abcam

ab281303

# Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free

Recombinant

## Key facts

| | |
|---|---|
| **Isotype** | IgG |
| **Host species** | Rabbit |
| **Storage buffer** | pH: 7.4 Constituents: PBS |
| **Form** | Liquid |
| **Clonality** | Monoclonal |
| **Carrier free** | Yes |
| **Clone number** | HL1003 |
| **Purification technique** | Affinity purification Protein A |
| **Concentration** | 1 mg/mL The concentration of this product may be batch-dependent<br>Batch concentration finder → |

## Reactivity data

## ICC

### Tested

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

## sELISA

### Tested

| | |
|---|---|
| **Species** | SARS-CoV-2 |
| **Dilution info** | - |
| **Notes** | - |

## FuncS (Neut/Block)

### Tested

| | |
|---|---|
| **Species** | SARS-CoV-2 |
| **Dilution info** | - |
| **Notes** | This antibody inhibits infection of mammalian cells by live SARS-CoV-2. |

## I-ELISA

### Tested

| | |
|---|---|
| **Species** | SARS-CoV-2 |
| **Dilution info** | - |
| **Notes** | - |

# Target data

See full target information SARS-CoV-2 Spike RBD

# 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 RBD also known commonly as the Receptor Binding Domain of the spike protein plays an important role in viral entry into host cells. This domain has a mass of approximately 21 kDa. It is located on the surface of the virus and facilitates binding to the host cell receptor primarily ACE2 which permits viral entry and replication. The Spike RBD is also a target for neutralizing antibodies which are essential in immune response against the virus. The domain displays various mutations particularly in variants of concern such as Omicron which can affect binding efficiency and immune evasion. |
| **Biological function summary** | The SARS-CoV-2 Spike RBD interacts directly with the host ACE2 receptor to mediate entry of the virus into host cells. This interaction is necessary for the virus to fuse with the host cell membrane which allows viral RNA to enter the host cell and begin replication. The Spike protein of which the RBD is a part forms a trimeric complex on the virus surface that is important for host interaction. Variations in the Spike RBD such as mutations like Arg319-Phe541 have significant impacts on the binding affinity to ACE2 and the effectiveness of vaccine-elicited antibodies. |
| **Pathways** | The Spike RBD of SARS-CoV-2 is vital in the entry pathway of the virus into the host cell. It is prominently involved in the ACE2-mediated signaling pathway with ACE2 playing the key role as the cellular receptor. This pathway is integral to the pathogenesis of COVID-19. Additionally the presence of the virus in host cells can trigger inflammatory pathways via infection-induced signaling cascades which can lead to exacerbated immune responses. |
| **Associated diseases and disorders** | The SARS-CoV-2 Spike RBD is inherently linked to COVID-19 pathogenesis. Variants such as Omicron have alterations within the RBD that may confer increased transmissibility and resistance to neutralizing antibodies. These mutations can influence disease severity and vaccine effectiveness. The interaction between the Spike RBD and ACE2 receptor underlies the symptomatic manifestations of COVID-19 including respiratory distress and systemic inflammation. The emergence of RBD-targeted therapeutics and vaccines addresses its critical role in infection aiming to block the binding and prevent disease progression. |

## 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.

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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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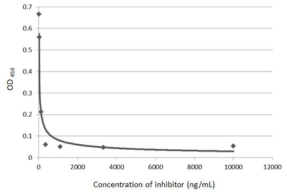
## 9 product images




### Functional Studies (Neut/Block) - Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free (ab281303)

Inhibition analysis of immobilized recombinant SARS-CoV-2 (COVID-19) Spike S1 protein, His tag (active) (coated at 2 µg/mL) binding to soluble recombinant Human ACE2 (ECD) protein, mouse IgG Fc tag (3000 ng/mL). ACE2 binding was inhibited by increasing concentrations of ab281303 (14-10000 ng/mL). Bound ACE2 protein was detected by HRP-Goat Anti-Mouse IgG antibody at 1/10000 dilution.

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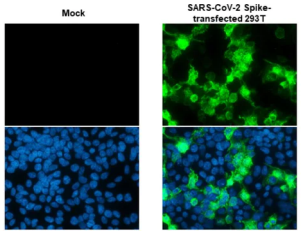


### Immunocytochemistry - Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free (ab281303)

SARS-CoV-2 Spike RBD Immunocytochemistry staining using rabbit Anti-SARS-CoV-2 Spike RBD antibody

Mock and transfected HEK-293T (Human epithelial cell line from embryonic kidney transformed with large T antigen) whole cell lysate were fixed in 4% paraformaldehyde at room temperature for 15 minutes. SARS-CoV-2 (COVID-19) Spike RBD stained (green) by ab281303 at 1/700 dilution in immunocytochemical analysis. Fluoroshield with DAPI (blue).

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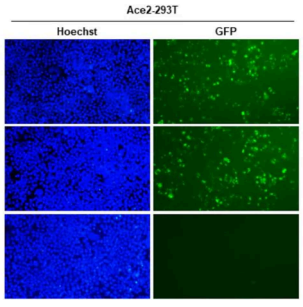


### Functional Studies (Neut/Block) - Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free (ab281303)

SARS-CoV-2 (COVID-19) Spike RBD antibody (HL1003) effectively neutralizes SARS-CoV-2 pseudovirus entry into human cells. Control or tested antibodies were mixed with GFP-expressing SARS-CoV-2 (Furin modified) pseudovirus. Each mixture was then added to HEK-293T (Human epithelial cell line from embryonic kidney transformed with large T antigen) whole cell lysate overexpressing human ACE2. After 48 hours, the infections were observed by detecting GFP using fluorescence microscopy.

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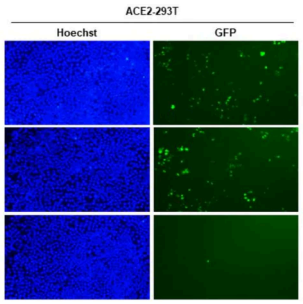
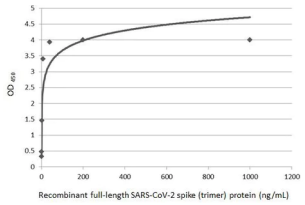


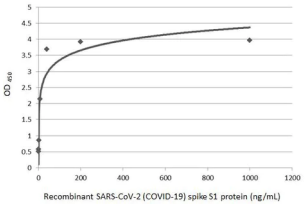

## Functional Studies (Neut/Block) - Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free (ab281303)

ab281303 effectively neutralizes SARS-CoV-2 pseudovirus entry into human cells. Control or tested antibodies were mixed with GFP-expressing SARS-CoV-2 (wild-type) pseudovirus. Each mixture was then added to HEK-293T (Human epithelial cell line from embryonic kidney transformed with large T antigen) whole cell lysate overexpressing human ACE2. After 48 hours, the infections were observed by detecting GFP using fluorescence microscopy.



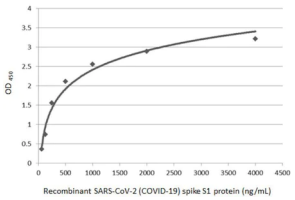

## Sandwich ELISA - Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free (ab281303)

Sandwich ELISA detection of recombinant full-length SARS-CoV-2 spike (trimer) protein using ab281305 as capture antibody at concentration of 5 µg/mL and HRP-conjugated ab281303 as detection antibody at concentration of 1 µg/mL.
Please notice that ab281303 needs to be conjugated to HRP to function as the detection antibody.



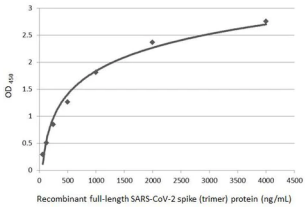

## Sandwich ELISA - Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free (ab281303)

Sandwich ELISA detection of recombinant SARS-CoV-2 (COVID-19) Spike S1 protein, His tag (active) protein using ab281305 as capture antibody at concentration of 5 µg/mL and HRP-conjugated ab281303 as detection antibody at concentration of 1 µg/mL.
Please notice that ab281303 needs to be conjugated to HRP to function as the detection antibody.



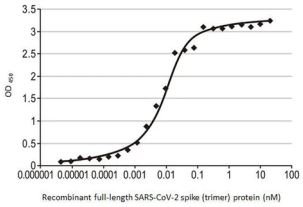

## Indirect ELISA - Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free (ab281303)

Indirect ELISA analysis performed by coating plate with recombinant SARS-CoV-2 (COVID-19) Spike S1 protein, His tag (active) protein (4000-62.5 ng/mL). Coated protein probed with ab281303 at 1 µg/mL. HRP-Rabbit IgG antibody at 1/10000 dilution detected bound primary antibody.




## Sandwich ELISA - Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free (ab281303)

Sandwich ELISA detection of recombinant full-length SARS-CoV-2 spike (trimer) protein using a SARS-CoV / SARS-CoV-2 (COVID-19) spike antibody as capture antibody at concentration of 5 µg/mL andab281303 as detection antibody at concentration of 1 µg/mL. HRP-Rabbit IgG antibody was diluted at 1/10000 dilution and used to detect the primary antibody.




## Indirect ELISA - Anti-SARS-CoV-2 Spike RBD antibody [HL1003] - BSA and Azide free (ab281303)

Indirect ELISA analysis performed by coating plate with recombinant full-length SARS-CoV-2 spike (trimer) protein (50 ng). Coated protein probed with ab281303 (20-4.8*$10^{-6}$ nM). HRP-Rabbit IgG antibody at 1/10000 dilution detected bound primary antibody.
EC50: 7.49 pM