abcam

ab281311

Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody [HL6] - BSA and Azide free

Recombinant

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Carrier free	Yes
Clone number	HL6
Purification technique	Affinity purification Protein A
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Transfected cell line - SARS-CoV-2
Dilution info	1/1000
Notes	-

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

Not recommended

Species	Transfected cell lysate - SARS-CoV-2, Recombinant fragment - SARS-CoV-2
Dilution info	-
Notes	-

ICC/IF

Tested

Species	SARS-CoV-2
Dilution info	1/100 - 1/1000
Notes	-

Not recommended

Species	Transfected cell line - SARS-CoV-2, Transfected cell lysate - SARS-CoV-2, Recombinant fragment - SARS-CoV-2
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	SARS-CoV-2
Dilution info	1/50
Notes	-

Not recommended

Species	Transfected cell line - SARS-CoV-2, Transfected cell lysate - SARS-CoV-2, Recombinant fragment - SARS-CoV-2

Dilution info	-
Notes	-

WB

Tested

Species	Transfected cell lysate - SARS-CoV-2
Dilution info	1/1000 - 1/10000
Notes	-

Expected

Species	SARS-CoV-2
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Transfected cell line - SARS-CoV-2, Recombinant fragment - SARS-CoV-2
Dilution info	-
Notes	-

sELISA

Tested

Species	Transfected cell lysate - SARS-CoV-2
Dilution info	1 µg/mL
Notes	-

Expected

Species	SARS-CoV-2
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Transfected cell line - SARS-CoV-2, Recombinant fragment - SARS-CoV-2
Dilution info	-
Notes	-

I-ELISA

Tested

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

Expected

Species	SARS-CoV-2
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Transfected cell line - SARS-CoV-2, Transfected cell lysate - 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

Supplementary info

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

Activity summary	The SARS-CoV-2 Spike Glycoprotein S1 also known as the G10 spike or glycoprotein spike plays an important role in allowing the virus to attach and enter host cells. This protein with a mass of approximately 180 kDa is located on the surface of the virus and forms the outer spikes observed in coronaviruses. Expression of the spike glycoprotein is in virus-infected cells where it facilitates the interaction with host cell receptors. The S1 subunit includes a receptor-binding domain that specifically binds to the human angiotensin-converting enzyme 2 (ACE2) receptors initiating the infection process.
Biological function summary	The spike glycoprotein S1 mediates the fusion of the viral and cellular membranes which is necessary for viral entry. It forms part of a larger trimeric complex comprising S1 and S2 subunits. This complex undergoes conformational changes that drive the membrane fusion process. The glycoprotein contains multiple glycosylation sites which help shield the virus from the host immune response. The proper function and presentation of this glycoprotein are critical for efficient viral spread and infection establishment.
Pathways	The spike glycoprotein S1 is integral to the viral infection pathway and host immune evasion. It interacts with the renin-angiotensin system by binding to the ACE2 receptor disrupting normal receptor activity. This interaction not only facilitates viral entry but also impacts the homeostatic functions typically mediated by ACE2 which include blood pressure regulation. Additionally the spike protein is involved in downstream activation of immune signaling pathways including those related to inflammation and cytokine production which may involve proteins such as IL-6.
Associated diseases and disorders	Infection with the spike glycoprotein S1 is directly related to COVID-19. The binding to ACE2 receptors is linked to the pathology of the disease contributing to respiratory symptoms and in severe cases acute respiratory distress syndrome (ARDS). Through the IL-6 signaling pathway the spike protein is indirectly connected to cytokine release syndrome often observed in severe COVID-19 cases. This connection highlights the importance of targeting this glycoprotein for potential therapeutic interventions and diagnostics such as ELISA SARS-CoV-2 tests and the development of anti-spike antibodies available on platforms like antispark.com for research and clinical purposes.

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

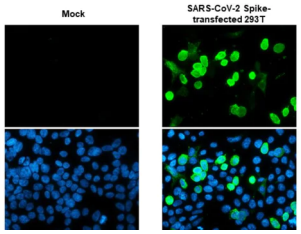
We do not recommend this combination. It is not covered by our product promise.

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.

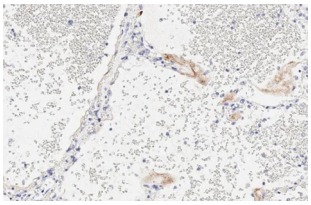
8 product images



Immunocytochemistry/ Immunofluorescence - Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody [HL6] - BSA and Azide free (ab281311)

SARS-CoV-2 Spike Glycoprotein S1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody

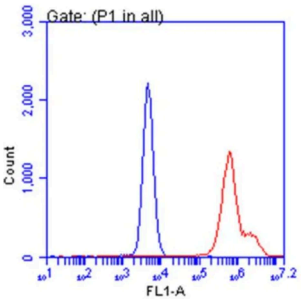
Mock and SARS-CoV-2 Spike-transfected 293T cells were fixed in 4% paraformaldehyde at room temperature for 15 minutes. SARS-CoV-2 (COVID-19) spike stained (green) by ab281311 at 1/1000 dilution in Immunocytochemical analysis. Fluoroshield with DAPI (blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody [HL6] - BSA and Azide free (ab281311)

SARS-CoV-2 Spike Glycoprotein S1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody

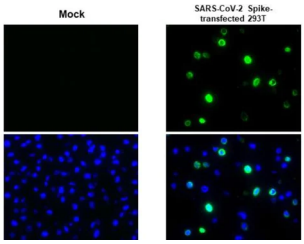
Paraffin embedded SARS-CoV-2 (COVID-19) infected human lung tissue stained for SARS-CoV-2 (COVID-19) nucleocapsid protein using ab281311 in immunohistochemical analysis.



Flow Cytometry - Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody [HL6] - BSA and Azide free (ab281311)

SARS-CoV-2 Spike Glycoprotein S1 Flow Cytometry staining using rabbit Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody

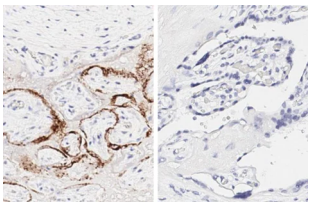
ab281311 detects SARS-CoV-2 (COVID-19) spike protein by flow cytometry analysis. SARS-CoV-2 (2019-nCoV) Spike 293T cells. Unlabelled sample was used as a control (blue) and ab281311 at 1/50 dilution (red). Acquisition of 20,000 events were collected for flow cytometry analysis.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody [HL6] - BSA and Azide free (ab281311)

SARS-CoV-2 Spike Glycoprotein S1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody

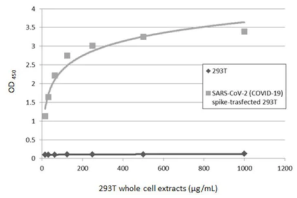
Mock and SARS-CoV-2 (COVID-19) Spike transfected 293T cell FFPE Cell Pellet Block. SARS-CoV-2 (COVID-19) Spike S1 stained by ab281311 at 1/1000 dilution in immunohistochemical analysis. Fluoroshield with DAPI (blue).
Antigen Retrieval was achieved with Citrate buffer at pH 6.0 for 15 minutes.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody [HL6] - BSA and Azide free (ab281311)

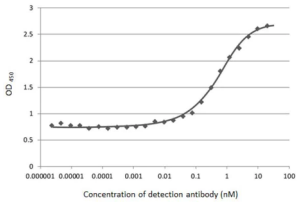
SARS-CoV-2 Spike Glycoprotein S1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody

Paraffin embedded SARS-CoV-2 (COVID-19) infected human placenta (left) and normal human placenta (right) tissue stained for SARS-CoV-2 (COVID-19) nucleocapsid protein using ab281311 in immunohistochemical analysis.



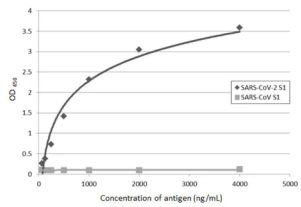
Sandwich ELISA - Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody [HL6] - BSA and Azide free (ab281311)

Sandwich ELISA detection of non-transfected and SARS-CoV-2 spike (full length) transfected 293T whole cell extracts using 5 µg/mL of capture antibody and ab281311 as detection antibody at 1 µg/mL. HRP-conjugated Rabbit IgG antibody at 1/10000 dilution was used to detect the primary antibody.



Indirect ELISA - Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody [HL6] - BSA and Azide free (ab281311)

Indirect ELISA analysis performed by coating plate with recombinant SARS-CoV-2 (COVID-19) spike S1 subunit protein (50 ng). Coated protein probed with ab281311 (2.4*10⁶ ~ 20 nM). HRP-conjugated Rabbit IgG antibody at 1/10000 dilution detected bound primary antibody.
EC50: 0.251 nM



Indirect ELISA - Anti-SARS-CoV-2 Spike Glycoprotein S1 antibody [HL6] - BSA and Azide free (ab281311)

Indirect ELISA analysis performed by coating plate with recombinant SARS-CoV-2 (COVID-19) spike S1 subunit protein or recombinant SARS-CoV spike S1 subunit protein (62.5-4000 ng/mL). Coated protein probed with ab281311 at 1 µg/mL. HRP-conjugated Rabbit IgG antibody at 1/10000 dilution detected bound primary antibody.

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