

# Spike Protein RBD

Catalog # PVGS1576

## Product Information

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<b>Primary Accession Species</b>	<a href="#">P0DTC2</a> SARS-CoV-2
<b>Sequence</b>	Arg319-Ser591 (N501Y)
<b>Biological Activity</b>	This protein is validated to bind with human ACE2 (Cat. No. <a href="#">Z03516</a> ) in functional ELISA assay.
<b>Expression System</b>	Human Cells
<b>Formulation Storage &amp; Stability</b>	Supplied as a solution in PBS, pH 7.4, 0.1% ProClin 300. Upon receiving, this product remains stable for up to 3 months at 2-8°C. Protect from light.

## Additional Information

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<b>Gene ID</b>	43740568
<b>Other Names</b>	Spike glycoprotein {ECO:0000255 HAMAP-Rule:MF_04099}, S glycoprotein {ECO:0000255 HAMAP-Rule:MF_04099}, E2 {ECO:0000255 HAMAP-Rule:MF_04099}, Peplomer protein {ECO:0000255 HAMAP-Rule:MF_04099}, Spike protein S1 {ECO:0000255 HAMAP-Rule:MF_04099}, Spike protein S2 {ECO:0000255 HAMAP-Rule:MF_04099}, Spike protein S2' {ECO:0000255 HAMAP-Rule:MF_04099}, S {ECO:0000255 HAMAP-Rule:MF_04099}
<b>Target Background</b>	SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) also known as 2019-nCoV (2019 Novel Coronavirus) is a virus that causes illnesses ranging from the common cold to severe diseases. The spike protein mutation N501Y (UK variant, B.1.1.7) is one of six key contact residues within the receptor-binding domain (RBD) and has been identified as increasing binding affinity to human and murine ACE. Lineage B.1.1.7 is believed to have emerged in the United Kingdom in September 2020. Epidemiological markers suggest that the variant is more transmissible and lethal. Among the variant's several mutations is one in the receptor-binding domain of the spike protein that changes the asparagine at position 501 to tyrosine (N501Y). This mutation may cause the virus to bind more tightly to the ACE2 receptor. It is currently spread globally.

## Protein Information

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<b>Name</b>	S {ECO:0000255 HAMAP-Rule:MF_04099}
<b>Function</b>	<p>[Spike protein S1]: Attaches the virion to the cell membrane by interacting with host receptor, initiating the infection. The major receptor is host ACE2 (PubMed:<a href="#">32142651</a>, PubMed:<a href="#">32155444</a>, PubMed:<a href="#">33607086</a>). When S2/S2' has been cleaved, binding to the receptor triggers direct fusion at the cell membrane (PubMed:<a href="#">34561887</a>). When S2/S2' has not been cleaved, binding to the receptor results in internalization of the virus by endocytosis using host TFRC and GRM2 and leading to fusion of the virion membrane with the host endosomal membrane (PubMed:<a href="#">32075877</a>, PubMed:<a href="#">32221306</a>, PubMed:<a href="#">34903715</a>, PubMed:<a href="#">36779763</a>). Alternatively, may use NRP1/NRP2 (PubMed:<a href="#">33082294</a>, PubMed:<a href="#">33082293</a>) and integrin as entry receptors (PubMed:<a href="#">35150743</a>). The use of NRP1/NRP2 receptors may explain the tropism of the virus in human olfactory epithelial cells, which express these molecules at high levels but ACE2 at low levels (PubMed:<a href="#">33082293</a>). The stalk domain of S contains three hinges, giving the head unexpected orientational freedom (PubMed:<a href="#">32817270</a>).</p>
<b>Cellular Location</b>	<p>Virion membrane {ECO:0000255 HAMAP-Rule:MF_04099, ECO:0000269 PubMed:32979942}; Single-pass type I membrane protein {ECO:0000255 HAMAP-Rule:MF_04099, ECO:0000269 PubMed:34504087}. Host endoplasmic reticulum-Golgi intermediate compartment membrane {ECO:0000255 HAMAP-Rule:MF_04099, ECO:0000269 PubMed:34504087}; Single-pass type I membrane protein {ECO:0000255 HAMAP-Rule:MF_04099}. Host cell membrane {ECO:0000255 HAMAP-Rule:MF_04099, ECO:0000269 PubMed:34504087}; Single-pass type I membrane protein {ECO:0000255 HAMAP-Rule:MF_04099}. Note=Accumulates in the endoplasmic reticulum-Golgi intermediate compartment, where it participates in virus particle assembly. Some S oligomers are transported to the host plasma membrane, where they may mediate cell-cell fusion (PubMed:34504087). An average of 26 +/-15 S trimers are found randomly distributed at the surface of the virion (PubMed:32979942) {ECO:0000255 HAMAP-Rule:MF_04099, ECO:0000269 PubMed:32979942, ECO:0000269 PubMed:34504087}</p>

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