

FT-JN445

SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope antibody

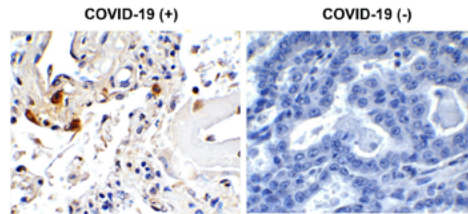


Fig. 1 IHC/IF Validation in COVID-19 Patient Sample (Nuovo et al., 2020)

Detection of SARS-CoV-2 proteins in nasopharyngeal swab cell preparations F-H. Co-expression of spike detected by spike antibodies (3525) and envelope prot

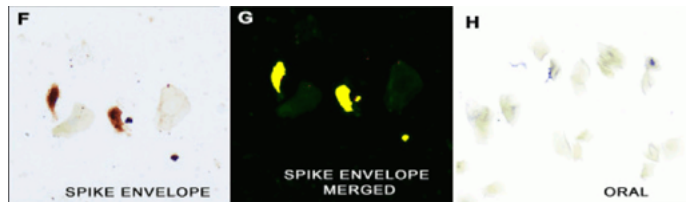


Fig. 2 IHC/IF Validation in COVID-19 Patient Sample

(Nuovo et al., 2020) Detection of SARS-CoV-2 proteins in nasopharyngeal swab cell preparations F-H. Co-expression of spike detected by spike antibodies (3525) and envelope proteins detected by envelope antibodies (3531) of SARSCoV-2 (panel F) documented localization of each protein to glandular cells with negative squamous cells two weeks after full recovery (panel G, signal yellow). No signal was seen in oral swabs of positive cases (panel H). **Both the spike and envelope protein detected by anti-spike antibodies (3525, 0.2µg/mL) and anti-envelope antibodies (3531, 2µg/mL) produced a signal in the nasopharyngeal swabs of the three cases and no signal was evident in the nasopharyngeal swabs of the seven controls.**

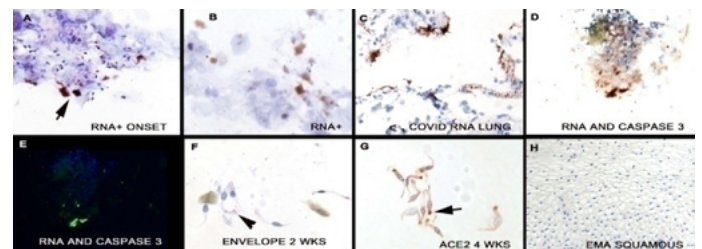


Fig. 3 IHC Validation in COVID-19 Patient Sample

(Nuovo et al., 2020) Detection of SARS-CoV-2 Envelope protein in nasopharyngeal swab samples of COVID-19 patients Panel F shows Envelope protein **detected by envelope antibodies (3531, 2µg/mL)** was still evident 2 weeks after the initial swabs (signal is red with hematoxylin counterstain), though the amount of virus was much less than at the initial swab.

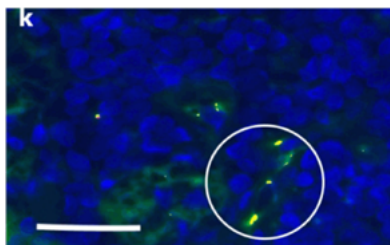


Fig. 4 IF Validation of Envelope in COVID-19 Patient Skin (Magro et al., 2020) Detection of SARS-CoV-2 Envelope protein in the skin of COVID-19 patients that were confirmed by PCR. The skin staining shows Envelope protein expression (green) **detected by envelope antibodies (3531, 3µg/mL)** in mononuclear cells with hematoxylin counterstain. The staining was negative in control normal skin/lung (not shown).

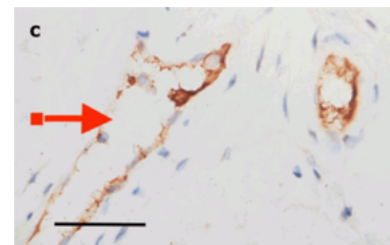


Fig. 5 IHC Validation of Envelope in COVID-19 Patient Skin (Magro et al., 2020) Detection of SARS-CoV-2 Envelope protein in the blood vessels of COVID-19 patients that were confirmed by PCR. The staining shows Envelope protein expression (green) **detected by envelope antibodies (3531, 3µg/mL)** in the endothelial cytoplasm in thrombosed and normal appearing blood vessels with hematoxylin counterstain. The staining was negative in control normal skin/lung (not shown).

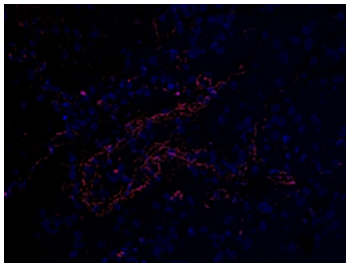


Fig. 6 Immunofluorescence Validation of SARSCoV-2 (COVID-19) Envelope in Human Lung Tissue from the COVID-19 Patient

Immunofluorescent I analysis of paraffin-embedded COVID-19 patient lung tissue using anti- SARS-CoV-2 (COVID-19) Envelope antibody (3531, 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, followed by a goat anti-rabbit IgG secondary antibody at 1/500 (red) and DAPI staining (blue). (Courtesy of Dr. Nuovo Gerard J., OSU).

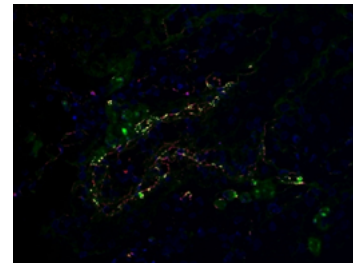


Fig. Co-expression of SARS-CoV-2 (COVID-19) Envelope and C5b-9 in Human Lung Tissue from the COVID-19 Patient

Immunofluorescent I analysis of paraffin-embedded COVID-19 patient lung tissue using anti- SARS-CoV-2 (COVID-19) Envelope antibody (3531, 2 µg/mL, red) and anti-C5b-9 antibody (green). 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, followed by secondary antibodies at 1/500 and DAPI staining (blue). Coexpression was shown in yellow. (Courtesy of Dr. Nuovo Gerard J., OSU).

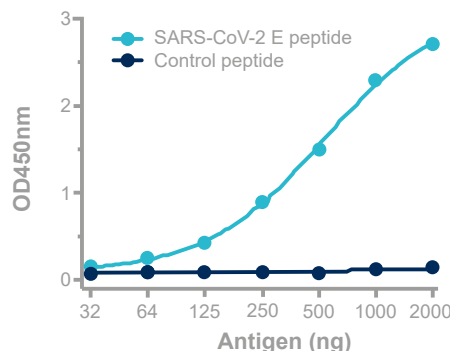


Fig. 8 ELISA Test

Antibodies: SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope Antibody, 3531 (1 µg/mL). A direct ELISA was performed using antigen or control peptide as coating antigen and the anti-SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope antibody as the capture antibody. Secondary: Goat antirabbit IgG HRP conjugate at 1:20000 dilution. Detection range is from 32 ng/mL to 2000ng/mL.

Specifications

Host species	Rabbit
Species reactivity	Virus
Homology	Predicted reactivity based on immunogen sequence: SARS-CoV Envelope proteins: (100%)
Immunogen	Anti-SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope antibody (3531) was raised against a peptide corresponding to 10 amino acids near the amino terminus of SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope protein. The immunogen is located within the first 50 amino acids of SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope.
Tested applications	ELISA, IF, IHC
Applications	IHC/IF: 1-3µg/mL Antibody validated: Immunohistochemistry and immunofluorescence in COVID-19 patient samples. SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope antibody can detect 50ng of free peptide at 1µg/mL in ELISA. But it cannot detect envelope recombinant protein in WB and ELISA.

Properties

Purification	SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope Antibody is affinity chromatography purified via peptide column.
Clonality	Polyclonal
Isotype	IgG
Conjugate	Unconjugated
Physical state	Liquid

Buffer	SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope Antibody is supplied in PBS containing 0.02% sodium azide.
Concentration	1mg/mL
Storage conditions	SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope 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.

Additional Info

Official symbol	E
Alternate names	SARS-CoV-2 (COVID-19, 2019-nCoV) Envelope Antibody; Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), Envelope protein, E protein
Accession no.	QHD43418
Protein GI no.	1791269092
Gene ID	43740570
User note	Optimal dilutions for each application to be determined by the researcher.

Background and References

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). The structure of 2019-nCoV consists of the following: a spike protein (S), hemagglutinin-esterase dimer (HE), a membrane glycoprotein (M), an envelope protein (E) a nucleocapsid protein (N) and RNA. Envelope protein is a small polypeptide that contains at least one alpha-helical transmembrane domain. It involves in several aspects of the virus's life cycle, such as assembly, budding, envelope formation, and pathogenesis. E protein has membrane permeabilizing activity, which provides a possible rationale to inhibit in vitro ion channel activity of some synthetic coronavirus E proteins, and also viral replication (3).
References	<ol style="list-style-type: none"> 1) Gorbalenya. bioRxiv. 2020. 2) Hui et al. Int J Infect Dis. 2020;91:264-266. 3) Pervushin et al. PLoS Pathog. 2009; 5(7): e1000511.

CITATIONS

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- 2) Magro C, Mulvey JJ, Laurence J, Sanders S, Crowson N, Grossman M, Harp J, Nuovo G. The differing pathophysiologies that underlie COVID-19 associated perniois and thrombotic retiform purpura: a case series. Br J Dermatol. 2020; 22:10.1111/bjd.19415. doi: 10.1111/bjd.19415. PMID: [32779733](#)
- 3) Nuovo G, Tili E, Suster D, Matys E, Hupp L, Magro C. Strong homology between SARSCoV-2 envelope protein and a Mycobacterium sp. antigen allows rapid diagnosis of Mycobacterial infections and may provide specific anti-SARS-CoV-2 immunity via the BCG vaccine. Ann Diagn Pathol. 2020; 48:151600. doi: 10.1016/j.anndiagpath.2020.151600. PMID: [32805515](#)
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- 5) Magro, et al. Docked severe acute respiratory syndrome coronavirus 2 proteins within the cutaneous and subcutaneous microvasculature and their role in the pathogenesis of severe coronavirus disease 2019. Hum Pathol. 2020 Dec;106:106-116. doi: 10.1016/j.humpath.2020.10.002. Epub 2020 Oct 12. PMID: [33058948](#)
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