

**Synonym**

Spike, S protein, Spike glycoprotein, S glycoprotein

**Source**

SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) (SPN-C5226) is expressed from human 293 cells (HEK293). It contains AA Val 16 - Pro 1213 (Accession # [QHD43416.1](#) (T19R, A27S, T95I, G142D, E142F, R156G, N1211I, I1211N, S1214E, P1214E, G339D, S371L, S373P, S375F, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, N501Y, Y505H, T547K, D614G, H655Y, N679K, P681H, N764K, D796Y, N856K, Q954H, N969K, L981F, R683A, R685A, F817P, A892P, A899P, A942P, K986P, V987P)). The spike mutations are predicted as the SARS-CoV-2 variant (Pango lineage: XD). The recombinant protein is expressed from human 293 cells (HEK293) with T4 fibrin trimerization motif and a polyhistidine tag at the C-terminus. Proline substitutions (F817P, A892P, A899P, A942P, K986P, V987P) and alanine substitutions (R683A and R685A) are introduced to stabilize the trimeric prefusion state of SARS-CoV-2 S protein and abolish the furin cleavage site, respectively.

Predicted N-terminus: Val 16

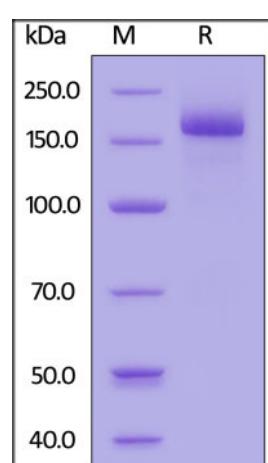
**Molecular Characterization**

This protein carries a polyhistidine tag at the C-terminus.

The protein has a calculated MW of 138.5 kDa. The protein migrates as 160-190 kDa under reducing (R) condition (SDS-PAGE) due to glycosylation.

**Endotoxin**

Less than 1.0 EU per  $\mu$ g by the LAL method / rFC method.

**SDS-PAGE**

SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) on SDS-PAGE under reducing (R) condition. The gel was stained with Coomassie Blue. The purity of the protein is greater than 95%.

**Purity**

>95% as determined by SDS-PAGE.

>95% as determined by SEC-MALS.

**Formulation**

Lyophilized from 0.22  $\mu$ m filtered solution in 0.1 M Sodium citrate, pH5.5 with trehalose as protectant.

Contact us for customized product form or formulation.

**Reconstitution**

Please see Certificate of Analysis for specific instructions.

*For best performance, we strongly recommend you to follow the reconstitution protocol provided in the CoA.*

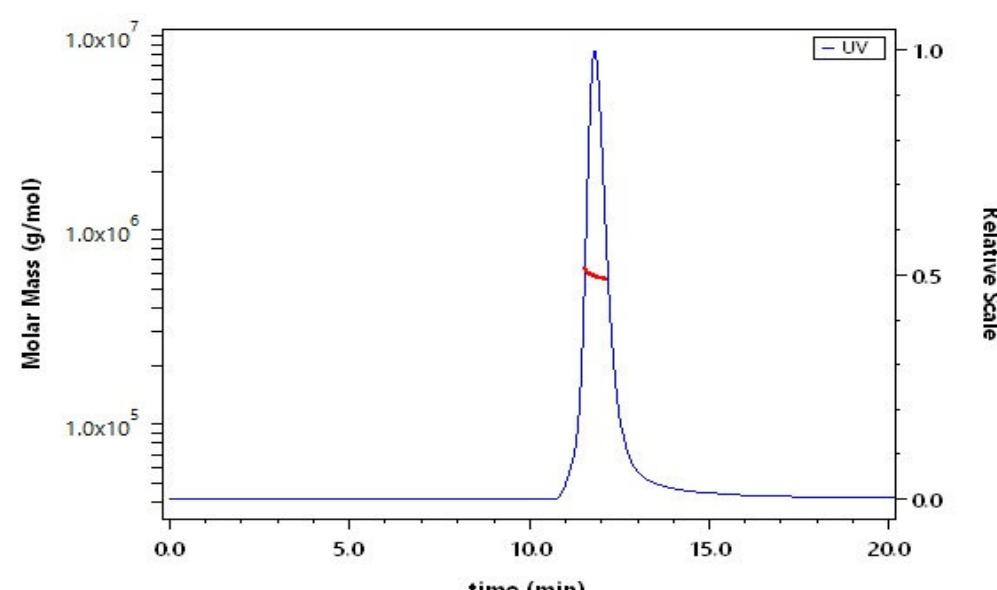
**Storage**

For long term storage, the product should be stored at lyophilized state at -20°C or lower.

*Please avoid repeated freeze-thaw cycles.*

This product is stable after storage at:

- -20°C to -70°C for 12 months in lyophilized state;
- -70°C for 3 months under sterile conditions after reconstitution.

**SEC-MALS**

The purity of SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) (Cat. No. SPN-C5226) is more than 95% and the molecular weight of this protein is around 551-608 kDa verified by SEC-MALS. [Report](#)

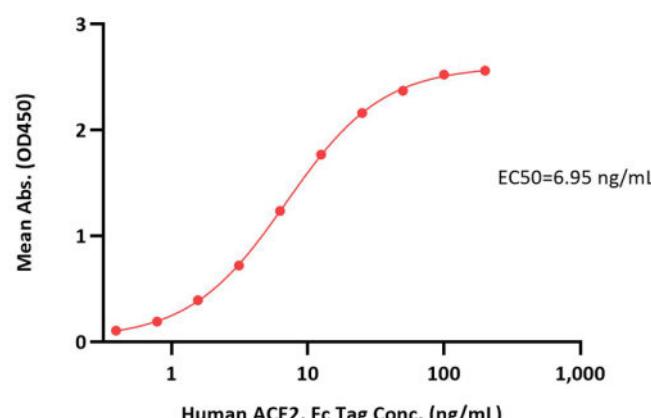
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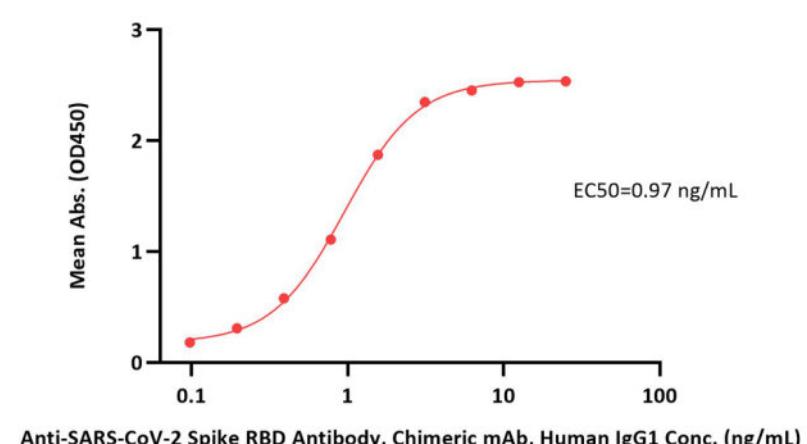
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**Bioactivity-ELISA**

SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) ELISA  
0.1 µg of SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) per well

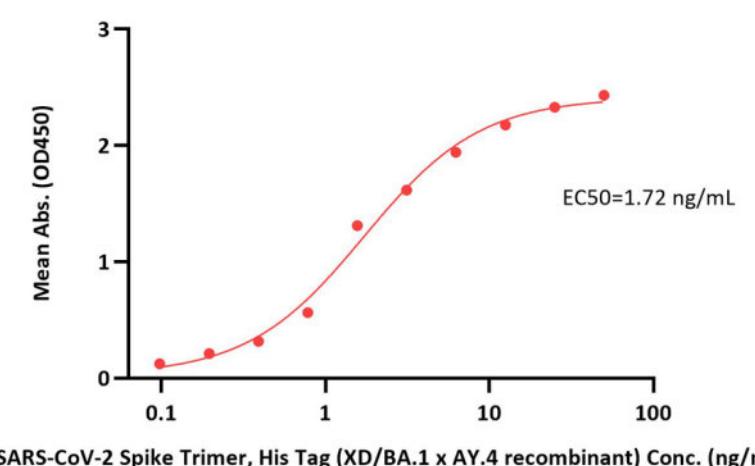


SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) ELISA  
0.1 µg of SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) per well



Immobilized SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) (Cat. No. SPN-C5226) at 1 µg/mL (100 µL/well) can bind Human ACE2, Fc Tag (Cat. No. AC2-H5257) with a linear range of 0.4-25 ng/mL (QC tested).

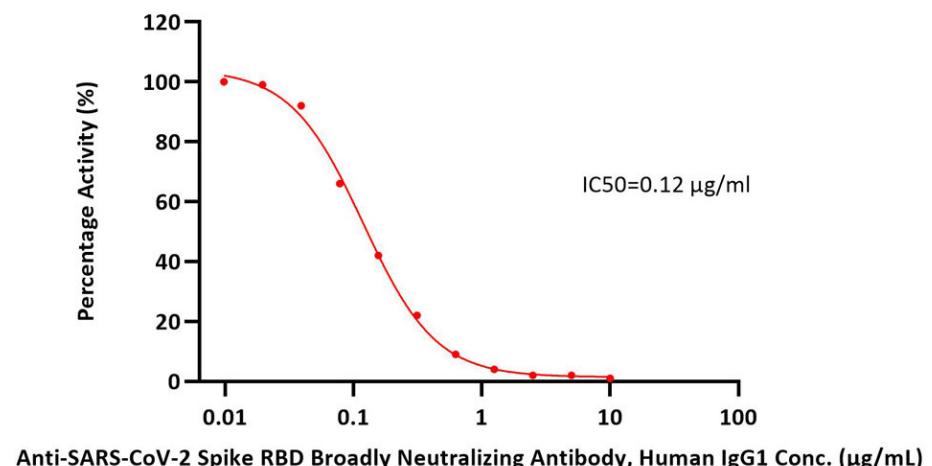
SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) ELISA  
0.5 µg of Human ACE2, Fc Tag per well



Immobilized Human ACE2, Fc Tag (Cat. No. AC2-H5257) at 5 µg/mL (100 µL/well) can bind SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) (Cat. No. SPN-C5226) with a linear range of 0.1-13 ng/mL (Routinely tested).

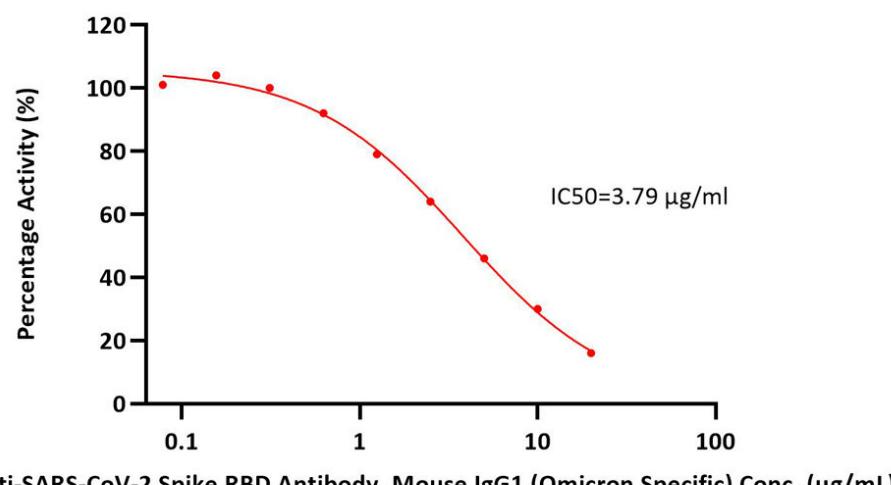
Immobilized SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) (Cat. No. SPN-C5226) at 1 µg/mL (100 µL/well) can bind Anti-SARS-CoV-2 Spike RBD Antibody, Chimeric mAb, Human IgG1 (Cat. No. S1N-M122) with a linear range of 0.1-3 ng/mL (Routinely tested).

Inhibition of SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) ELISA



Serial dilutions of Anti-SARS-CoV-2 Spike RBD Broadly Neutralizing Antibody, Human IgG1 (Cat. No. SPD-M265) were added into Human ACE2, Fc Tag (Cat. No. AC2-H5257) : SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) (Cat. No. SPN-C5226) binding reactions. The half maximal inhibitory concentration (IC50) is 0.1198 µg/mL (Routinely tested).

Inhibition of SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) ELISA



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Serial dilutions of Anti-SARS-CoV-2 Spike RBD Antibody, Mouse IgG1 (Omicron Specific) (Cat. No. SPD-M305) were added into Human ACE2, Fc Tag (Cat. No. AC2-H5257) : SARS-CoV-2 Spike Trimer, His Tag (XD/BA.1 x AY.4 recombinant) (Cat. No. SPN-C5226) binding reactions. The half maximal inhibitory concentration (IC50) is 3.646  $\mu$ g/mL (Routinely tested).

## Background

It's been reported that SARS-CoV-2 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.

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