PRODUCT INFORMATION

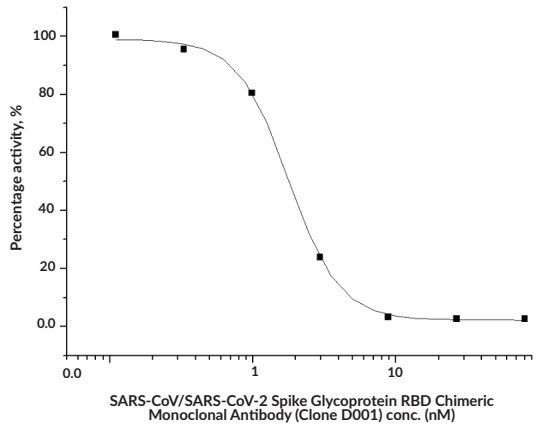
SARS-CoV/SARS-CoV-2 Spike Glycoprotein RBD Chimeric Monoclonal Antibody (Clone D001)

Item No. 31988

Overview and Properties

Contents:	This vial contains 50 or 100 µl of protein A-affinity purified monoclonal antibody.
Synonyms:	SARS-CoV/SARS-CoV-2 Spike RBD, SARS-CoV/SARS-CoV-2 Spike Receptor Binding Domain, SARS-CoV/SARS-CoV-2 Surface Glycoprotein RBD, SARS-CoV/SARS-CoV-2 Surface Glycoprotein Receptor Binding Domain, Severe Acute Respiratory Syndrome Coronavirus/Severe Acute Respiratory Syndrome Coronavirus 2 Spike Glycoprotein Receptor Binding Domain
Immunogen:	Recombinant C-terminal His-tagged SARS-CoV spike glycoprotein RBD
Form:	Liquid
Storage:	-80°C (as supplied)
Stability:	≥1 year
Storage Buffer:	0.2 µm filtered solution in PBS
Clone:	D001
Host:	Chimeric monoclonal antibody combining the constant domains of human IgG1κ with variable regions from a mouse immunized with purified recombinant SARS-CoV spike glycoprotein RBD
Isotype:	Human IgG1κ
Applications:	ELISA, Flow cytometry (FC), Immunocytochemistry (ICC), Immunofluorescence (IF), and Microneutralization (MN); the recommended starting concentration is 1:5,000-1:10,000 for ELISA, 1:20-1:100 for ICC and IF, and 1:25-1:100 for FC and MN. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Images



Log dilutions of SARS-CoV/SARS-CoV-2 Spike Glycoprotein RBD Chimeric Monoclonal Antibody (Clone D001) were detected by SARS-CoV-2 (2019-nCoV) Inhibitor Screening ELISA Kit. The EC_{50} is typically 0.5-5 nM for the wild-type (WT) protein.

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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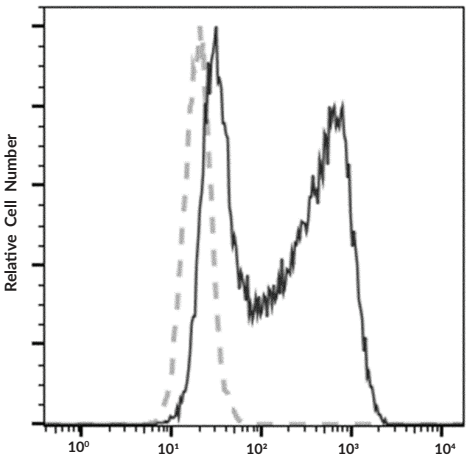
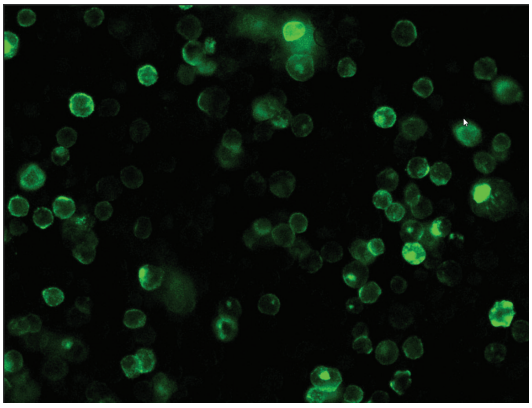
Images



SARS-CoV/SARS-CoV-2 Spike Glycoprotein RBD Chimeric Monoclonal Antibody (Clone D001) with negative control

Flow cytometric analysis of SARS-CoV-2 Spike Glycoprotein overexpressed in HEK293 Cells. Cells were stained with purified SARS-CoV/SARS-CoV-2 Spike Glycoprotein RBD Chimeric Monoclonal Antibody (Clone D001), followed by a FITC-conjugated secondary antibody. The fluorescence histograms were derived from gated events with the forward and side-scatter light characteristics of intact cells.



Immunofluorescent labeling of SARS-CoV/SARS-CoV-2 Spike Glycoprotein RBD Chimeric Monoclonal Antibody (Clone D001). HEK293 cells overexpressing the spike glycoprotein were stained with purified SARS-CoV/SARS-CoV-2 Spike Glycoprotein RBD Chimeric Monoclonal Antibody (Clone D001), followed by a FITC-conjugated secondary antibody.

WT		Delta	
Conc. (µg/mL)	**Inhibition%**	**Conc. (µg/mL)**	**Inhibition%**
100	100.00%	100	100.00%
20	99.76%	20	98.64%
4	89.67%	4	58.63%
0.8	52.24%	0.8	47.95%
0.16	44.08%	0.16	20.35%
0.032	29.16%	0.032	19.19%

The neutralization activity is measured by a microneutralization (MN) assay *in vitro*. The virus MN test was performed on 293T-ACE2 cells infected with SARS-CoV-2 Spike Glycoprotein Pseudovirus, SARS-CoV-2 Spike Omicron Pseudovirus, or SARS-CoV-2 Delta variant Spike Pseudovirus under treatment of serial dilutions of neutralizing antibody. The infection was neutralized by increasing concentrations of SARS-CoV/SARS-CoV-2 Spike Glycoprotein RBD Chimeric Monoclonal Antibody (Clone D001). Rate of inhibition was determined by comparing the relative light unit (RLU) of Luciferase reporter in different antibody concentrations. The IC_{50} for the WT protein is typically 0.51 µg/ml and 1.09 µg/ml for the Delta protein. There was no neutralization of the SARS-CoV-2 Spike Omicron Pseudovirus.

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Reactivity

Cross Reactivity: (+) SARS-CoV-2 Omicron (B.1.1.529) S1+S2 trimer,
SARS-CoV-2 Delta (B.1.617.2) spike glycoprotein S1+S2 trimer,
SARS-CoV-2 Delta (B.1.617.2) spike glycoprotein S1 subunit,
SARS-CoV-2 spike glycoprotein S1 subunit NTD (Fc- and AVI-tagged),
SARS-CoV-2 spike glycoprotein S1 subunit,
SARS-CoV spike glycoprotein S1 subunit,
SARS-CoV-2 (BA.4.6) spike glycoprotein S1+S2 trimer

(-) SARS-CoV-2 Omicron (BQ.1.1) spike glycoprotein S1+S2 trimer,
SARS-CoV-2 Omicron (BF.7) spike glycoprotein S1+S2 trimer,
SARS-CoV-2 (BA.2.75) spike glycoprotein S1+S2 trimer,
SARS-CoV-2 Omicron (BA.2.75.2) spike glycoprotein S1+S2 trimer,
SARS-CoV-2 Omicron (BA.1.1) spike glycoprotein S1+S2 trimer,
SARS-CoV-2 Omicron (BA.2) spike glycoprotein S1+S2 trimer,
SARS-CoV-2 Omicron (BA.2) spike glycoprotein S1 subunit,
SARS-CoV-2 Omicron (BA.2) spike glycoprotein S1 subunit NTD,
SARS-CoV-2 XD (BA.1 x AY.4) spike glycoprotein S1+S2 trimer,
SARS-CoV-2 Delta (B.1.617.2) spike glycoprotein S1 subunit NTD,
MERS-CoV spike glycoprotein S1 subunit,
HCoV-HKU1 (isolate N1) spike glycoprotein S1 subunit,
HCoV-HKU1 (isolate N5) spike glycoprotein S1 subunit,
HCoV-NL63 spike glycoprotein S1 subunit,
HCoV-229E spike glycoprotein S1 subunit,
HCoV-OC43 spike glycoprotein S1+S2 ECD

Species Reactivity: (+) SARS-CoV,
SARS-CoV-2,
SARS-CoV-2 Omicron (B.1.1.529)

(-) SARS-CoV-2 Omicron (XBB),
SARS-CoV-2 Omicron (BQ.1.1),
SARS-CoV-2 Omicron (BA.4.6/BF.7),
SARS-CoV-2 (BA.2.75),
SARS-CoV-2 Omicron (BA.2.75.2),
SARS-CoV-2 (BA.2.3.20),
SARS-CoV-2 Omicron (BA.1.1),
SARS-CoV-2 Omicron (BA.2),
SARS-CoV-2 Omicron (BA.2.12.1),
SARS-CoV-2 Omicron (BA.4),
SARS-CoV-2 Omicron (BA.5),
SARS-CoV-2 Delta (B.1.617.2)

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Description

Severe acute respiratory syndrome coronavirus (SARS-CoV) spike glycoprotein, also known as the surface glycoprotein, is a viral structural protein encoded by the *S* gene in SARS-CoV RNA that contains the receptor binding domain (RBD).[1] SARS-CoV is a member of the *Betacoronavirus* genus of viruses and has an approximately 79% sequence identity with SARS-CoV-2, the causative agent of COVID-19.[2,3] SARS-CoV spike glycoprotein is a transmembrane glycoprotein that assembles into homotrimers on the virus surface and is composed of an N-terminal S1 subunit, which contains the RBD, and a C-terminal S2 subunit, which facilitates fusion between viral and host cell membranes.[4-6] The 193-amino acid RBD of the SARS-CoV spike protein is a target for neutralizing antibodies.[5,7] The SARS-CoV RBD, which spans amino acid residues 318 to 510, is 73% identical to that of SARS-CoV-2 and can bind to human angiotensin-converting enzyme 2 (ACE2), which is the host cell surface receptor for both SARS-CoV and SARS-CoV-2.[4-7] SARS-CoV is the causative agent of SARS, a primarily respiratory illness characterized by fever, cough, shortness of breath, and an approximately 10% fatality rate.[3] Cayman's SARS-CoV/SARS-CoV-2 Spike Glycoprotein RBD Chimeric Monoclonal Antibody (Clone D001) is composed of human IgG1κ constant domains and variable regions from a mouse immunized with purified recombinant SARS-CoV spike glycoprotein RBD. It can be used for ELISA, flow cytometry (FC), immunocytochemistry (ICC), and immunofluorescence (IF) applications, as well as microneutralization assays.

References

1. Kandeel, M., Ibrahim, A., Fayez, M., *et al.* From SARS and MERS CoVs to SARS-CoV-2: Moving toward more biased codon usage in viral structural and nonstructural genes. *J. Med. Virol.* **92(6)**, 660-666 (2020).
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3. Meo, S.A., Alhowikan, A.M., Al-Khlaiwi, T., *et al.* Novel coronavirus 2019-nCoV: Prevalence, biological and clinical characteristics comparison with SARS-CoV and MERS-CoV. *Eur. Rev. Med. Pharmacol. Sci.* **24(4)**, 2012-2019 (2020).
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5. He, Y., Zhou, Y., Liu, S., *et al.* Receptor-binding domain of SARS-CoV spike protein induces highly potent neutralizing antibodies: Implication for developing subunit vaccine. *Biochem. Biophys. Res. Commun.* **324(2)**, 773-781 (2004).
6. Walls, A.C., Park, Y.-J., Tortorici, M.A., *et al.* Structure, function, and antigenicity of the SARS-CoV-2 spike glycoprotein. *Cell* **181(2)**, 281-292 (2020).
7. Tian, X., Li, C., Huang, A., *et al.* Potent binding of 2019 novel coronavirus spike protein by a SARS coronavirus-specific human monoclonal antibody. *Emerg. Microbes Infect.* **9(1)**, 382-385 (2020).

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