRFQTLYRSYLTPG GFFLGLTAGSAAYYVGYLQLRTFLLKYNENGTITDAVDCALDP LSEIKCTLKSFILEKGIYQTSNFRVQPTESIVRFPNI TNLCPFGEVFNATRFASVYAWNRKRISNCVADYSFLYNSASF STFKCYGVSLTKLNDLCFTNVYADSFVIRGDEVRQIAP GKTGNIADYNYKLPDDFTGCVIAWNSKKLDSKVGGNYNYRFR LFRKSNLKPFERDISTEIYQAGNKPCNGVKGFNCYSPL QPYGFQPTYGVGYQPYRVVVLSFELLHSPSTVCGPKKSTNLV KNKCVNFNFNGLIGTGVLTESNKNFLPFQQFGRDIDDI TDAVRDPQTLDILDITPCSFGGVSVITPGTNTSNQVAVLYHGV NCTEVPFAIHSDQLTPTWRVYSTGFNVFQTRAGCLIG VQYVNNSYECDIPIGAGICATYHTHTKSHRRARSVVSQSIIAYT MSLGVENLVVYSNNSIAIPINFTISVITEILPVSMA KTSVDCTMYICGDSTECSNLLLQYGSFCTQLNRALTVIAIEQDK NTQQVFAQVKQIYKIPPIKYFGGFNFSQILPDSSKS SKRSFIEDLFFNKVTLADAGFIKQYGDCLGDISARDLICAQKFN GLNVLPPLLTDEMIAQYTSALLSGTITSGWTLGAGA ALQIPFSMQMAYRFNGIGVTQNVLYENQKLIANQFNSAIGKIQY SFFFTASALGKLQHVVNQNARALNTLVKQLSSNFGA ISSVLNDILARLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEI RSSANLAAIKMSECVLGQSKRVDFCGKGYHLMSF PQSAPHGVVFFHVTYVPALENNFTTSPAICHYGKAHFPREGVF VSNGTHWFLTQRNFYEPQIITIHNTFLSGNCDVVIGI VNNTVYDPLQPELDSFKEELDKYFKNHTSSYVDLVDISGINASF VNIQKEIDRLNEVANNLNESLIDLQQLGKYEQYIKW PWYIWLCFIAGFIAILIVTIMLCCITSCCSCLKGCCSCGFCCKFD EDDSELLLKGVKLHYT
46	Pangolin coronavirus Spike protein (Genbank: QIA48614)	MFVFLFVLPLVSSQCVNLTTRTGIPPGYTNSSTRGVYYPDKVF RSSILHLTQDLFLPFFSNVTWFNTINYQGGFKKFDNP VLPFNDGVYFASTEKSNIIRGWIFGTTLDARTQSLLIVNNATNV VIKVCEFQFCTDPFLGVYYHNNNKTWVENEFRVYSS ANNCTFEYISQPFLMDLEGKQGNFKNLREFVFKNVDGYFKIYS KHTPIDLVRDLPRGFAALEPLVDLPIGINITRFQTLL

		ALHRSYLTPGNLESGWTTGAAAYYVGYLQQRTFLLSYNQNGT ITDAVDCSLDPLSETKCTLKSLTVEKGIYQTSNFRVQP TISIVRFPNITNLCPFGEVFNASKFASVYAWNRKRISNCVADYS VLYNSTSFSTFKCYGVSPTKLNDLCFTNVYADSFVV KGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNSVKQDALT GGNYGYLYRLFRKSKLKPFERDISTEIYQAGSTPCNG QVGLNCYYPLERYGFHPTTGVNYQPFRVVVLSFELLNGPATV CGPKLSTTLVKDKCVNFNFNGLTGTGVLTTSKKQFLPF QQFGRDISDTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSN QVAVLYQDVNCTEVPMAIHAEQLTPAWRVYSAGANV FQTRAGCLVGAEHVNNSYECDIPVGAGICASYHSMSSLRSVN QRSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEI LPVSMTKTSVDCTMYICGDSIECSNLLLQYGSFCTQLNRALTGI AVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQIL PDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLI CAQKFNGLTVLPPLLTDEMIAQYTSALLAGTITSGW TFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFNS AIGKIQDSLSSTASALGKLQDVVNQNAQALNTLVKQL SSNFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQ QLIRAAEIRASANLAATKMSECVLGQSKRVDFCGKG YHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHEGKAH FPREGVFVSNGTHWFITQRNFYEPQIITTDNTFVSGSC DVVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDIS GINASVVNIQKEIDRLNEVAKNLNESPIDLQELGKY EQYIKWPWYIWLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSC GSCCKFDEDDSEPVLKGVKLHYT
47	Pangolin coronavirus Spike protein (Genbank: QIA48623)	MFVFLFVLPLVSSQCVNLTTRTGIQPGYTNSSTRGVYYPDKVF RSSILHLTQDLFLPFFSNVTWFNTINYQGGFKKFDNP VLPFNDGVYFASTEKSNIIRGWIFGTTLDARTQSLLIVNNATNV VIKVCEFQFCTDPFLGVYYHNNNKTWVENEFRVYSS ANNCTFEYISQPFLMDLEGKQGNFKNLREFVFKNVDGYFKIYS KHTPIDLVRDLPRGFAALEPLVDLPIGINITRFQTLL ALHRSYLTPGKLESGWTTGAAAYYVGYLQQRTFLLSYNQNGT ITDAVDCSLDPLSETKCTLKSLTVEKGIYQTSNFRVQP TISIVRFPNITNLCPFGEVFNASKFASVYAWNRKRISNCVADYS VLYNSTSFSTFKCYGVSPTKLNDLCFTNVYADSFVV KGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNSVKQDALT GGNYLYRLFRKSKLKPFERDISTEIYQAGSTPCNGQV GLNCYYPLERYGFHPTTGVNYQPFRVVVLSFELLNGPATVCG PKLSTTLVKDKCVNFNFNGLTGTGVLTTSKKQFLPFQQ FGRDISDTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQV AVLYQDVNCTEVPMAIHAEQLTPAWRVYSAGANVFQ TRAGCLVGAEHVNNSYECDIPVGAGICASYHSMSSLRSVNQR SIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILP VSMTKTSVDCTMYICGDSIECSNLLLQYGSFCTQLNRALTGIA VEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQILPD PSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICA QKFNGLTVLPPLLTDEMIAQYTSALLAGTITSGWTF GAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFNSAI GKIQDSLSSTASALGKLQDVVNQNAQALNTLVKQLSS NFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLI RAAEIRASANLAATKMSECVLGQSKRVDFCGKGYH LMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHEGKAHFP REGVFVSNGTHWFITQRNFYEPQIITTDNTFVSGSCDV

		VIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGI NASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQ YIKWPWYIWLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSCGS CCKFDEDDSEPVLKGVKLHYT
48	Pangolin coronavirus Spike protein (Genbank: QIA48641)	MFVFLFVLPLVSSQCVNLTTRTGIPPGYTNSSTRGVYYPDKVF RSSILHLTQDLFLPFFSNVTWFNTITYQGGSKKFDNP VLPFNDGVYFASTEKSNIIRGWIFGTTLDARTQSLLIVNNATNV VIKVCEFQFCTDPFLGVYYHNNNKTWVENEFRVYSS ANNCTFEYISQPFLMDLEGKQGNFKNLREFVFKNVDGYFKIYS KHTPIDLVRDLPRGFAALEPLVDLPIGINITRFQTLL ALHRSYLTPGKLESGWTTGAAAYYVGYLQQRTFLLSYNQNGT ITDAVDCSLDPLSETKCTLKSLTVEKGIYQTSNFRVQP TISIVRFPNITNLCPFGEVFNASKFASVYAWNRKRISNCVADYS VLYNSTSFSTFKCYGVSPTKLNDLCFTNVYADSFVV KGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNSVKQDALT GDNYGYLYRLFRKSKLKPFERDISTEIYQAGSTPCNG QVGLNCYYPLERYGFHPTTGVNYQPFRVVVLSFELLNGPATV CGPKLSTTLVKDKCVNFNFNGLTGTGVLTTSKKQFLPF QQFGRDISDTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSN QVAVLYQDVNCTEVPMAIHAEQLTPAWRVYSAGANV FQTRAGCLVGAEHVNNSYECDIPVGAGICASYHSMSSFRSVN QRSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEI LPVSMTKTSVDCTMYICGDSIECSNLLLQYGSFCTQLNRALTGI AVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQIL PDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLI CAQKFNGLTVLPPLLTDEMIAQYTSALLAGTITSGW TFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFNS AIGKIQDSLSSTASALGKLQDVVNQNAQALNTLVKQL SSNFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQ QLIRAAEIRASANLAATKMSECVLGQSKRVDFCGKG YHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHEGKAH FPREGVFVSNGTHWFITQRNFYEPQIITTDNTFVSGSC DVVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDIS GINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKY EQYIKWPWYIWLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSC GSCCKFDEDDSEPVLKGVKLHYT
49	Pangolin coronavirus Spike protein (Genbank: QIA48632)	MFVFLFVLPLVSSQCVNLTTRTGIPPGYTNSSTRGVYYPDKVF RSSILHLTQDLFLPFFSNVTWFNTINYQGGFKKFDNP VLPFNDGVYFASTEKSNIIRGWIFGTTLDARTQSLLIVNNATNV VIKVCEFQFCTDPFLGVYYHNNNKTWVENEFRVYSS ANNCTFEYISQPFLMDLEGKQGNFKNLREFVFKNVDGYFKIYS KHTPIDLVRDLPRGFAALEPLVDLPIGINITRFQTLL ALHRSYLTPGKLESGWTTGAAAYYVGYLQQRTFLLSYNQNGT ITDAVDCSLDPLSETKCTLKSLTVEKGIYQTSNFRVQP TISIVRFPNITNLCPFGEVFNASKFASVYAWNRKRISNCVADYS VLYNSTSFSTFKCYGVSPTKLNDLCFTNVYADSFVV KGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNSVKQDALT GGNYGYLYRLFRKSKLKPFERDISTEIYQAGSTPCNG QVGLNCYYPLERYGFHPTTGVNYQPFRVVVLSFELLNGPATV CGPKLSTTLVKDKCVNFNFNGLTGTGVLTTSKKQFLPF QQFGRDISDTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSN QVAVLYQDVNCTEVPMAIHAEQLTPAWRVYSAGANV FQTRAGCLVGAEHVNNSYECDIPVGAGICASYHSMSSFRSVN QRSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEI

		LPVSMTKTSVDCTMYICGDSIECSNLLLQYGSFCTQLNRALTGI AVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQIL PDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLI CAQKFNGLTVLPPLLTDEMIAQYTSALLAGTITSGW TFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFNS AIGKIQDSLSSTASALGKLQDVVNQNAQALNTLVKQL SSNFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQ QLIRAAEIRASANLAATKMSECVLGQSKRVDFCGKG YHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHEGKAH FPREGVFVSNGTHWFITQRNFYEPQIITTDNTFVSGSC DVVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDIS GINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKY EQYIKWPWYIWLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCCSC GSCCKFDEDDSEPVLKGVKLHYT
50	Pangolin coronavirus Spike protein (Genbank: QIQ54048)	MFVFLFVLPLVSSQCVNLTTRTGIPPGYTNSSTRGVYYPDKVF RSSILHLTQDLFLPFFSNVTWFNTIHLNYQGGFKKFD NPVLPXNDGVYFASTEKSNIIRGWIFGTTLDARTQSLLIVNNAT NVVIKVCEFQFCTDPFLGVYYHNNNKTWVENEFRVY SSANNCTFEYISQPFLMDLEGKQGNFKNLREFVFKNVDGYFKI YSKHTPIDLVRDLPRGFAALEPLVDLPIGINITRFQT LLALHRSYLTPGKLESGWTTGAAAYYVGYLQQRTFLLSYNQN GTITDAVDCSLDPLSETKCTLKSLTVEKGIYQTSNFRV QPTISIVRFPNITNLCPFGEVFNASKFASVYAWNRKRISNCVAD YSVLYNSTSFSTFKCYGVSPTKLNDLCFTNVYADSF VVKGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNSVKQD ALTGGNYGYLYRLFRKSKLKPFERDISTEIYQAGSTPC NGQVGLNCYYPLERYGFHPTTGVNYQPFRVVVLSXELLNGPA TVCGPKLSTTLVKDKCVNFNFNGLTGTGVLTTSKKQFL PFQQFGRDISDTTDAVRDPQTLEILDITPCSFGGVSVITPGTNT SNQVAVLYQDVNCTEVPMAIHAEQLTPAWRVYSAGA NVFQTRAGCLVGAEHVNNSYECDIPVGAGICASYHSMSSFRS VNQRSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTT EILPVSMTKTSVDCTMYICGDSIECSNLLLQYGSFCTQLNRALT GIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFLQ ILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDL ICAQKFNGLTVLPPLLTDEMIAQYTSALLAGTITS GWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQ FNSAIGKIQDSLSSTASALGKLQDVVNQNAQALNTLVK QLSSNFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVT QQLIRAAEIRASANLAATKMSECVLGQSKRVDFCG KGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHEGK AHFPREGVFVSNGTHWFITQRNFYEPQIITTDNTFVSG SCDVVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLG DISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELG KYEQYIKWPWYIWLGFIAGLIAIIMVTIMLCCMTSCCSCLKGCC SCGSCCKFDEDDSEPVLKGVKLHYT
51	SC2r-CoV batACE2 Spike	MFILVLLNVLSVYGCVNITYGSHHLYVSSRTRGVYYPDDAFRS STNVLHEGFFLPFDSNVTWYSFWNQKYSVATSPFGDG VYFSTIDKSNVVRGWVFGTTLDNDTQSVLLYNDGTHVRVEVC TFHFCPTPVFSASSPHLYSSAFNCTLNYTLASVRADFT EVDGSFKTIREFVFKLQDGSLNVYYASTSYVLAIGATSQLPSG VTPLVPLWKIPIGLNITNFKTLVYLRSDNTPLQAAYV VGHLKRRTMMFKYDENGTIVDAIDCALDPLSETKCTLRSFIVEK GIYQTSNFRVQPQDTVVRFPNITNLCPFSEVFNATT

		FASVYAWNRKRISNCVADYSVLYNSTSFSTFQCYGVSSTKLN DLCFTNVYADSFVVRGDEVRQIAPGQTGVIADYNYKLP DDFTGCVLAWNSRNQDASTSGNFNYYYRIWRSEKLRPFERDI AHYDYQVGTQFKSSLKNYGFYSSAGDSHQPYRVVVLSF ELLNAPATVCGPKQSTELIKNKCVNFNFNGLTGTGVLTDSNKK FQSFQQFGRDVSDFTDSVKDPKTLEVLDITPCSYGGV SVITPGTNASTQVAVLYQDVNCTDVPTAIHAEQLTPSWRVYST GTNMFQTQAGCLIGAEHVNNSYDCDIPIGAGICATYH TPSMLRSANNNKRIVAYVMSLGAENSVAYSNNTIAIPTNFTISV TTEVMPVSMTKTSVDCTMYICGDSVECSTLLLQYGS FCTQLNRALTGIAVEQDKNTQEVFAQVKQIYKTPDIKDFGGFN FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFVKQYG DCLGDIQARDLICAQKFNGLTVLPPLLTDEMIAAYTAALISGTAT AGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYE NQKLIANQFNSAIGKIQESLTSTASALGKLQDVVNQNAQALNTL VKQLSSNFGAISSVLNDIISRLDKVEAEVQIDRLIT GRLQSLQTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVD FCGKGYHLMSFPQAAPHGVVFLHVTYIPSQERNFTTA PAICHEGKAHFPREGVFVSNGTHWFITQRNFYEPQIITTDNTFV SGTCDVVIGIVNNTVYDPLQPELESFKDELDKYFKN HTSPDIDLGDISGINASVVDIQKEIDILKDVAKNLNESLINLQELG KYEQYIKWPWYVWLGFIAGLIAIIMVTIMLCCMT SCCSCLKGCCSCGSCCKFDEDDSEPVLKGVKLHYT
52	Bats SARS coronavirus Rc-0319 Spike (Genbank: QIQ54048)	MFILVLLNVLSVYGCVNITYGSHHLYVSSRTRGVYYPDDAFRS STNVLHEGFFLPFDSNVTWYSFWNQKYSVATSPFGDG VYFSTIDKSNVVRGWVFGTTLDNDTQSVLLYNDGTHVRVEVC TFHFCPTPVFSASSPHLYSSAFNCTLNYTLASVRADFT EVDGSFKTIREFVFKLQDGSLNVYYASTSYVLAIGATSQLPSG VTPLVPLWKIPIGLNITNFKTLVYLRSDNTPLQAAYV VGHLKRRTMMFKYDENGTIVDAIDCALDPLSETKCTLRSFIVEK GIYQTSNFRVQPQDTVVRFPNITNLCPFSEVFNATT FASVYAWNRKRISNCVADYSVLYNSTSFSTFQCYGVSSTKLN DLCFTNVYADSFVVRGDEVRQIAPGQTGVIADYNYKLP DDFTGCVLAWNSRNQDASTSGNFNYYYRIWRSEKLRPFERDI AHYDYQVGTQFKSSLKNYGFYSSAGDSHQPYRVVVLSF ELLNAPATVCGPKQSTELIKNKCVNFNFNGLTGTGVLTDSNKK FQSFQQFGRDVSDFTDSVKDPKTLEVLDITPCSYGGV SVITPGTNASTQVAVLYQDVNCTDVPTAIHAEQLTPSWRVYST GTNMFQTQAGCLIGAEHVNNSYDCDIPIGAGICATYH TPSMLRSANNNKRIVAYVMSLGAENSVAYSNNTIAIPTNFTISV TTEVMPVSMTKTSVDCTMYICGDSVECSTLLLQYGS FCTQLNRALTGIAVEQDKNTQEVFAQVKQIYKTPDIKDFGGFN FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFVKQYG DCLGDIQARDLICAQKFNGLTVLPPLLTDEMIAAYTAALISGTAT AGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYE NQKLIANQFNSAIGKIQESLTSTASALGKLQDVVNQNAQALNTL VKQLSSNFGAISSVLNDIISRLDKVEAEVQIDRLIT GRLQSLQTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVD FCGKGYHLMSFPQAAPHGVVFLHVTYIPSQERNFTTA PAICHEGKAHFPREGVFVSNGTHWFITQRNFYEPQIITTDNTFV SGTCDVVIGIVNNTVYDPLQPELESFKDELDKYFKN HTSPDIDLGDISGINASVVDIQKEIDILKDVAKNLNESLINLQELG KYEQYIKWPWYVWLGFIAGLIAIIMVTIMLCCMT SCCSCLKGCCSCGSCCKFDEDDSEPVLKGVKLHYT

53	Bat SARS-like coronavirus Rs7327 S protein RBD (Genbank: ATO98218)	SNFRVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWN TRNIDATSTGNYNYKYRSLRHGKLRPFERDISNVPFSP DGKPCTPPAFNCYWPLNDYGFFTTNGIGYQPYRVVVLSFELL NAPATVCGPKLSTDLIKNQCVNFNFNGLTGTGVLTSSS KRFQPFQQFGRDVSDFTDSVRDPKTSEIL
54	Coronavirus BtRs-BetaCoV/YN2018B S protein RBD (Genbank: QDF43825)	SNFRVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWN TRNIDATSTGNYNYKYRSLRHGKLRPFERDISNVPFSP DGKPCTPPAFNCYWPLNDYGFFTTNGIGYQPYRVVVLSFELL NAPATVCGPKLSTDLIKNQCVNFNFNGLTGTGVLTPSS KRFQPFQQFGRDVSDFTDSVRDPKTSEIL
55	Rhinolophus affinis coronavirus LYRa11 S protein RBD (Genbank: AHX37558)	SNFRVSPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSAIKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWN TRNIDATSSGNFNYKYRSLRHGKLRPFERDISNVPFSP DGKPCTPPAFNCYWPLNDYGFYTTNGIGYQPYRVVVLSFELL NAPATVCGPKLSTDLITNQCVNFNFNGLTGTGVLTPSL KRFQPFQQFGRDFSDFTDSVRDPKTLEVL
56	Rhinolophus affinis coronavirus LYRa3 S protein RBD (Genbank: AHX37569)	SNFRVSPSREVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSAIKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWN TRNIDATSSGNFHYKYRSLRHGKLRPFERDISNVPFSP DGKPCTPPAFNCYWPLNDYGFYTTNGIGYQPYRVVVLSFELL NAPATVCGPKLSTDLITNQCVNFNFNGLTGTGVLTPSS KRFQPFQQFGRDVSDFTDSVRDPKTLEVL
57	SARS coronavirus Tor2 Spike glycoprotein RBD (Genbank: YP_009825051)	SNFRVVPSGDVVRFPNITNLCPFGEVFNATKFPSVYAWERKKI SNCVADYSVLYNSTFFSTFKCYGVSATKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFMGCVLAWN TRNIDATSTGNYNYKYRYLRHGKLRPFERDISNVPFSP DGKPCTPPALNCYWPLNDYGFYTTTGIGYQPYRVVVLSFELL NAPATVCGPKLSTDLIKNQCVNFNFNGLTGTGVLTPSS KRFQPFQQFGRDVSDFTDSVRDPKTSEIL
58	Bat SARS-like coronavirus Rs3367 S protein RBD (Genbank: AGZ48818)	SNFRVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFTGCVLAWN TRNIDATQTGNYNYKYRSLRHGKLRPFERDISNVPFSP DGKPCTPPAFNCYWPLNDYGFYITNGIGYQPYRVVVLSFELLN APATVCGPKLSTDLIKNQCVNFNFNGLTGTGVLTPSS KRFQPFQQFGRDVSDFTDSVRDPKTSEIL
59	SARS-like coronavirus WIV16 S protein RBD (Genbank: ALK02457)	SNFRVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFTGCVLAWN TRNIDATQTGNYNYKYRSLRHGKLRPFERDISNVPFSP DGKPCTPPAFNCYWPLNDYGFYITNGIGYQPYRVVVLSFELLN APATVCGPKLSTDLIKNQCVNFNFNGLTGTGVLTPSS KRFQPFQQFGRDVLDFTDSVRDPKTSEIL

60	Bat SARS-like coronavirus Rs4231 S protein RBD (Genbank: ATO98157)	SNFRVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFLGCVLAWN TNSKDSSTSGNYNYLYRWVRRSKLNPYERDLSNDIYSP GGQSCSAIGPNCYNPLRPYGFFTTAGVGHQPYRVVVLSFELL NAPATVCGPKLSTDLIKNQCVNFNFNGLTGTGVLTSSS KRFQPFQQFGRDVSDFTDSVRDPKTSEIL
61	Bat SARS-like coronavirus RsSHC014 S protein RBD (Genbank: AGZ48806)	SNFRVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSVLYNSTSFSTFKCYGVSATKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFLGCVLAWN TNSKDSSTSGNYNYLYRWVRRSKLNPYERDLSNDIYSP GGQSCSAVGPNCYNPLRPYGFFTTAGVGHQPYRVVVLSFELL NAPATVCGPKLSTDLIKNQCVNFNFNGLTGTGVLTPSS KRFQPFQQFGRDVSDFTDSVRDPKTSEIL
62	Bat SARS-like coronavirus Rs4084 S protein RBD (Genbank: ATO98132)	SNFRVAPSKEVVRFPNITNLCPFGEVFNATTFPSVYAWERKRI SNCVADYSILYNSTSFSTFKCYGVSATKLNDLCFSNV YADSFVVKGDDVRQIAPGQTGVIADYNYKLPDDFLGCVLAWN TNSKDSSTSGNYNYLYRWVRRSKLNPYERDLSNDIYSP GGQSCSAVGPNCYNPLRPYGFFTTAGVGHQPYRVVVLSFELL NAPATVCGPKLSTDLIKNQCVNFNFNGLTGTGVLTPSS KRFQPFQQFGRDVSDFTDSVRDPKTSEIL
63	Bat SARS coronavirus BtKY72 S protein RBD (Genbank: APO40579)	SNFRVSPSTEVVRFPNITNLCPFGQVFNASNFPSVYAWERLRI SDCVADYAVLYNSSSSFSTFKCYGVSPTKLNDLCFSS VYADYFVVKGDDVRQIAPAQTGVIADYNYKLPDDFTGCVLAW NTNSVDSKSGNNFYYRLFRHGKIKPYERDISNVLYNSA GGTCSSISQLGCYEPLKSYGFTPTVGVGYQPYRVVVLSFELLN APATVCGPKKSTELVKNKCVNFNFNGLTGTGVLTSST KKFQPFQQFGRDVSDFTDSVRDPKTFEIL
64	SARS-like coronavirus BatCoV/BB9904/BGR/2008 S protein RBD (Genbank: ALJ94036)	SNFRVTPTTEVVRFPNITKLCPFDQVFNASSFPSVYAWERVRI TDCVANYAVLYNSSVSFSTFQCYGVSPTKLNDLCFSS VYADYFIVKGDDVRQIAPSQTGVIADYNYKLPDDFTGCVIAWN TNALDSNKDFYYRLFRHGKIKPYGRDLSNIPYSPSGT CSTINNLNCFAPLKSYGFTQSSGISFQPYRVVVLSFELLNAPAT VCGPKQSTELVKDKCVNFNFNGLTGTGVLTSSSKKF QPFQQFGRDVSDFTDSVRDPKTLEIL
65	Bat coronavirus BM48-31/BGR/2008 S protein RBD (Genbank: YP_003858584)	SNFRVTPTTEVVRFPNITQLCPFNEVFNITSFPSVYAWERMRIT NCVADYSVLYNSSASFSTFQCYGVSPTKLNDLCFSS VYADYFVVKGDDVRQIAPAQTGVIADYNYKLPDDFTGCVIAWN TNSLDSSNEFFYRRFRHGKIKPYGRDLSNVLFNPSGG TCSAEGLNCYKPLASYGFTQSSGIGFQPYRVVVLSFELLNAPA TVCGPKQSTELVKNKCVNFNFNGLTGTGVLTNSTKKF QPFQQFGRDVSDFTDSVRDPKTLEIL
66	Pangolin coronavirus cDNA8-S S protein RBD (Genbank: QLR06864)	SNFRVQPTESIVRFPNITNLCPFGEVFNATTFASVYAWNRKRIS NCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCFTNV YADSFVVRGDEVRQIAPGQTGRIADYNYKLPDDFTGCVIAWN SNNLDSKVGGNYNYLYRLFRKSNLKPFERDISTEIYQA GSTPCNGVEGFNCYFPLQSYGFHPTNGVGYQPYRVVVLSFEL LNAPATVCGPKQSTNLVKNKCVNFNFNGLTGTGVLTES SKKFLPFQQFGRDIADTTDAVRDPQTLEIL
67	SARS-CoV2 S protein	SNFRVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRKRI SNCVADYSVLYNSASFSTFKCYGVSPTKLNDLCFTNV

	RBD (Genbank: YP_009724390)	YADSFVIRGDEVRQIAPGQTGKIADYNYKLPDDFTGCVIAWNS NNLDSKVGGNYNYLYRLFRKSNLKPFERDISTEIYQA GSTPCNGVEGFNCYFPLQSYGFQPTNGVGYQPYRVVVLSFE LLHAPATVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTES NKKFLPFQQFGRDIADTTDAVRDPQTLEIL
68	SARS-CoV2 VOC May 01 RBD	SNFRVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRKRI SNCVADYSFLYNSASFSTFKCYGVSLTKLNDLCFTNV YADSFVIRGDEVRQIAPGKTGNIADYNYKLPDDFTGCVIAWNS KKLDSKVGGNYKYRFRLFRKSNLKPFERDISTEIYQA GNKPCNGVKGFNCYSPLQPYGFQPTYGVGYQPYRVVVLSFE LLHSPSTVCGPKKSTNLVKNKCVNFNFNGLIGTGVLTES NKNFLPFQQFGRDIDDITDAVRDPQTLDIL
69	SARS-CoV2 VOC S protein RBD (Genbank: YP_009724390)	SNFRVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRKRI SNCVADYSFLYNSASFSTFKCYGVSLTKLNDLCFTNV YADSFVIRGDEVRQIAPGQTGNIADYNYKLPDDFTGCVIAWNS KKLDSKVGGNYNYRFRLFRKSNLKPFERDISTEIYQA GNKPCNGVKGFNCYFPLQPYGFQPTYGVGYQPYRVVVLSFE LLHSPSTVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTES NKKFLPFQQFGRDIDDITDAVRDPQTLEIL
70	Bat coronavirus RaTG13 S protein RBD (Genbank: QHR63300)	SNFRVQPTDSIVRFPNITNLCPFGEVFNATTFASVYAWNRKRI SNCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCFTNV YADSFVITGDEVRQIAPGQTGKIADYNYKLPDDFTGCVIAWNS KHIDAKEGGNFNYLYRLFRKANLKPFERDISTEIYQA GSKPCNGQTGLNCYYPLYRYGFYPTDGVGHQPYRVVVLSFE LLNAPATVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTES NKKFLPFQQFGRDIADTTDAVRDPQTLEIL
71	Pangolin coronavirus GX-P1E S protein RBD (Genbank: QIA48623)	SNFRVQPTISIVRFPNITNLCPFGEVFNASKFASVYAWNRKRIS NCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCFTNV YADSFVVKGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNS VKQDALTGGNYLYRLFRKSKLKPFERDISTEIYQAGS TPCNGQVGLNCYYPLERYGFHPTTGVNYQPFRVVVLSFELLN GPATVCGPKLSTTLVKDKCVNFNFNGLTGTGVLTTSKK QFLPFQQFGRDISDTTDAVRDPQTLEIL
72	Pangolin coronavirus GX-P2V S protein RBD (Genbank: QIQ54048)	SNFRVQPTISIVRFPNITNLCPFGEVFNASKFASVYAWNRKRIS NCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCFTNV YADSFVVKGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNS VKQDALTGGNYGYLYRLFRKSKLKPFERDISTEIYQA GSTPCNGQVGLNCYYPLERYGFHPTTGVNYQPFRVVVLSXEL LNGPATVCGPKLSTTLVKDKCVNFNFNGLTGTGVLTTS KKQFLPFQQFGRDISDTTDAVRDPQTLEIL
73	Pangolin coronavirus GX-P4L S protein RBD (Genbank: QIA48614)	SNFRVQPTISIVRFPNITNLCPFGEVFNASKFASVYAWNRKRIS NCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCFTNV YADSFVVKGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNS VKQDALTGGNYGYLYRLFRKSKLKPFERDISTEIYQA GSTPCNGQVGLNCYYPLERYGFHPTTGVNYQPFRVVVLSFEL LNGPATVCGPKLSTTLVKDKCVNFNFNGLTGTGVLTTS KKQFLPFQQFGRDISDTTDAVRDPQTLEIL
74	Pangolin coronavirus GX-P5E S protein RBD (Genbank: QIA48641)	SNFRVQPTISIVRFPNITNLCPFGEVFNASKFASVYAWNRKRIS NCVADYSVLYNSTSFSTFKCYGVSPTKLNDLCFTNV YADSFVVKGDEVRQIAPGQTGVIADYNYKLPDDFTGCVIAWNS VKQDALTGDNYGYLYRLFRKSKLKPFERDISTEIYQA GSTPCNGQVGLNCYYPLERYGFHPTTGVNYQPFRVVVLSFEL LNGPATVCGPKLSTTLVKDKCVNFNFNGLTGTGVLTTS KKQFLPFQQFGRDISDTTDAVRDPQTLEIL

75	Bat SARS coronavirus Rc-o319 S protein RBD (Genbank: BCG66627)	SNFRVQPQDTVVRFPNITNLCPFSEVFNATTFASVYAWNRKRI SNCVADYSVLYNSTSFSTFQCYGVSSTKLNDLCFTNV YADSFVVRGDEVRQIAPGQTGVIADYNYKLPDDFTGCVLAWN SRNQDASTSGNFNYYYRIWRSEKLRPFERDIAHYDYQV GTQFKSSLKNYGFYSSAGDSHQPYRVVVLSFELLNAPATVCG PKQSTELIKNKCVNFNFNGLTGTGVLTDSNKKFQSFQQ FGRDVSDFTDSVKDPKTLEVL
76	Bat SARS CoV RShSTT182 S protein RBD (Genbank: RShSTT182/2010|EPI_ISL_852604)	SNFRTSPTTQVVRFPNITNLCPFGEVFNATTFASVYAWNRRRI SNCVADYSVLYNTTSFSTFKCYGVSPTKLNDLCFTNV YADSFVVRGDEVRQIAPGQTGKIADYNYKLPDDFMGCVIAWN SISLDAGGSYYYRLFRKSVLKPFERDISTQLYQAGDKP CSVEGPDCYYPLQSYYFQSTNGVGYQPYRVVVLSFELLNAPA TVCGPKKSTHLVVNKCVNFNFNGLTGTGVLTSSTKKFL PFQQFGRDVADTTNAVRDPQTLEVL
77	SARS-related coronavirus Spike glycoprotein (Genbank: ABD72984)	MFIFILFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
78	SARS coronavirus wtic-MB Spike glycoprotein precursor	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP

	(Genbank: ACZ72093)	AQDIWGTSAAAYFFGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
79	SARS coronavirus Shanghai LY Spike glycoprotein (Genbank: AAP82968)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIISNSTNVVI RACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGSLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTGNIDATSTGNYDYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLPFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAGIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY

		DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
80	SARS coronavirus HKU-39849 Spike glycoprotein precursor (Genbank: ADC35483)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGIATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
81	SARS-related coronavirus Spike glycoprotein (Genbank: ABD72982)	MLIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC

		NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
82	SARS coronavirus Tor2 Spike glycoprotein precursor (Genbank: AFR58672)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCXFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
83	SARS coronavirus Tor2 Spike glycoprotein precursor (Genbank: AFR58714)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT

		NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LXHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCXFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
84	SARS coronavirus Tor2 Spike glycoprotein (Genbank: YP_009825051)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCAFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL

		GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
85	SARS coronavirus ShanghaiQXC 1 Spike (Genbank: AAR86788)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCAFGGVSVITPGTNASSEVAVLYQDVNCT NVSAAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKGELDKYFKNHTSPDVDLGDISGINASVVNIQK EIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
86	SARS Coronavirus CDC#2003011 57 S protein (Genbank: AAU81608)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPVGAGICASYHTVSLLRSTSQKSIVAYTMSLGA DSSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI

		EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
87	SARS coronavirus P2 Spike glycoprotein precursor (Genbank: ACQ82725)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQGVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPVGAGICASYHTVSLLRSTSQKSIVAYTMSLGA DSSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
88	SARS coronavirus AS Spike protein S (Genbank: AAQ94060)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG

		QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
89	SARS coronavirus ExoN1 Spike glycoprotein precursor (Genbank: AFM43867)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE YVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISIATEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

90	SARS coronavirus ExoN1 Spike glycoprotein (Genbank: AGT21078)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRS LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE YVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISIATEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTVTAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
91	SARS coronavirus Frankfurt 1 Spike protein S (Genbank: AAP33697)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDFGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
92	SARS coronavirus Frankfurt1-v01 Spike glycoprotein (Genbank: BAF42873)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE YVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLSDAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSFNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDFGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
93	SARS coronavirus Frankfurt 1 Spike protein (Genbank: BAE93401)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRC LRHGKLRPFERDISNVPFSPDGKPCTPPAFNCYWPLND

		YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEFAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE YVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKSTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDFGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
94	SARS-related coronavirus Spike glycoprotein (Genbank: ABD72969)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYVDSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

95	SARS coronavirus BJ182-12 Spike glycoprotein S (Genbank: ACB69905)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFDGFNFSQILPDPLKPIKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINAPVVNIQKE IDRLNEVAKNLNESLIDLRELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
96	SARS coronavirus BJ182a Spike glycoprotein S (Genbank: ACB69860)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPI IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFDGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWAFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLRELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
97	SARS coronavirus BJ182-8 Spike glycoprotein S (Genbank: ACB69894)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFDGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLRELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
98	SARS coronavirus BJ182-4 Spike glycoprotein S (Genbank: ACB69883)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTLGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND

		YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFDGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLRELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
99	SARS coronavirus Sino1-11 Spike protein (Genbank: AAR23250)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRS LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

100	SARS coronavirus ExoN1 Spike glycoprotein precursor (Genbank: ACZ71797)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSVDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNAFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMTKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINTSVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
101	SARS coronavirus ExoN1 Spike glycoprotein precursor (Genbank: ACZ72020)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFPP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMTKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
102	SARS coronavirus ExoN1 Spike glycoprotein precursor (Genbank: ACZ71976)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMTKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKXFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEIAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
103	SARS coronavirus ExoN1 Spike glycoprotein precursor (Genbank: ACZ71961)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND

		YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMTKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESFTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELNSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
104	SARS coronavirus ExoN1 Spike glycoprotein precursor (Genbank: ACZ72195)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEXISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMTKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

105	SARS coronavirus ExoN1 Spike glycoprotein precursor (Genbank: ACZ72108)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVVYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMTKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
106	SARS coronavirus ExoN1 Spike glycoprotein precursor (Genbank: ACZ71826)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMTKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
107	SARS coronavirus ExoN1 Spike glycoprotein precursor (Genbank: ACZ72254)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMTKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKIHTSPDVDLGDISGINASVVNIQKEI DRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
108	SARS-related coronavirus Spike glycoprotein (Genbank: ABD72972)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPNGKPCTPPALNCYWPLND

		YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
109	SARS coronavirus MA15 ExoN1 Spike glycoprotein precursor (Genbank: ACZ71991)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNHNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQMLPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

110	SARS coronavirus MA15 ExoN1 Spike glycoprotein precursor (Genbank: ACZ72122)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNHNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQMLPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
111	SARS coronavirus MA15 ExoN1 Spike glycoprotein precursor (Genbank: AEA10443)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNHNYKYRY LXHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
112	SARS coronavirus MA15 Spike glycoprotein precursor (Genbank: ACZ72035)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNHNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
113	SARS coronavirus MA15 ExoN1 Spike glycoprotein precursor (GenBank: AEA10473)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNHNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND

		YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKXSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
114	SARS-related coronavirus Spike glycoprotein (GenBank: ABD73001)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFIAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIVIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
115	SARS-related coronavirus	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV

	Spike glycoprotein (GenBank: ABD72970)	IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIVIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
116	SARS-related coronavirus Spike glycoprotein (GenBank: ABD72988)	MFIFLLFLTLTNGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN

		DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIVIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
117	SARS-related coronavirus Spike glycoprotein (GenBank: ABD72985)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFIAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
118	SARS-related coronavirus Spike glycoprotein (GenBank: ABD72977)	MFIFLLFLTLTRGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFIAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD

		SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
119	SARS-related coronavirus Spike glycoprotein (GenBank: ABD72979)	MFIFLLFLTLTRGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
120	SARS-related coronavirus Spike glycoprotein	MFIFLLFLTLTRGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT

	(GenBank: ABD72995)	FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVVDYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
121	SARS coronavirus BJ302 Spike glycoprotein (GenBank: AAR07630)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH

		GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
122	SARS coronavirus TJF Spike glycoprotein (GenBank: AAT76147)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRNTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGKCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
123	SARS coronavirus NS-1 Spike glycoprotein S (GenBank: AAR91586)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE

		HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIMASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
124	SARS coronavirus BJ01 Spike glycoprotein S (GenBank: AAP30030)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
125	SARS coronavirus HHS-2004 Spike protein (GenBank: AAT74874)	MAIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP

		AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LKHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DVLSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASA NLAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
126	SARS coronavirus WH20 Spike glycoprotein S (GenBank: AAX16192)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY

		DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLMAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDS EPVLKGVKLHYT
127	SARS coronavirus BJ302 Spike glycoprotein (GenBank: AAR07624)	MFIFLLFFTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVGFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
128	SARS coronavirus BJ302 Spike glycoprotein (GenBank: AAR07626)	MFIFLLFFTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLSD YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPRSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC

		NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVGFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
129	SARS coronavirus BJ302 Spike glycoprotein (GenBank: AAR07629)	MFIFLLFFTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLSD YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTVDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVGFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
130	SARS coronavirus BJ302 Spike glycoprotein (GenBank: AAR07625)	MFIFLLFFTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT

		NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLSD YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPRSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTVDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVGFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
131	SARS coronavirus BJ302 Spike glycoprotein (GenBank: AAR07627)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLSD YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPRSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTVDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVGFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL

		GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
132	SARS coronavirus BJ302 Spike glycoprotein (GenBank: AAR07628)	MFIFLLFFTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACIFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLSD YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPRSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTVDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVGFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
133	SARS coronavirus BJ302 Spike glycoprotein (GenBank: AAR07631)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACIFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLSD YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPRSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI

		EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTVDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVGFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVIVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
134	SARS coronavirus CS21 Spike glycoprotein (GenBank: ABF68958)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLNG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
135	SARS coronavirus ES260 Spike glycoprotein (GenBank: ABF68957)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFGNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG

		QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLNG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCVTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
136	SARS coronavirus CS24 Spike glycoprotein (GenBank: ABF68959)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKKISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLND YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCAFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCVTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

137	SARS coronavirus ES191 Spike glycoprotein (GenBank: ABF68956)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDIWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNPL AELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSIGITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCVTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
138	SARS coronavirus WF188 Spike glycoprotein (GenBank: ABF68955)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFPYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFKIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDTPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGA DSSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKYFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCVTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
139	SARS coronavirus PC4-137 Spike glycoprotein (GenBank: AAV49720)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLKG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
140	SARS coronavirus PC4-199 Spike glycoprotein (GenBank: AAV49722)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG

		YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
141	SARS coronavirus PC4-241 Spike glycoprotein (GenBank: AAV49723)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLNG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

142	SARS coronavirus PC4-115 Spike glycoprotein (GenBank: AAV49719)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLNG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
143	SARS coronavirus GD03T0013 Spike glycoprotein (GenBank: AAS10463)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDDPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLNG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
144	SARS coronavirus B012 Spike glycoprotein (GenBank: AAV97989)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLNG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNALTVL TPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
145	SARS coronavirus civet020 Spike glycoprotein (GenBank: AAU04664)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG

		YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
146	SARS coronavirus B033 Spike glycoprotein (GenBank: AAV97992)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKHRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

147	SARS coronavirus PC4-205 Spike glycoprotein (GenBank: AAU93319)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQTVIIINNSTNVVI RACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
148	SARS coronavirus C028 Spike glycoprotein (GenBank: AAV98001)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTLAGCLIGAE HVDTSYDCDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
149	SARS coronavirus A013 Spike glycoprotein (GenBank: AAV97985)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYDNQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
150	SARS coronavirus civet014 Spike glycoprotein (GenBank: AAU04661)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLKG

		YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
151	SARS coronavirus A001 Spike glycoprotein (GenBank: AAV97984)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKXRY LRHGKLRPFERDISNVPFSPXGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

152	SARS coronavirus C013 Spike glycoprotein (GenBank: AAV97995)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKFRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
153	SARS coronavirus C029 Spike glycoprotein (GenBank: AAV98002)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMDNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
154	SARS coronavirus civet019 Spike glycoprotein (GenBank: AAU04662)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSSDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFSGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
155	SARS coronavirus A021 Spike glycoprotein (GenBank: AAV97986)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQGTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLNG

		YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTVIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFSGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
156	SARS coronavirus C018 Spike glycoprotein (GenBank: AAV97998)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTRTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFSP AQGTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPFQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

157	SARS coronavirus B024 Spike glycoprotein (GenBank: AAV97990)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGIKITNFRAILTAFSP AQGTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLNG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPFQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
158	SARS coronavirus C025 Spike glycoprotein (GenBank: AAV98000)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGIKITNFRAILTAFSP AQGTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDSSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
159	SARS coronavirus civet010 Spike glycoprotein (GenBank: AAU04649)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGIKITNFRAILTAFSP AQGTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSSDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
160	Civet SARS CoV 007/2004 Spike glycoprotein (GenBank: AAU04646)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGIKITNFRAILTAFSP AQGTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSSDGKPCTPPAPNCYWPLRG

		YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFSGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
161	SARS coronavirus A022 Spike glycoprotein (GenBank: AAV91631)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFVVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGIKITNFRAILTAFSP AQGTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSGDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTSFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSSDGKPCTPPAPNCYWPLRG YGFYTTSGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTLIHAEQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSSLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCRQLNRALSGIAAEQDRNTRE VFVQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGQCLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFSGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

162	SARS coronavirus GD01 Spike glycoprotein S (GenBank: AAP51227)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFLP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSRDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSYELLNAPATVCGPKLSTDLIKNQ CVNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKDFGGFNFSQILPDPLKSTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT
163	SARS coronavirus GZ02 Spike glycoprotein (GenBank: AAS00003)	MFIFLLFLTLTSGSDLDRCTTFDDVQAPNYTQHTSSMRGVYYP DEIFRSDTLYLTQDLFLPFYSNVTGFHTINHTFDNPV IPFKDGIYFAATEKSNVVRGWVFGSTMNNKSQSVIIINNSTNVV IRACNFELCDNPFFAVSKPMGTQTHTMIFDNAFNCT FEYISDAFSLDVSEKSGNFKHLREFVFKNKDGFLYVYKGYQPI DVVRDLPSGFNTLKPIFKLPLGINITNFRAILTAFLP AQDTWGTSAAAYFVGYLKPTTFMLKYDENGTITDAVDCSQNP LAELKCSVKSFEIDKGIYQTSNFRVVPSRDVVRFPNIT NLCPFGEVFNATKFPSVYAWERKRISNCVADYSVLYNSTFFST FKCYGVSATKLNDLCFSNVYADSFVVKGDDVRQIAPG QTGVIADYNYKLPDDFMGCVLAWNTRNIDATSTGNYNYKYRY LRHGKLRPFERDISNVPFSPDGKPCTPPALNCYWPLND YGFYTTTGIGYQPYRVVVLSFELLNAPATVCGPKLSTDLIKNQC VNFNFNGLTGTGVLTPSSKRFQPFQQFGRDVSDFTD SVRDPKTSEILDISPCSFGGVSVITPGTNASSEVAVLYQDVNCT DVSTAIHADQLTPAWRIYSTGNNVFQTQAGCLIGAE HVDTSYECDIPIGAGICASYHTVSLLRSTSQKSIVAYTMSLGAD SSIAYSNNTIAIPTNFSISITTEVMPVSMAKTSVDC NMYICGDSTECANLLLQYGSFCTQLNRALSGIAAEQDRNTREV FAQVKQMYKTPTLKDFGGFNFSQILPDPLKPTKRSFI EDLLFNKVTLADAGFMKQYGECLGDINARDLICAQKFNGLTVL PPLLTDDMIAAYTAALVSGTATAGWTFGAGAALQIPF

		AMQMAYRFNGIGVTQNVLYENQKQIANQFNKAISQIQESLTTT STALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLN DILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASAN LAATKMSECVLGQSKRVDFCGKGYHLMSFPQAAPH GVVFLHVTYVPSQERNFTTAPAICHEGKAYFPREGVFVFNGTS WFITQRNFFSPQIITTDNTFVSGNCDVVIGIINNTVY DPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQEE IDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYVWL GFIAGLIAIVMVTILLCCMTSCCSCLKGACSCGSCCKFDEDDSE PVLKGVKLHYT

[0091] Figure 2 illustrates a plurality of consensus sequences formed from various sequences listed above.

[0092] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:4.

[0093] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NOs: 77 to 163.

[0094] In various embodiments, the consensus sequence includes amino acid 303 to 571 of the amino acid sequence set forth in SEQ ID NOs: 77 to 163.

[0095] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:4 and SEQ ID NOs:53 to 62 or any combination thereof.

[0096] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:4 and SEQ ID NOs:53 to 62 or any combination thereof.

[0097] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:4, SEQ ID NOs:53 to 62, and SEQ ID NOs:63 to 65 or any combination thereof.

[0098] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:7 and SEQ ID NOs:66 to 74. or any combination thereof

[0099] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:7.

[00100] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:7, SEQ ID NOs:66 to 74, and SEQ ID NOs:75 to 76 or any combination thereof.

[00101] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:4, SEQ ID NOs:53 to 62, SEQ ID NOs:63 to 65, SEQ ID NOs:7, SEQ ID NOs:66-74, and SEQ ID NOs:75 to 76 or any combination thereof.

[00102] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:1 and SEQ ID NOs:23-35 or any combination thereof.

[00103] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:1, SEQ ID NOs:23-35, and SEQ ID NOs:36-38 or any combination thereof.

[00104] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:2 and SEQ ID NOs:39 to 50 or any combination thereof.

[00105] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:2, SEQ ID NOs:39-50 and SEQ ID NOs:51 to 52 or any combination thereof.

[00106] In various embodiments, the consensus sequence includes an amino acid sequence set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NOs:23-35, SEQ ID NOs:36-38, SEQ ID NOs:39-50 and SEQ ID NOs:51 to 52 or any combination thereof.

[00107] In various embodiments, the sarbecovirus is selected from the group comprising of SARS-CoV, SARS-CoV-2, SARS-CoV-2 B.1.1.7, SARS-CoV-2 B.1.351, SC2r-CoV RaTG13, SC2r-CoV GX-P5L, and SARS-CoV combined variants of concern (VOC).

[00108] Figure 3 illustrates the methodology used to generate the consensus sequences.

[00109] It is to be appreciated that the terms SARS1r hACE2/batACE2 Spike, SARS1r hACE2 Spike, SARS2r hACE2 Spike, SARS2r hACE2/batACE2 Spike, SARS1r/SARS2r hACE2 Spike, or SARS1r/SARS2r hACE2/batACE2 Spike are references to SEQ ID NOs. 23 to 52.

[00110] It is to be appreciated that the terms SARS1r hACE RBD, SARS1r hACE2/batACE2 RBD, SARS2r hACE2 RBD, SARS2r hACE/batACE2 RBD, SARS1r/SARS2r hACE2 RBD, or SARS1r/SARS2r hACE2/batACE2 RBD are references to SEQ ID NOs. 53 to 76.

[00111] It is to be appreciated that the terms SARS-CoV VOC or SARS-CoV-2 VOC are references to SEQ ID NOs: 77 to 163.

[00112] The method to generate consensus sequence from a genotype of sarbecovirus comprises: a) obtaining sarbecovirus spike protein sequences (except for human SARS-CoV2) directly from NCBI protein database and processing in R (v4.0.2) to filter complete protein sequences or by determining the corresponding nucleic acid using a genomic database such as GISAID genome and; b) retrieving and processing GISAID SARS-CoV2 spike protein mutation report in R (v4.0.2) with in-house script to calculate the highest frequency mutation per position using a microprocessor; c) producing the SARS-CoV2 reference and combined variants of concern (VOC) sequence (for example SARS-CoV-2 B.1.1.7, and/or SARS-CoV-2 B.1.351); d) after redundancy removal using CD-hit (v4.8.1), importing 163 unique spike and 81 unique RBD sequences into a microprocessor such as Geneious Prime (v2021.0) for further analysis; d) conducting protein alignment using MAFFT and plotting a phylogeny tree using PhyML; e) inferring the human ACE2, batACE2 and non-ACE2 lineages from the RBD phylogeny tree and validating with experimental evidence and literature search; and f) generating consensus sequences for RBD and non-RBD regions according to the highest frequency per amino acid position in the lineage and combining the initial sequences to establish 8 consensus sequences.

[00113] It is to be appreciated that the effect of the SARS survivors vaccinated with Pfizer–BioNTech mRNA SARS-CoV-2 vaccine BNT162b2 would be similar to using the consensus sequences generated in the present disclosure. Therefore, for the purposes of the following examples, they provide an example of how the amino acid constructs will work.

[00114] Example 1: Human serum panel studies were conducted.

[00115] The four serum panels included in this study were described as below. (1) SARS patient (n = 11): these were sera collected from SARS survivors in Singapore at different time points (2003, 2012 and 2020) before the vaccination program started in February 2021; (2) COVID-19 patient (n = 40): this group of sera was collected during 2020 as part of a national longitudinal study [19]. (3) Healthy-vaccinated (n = 20): these were sera collected at day 14 after second dose (or 35 days after the first dose) of the Pfizer-BioNTech BNT162b2 mRNA vaccine. (4) SARS-vaccinated (n=9): sera taken from SARS survivors 21-62 days post first vaccination.

[00116] Figure 4 shows a surrogate virus neutralization test (sVNT), which allowed rapid and multiplex determination of Nabs

[00117] We have further improved the sVNT in two aspects: 1) we have immobilized the viral RBD on a solid phase (a magnetic bead) and used a PE-ACE2 to measure the virus-receptor binding (Figure 5) which allowed multiplex detection of NAbs against different sarbecoviruses; 2) we have expanded the RBD proteins to six different viruses. As shown in Figure 5, multiplex sVNT on the Luminex platform shows all six RBD proteins are able to bind the hACE2 receptor molecular as expected in the following order (from high to low affinity): SARS-CoV-2 B.1.351 > SARS-CoV-2 B.1.1.7 = SC2r-CoV GX-P5L (pangolin) > SARS-CoV-2 > SARS-CoV > SC2r-CoV RaTG13 (bat).

[00118] Multiplex sVNT based on RBD from six different sarbecoviruses

[00119] AviTag-biotinylated RBDs were coated on the MagPlex Avidin microsphere (Luminex) at 5 µg/1 million beads. In multiplex sVNT, RBD-coated microspheres (600 beads/antigen) were pre-incubated with serum at a final 1:20 or greater for 1h at 37°C with 800 rpm agitation. After 1h incubation, 50 µl of PE-conjugated hACE2 (GenScript, 1000 ng/ml) were added to the well and incubated for 30 min at 37°C with agitation, followed by two PBS-1% BSA washes. The data were acquired using MAGPIX system.

[00120] Figure 6 shows multiplex sVNT on six different RBDs (from left to right: SARS-CoV-2 WT, UK, SA strains; Bat virus RaTG13; Pangolin virus GX-P5L; SARS-CoV). A). SARS patient. B) COVID-19 patient. C) Healthy-vaccinated. Serum samples were taken two weeks after second dose. D) SARS-vaccinated. All serum samples were tested at a single dilution of 1:20. A cut-off of 30% was set as previously determined.

[00121] The cross-NAb data demonstrated two highly important observations: The first observation is that vaccinated SARS survivors produced very high NAbs against all viruses studied (Panel D), even against the bat and pangolin viruses; and the second observation is that they neutralized the SARS-CoV-2 variants better than the naïve individuals who received the normal two doses (Panel C).

[00122] The SARS patients had minimal cross-NAbs to any of the other five viruses before vaccination (Panel A) whereas the COVID-19 patients had cross-NAbs against other viruses (all of them are SARS-CoV-2 related), they did not have much against the SARS-CoV (Panel B).

[00123] Using serial dilutions, the best performance of pan-sarbecovirus cross-neutralization by the SARS-vaccinated group have been illustrated.

[00124] Figure 7 shows titration of neutralizing antibody levels (NT50) in the different

groups against the six sarbecoviruses. Serum samples were tested at dilutions from 1:20 to 1:20480 by a 4-fold serial titration. SAR-vaccinated shows highest log NT50 titer values against all six sarbecoviruses.

[00125] Example 2: Mouse studies

[00126] Pan-sarbecovirus mAb inhibition assay

[00127] RBD-coated microspheres (600 beads/antigen) were pre-incubated with 1:100 diluted serum for 1h at 37°C with agitation. Unbound antibodies were removed by two PBS-1% BSA washes. Pan-sarbecovirus mAbs (1000 ng/ml) were then added, followed by 1h incubation at 37°C with agitation followed by washing. The binding of the pan-sarbecovirus mAb on RBD was detected by PE-conjugated anti-mouse IgG antibodies. The data were acquired using MAGPIX system.

[00128] As shown in Figure 8A, the mAb is able to neutralize all six viruses, albeit with slightly lower efficacy against GX-P5L. Using a blocking assay, same principle as the sVNT by replacing the PE-hACE2 with the mAb, we have determined the ability of the four different serum panels to block the mAb's ability in neutralization (Figure 8B).

[00129] It should be appreciated that that the cross-neutralizing ability of the SARS-vaccinated group is the best among the four groups. Second, during natural infection (for either SARS and COVID-19), there is minimal activation of cross-neutralizing antibodies across the two lineages representing SC2r-CoVs and SARS-CoV. Third, although the mRNA vaccination boosted overall neutralizing ability against SCr2-CoVs, it had minimal impact on cross-neutralization against SARS-CoV.

[00130] Example 3: Rabbit studies

[00131] Multiplex sVNT analysis using rabbit hyper immune sera targeting RBD of six different beta coronaviruses

[00132] The rabbit anti-RBD sera were produced by commercial contract with GenScript Biotech. The testing was conducted essentially the same as those described for the mouse studies. Rabbit sera were used by a 4-fold serial dilution starting at 1:20.

[00133] Figure 9 shows neutralization patterns from rabbit hyper immune sera targeting different beta coronavirus RBD proteins. The data presented in Figure 9 demonstrates that cross-neutralization is limited only to the strain/lineage level among the five SC2r-CoVs.

There is no cross-neutralization between SC2r-CoV and SARS-CoV and the negative control HKU1 did not neutralize any virus/strain as shown. The data confirms the virus/strain-specific immunodominant antibody using rabbit hyper immune serum targeting specific virus/strain similar to the results as shown for human serum panel and mouse studies.

[00134] In should be appreciated that the amino acid constructs as mentioned herein above and in Figure 2 may be used to form rabbit anti-amino acid construct sera or rabbit anti-consensus sequence sera to test against the six different sarbecoviruses used in the mouse studies above or the six different beta coronaviruses used in the Rabbit studies above.

[00135] It should be appreciated by the person skilled in the art that the above invention is not limited to the embodiment described. It is appreciable that modifications and improvements may be made without departing from the scope of the present invention.

[00136] It should be further appreciated by the person skilled in the art that one or more of the above modifications or improvements, not being mutually exclusive, may be further combined to form yet further embodiments of the present invention.

CLAIMS

1. An amino acid construct comprising an amino acid sequence having at least 75% sequence identity to at least two different sarbecovirus Spike proteins, or a fragment thereof.

2. The amino acid construct of claim 1, wherein the at least two different sarbecovirus Spike proteins comprise an amino acid sequence having at least 75% sequence identity to a sarbecovirus Spike protein, or an amino acid sequence having at least 75% sequence identity to a fragment of at least two different sarbecovirus Spike proteins.

3. The amino acid construct of claim 1, wherein the fragment comprises a receptor binding domain fragment of a sarbecovirus Spike protein.

4. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence selected from SEQ ID NOs: 10 to 163 or any combination thereof.

5. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 10.

6. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 11.

7. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 12.

8. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 13.

9. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 14.

10. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 15.

11. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 16.

12. The amino acid construct of any one of claims 1-3, wherein the amino acid

sequence comprises a sequence set forth in SEQ ID NO: 17

13. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 18.

14. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 19.

15. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 20.

16. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 21.

17. The amino acid construct of any one of claims 1-3, wherein the amino acid sequence comprises a sequence set forth in SEQ ID NO: 22.

18. The amino acid construct according to any one of claims 1-17, comprising an oligomeric polypeptide.

19. The amino acid construct of claim 18, wherein the polypeptide is a fusion dimer.

20. A nucleic acid encoding the amino acid construct of any one of claims 1 to 17.

21. The nucleic acid according to claim 20, comprising a messenger ribonucleic acid (mRNA)

22. An immunogenic composition comprising the amino acid construct of any one of claims 1 to 18 or the nucleic acid of claim 20 or claim 21.

23. The immunogenic composition of claim 22, further comprising an adjuvant.

24. The immunogenic composition of claim 23, wherein the adjuvant is selected from MF59, Adjuvant System 03 (A S03) or CpG 1018.

25. The immunogenic composition of claim 22, comprising at least two sarbecovirus virus antigen.

26. A viral vector comprising a nucleic acid of claim 20 or 21

27. The viral vector of claim 26, wherein the vector is selected from a recombinant measles virus vector, a vesicular stomatitis virus (VSV) vector, a vaccinia virus

vector or an adenovirus vector.

28. The amino acid construct according to any one of claims 1 to 18 for use in the treatment or prevention of sarbecovirus infections.

29. The immunogenic composition according to any one of claims 22 to 25 for use in the treatment and/or prevention of sarbecovirus infections.

30. The nucleic acid according to claim 20 or 21 for use in the treatment and/or prevention of sarbecovirus infections.

31. The viral vector according to claim 26 or 27 for use in the treatment and/or prevention of sarbecovirus infections.

32. Use of an amino acid construct according to any one of claims 1 to 18 in the manufacture of a medicament for the treatment and/or prevention of sarbecovirus infections.

33. Use of an immunogenic composition according to any one of claims 22 to 25 in the manufacture of a medicament for the treatment and/or prevention of sarbecovirus infections.

34. Use of a nucleic acid according to claim 20 or 21 in the manufacture of a medicament for the treatment and/or prevention of sarbecovirus infections.

35. Use of a viral vector according to claim 26 or 27 in the manufacture of a medicament for the treatment and/or prevention of sarbecovirus infections

36. A method of treating and/or preventing an infection caused by sarbecovirus comprising administering a vaccine molecule comprising an amino acid construct according to any one of claims 1 to 18, an immunogenic composition according to any one of claims 22 to 25, a nucleic acid of claims 20 to 21, or a viral vector of claims 26 to 27 to a subject.

37. A method of making an amino acid construct according to any one of claims 1 to 18, comprising:

    a. comparing amino acid sequences from at least two different sarbecovirus spike proteins or fragments thereof;

    b. identifying identical amino acid in the sequences from the at least two different

sarbecovirus spike proteins or fragments thereof;

c. removing any different amino acids from the sequences of the at least two different sarbecovirus spike proteins or fragments thereof to identify a unique amino acid sequence; and

d. forming the amino construct of the unique amino acid sequence wherein the amino construct has at least 75% sequence identity to the at least two different sarbecovirus Spike proteins, or a fragment thereof.

38. The method of claim 37, further comprising identifying a fragment within the unique amino acid sequence that corresponds to a receptor binding domain of the at least two different sarbecovirus spike proteins to form a unique amino acid fragment sequence; and forming the amino construct of the combined unique amino acid fragment sequence with the unique amino acid sequence.

39. The method of claim 37 or 38, wherein forming the amino construct in step d comprises forming a nucleic acid encoding the amino acid construct able to express the amino acid construct.

40. The method of claim 39, wherein the nucleic acid comprises a messenger ribonucleic acid (mRNA).

41. The method of any one of claims 37 to 40, wherein the amino acid construct or a nucleic acid encoding the amino acid construct able to express the amino acid construct is prepared as an immunogenic composition.

42. The method of claim 41, wherein the immunogenic composition comprises an adjuvant.

43. The method of claim 42, wherein the adjuvant is selected from MF59, Adjuvant System 03 (A S03) or CpG 1018.

44. The method of claim 39 or 40, wherein the nucleic acid is prepared in a viral vector.

45. The method of claim 44, wherein the vector is selected from a recombinant measles virus vector, a vesicular stomatitis virus (VSV) vector, a vaccinia virus vector or an adenovirus vector.