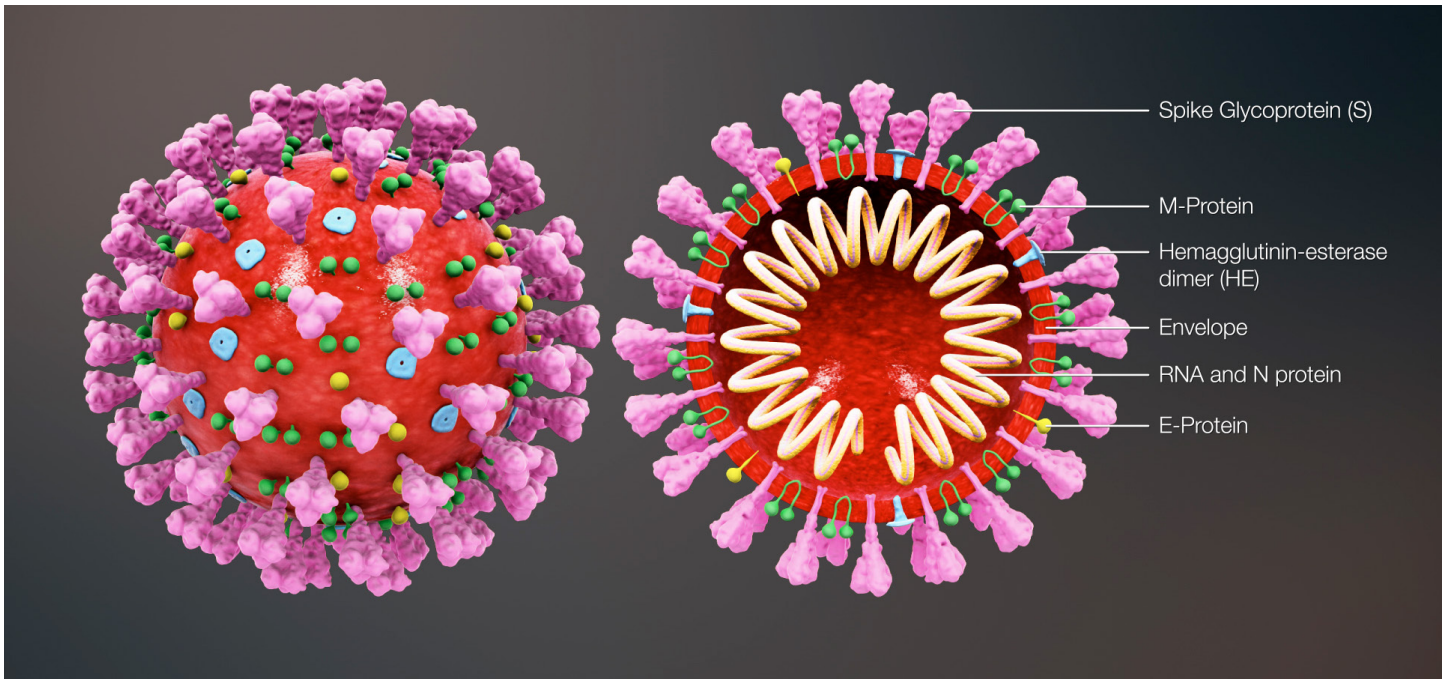
SARS-CoV-2 (2019-nCoV) Proteins

BioVendor offers new SARS-CoV-2 structural protein products for virology research

BioVendor
Research
and Diagnostic Products



Background:

Coronaviruses (CoVs), within the order Nidovirales, are enveloped, single-strand, positive-sense RNA viruses with a large genome of approximately 30 kbp in length. A human infecting coronavirus (viral pneumonia) initially known as 2019 novel coronavirus (2019-nCoV) was found in the city of Wuhan, Hubei province of China in December 2019. This virus is now named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), with the resulting disease known as coronavirus disease 2019 (COVID-19).

Coronaviruses contain at least four structural proteins: Spike (S) protein, envelope (E) protein, membrane (M) protein, and nucleocapsid (N) protein.

Products Available

SARS-CoV-2 (2019-nCoV) Spike Glycoprotein-S1, HEK293 Recombinant

Cat. No. RP972011

Description: The HEK293 derived recombinant protein contains the SARS-CoV-2 Spike Glycoprotein S1, Wuhan-Hu-1 strain, amino acids 1-674 fused to Fc tag at C-terminal.

Purity: Greater than 85.0% as determined by SDSPAGE. Purfied by Protein-G chromatographic technique.

Formulation: SARS-CoV-2 S1 protein solution is supplied in DPBS. Sterile filtered clear solution.

SARS-CoV-2 (2019-nCoV) Spike Glycoprotein-S2, HEK293 Recombinant

Cat. No. RP972012

Description: The HEK293 derived recombinant protein contains the SARS-CoV-2 Spike Glycoprotein S2, Wuhan-Hu-1 strain, amino acids 685-1211 fused to Fc tag at C-terminal.

Purity: Greater than 85.0% as determined by SDSPAGE. Purfied by Protein-G chromatographic technique.

Formulation: SARS-CoV-2 S2 protein solution is supplied in DPBS. Sterile filtered clear solution.

SARS-CoV-2 (2019-nCoV) Spike-E-M Mosaic, E.coli Recombinant

Cat. No. RP972014

Description: The *E.Coli* derived recombinant protein contains the SARS-CoV-2 spike (S), membrane (M), and envelope (E) immunodominant regions, fused to His tag at C-terminal.

Purity: Greater than 90.0% as determined by Analysis by SDS-PAGE.

Formulation: SARS-CoV-2 Spike Envelope-Mosaic Protein 1mg/ml solution is supplied in 1x PBS. Sterile filtered clear solution.

SARS-CoV-2 (2019-nCoV) Nucleocapsid (N) Protein, E.coli Recombinant

Cat. No. RP972013

Description: The E.Coli derived recombinant protein contains the SARS-CoV-2 full-length nucleoprotein: Gene bank- MN908947, fused to His tag at C-terminal and having a Mw. of 48 kDa as appears on SDS-PAGE.

Purity: Greater than 95.0% as determined by SDS-PAGE.

Formulation: SARS-CoV-2 Nucleocapsid is supplied in 25mM Tris base and 10mM K2CO3. Sterile filtered clear solution.

SARS-CoV-2 (2019-nCoV) Nucleocapsid (N) Protein Mosaic, E.coli Recombinant

Cat. No. RP972015

Description: The E.Coli derived recombinant protein contains the SARS-CoV-2 full length nucleocapsid Mosaic immunodominant regions, fused to His tag at the C-terminal.

Purity: Greater than 90.0% as determined by SDS-PAGE.

Formulation: SARS-CoV-2 Nucleocapsid-Mosaic Protein 1mg/ml solution is supplied in 1x PBS. Sterile filtered clear solution.

Coronavirus (CoV) Structural Proteins

Spike (S) Protein

Cell entry of CoVs depends on binding of the viral spike (S) proteins to cellular receptors and on S protein priming by host cell proteases. Early studies indicate that SARS-CoV-2 uses the receptor angiotensin-converting enzyme 2 (ACE2) for entry and transmembrane protease serine 2 (TMPRSS2) for S protein priming. The spike (S) glycoprotein is a type I transmembrane glycoprotein that plays an important role in mediating viral infection. The S proteins consist of two subunits, S1 and S2. The S1 subunit binds the cellular receptor through its receptor-binding domain (RBD), followed by conformational changes in the S2 subunit, which allows the fusion peptide to insert into the host target cell membrane. S protein represents an important target for specific drug development.

Envelope (E) Protein

The CoV envelope (E) protein is a small, integral membrane protein involved in several aspects of the virus' life cycle, such as assembly, budding, envelope formation, and pathogenesis. Recent studies have expanded on its structural motifs and topology, its functions as an ionchannelling viroporin, and its interactions with both other CoV proteins and host cell proteins. Recombinant CoVs lacking E exhibit significantly reduced viral titres, crippled viral maturation, or yield propagation incompetent progeny, demonstrating the importance of E in virus production and maturation.

Membrane (M) Protein

The CoV membrane (M) protein is of the viral envelope that plays a central role in virus morphogenesis and assembly via its interactions with other viral proteins. M is located among the S proteins in the virus envelope along with small amounts of E and is the primary driver of the virus budding process. During assembly of the authentic virion M interacts with itself, with the nucleocapsid protein N, with E and with the S protein. The M protein has dominant cellular immunogenicity and elicits a strong humoral response which suggests it could serve as a potential target in vaccine design.

Nucleocapsid (N) Protein

The primary function of the nucleocapsid (N) protein is to package the viral RNA genome within the viral envelope into a ribonucleoprotein (RNP) complex called the capsid. Ribonucleocapsid packaging is a fundamental part of viral self-assembly and replication. Additionally, the Nprotein of the SARS-CoV-2 affects host cell responses and may serve regulatory roles during its viral life cycle.

Related Products

MxA Protein Human ELISA *(Cat. No. RD194349200R)*

Research data show that MxA protein is selectively increased in patients with viral infections and has the potential to greatly enhance the rapid distinction between viral and bacterial respiratory infections. MxA protein may offer advantages as a marker for viral infection over other induced proteins because of its very low basal concentration and long half-life.

Procalcitonin Human ELISA *(Cat. No. RD191006200R)*
CRP Human ELISA *(Cat. No. RAP001)*
High-Sensitivity CRP ELISA *(Cat. No. RAP002)*

C-reactive protein and procalcitonin have established positions as general biomarkers for bacterial infections. However, these biomarkers lack adequate clinical specificity to differentiate a viral from a bacterial infection and ultimately lead to antibiotic overtreatment of viral infections. Treatment of viral infection with antibiotics is not only ineffective, but also contributes heavily to the growing problem of antibiotic resistance.

SARS-CoV Nucleocapsid Protein, E.coli Recombinant *(Cat. No. RD972052100)*

As the most abundantly expressed structural protein during infection, SARS-CoV NP is highly detectable in SARS patients. Therefore, this protein may serve as one of the immunodominant antigens in the early diagnosis of infection. Furthermore, researchers have suggested that antibody against the N protein could modulate cytokine responses such as IL-11; non-neutralizing antibodies against N protein were found to protect mice against lethal infection.

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