

# SARS-CoV-2 B.1.1.529 (Omicron) Spike S1 Protein (His Tag)

Catalog Number: 40591-V08H41



Sino Biological  
Biological Solution Specialist

## General Information

### Gene Name Synonym:

spike

### Protein Construction:

A DNA sequence encoding the SARS-CoV-2 Spike S1 (YP\_009724390.1, with mutations A67V, HV69-70 deletion, T95I, G142D, VYY143-145 deletion, N211 deletion, L212I, ins214EPE, G339D, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H, T547K, D614G, H655Y, N679K, P681H) (Met1-Arg685) was expressed with a polyhistidine tag at the C-terminus. The mutations were identified in the SARS-CoV-2 variant (known as variant B.1.1.529) which emerged in the South Africa.

**Source:** SARS-CoV-2

**Expression Host:** HEK293 Cells

## QC Testing

**Purity:** > 95% as determined by SDS-PAGE.  
> 95 % as determined by SEC-HPLC.

### Bio-activity:

Immobilized human ACE2 protein (mFc tag)(Cat:10108-H05H) at 2 µg/mL (100 µL/well) can bind SARS-CoV-2 B.1.1.529 (Omicron) S1 Protein (His Tag)(Cat:40591-V08H41), the EC<sub>50</sub> of is 45-140 ng/mL.

### Endotoxin:

< 1.0 EU per µg protein as determined by the LAL method.

**Predicted N terminal:** Val 16

### Molecular Mass:

The recombinant SARS-CoV-2 Spike S1 consists of 678 amino acids and predicts a molecular mass of 76.48 kDa. As a result of glycosylation, it migrates as an approximately 99.56 kDa band in SDS-PAGE under reducing conditions.

### Formulation:

Lyophilized from sterile PBS, pH 7.4.

Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween80 are added as protectants before lyophilization. Specific concentrations are included in the hardcopy of COA. Please contact us for any concerns or special requirements.

## Usage Guide

### Stability & Storage:

Samples are stable for twelve months from date of receipt at -20°C to -80°C.

Store it under sterile conditions at -20°C to -80°C upon receiving. Recommend to aliquot the protein into smaller quantities for optimal storage.

**Avoid repeated freeze-thaw cycles.**

### Reconstitution:

Detailed reconstitution instructions are sent along with the products.

## SDS-PAGE:



## Protein Description

The spike (S) glycoprotein of coronaviruses contains protrusions that will only bind to certain receptors on the host cell. Known receptors bind S1 are ACE2, angiotensin-converting enzyme 2; DPP4, dipeptidyl peptidase-4; APN, aminopeptidase N; CEACAM, carcinoembryonic antigen-related cell adhesion molecule 1; Sia, sialic acid; O-ac Sia, O-acetylated sialic acid. The spike is essential for both host specificity and viral infectivity. The term 'peplomer' is typically used to refer to a grouping of heterologous proteins on the virus surface that function together. The spike (S) glycoprotein of coronaviruses is known to be essential in the binding of the virus to the host cell at the advent of the infection process. It's been reported that SARS-CoV-2 (COVID-19 coronavirus, 2019-nCoV) can infect the human respiratory epithelial cells through interaction with the human ACE2 receptor. The spike protein is a large type I transmembrane protein containing two subunits, S1 and S2. S1 mainly contains a receptor binding domain (RBD), which is responsible for recognizing the cell surface receptor. S2 contains basic elements needed for the membrane fusion. The S protein plays key parts in the induction of neutralizing-antibody and T-cell responses, as well as protective immunity. The main functions for the Spike protein are summarized as: Mediate receptor binding and membrane fusion; Defines the range of the hosts and specificity of the virus; Main component to bind with the neutralizing antibody; Key target for vaccine design; Can be transmitted between different hosts through gene recombination or mutation of the receptor binding domain (RBD), leading to a higher mortality rate.

## References

- Shen S, et al. (2007) Expression, glycosylation, and modification of the spike (S) glycoprotein of SARS CoV. *Methods Mol Biol.* 379: 127-35.
- Du L, et al. (2009) The spike protein of SARS-CoV--a target for vaccine and therapeutic development. *Nat Rev Microbiol.* 7 (3): 226-36.
- Xiao X, et al. (2004) The SARS-CoV S glycoprotein. *Cell Mol Life Sci.* 61 (19-20): 2428-30.

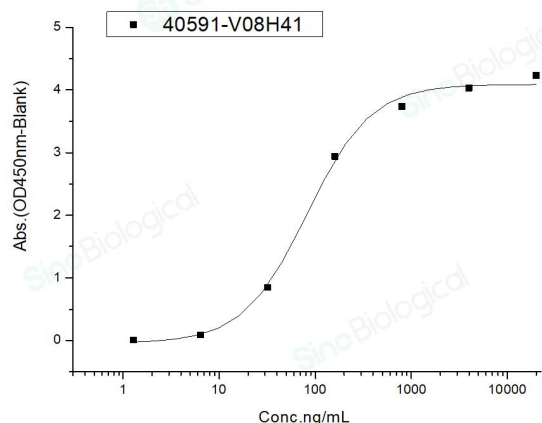
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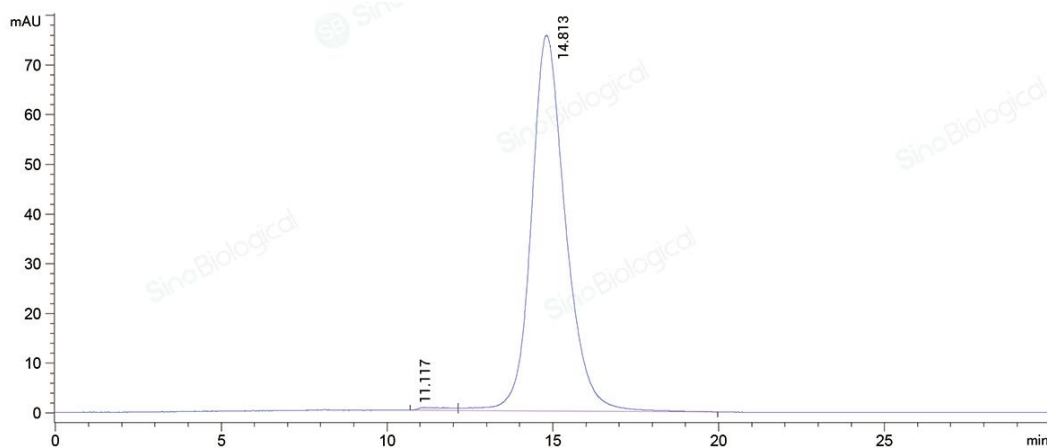
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## ELISA:



Immobilized human ACE2 protein (mFc tag)(Cat:10108-H05H) at 2  $\mu\text{g/mL}$  (100  $\mu\text{L}$ /well) can bind SARS-CoV-2 B.1.1.529 (Omicron) S1 Protein (His Tag)(Cat:40591-V08H41), the  $\text{EC}_{50}$  of is 45-140 ng/mL.

## SEC-HPLC:



> 95 % as determined by SEC-HPLC.