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SARS-CoV-2 (COVID-19) ORF3a Antibody

Infectious Disease, COVID-19
Catalog # ASC12217

Product Information

Application	IHC, E
Primary Accession	P0DTC3
Other Accession	P0DTC3
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Clone Names	ORF3a
Calculated MW	31123
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	IHC: 0.2 µg/mL Antibody validated: Immunohistochemistry in human samples. Antibody validated: SARS-CoV-2 (COVID-19) ORF3a antibody can detect 2 ng of free peptide at 1 µg/mL in ELISA. All other applications and species not yet tested.

Additional Information

Gene ID	43740569
Other Names	ORF3a protein, Accessory protein 3a, Protein 3a, Protein U274, Protein X1, ORF3a
Reconstitution & Storage	SARS-CoV-2 (COVID-19) ORF3a 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 (COVID-19) ORF3a Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	3a
Function	Plays a role in viral egress via lysosomal trafficking (PubMed: 33157038, PubMed:33422265). Forms homotetrameric ion channels (viroporins) localized at endosomes and lysosomes, that may induce deacidification of lysosomes, allowing safe egress of virions via lysosomal trafficking (PubMed:33157038, PubMed:33422265, PubMed:34158638). Also blocks autolysosome formation by binding and sequestering the host component VPS39 for homotypic fusion and protein sorting (HOPS) on late endosomes (PubMed:33422265). This prevents fusion of autophagosomes with

	lysosomes, disrupting autophagy and facilitating virus egress (PubMed:33422265). Induces host RETREG1/FAM134B-dependent reticulophagy by interacting with host HMGB1 and enhancing the association between HMGB1 and host BECN1 (PubMed:35239449). This induces endoplasmic reticulum stress and inflammatory responses and facilitates viral infection (PubMed:35239449).
Cellular Location	Virion {ECO:0000250|UniProtKB:P59632}. Host cell membrane {ECO:0000250|UniProtKB:P59632, ECO:0000269|PubMed:33060197, ECO:0000269|PubMed:34158638}; Multi-pass membrane protein {ECO:0000250|UniProtKB:P59632, ECO:0000269|PubMed:34158638}. Host endoplasmic reticulum membrane; Multi- pass membrane protein. Secreted {ECO:0000250|UniProtKB:P59632}. Host cytoplasm {ECO:0000250|UniProtKB:P59632, ECO:0000269|PubMed:33060197}. Host endosome Host lysosome. Note=The cell surface expressed protein can undergo endocytosis. The protein is secreted in association with membranous structures. {ECO:0000250|UniProtKB:P59632}

Background

Coronavirus disease 2019 (COVID-19), formerly known as 2019-nCoV acute respiratory disease, is an infectious disease caused by SARS-CoV-2, a virus closely related to the SARS virus (1). The disease is the cause of the 2019–20 coronavirus outbreak (2). SARS-CoV-2 virus proteins include structural proteins, non-structural proteins and accessory factors. The structure of SARS-CoV-2 consists of the following: a spike protein (S), hemagglutinin-esterease dimer (HE), a membrane glycoprotein (M), an envelope protein (E) a nucleoclapid protein (N) and RNA. SARS-CoV-2 non-structural protein is ORF1ab that consists of 16 proteins (nsp1-nsp16), while accessory factors include ORF3a, ORF3b, ORF6, ORF7a, ORF7b, ORF8, ORF9b, ORF9c and ORF10. ORF3a forms homotetrameric potassium sensitive ion channels (viroporin) and may modulate virus release. It up-regulates expression of fibrinogen subunits FGA, FGB and FGG in host lung epithelial cells. It induces apoptosis in cell culture and downregulates the type 1 interferon receptor by inducing serine phosphorylation within the IFN alpha-receptor subunit 1 (IFNAR1) degradation motif and increasing IFNAR1 ubiquitination (3).

References

Gorbalenya. bioRxiv: 2020.;Hui et al. Int J Infect Dis. 2020;91:264-266.;Lu et al. PNAS USA. 2006; 103:12540-12545.

Images

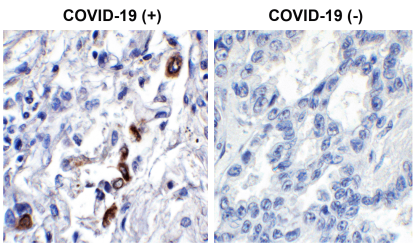


Figure 1 Immunohistochemistry Validation of SARS-CoV-2 (COVID-19) ORF3a in COVID-19 Patient Lung
Immunohistochemical analysis of paraffin-embedded COVID-19 patient lung tissue using anti- SARS-CoV-2 (COVID-19) ORF3a antibody (ASC12217, 0.2 µg/mL). Tissue was fixed with formaldehyde and blocked with 10% serum for 1 h at RT; antigen retrieval was by heat mediation with a citrate buffer (pH6). Samples were incubated with primary antibody overnight at 4˚C. A goat anti-rabbit IgG H&L (HRP) at 1/250 was used as secondary. Counter stained with Hematoxylin. Strong signal of SARS-COV-2 ORF3a protein was observed in macrophages of COVID-19 patient lung, but not in non-COVID-19 patient lung.

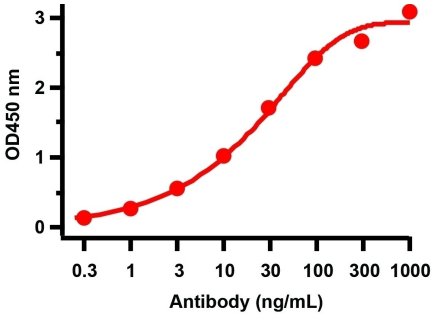


Figure 2 ELISA Validation
Antibodies: SARS-CoV-2 (COVID-19) ORF3a Antibody, ASC12217. A direct ELISA was performed using SARS-CoV-2 ORF3a immunogen peptide (ASC12217P)) as coating antigen and the anti-SARS-CoV-2 (COVID-19) ORF3a antibody as the capture antibody. Secondary: Goat anti-rabbit IgG HRP conjugate at 1:20000 dilution. Detection range is from 0.3 ng/mL to 1000 ng/mL

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