abcam

ab284041

Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR25038-122
Purification technique	Affinity purification Protein A
Specificity	Cross-reacts with the SARS-CoV-2 Omicron variant spike protein.
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Dot

Tested

Species	Recombinant fragment - SARS-CoV-2

Dilution info	-
Notes	-

Predicted

Species	SARS-CoV-2
Dilution info	-
Notes	-

Not recommended

Species	Transfected cell line - SARS-CoV-2
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Transfected cell line - SARS-CoV-2
Dilution info	-
Notes	-

Predicted

Species	SARS-CoV-2
Dilution info	-
Notes	-

Not recommended

Species	Recombinant fragment - SARS-CoV-2
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Transfected cell line - SARS-CoV-2
Dilution info	-
Notes	-

Predicted

Species	SARS-CoV-2
Dilution info	-
Notes	-

Not recommended

Species	Recombinant fragment - SARS-CoV-2
Dilution info	-
Notes	-

WB

Tested

Species	Recombinant fragment - SARS-CoV-2
Dilution info	1/1000
Notes	-

Predicted

Species	SARS-CoV-2
Dilution info	-
Notes	-

Not recommended

Species	Transfected cell line - SARS-CoV-2
Dilution info	-

Notes	-

I-ELISA

Tested

Species	Recombinant fragment - SARS-CoV-2
Dilution info	0.00002-5 µg/mL
Notes	-

Predicted

Species	SARS-CoV-2
Dilution info	-
Notes	-

Not recommended

Species	Transfected cell line - SARS-CoV-2
Dilution info	-
Notes	-

Target data

See full target information S

Function

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:32142651, PubMed:32155444, PubMed:33607086). When S2/S2' has been cleaved, binding to the receptor triggers direct fusion at the cell membrane (PubMed:34561887). 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:32075877, PubMed:32221306, PubMed:34903715, PubMed:36779763). Alternatively, may use NRP1/NRP2 (PubMed:33082294, PubMed:33082293) and integrin as entry receptors (PubMed:35150743). 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:33082293). Uses also ASGR1 as an alternative receptor in an ACE2-independent manner (PubMed:34837059). The stalk domain of S contains three hinges, giving the head unexpected orientational freedom (PubMed:32817270). Spike protein S2. Precursor of the fusion protein processed in the biosynthesis of the S protein and the

formation of virus particle. Mediates fusion of the virion and cellular membranes by functioning as a class I viral fusion protein. Contains two viral fusion peptides that are unmasked after cleavage. The S2/S2' cleavage occurs during virus entry at the cell membrane by host TMPRSS2 (PubMed:32142651) or during endocytosis by host CSTL (PubMed:32703818, PubMed:34159616). In either case, this triggers an extensive and irreversible conformational change leading to fusion of the viral envelope with the cellular cytoplasmic membrane, releasing viral genomic RNA into the host cell cytoplasm (PubMed:34561887). Under the current model, the protein has at least three conformational states: pre-fusion native state, pre-hairpin intermediate state, and post-fusion hairpin state. During fusion of the viral and target cell membranes, the coiled coil regions (heptad repeats) adopt a trimer-of-hairpins structure and position the fusion peptide in close proximity to the C-terminal region of the ectodomain. Formation of this structure appears to promote apposition and subsequent fusion of viral and target cell membranes. Spike protein S2'. Subunit of the fusion protein that is processed upon entry into the host cell. Mediates fusion of the virion and cellular membranes by functioning as a class I viral fusion protein. Contains a viral fusion peptide that is unmasked after S2 cleavage. This cleavage can occur at the cell membrane by host TMPRSS2 or during endocytosis by host CSTL (PubMed:32703818, PubMed:34159616). In either case, this triggers an extensive and irreversible conformational change that leads to fusion of the viral envelope with the cellular cytoplasmic membrane, releasing viral genomic RNA into the host cell cytoplasm (PubMed:34561887). Under the current model, the protein has at least three conformational states: pre-fusion native state, pre-hairpin intermediate state, and post-fusion hairpin state. During fusion of the viral and target cell membranes, the coiled coil regions (heptad repeats) adopt a trimer-of-hairpins structure and position the fusion peptide in close proximity to the C-terminal region of the ectodomain. Formation of this structure appears to promote apposition and subsequent fusion of viral and target cell membranes.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C

Notes

ab284041 is the carrier free version of ab283913

Patented technology

Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?

This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility

- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Conjugation ready
Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	The SARS-CoV-2 Spike Glycoprotein S2 also known as S2 subunit is a segment of spike protein found on the surface of the SARS-CoV-2 virus. The spike protein facilitates viral entry into host cells. Mechanically S2 mediates membrane fusion which is essential for the virus to merge with cellular membranes allowing viral RNA to enter and replicate within the host. This protein has a molecular weight of approximately 680 kDa combined with S1. Expressed mainly in virions the spike protein is the target for many therapeutic interventions.
Biological function summary	The SARS-CoV-2 Spike Glycoprotein S2 plays an important role in the viral infectivity process. It is part of a trimeric spike protein complex which undergoes a conformational shift during host cell entry. The S2 subunit specifically triggers the fusion process following receptor binding of another component the S1 subunit. During infection immune response typically generates anti-spike antibodies that target this protein aiming to block viral invasion or clear infected cells.
Pathways	The SARS-CoV-2 Spike Glycoprotein S2 is critical in the viral entry and replication pathway. It interacts with host proteins in pathways involving endocytosis. The fusion activity of S2 is closely associated with cellular proteases like TMPRSS2 and furin which prime the spike protein for entry. These interactions are important for the initiation of the viral replication cycle and help shape the host's pathophysiological response to infection.
Associated diseases and disorders	The SARS-CoV-2 Spike Glycoprotein S2 holds significant relevance in COVID-19 pathogenesis which is caused by the SARS-CoV-2 virus. This protein's interaction with angiotensin-converting enzyme 2 (ACE2) alongside the spike S1 subunit plays an important role in determining the virus’s infectivity and host cell invasion. Understanding its role can aid in designing therapeutic strategies against COVID-19 and related variants also revealing connections to host immune responses.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

We do not recommend this combination. It is not covered by our product promise.

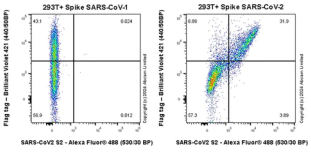
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

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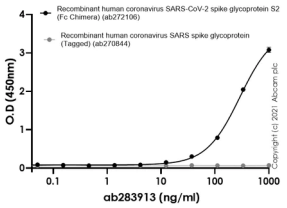
9 product images



Flow Cytometry (Intracellular) - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

SARS-CoV-2 Spike Glycoprotein S2 Flow Cytometry (Intracellular) staining of HEK-293T (Human embryonic kidney epithelial cell) cells using rabbit Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody

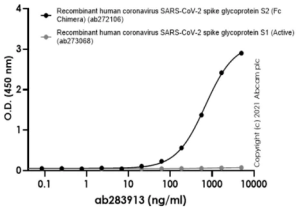
Flow cytometric analysis of 2% paraformaldehyde fixed 0.1% Tween-20 permeabilized HEK-293T (Human embryonic kidney epithelial cell) cells transfected with a Spike SARS-CoV-1 (Left) or Spike SARS-CoV-2 (Right) expression vector. SARS-CoV-2 Spike Glycoprotein S2 was labelled with ab283913 at 1/50 dilution (1 µg)/ Left and Right. Cells were surface stained with ab283913. Then fixed with 2% PFA for 10 minutes followed by intracellularly stained with anti-Flag tag conjugated to BV421. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150081) at 1/5000 dilution was used as the secondary antibody. No cross-reactivity with Spike SARS-CoV-1.



Indirect ELISA - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

This data was developed using ab283913, the same antibody clone in a different buffer formulation.
Indirect ELISA showing primary antibody ab283913 binding to the antigen ab272106 (recombinant human coronavirus SARS-CoV-2 spike glycoprotein S2 (Fc Chimera)). Plates were coated with recombinant human coronavirus SARS-CoV-2 spike glycoprotein S2 (Fc Chimera, ab272106) and recombinant human coronavirus SARS spike glycoprotein (Tagged, ab270844) at 1000 ng/ml. Binding of ab283913 was assessed in a serial dilution range 0.016- 1000 ng/mL (a 3-fold serial dilution).

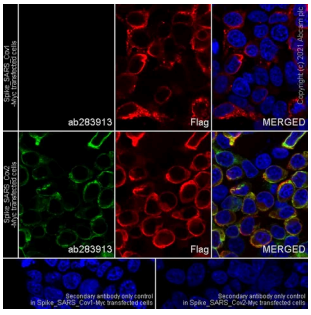
Binding was detected using pre-adsorbed secondary antibody, goat anti-rabbit IgG H&L (HRP, ab97080) at 1/2000 dilution.



Indirect ELISA - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

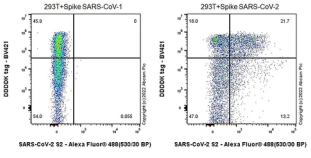
This data was developed using ab283913, the same antibody clone in a different buffer formulation.
Indirect ELISA showing primary antibody ab283913 binding to the antigen ab272106 (recombinant human coronavirus SARS-CoV-2 spike glycoprotein S2 (Fc Chimera)). Plates were coated with recombinant human coronavirus SARS-CoV-2 spike glycoprotein S2 (Fc Chimera, ab272106) and recombinant human coronavirus SARS-CoV-2 spike glycoprotein S1 (Fc Chimera, ab273068) at 1000 ng/ml. Binding of ab283913 was assessed in a serial dilution range 0.028- 5000 ng/mL (a 3-fold serial dilution).

Binding was detected using pre-adsorbed secondary antibody, goat anti-rabbit IgG H&L (HRP, ab97080) at 1/2000 dilution.



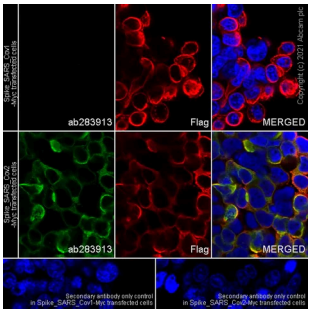
Immunocytochemistry/ Immunofluorescence - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

Immunofluorescent analysis of 4% paraformaldehyde- fixed, 0.1% Triton X-100 permeabilized HEK-293T (human epithelial cell line from embryonic kidney) cells labelling SARS-CoV-2 spike glycoprotein S2 with primary antibody anti-SARS-CoV-2 spike glycoprotein S2 (ab283913) at 1/500 dilution, followed by AlexaFluor®488 Goat anti-Rabbit (green) (ab150081) secondary antibody at 1/1000 dilution. Confocal image showing cytoplasmic staining in HEK-293T cells transfected with a Spike-SARS-CoV2 expression vector containing a FLAG tag, no staining in HEK-293T cells transfected with a Spike-SARS-CoV1 expression vector containing a FLAG tag. Anti-FLAG mouse monoclonal antibody was used to counterstain at 1/500 dilution. AlexaFluor®594 Goat anti-Mouse (red) (ab150120) secondary antibody was used to counterstain at 1/1000 dilution. The nuclear counterstain is DAPI (blue).
This data was developed using ab283913, the same antibody clone in a different buffer formulation.



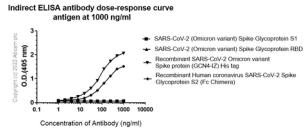
Flow Cytometry (Intracellular) - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

Flow cytometric analysis of 2% paraformaldehyde fixed 0.1% Tween-20 permeabilized HEK-293T (Human embryonic kidney epithelial cell) cells transfected with a Spike SARS-CoV-1 (Left) or Spike SARS-CoV-2 (Right) expression vector. SARS-CoV-2 Spike Glycoprotein S2 was labelled with ab283913 at 1/500 dilution (0.1 µg)/ Left and Right. Cells were surface stained with ab283913. Then fixed with 2% PFA for 10 minutes followed by intracellularly stained with anti-DDDDK tag conjugated to BV421. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150081) at 1/5000 dilution was used as the secondary antibody. No cross-reactivity with Spike SARS-CoV-1. This data was developed using ab283913, the same antibody clone in a different buffer formulation.



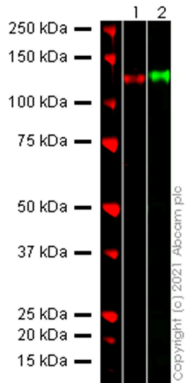
Immunocytochemistry/ Immunofluorescence - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

Immunofluorescent analysis of 100% methanol- fixed, 0.1% Triton X-100 permeabilized HEK-293T (human epithelial cell line from embryonic kidney) cells labelling SARS-CoV-2 spike glycoprotein S2 with primary antibody anti-SARS-CoV-2 spike glycoprotein S2 (ab283913) at 1/500 dilution, followed by AlexaFluor®488 Goat anti-Rabbit (green) (ab150081) secondary antibody at 1/1000 dilution. Confocal image showing cytoplasmic staining in HEK-293T cells transfected with a Spike-SARS-CoV2 expression vector containing a FLAG tag, no staining in HEK-293T cells transfected with a Spike-SARS-CoV1 expression vector containing a FLAG tag. Anti-FLAG mouse monoclonal antibody was used to counterstain at 1/500 dilution. AlexaFluor®594 Goat anti-Mouse (red) (ab150120) secondary antibody was used to counterstain at 1/1000 dilution. The nuclear counterstain is DAPI (blue).
This data was developed using ab283913, the same antibody clone in a different buffer formulation.



Indirect ELISA - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

Indirect ELISA showing primary antibody ab283913 binding SARS-CoV-2 (Omicron variant) Spike Glycoprotein S1 (ab290828); SARS-CoV-2 (Omicron variant) Spike Glycoprotein RBD (ab290829); Recombinant SARS-CoV-2 Omicron variant Spike protein (GCN4-IZ) His tag; Recombinant Human coronavirus SARS-CoV-2 Spike Glycoprotein S2 (Fc Chimera) (ab272106). Antigen concentration is 1000 ng/ml. Substrate solution is p-nitrophenyl phosphate(PNPP). Binding of ab283913 was assessed in a serial dilution range 1000-0 ng/ml. Binding was detected using the secondary antibody, Alkaline Phosphatase-conjugated AffiniPure Goat Anti-Rabbit IgG(H+L) at 1/2500 dilution. This data was developed using ab283913, the same antibody clone in a different buffer formulation.



Western blot - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

This data was developed using ab283913, the same antibody clone in a different buffer formulation.
Lane 1: Red – loading control Donkey anti-Goat IgG H&L (IRDye® 800CW) preadsorbed (ab216775) binding to the sheep Fc Chimera tag on recombinant human coronavirus SARS-CoV-2 spike glycoprotein S2 – observed at 135 kDa

Lanes 2: Green – ab283913 observed at 135 kDa.

ab283913 was shown to bind specifically to SARS-CoV-2 spike glycoprotein S2 in Western blot. Samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 3 % milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with

primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Donkey anti-Goat IgG H&L (IRDye® 800CW) preadsorbed (ab216775) and Donkey anti-Rabbit IgG H&L (IRDye® 680RD) preadsorbed (ab216779) at 1/20000 dilution.

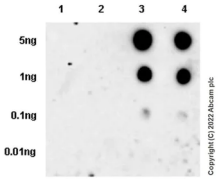
Blocking buffer: 3% milk in TBS-0.1% Tween® 20 (TBS-T)
All lanes:
Western blot - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

All lanes:
Western blot - Recombinant Human coronavirus SARS-CoV-2 Spike Glycoprotein S2 (Fc Chimera) (ab272106) at 0.2 µg

Secondary

Lane 1:
Western blot - Donkey anti-Goat IgG H&L (IRDye® 800CW) preadsorbed (ab216775)

Lane 2:
Western blot - Donkey anti-Goat IgG H&L (IRDye® 800CW) preadsorbed (ab216775) at 1/20000 dilution



Dot Blot - Anti-SARS-CoV-2 Spike Glycoprotein S2 antibody [EPR25038-122] - BSA and Azide free (ab284041)

Dot blot analysis using ab283913 at 1/1000 dilution followed by a Goat Anti-Rabbit IgG (HRP) with minimal cross-reactivity with human IgG at 1/2000 dilution.
Lane 1: Recombinant Human coronavirus SARS-CoV-2 (B.1.1.529/Omicron) Spike Glycoprotein S1 (ab290828).

Lane 2: Recombinant Human coronavirus SARS-CoV-2 (B.1.1.529/Omicron) Spike Glycoprotein S1 RBD protein (ab290829).

Lane 3: Recombinant Human coronavirus SARS-CoV-2 (B.1.1.529/Omicron) Spike protein.

Lane 4: Recombinant Human coronavirus SARS-CoV-2 Spike Glycoprotein S2 (ab272106).

Blocking buffer and concentration: 5% NFDM/TBST.

Diluting buffer and concentration: 5% NFDM/TBST.

Exposure Time: 180 seconds.

This data was developed using ab283913, the same antibody clone in a different buffer formulation.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.