10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

SARS-CoV-2 Spike P681H Antibody (Alpha, Mu Variant)

Infectious Disease, COVID-19
Catalog # ASC12227

Specification

SARS-CoV-2 Spike P681H Antibody (Alpha, Mu Variant) - Product Information

Application	**WB, E**
Primary Accession	P0DTC2
Other Accession	QHD43416
Host	**Rabbit**
Clonality	**Polyclonal**
Isotype	**IgG**
Application Notes	**WB: 1 µg/mL. Antibody validated: Western Blot in human samples. Anti-SARS-CoV-2 (COVID-19) P681H Mutant Specific Spike antibody can specifically detect SARS-CoV-2 UK Variant (B.1.1.7) Spike S1 protein, but not SARS-CoV-2 WT Spike S1 protein by ELISA. It can also detect mutant peptide (681H), but not WT peptide (681P). All other applications and species not yet tested.**

SARS-CoV-2 Spike P681H Antibody (Alpha, Mu Variant) - Additional Information

Gene ID	**43740568**

Other Names
SARS-CoV-2 (COVID-19) Spike Antibody: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), Surface Glycoprotein, Spike protein

Target/Specificity
May cross-react with several virus of interest (VOI) variant lineages that contains P681H mutation, including B.11.318, B.1.621, B.1.621.1, P.3. But all of these lineages are rarely present in current pandemic.

Reconstitution & Storage
SARS-CoV-2 (COVID-19) P681H Mutant Specific Spike antibody can be stored at 4˚C for three months and -20˚C, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.

Precautions
SARS-CoV-2 Spike P681H Antibody (Alpha, Mu Variant) is for research use only and not for use in diagnostic or therapeutic procedures.

SARS-CoV-2 Spike P681H Antibody (Alpha, Mu Variant) - Protein Information

Name S {ECO:0000255|HAMAP-Rule:MF_04099}

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). The stalk domain of S contains three hinges, giving the head unexpected orientational freedom (PubMed:32817270).

Cellular Location
Virion membrane {ECO:0000255|HAMAP-Rule:MF_04099, ECO:0000269|PubMed:32979942}; Single-pass type I membrane protein {ECO:0000255|HAMAP-Rule:MF_04099, ECO:0000269|PubMed:34504087}. Host endoplasmic reticulum-Golgi intermediate compartment membrane {ECO:0000255|HAMAP-Rule:MF_04099, ECO:0000269|PubMed:34504087}; Single-pass type I membrane protein {ECO:0000255|HAMAP-Rule:MF_04099}. Host cell membrane {ECO:0000255|HAMAP-Rule:MF_04099, ECO:0000269|PubMed:34504087}; Single-pass type I membrane protein {ECO:0000255|HAMAP-Rule:MF_04099}. Note=Accumulates in the endoplasmic reticulum-Golgi intermediate compartment, where it participates in virus particle assembly. Some S oligomers are transported to the host plasma membrane, where they may mediate cell-cell fusion (PubMed:34504087). An average of 26 +/-15 S trimers are found randomly distributed at the surface of the virion (PubMed:32979942) {ECO:0000255|HAMAP-Rule:MF_04099, ECO:0000269|PubMed:32979942, ECO:0000269|PubMed:34504087}

SARS-CoV-2 Spike P681H Antibody (Alpha, Mu Variant) - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

SARS-CoV-2 Spike P681H Antibody (Alpha, Mu Variant) - Images

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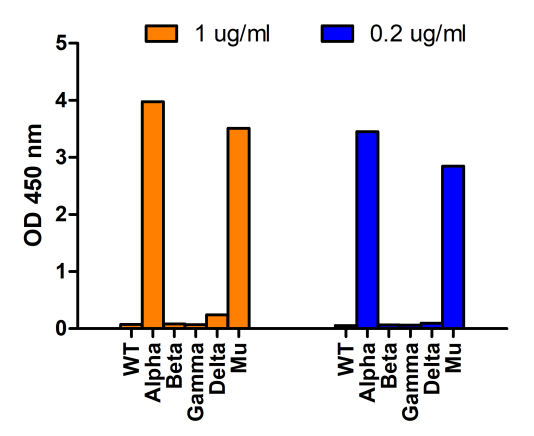

Figure 1 ELISA Validation of Alpha Variant Spike Antibodies with Spike S1 Protein of SARS-CoV-2 Variants

Coating Antigen: SARS-CoV-2 spike S1 proteins WT, alpha variant (B.1.1.7), beta variant (B.1.351), gamma variant (P.1), delta variant (B.1.617.2), and mu variant (B.1.621), 1 μg/mL, incubate at 4 ˚C overnight. Detection Antibodies: SARS-CoV-2 Alpha Variant Spike antibody, 9359, dilution: 200-1000 ng/mL, incubate at RT for 1 hr. Secondary Antibodies: Goat anti-rabbit HRP at 1:20,000, incubate at RT for 1 hr. **SARS-CoV-2 alpha variant spike antibody (9359) can specifically detect alpha variant spike S1 protein, but not spike S1 protein of WT and other tested variants by ELISA.**

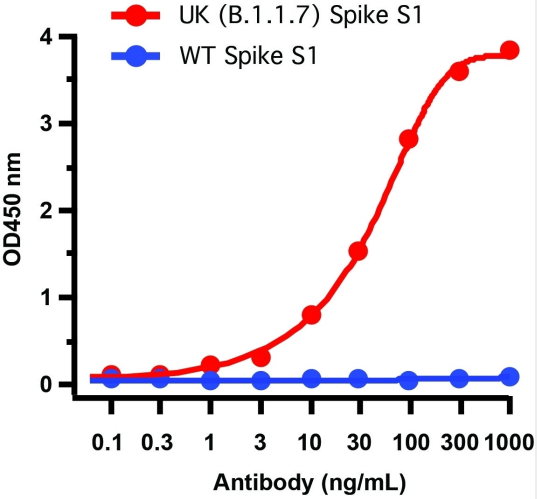

Figure 2 ELISA Validation of P681H Mutant Specific Spike Antibodies with SARS-CoV-2 UK Variant Spike S1 Protein

Coating Antigen: SARS-CoV-2 spike S1 proteins, including WT and UK variant (B.1.1.7), 1 μg/mL, incubate at 4 ˚C overnight. Detection Antibodies: SARS-CoV-2 UK Variant Spike antibody, 9359, dilution: 0.1-1000 ng/mL, incubate at RT for 1 hr. Secondary Antibodies: Goat anti-rabbit HRP at 1:20,000, incubate at RT for 1 hr. **SARS-CoV-2 P681H Mutant Specific Spike antibody (9359) can specifically detect UK variant spike S1 protein, but not WT spike S1 protein (10-300).**

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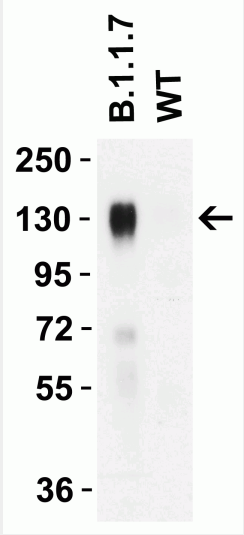

Figure 3 WB Validation of P681H Mutant Specific Spike Antibodies with SARS-CoV-2 UK Variant Spike S1 Protein
Loading: 50 ng of SARS-CoV-2 spike S1 proteins, including WT and UK variant (B.1.1.7). Detection Antibodies: SARS-CoV-2 P681H Mutant Specific Spike antibody, 9359, 1 µg/mL, incubate at RT for 1 hr. Secondary Antibodies: Goat anti-rabbit HRP at 1:20,000, incubate at RT for 1 hr. **SARS-CoV-2 P681H Mutant Specific Spike antibody (9359) can specifically detect UK variant spike S1 protein, but not WT spike S1 protein (10-300).**

SARS-CoV-2 Spike P681H Antibody (Alpha, Mu Variant) - Background

In September of 2020 a new lineage of SARS-CoV-2, known as B.1.1.7, was discovered in the United Kingdom. This lineage was found to have developed 14 lineage-specific amino acid replacements and 3 deletions prior to its discovery. The transmission of UK variant (B.1.1.7 lineage) was increased at least 50%. Increased severity and higher death rate were also found in UK variant. UK variant will not affect the effectiveness of COVID19 vaccine. One of the mutations associated with this lineage is a N501Y in the spike protein of the virus. It is believed that this mutation is able to increase the spike protein's affinity for the host ACE2 receptor and it has been associated with increased infectivity and virulence. B.1.1.7 viruses have also been shown to have a P681H in the cleavage site of spike protein. This location is one of the residues that make up the furin cleavage site between S1 and S2 in spike protein.

SARS-CoV-2 Spike P681H Antibody (Alpha, Mu Variant) - References

Duchene et al. Virus Evolution 6(2): veaa061.;Gu et al. Science 369(6511):1603-1607;Hoffmann et al. Molecular Cell 78(4):779-784.e5;Davies et al. Science 372(6538):eabg3055.;Davies et al. Nature. 593(7858):270-274.;Graham, et al. The Lancet Public Health. 6(5): e335-e345.;Horby et al. New & Emerging Threats Advisory Group. 2020;91:264-266.;;;;