



Daresbury Proteins

Product description

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Name: Recombinant SARS-CoV-2 Spike protein, D614G variant. Full-length soluble with foldon trimerization motif, mutated Furin recognition site and 2 stabilising mutations (K986P and V987P), based on/modified from Amanat *et al*, 2020.

Synonyms: Spike glycoprotein, S protein.

Species: Severe Acute Respiratory Syndrome Coronavirus 2

Source: HEK293

Amino Acids: 16-1213

Tag: 8xHis at the C terminus.

Predicted Molecular Weight: 137 kDa

Protein ID: P0DTC2

Sequence:

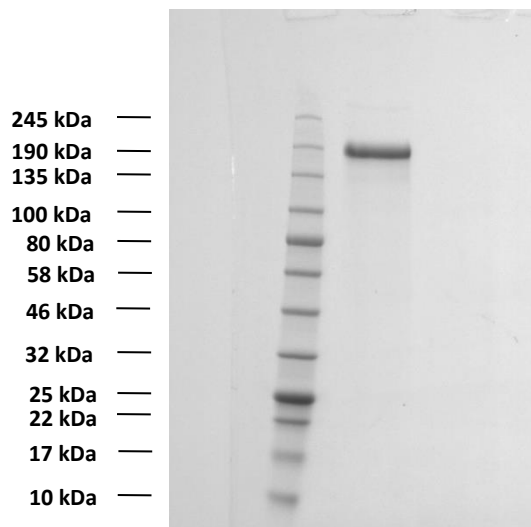
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TKRFDNPVLP FNDGVYFAST EKSNIIRGWI FGTTLDSTQ SLLIVNNATN VVIKVCEFQF
CNDPFLGVYY HKNNKSWMES EFRVYSSANN CTFEYVSQPF LMDLEGKQGN FKNLREFVFK
NIDGYFKIYS KHTPINLVRD LPQGFSALEP LVDLPIGINI TRFQTLALH RSYLTPGDSS
SGWTAGAAAY YVGYLQPRTF LLKYNENGTI TDAVDCALDP LSETKCTLKS FTVEKGIYQT
SNFRVQPTES IVRFPNITNL CPFGEVFNAT RFASVYAWNR KRISNCVADY SVLYNSASFS
TFKCYGVSP T KLNDLCFTNV YADSFVIRGD EVRQIAPGQT GKIADYNYKL PDDFTGCVIA
WNSNNLDSKV GGNYNLYRL FRKSNLKPFE RDISTEIQQA GSTPCNGVEG FNCYFPLQSY
GFQPTNGVGY QPYRVVLSF ELLHAPATVC GPKKSTNLVK NKCVMFNENG LTGTGVLTES
NKKFLFPQQF GRDIADTTDA VRDPQTLEIL DITPCSFGGV SVITPGTNTS NQVAVLYQGV
NCTEVPVAIH ADQLTPTWRV YSTGSNVFQT RAGCLIGAEH VNNSYECDIP IGAGICASYQ
TQTNSPGGAS VASQSIIAYT MSLGAENSVA YSNNSIAIPT NFTISVTTEI LPVSMTKTSV
DCTMYICGDS TECSNLLLQY GSFCQTLNRA LTGIAVEQDK NTQEVFAQVK QIYKTPPIKD
FGGFNFSQIL PDPSKPSKRS FIEDLLFNKV TLADAGFIKQ YGDCLGDIAA RDLICAQKFN
GLTVLPPLLT DEMIAQYTS A LLAGTITSGW TFGAGAALQI PFAMQMAYRF NGIGVTQNVL
YENQKLIANQ FENSAIGKIQD SLSSTASALG KLQDVVNQNA QALNTLVKQL SSNFGAIVSV
LNDILSRLDP PEAQVQIDRL ITGRLQSLQT YVTQQLIRAA EIRASANLAA TKMSECVLGQ
SKRVDFCGKG YHLMSPQSA PHGVVFLHVT YVPAQEKNT TAPAICHGDK AHFPREGVVF
SNGTHWFVTQ RNFYEPQIIT TDNTFVSGNC DVVIGIVNNT VYDPLQPELD SFKEELDKYF
KNHTSPDVL GDISGINASV VNIQKEIDRL NEVAKNLNES LIDLQELGKY EQYIKWPSGG
SGYIPEAPRD GQAYVRKDGE WVLLSTFLGS HHHHHHHH
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Product specifications

Estimated Molecular Weight, SDS-PAGE: ≈ 190 kDa

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Grade & Purity: >90% as estimated by SDS-PAGE stained with Instant Blue Stain (Expedeon).



Endotoxins: Less than 0.1 ng/ μ g (1 IEU/ μ g), as measured by LAL method.

Formulation: PBS 20% Glycerol

Shipping

Product is shipped either on dry or wet ice or frozen gel packs. Upon receipt, store at -20°C to -70°C .

Product application and Storage

Storage: The protein should be stored at -20°C to -70°C preferably in small aliquots to avoid repeated freeze-thaw cycles.

Stability: At least 12 months at -20°C to -70°C and at least 1 month at 2°C to 8°C.

Application Note: For research purposes only. Not for use in humans.

Background Information

The first reports of atypical pneumonia in China were announced at the very end of 2019, in the city of Wuhan, Hubei province. Its cause was identified in January 2020 as a novel β -CoV (1), named SARS-CoV-2, which started spreading very quickly causing a global pandemic COVID-19.

Spike protein attaches the virion to the cell membrane by interacting with host receptor, initiating the infection. Binding to human ACE2 receptor and internalization of the virus into the endosomes of the host cell induces conformational changes in the Spike glycoprotein (2, 3). The protein forms a trimer *in vivo* mediating receptor binding and membrane fusion (4). It has been demonstrated by Florian Krammer's group that certain mutations and the inclusion of trimerization motif can stabilize recombinant Spike protein (5, 6).

The original Wuhan strain of the virus has become quickly replaced by its more transmissible variant, mainly determined by a single amino acid point mutation D614G (7).

References:

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2. Hoffmann M., Kleine-Weber H., Schroeder S., et al. SARS-CoV-2 Cell Entry Depends on ACE2 and TMPRSS2 and Is Blocked by a Clinically Proven Protease Inhibitor. *Cell*, 2020;181(2):271-280.
3. Wrapp D., Wang N., Corbett KS., et al. Cryo-EM structure of the 2019-nCoV spike in the prefusion conformation. *Science*, 2020;367(6483):1260-1263.
4. Yin HS., Wen X., Paterson RG., Lamb RA., Jardetzky TS. Structure of the parainfluenza virus 5 F protein in its metastable, prefusion conformation. *Nature*, 2006;439(7072):38-44.
5. Amanat, F., Stadlbauer, D., Strohmeier, S., et al. A serological assay to detect SARS-CoV-2 seroconversion in humans. *Nat Med.*, 2020;26:1033–1036.
6. Stadlbauer, D., Amanat, F., Chromikova, V., et al. SARS-CoV-2 seroconversion in humans: A detailed protocol for a serological assay, antigen production, and test setup. *Current Protocols in Microbiology*, 2020;57, e100.
7. Korber, B., W. Fischer, Gnanakaran, S., et al. Tracking Changes in SARS-CoV-2 Spike: Evidence that D614G Increases Infectivity of the COVID-19 Virus. *Cell*, 2020;182:1-16.