

# Spike Protein RBD

Catalog # PVGS1575

## Product Information

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<b>Primary Accession Species</b>	<a href="#">P0DTC2</a> SARS-CoV-2
<b>Sequence</b>	Arg319-Ser591
<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>	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus that causes coronavirus disease 2019 (COVID-19), the respiratory illness responsible for the COVID-19 pandemic. SARS-CoV-2 also known as 2019-nCoV, is a positive-sense single-stranded RNA virus and is believed to have zoonotic origins and has close genetic similarity to bat coronaviruses. The receptor binding domain (RBD) of spike protein of the SARS-CoV-2 virus binds Angiotensin-Converting Enzyme 2 (ACE2) to invade the host cells. Based on structural biology studies, the RBD can be oriented either in the up/standing or down/lying state with the up/standing state associated with higher pathogenicity.

## Protein Information

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<b>Name</b>	S {ECO:0000255 HAMAP-Rule:MF_04099}
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<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>). Uses also ASGR1 as an alternative receptor in an ACE2-independent manner (PubMed:<a href="#">34837059</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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