ANTI-SPIKE (S-RBD) RABBIT MONOCLONAL AB #VYS6

CATALOG & PRICING

Cat. #	Conjugation	Size
VYS6-20	None	20 µL
VYS6-50		50 µL
VYS6-100		100 µL
VYS6B-20	Biotin	20 µL
VYS6B-50		50 µL
VYS6B-100		100 µL
VYS6H-20	Horseradish Peroxidase	20 µL
VYS6H-50		50 µL
VYS6H-100		100 µL

ANTIGEN BACKGROUND

The single-stranded, plus-sense severe acute respiratory syndrome coronavirus 2 (SARS–CoV-2) genome encodes nonstructural replicase polyproteins as well as structural proteins such as spike (S), nucleocapsid (N), membrane (M), and envelop (E) proteins (Zhou et al., 2020). S protein is a transmembrane homotrimeric class I fusion glycoprotein; the S1 subunit binds to angiotensin-converting enzyme II (ACE2) and S2 subunit is involved in the fusion of viral and host cell membranes (Sternberg and Naujokat, 2020). The distal subunit S1 contains a receptor binding domain (RBD, residues Arg319-Phe541, GenBank accession: YP_009724390.1), whose hinge-like conformational movement is required for ACE2 receptor binding and refolding of S2 for membrane fusion (Walls et al., 2020; Wrapp et al., 2020). Accumulating evidence from convalescent COVID-19 individuals supports that RBD is a highly immunogenic epitope targeted by neutralizing monoclonal antibodies through adaptive immune responses mediated by CD4+ T cells (Cao et al., 2020; Grifoni et al., 2020). As such, S and its RBD have been targets for vaccine design and development to prevent SARS-CoV-2 infection and rechallenge (Sternberg and Naujokat, 2020).

Cao, Y., Su, B., Guo, X., Sun, W., Deng, Y., Bao, L., Zhu, Q., Zhang, X., Zheng, Y., Geng, C., et al. (2020). Potent Neutralizing Antibodies against SARS-CoV-2 Identified by High-Throughput Single-Cell Sequencing of Convalescent Patients' B Cells. Cell 182, 73-84 e16.

Grifoni, A., Weiskopf, D., Ramirez, S.I., Mateus, J., Dan, J.M., Moderbacher, C.R., Rawlings, S.A., Sutherland, A., Premkumar, L., Jadi, R.S., et al. (2020). Targets of T Cell Responses to SARS-CoV-2 Coronavirus in Humans with COVID-19 Disease and Unexposed Individuals. Cell 181, 1489-1501 e1415.

Sternberg, A., and Naujokat, C. (2020). Structural features of coronavirus SARS-CoV-2 spike protein: Targets for vaccination. Life Sci 257, 118056.

Walls, A.C., Park, Y.J., Tortorici, M.A., Wall, A., McGuire, A.T., and Veesler, D. (2020). Structure, Function, and Antigenicity of the SARS-CoV-2 Spike Glycoprotein. Cell 181, 281-292 e286.

Wrapp, D., Wang, N., Corbett, K.S., Goldsmith, J.A., Hsieh, C.L., Abiona, O., Graham, B.S., and McLellan, J.S. (2020). Cryo-EM structure of the 2019-nCoV spike in the prefusion conformation. Science 367, 1260-1263.

Zhou, P., Yang, X.L., Wang, X.G., Hu, B., Zhang, L., Zhang, W., Si, H.R., Zhu, Y., Li, B., Huang, C.L., et al. (2020). A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature 579, 270-273.

PRODUCT FEATURES

- Recombinant antibodies with minimum batch-to-batch variations
- Verified with recombinant S-RBD and contrived human nasopharyngeal swab specimens
- Can be used as a neutralizing antibody for SARS-CoV-2

PRODUCT DETAILS

ALIASES OF THE PROTEIN (ANTIGEN)
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike protein (S) receptor binding domain (RBD); 2019 novel coronavirus spike glycoprotein RBD, SARS-CoV-2 S1, SARS-CoV-2 S protein RBD; S glycoprotein RBD; S-RBD

ANTIGEN BACKGROUND
UniProt Entry: P59594

APPLICATION INFORMATION
Antigen Molecular Weight: 27 kDa
Clonality: Rabbit monoclonal antibody
Clone ID: V700-S2
Species Reactivity: SARS-CoV-2
Applications Tested: ELISA

ANTIGEN SUBCELLULAR LOCATION
Virion; Host ER-Golgi intermediate compartment; host Golgi apparatus; host perinuclear region

IMMUNOGEN
Recombinant SARS-CoV-2 spike receptor binging domain

ISOTYPE
Rabbit IgG

SHIPPING
Supplied in PBS (pH 7.4) containing 0.01% sodium azide

STORAGE
Store at – 20°C

RECOMMENDED DILUTIONS
ELISA: 1:10,000

VALIDATION DATA

S1 (ng)	Δ RLU
250	1780301
25	121188
2.5	14453
0.25	0

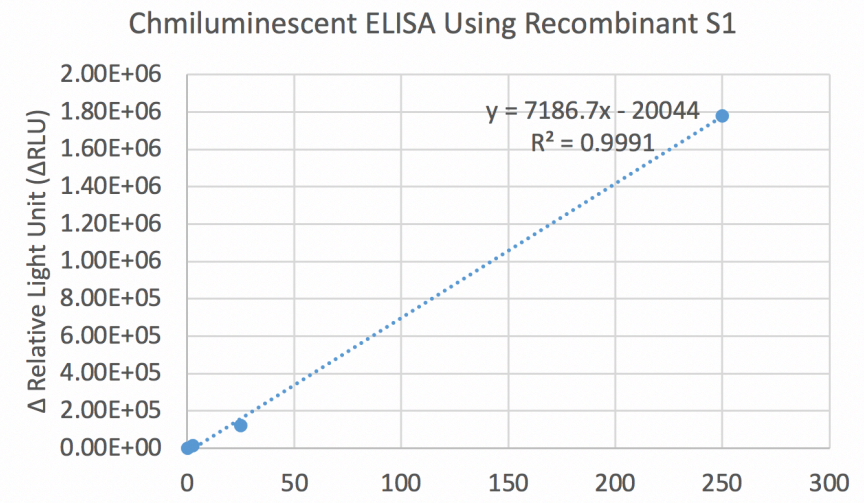

Figure 1. Chemiluminescent ELISA using recombinant SARS-CoV-2 S-RBD. Different concentrations of recombinant S-RBD (Cat# VPS1) were lysed in the Viral Lysis Buffer (Cat# VL101) and coated on microplate wells. Rabbit monoclonal anti-S-RBD antibody (Cat# VYS6, 1:10,000) and HRP-conjugated highly cross-adsorbed goat anti-rabbit IgG secondary antibody (Cat# 202, 1:20,000) were used to detect SARS-CoV-2 S-RBD protein. RLU, relative light unit. ΔRLU = RLU of the well with the primary antibody - RLU of the corresponding well without the primary antibody, everything else being equal.

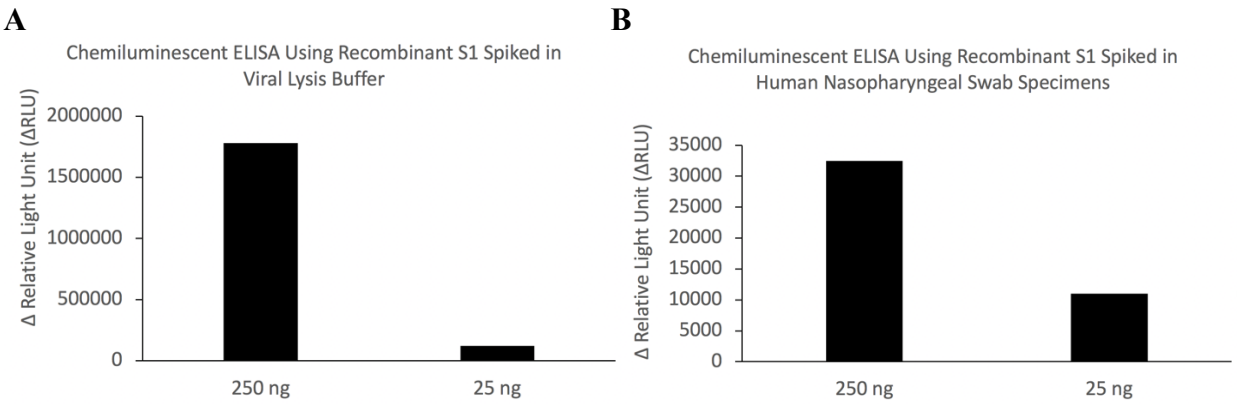

Figure 2. Clinical matrix interference test. Recombinant S-RBD (Cat# VPS1) was lysed directly in the Viral Lysis Buffer (Cat# VL101) (**A**) or spiked in EUA RT-PCR-confirmed negative human nasopharyngeal swab specimens before being lysed in the Viral Lysis Buffer (Cat# VL101) (**B**). Lysates were used to coat microplate wells. Rabbit monoclonal anti-S-RBD antibody (Cat# VYS6, 1:10,000) and HRP-conjugated highly cross-adsorbed goat anti-rabbit IgG secondary antibody (Cat# 202, 1:20,000) were used to detect SARS-CoV-2 S-RBD protein. RLU, relative light unit. ΔRLU = RLU of the well with the primary antibody - RLU of the corresponding well without the primary antibody, everything else being equal. Note: The clinical matrix such as nasopharyngeal swab greatly reduces the sensitivity of antigen detection.

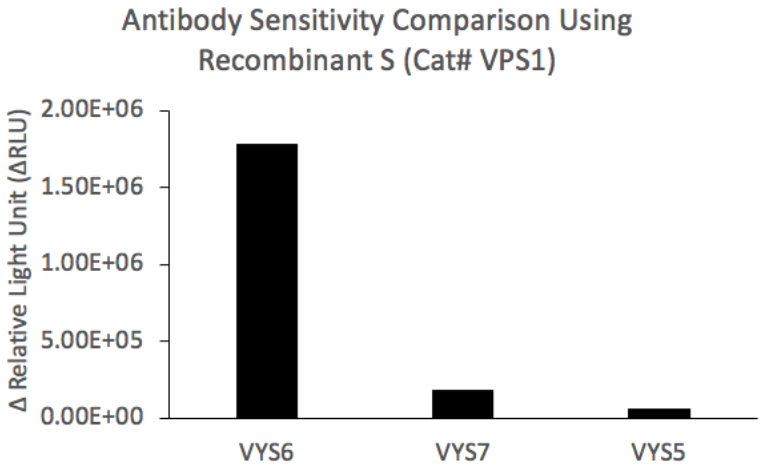

Figure 3. Comparison of sensitivities of three rabbit monoclonal antibodies. Recombinant S-RBD (Cat# VPS1, 250 ng) was lysed in the Viral Lysis Buffer (Cat# VL101) and the lysates were used to coat microplate wells. Anti-S-RBD antibodies with catalog numbers VYS6, VYS7, and VYS5 (1:10,000), and HRP-conjugated highly cross-adsorbed goat anti-rabbit IgG secondary antibody (Cat# 202, 1:20,000) were used to detect SARS-CoV-2 S-RBD protein. RLU, relative light unit. ΔRLU = RLU of the well with the primary antibody - RLU of the corresponding well without the primary antibody, everything else being equal.