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SARS-CoV-2 Spike P26S Antibody (Gamma Variant)

Infectious Disease, COVID-19
Catalog # ASC12203

Product Information

Application	WB, E
Primary Accession	P0DTC2
Other Accession	QHD43416
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Clone Names	S
Calculated MW	141178
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	WB: 1 µg/mL. Antibody validated: Western Blot in human samples. Anti-SARS-CoV-2 Spike P26S (Gamma Variant) antibody specifically detects SARS-CoV-2 Gamma Variant (P.1) Spike S1 protein, but not SARS-CoV-2 WT and other variant Spike S1 protein by ELISA. All other applications and species not yet tested.

Additional Information

Gene ID	43740568
Alias Symbol	S
Other Names	SARS-CoV-2 (COVID-19) Spike Antibody: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), Surface Glycoprotein, Spike protein
Target/Specificity	It can only detect SARS-CoV-2 Gamma Variant (P.1) Spike S1 protein and does not cross-react with the spike protein of other variants.
Reconstitution & Storage	SARS-CoV-2 Spike P26S 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 P26S Antibody (Gamma Variant) is for research use only and not for use in diagnostic or therapeutic procedures.

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). 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).

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}

Background

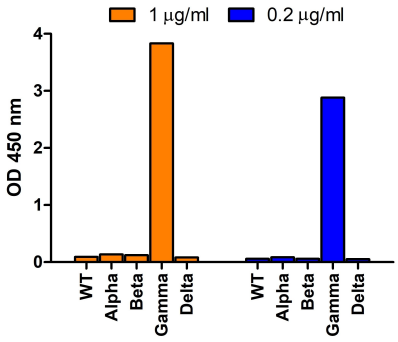
In January of 2021 a new lineage of SARS-CoV-2, known as P.1 and named as Gamma variant, was discovered in Japan and later spread in Brazil. It is considered as VOC (variant of concern). This variant carries 10 mutations in spike protein, including N501Y, E484K and K417T in RBD, which can increase the affinity to the human ACE2 receptor. Enhanced transmission of the Gamma variant (P.1 lineage) was observed globally, which is 3.5 times more contagious as the original one. The Gamma variant affects the effectiveness of COVID19 vaccine and is resistant to neutralization to some extent due to the immune escape E484K mutation.

References

Voloch et al. Journal of Virology 2021, 95 (10): e00119-21.
Wang et al. Cell Host & Microbe 2021, 29(5): 747-751.
Wang et al. Nature 592, 616-622.

Images

Figure 1 SARS-Cov-2 Spike P26S (Gamma Variant) Antibodies Specifically Detect Gamma Variant Spike S1 Protein in ELISA
Coating Antigen: SARS-CoV-2 spike S1 proteins WT, alpha



variant (B.1.1.7), beta variant (B.1.351), gamma variant (P.1), and delta variant (B.1.617.2), 1 µg/mL, incubate at 4 ˚C overnight. Detection Antibodies: SARS-CoV-2 Spike P26S (Gamma Variant) antibody, ASC12203, dilution: 200 and 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.

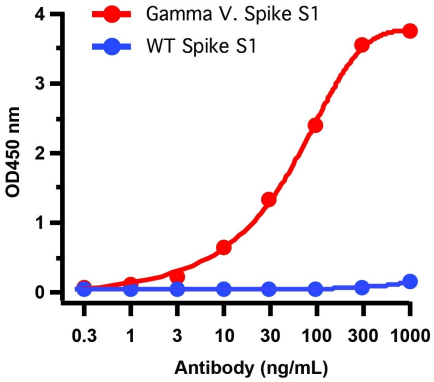


Figure 2 ELISA Validation of Gamma Variant Spike S1 Antibodies with SARS-CoV-2 Gamma Variant Spike S1 Protein
Coating Antigen: SARS-CoV-2 spike S1 proteins WT and Gamma variant (P.1), 1 µg/mL, incubate at 4 ˚C overnight. Detection Antibodies: SARS-CoV-2 Spike P26S (Gamma Variant) antibody, ASC12203, dilution: 0.3-1000 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 Spike P26S (Gamma Variant) antibody (ASC12203) specifically detects Gamma variant spike S1 protein, but not WT spike S1 protein (10-300).

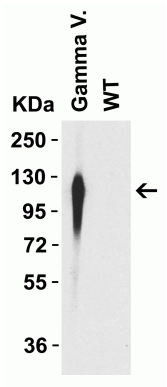


Figure 3 WB Validation of Gamma Variant Spike S1 Antibodies with SARS-CoV-2 Gamma Variant Spike S1 Protein
Loading: 50 ng of SARS-CoV-2 spike S1 proteins, including WT and Gamma variant (P.1). Detection Antibodies: Spike P26S (Gamma Variant) antibody, ASC12203, 1 µg/mL, incubate at RT for 1 hr. Secondary Antibodies: Goat anti-rabbit HRP at 1:20,000, incubate at RT for 1 hr. SARS-CoV-2 Spike P26S (Gamma Variant) antibody (ASC12203) specifically detects Gamma variant spike S1 protein, but not WT spike S1 protein (10-300).

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