

Recombinant SARS-CoV-2 RBD-Nucleoprotein Chimera, His-tagged

Cat. No. HUM-368 **Lot. No.** (See product label)

SPECIFICATION

Product Overview

SARS-CoV-2 RBD-Nucleoprotein Chimera, recombinant SAR-CoV-2 N-terminal Spike S1 RBD (319-541) fused to full-length Nucleoprotein (Nucleocapsid) with a linker HSA (human serum albumin), expressed in CHO cells using a C-terminal His-tag. These proteins can be used as diagnostic standard antigens, targets of neutralizing antibodies and in assay development for the detection and quantification of SARS-CoV-2 spike and nucleocapsid protein from recombinant or biological samples. Stronger binding affinity than that of individual S and N and only one test required to capture both anti-S and anti-N antibodies.

Tag

His

Background

SARS-CoV-2 is a respiratory virus which causes coronavirus disease 2019 (COVID-19). This disease spreads primarily through contact with an infected person via respiratory droplets generated when a person coughs or sneezes, or through droplets of saliva or discharge from the nose. Infection with SARS-CoV-2 can cause mild symptoms including a runny nose, sore throat, cough, and fever. However, it can be more severe for some people and can lead to pneumonia or breathing difficulties. The elderly, and people with pre-existing medical conditions (such as, diabetes and heart disease) appear to be more vulnerable to becoming severely ill with the virus (WHO, 2020).

The coronavirus spike (S) glycoprotein is a class I viral fusion protein on the outer envelope of the virion that plays a critical role in viral infection by recognizing host cell receptors and mediating fusion of the viral and cellular membranes (Li, 2016). The S

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glycoprotein is synthesized as a precursor protein consisting of ~1,300 amino acids that is then cleaved into an amino (N)-terminal S1 subunit (~700 amino acids) and a carboxyl (C)-terminal S2 subunit (~600 amino acids). Three S1/S2 heterodimers assemble to form a trimer spike protruding from the viral envelope. The S1 subunit contains a receptor-binding domain (RBD), while the S2 subunit contains a hydrophobic fusion peptide and two heptad repeat regions. Triggered by receptor binding, proteolytic processing and/or acidic pH in the cellular compartments, the class I viral fusion protein undergoes a transition from a metastable prefusion state to a stable postfusion state during infection, in which the receptor-binding subunit is cleaved, and the fusion subunit undergoes large-scale conformational rearrangements to expose the hydrophobic fusion peptide, induce the formation of a six-helix bundle, and bring the viral and cellular membranes close for fusion (Belouzard et al., 2012). The trimeric SARS coronavirus (SARS-CoV) S glycoprotein consisting of three S1-S2 heterodimers binds the cellular receptor angiotensin-converting enzyme 2 (ACE2) and mediates fusion of the viral and cellular membranes through a pre- to postfusion conformation transition (Song et al., 2018).

Nucleoproteins, also known as nucleocapsid proteins, are phosphoproteins that are capable of binding to helix and have flexible structure of viral genomic RNA. It plays an important role in virion structure, replication and transcription of coronaviruses, as it localizes in both the replication/ transcriptional region of the coronaviruses and the ERGIC region where the virus is collected. It packages the positive strand viral genome RNA into a helical ribonucleocapsid (RNP) and plays a fundamental role during virion assembly through its interactions with the viral genome and membrane protein M. It also plays an important role in enhancing the efficiency of subgenomic viral RNA transcription as well as viral replication (Yu et al., 2006). N-protein is a potent antigen that provides basis for future vaccine and diagnostic kit development (McBride et al., 2014).

Formulation

1X PBS, pH 7.4.

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Notes	This product is intended for research and manufacturing uses only. It is not a diagnostic device. The user assumes all responsibility for care, custody and control of the material, including its disposal, in accordance with all regulations.
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Type	Recombinant
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ClassID 1	Infectious Disease
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GENE INFORMATION

Synonyms	SARS-CoV-2 RBD-Nucleoprotein Chimera
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