ANTIBODIES FOR COVID-19 RESEARCH
KEY VIRAL AND HOST PROTEIN TARGETS

ANTIBODIES TO KEY VIRAL TARGETS

SARS-CoV-2 is the causative agent of the global pandemic coronavirus disease 2019 (COVID-19). It shares ~80% of its RNA sequence with SARS-CoV, the identified pathogen of the 2002-2003 outbreak. Four major structural proteins have been identified: the nucleocapsid protein (N), spike protein (S), membrane protein (M) and envelope protein (E).

SARS-COV-2 NUCLEOCAPSID PROTEIN (N)

The SARS-COV Nucleocapsid (N) protein is highly immunogenic and expressed primarily in the cytoplasm. Probing for this protein is popularly used to confirm presence of the virus in tissue.

Notably, the SARS Nucleocapsid Protein Polyclonal Antibody (NB100-56576) from Novus Biologicals™ was recently validated by the US Centers for Disease Control and Prevention (CDC) for IHC Detection of SARS-CoV-2. Other recent publications of this antibody are listed below.

Pathology and pathogenesis of fatal COVID-19 cases associated with SARS-CoV-2 pandemic.
SARS Nucleocapsid Protein Antibody [NB100-56576] used for IHC.

Respiratory disease in rhesus macaques inoculated with SARS-CoV-2.
Munster, V.J. et al.; National Institutes of Health, Nature 2020
[NB100-56576] used for IHC-P.

SARS-CoV-2 Infection Protects Against Rechallenge in Rhesus Macaques
Chandrashekar A, et al.; Harvard Medical School, Science. 2020
[NB100-56576] used for IHC-P, IHC, Dual ISH-IHC.

In situ detection of SARS-CoV-2 in lungs and airways of patients with COVID-19.
Schaefer, I., Padera, R.F. et al; Harvard Medical School, Mod Pathol. 2020
[NB100-56576] used for IHC.

Dr. Lynette Scholl, Harvard Medical School, recently published a study (Schaefer et al.) using this antibody and reported:

“We were able to quickly optimize and validate the antibody for use in clinical diagnostics on formalin fixed paraffin embedded tissues and have found that it is a robust tool for evaluation of SARS-CoV-2 in human autopsy tissue.”

SARS Nucleocapsid Protein Antibody [NB100-56576] - Immunostaining of SARS-CoV-2 in pulmonary tissues from fatal coronavirus disease cases.

VIEW ALL NUCLEOCAPSID PROTEIN ANTIBODIES HERE
ANTIBODIES TO KEY VIRAL TARGETS

SARS SPIKE PROTEIN (S)

The spike protein (S) of SARS-CoV-2 is of major interest in COVID-19 research. It binds cellular membrane receptors, such as ACE-2, to initiate infection of the host cell. The S protein is composed of two functional subunits, S1 and S2, and requires priming by host proteases for entry. S1 contains a receptor binding domain (RBD) and is responsible for the initial attachment of the virus to the surface of host cells, and S2 is responsible for membrane fusion.

VIEW ALL SPIKE PROTEIN ANTIBODIES

LLAMABODY™ ANTIBODIES AND THE SARS-COV-2 SPIKE PROTEIN

Camelid antibodies are used in studying protein structure, high resolution imaging applications and drug delivery - as well as the detection and neutralization of viruses. Our SARS-CoV-1/2 Spike RBD Llamabody™ Antibody is a recombinant antibody with the VHH domain of the SARS VHH-72 clone attached to a human IgG scaffold. The small size of the VHH domain can reach more difficult epitopes, and this product is able to block both SARS-CoV-1 and SARS-CoV-2.

VIEW MORE LLAMABODY™ ANTIBODIES

SIMPLE WESTERN™ CERTIFIED ANTIBODIES FOR SARS-COV-2

We have antibodies for both SARS Nucleocapsid protein and SARS Spike protein that have been validated for ProteinSimple’s Simple Western™ platforms, so are ready to slot into your workflow.

LEARN MORE ABOUT SIMPLE WESTERN ANTIBODIES

(Left) Simple Western analysis of recombinant SARS-CoV-2 Nucleocapsid Protein (10474-CV) with SARS Nucleocapsid Protein Antibody [NB100-56683]. SARS Nucleocapsid protein was loaded at 20 ng/mL and detected using serial dilutions of the Rabbit Anti-SARS-CoV Nucleocapsid Protein Polyclonal Antibody (NB100-56683) followed by HRP-conjugated Anti-Goat IgG Secondary Antibody.

(Right) Simple Western analysis of SARS-CoV-2 (1:50), MERS (1:100), OC43 (1:100), and 229E (1:100) lysates. A specific band was detected for SARS-CoV-2 Nucleocapsid Protein only in the SARS-CoV-2 lysate. Detection was based on the use of Rabbit Anti-SARS-CoV Nucleocapsid Protein Polyclonal Antibody [NB100-56683] followed by HRP-conjugated Anti-Goat IgG Secondary Antibody. Note: some reactivity observed with FL Std 230. SARS-CoV-2 lysate courtesy of University of Maryland. These experiments were conducted under reducing conditions and using the 12-230 kDa separation system.
ANTIBODIES TO KEY HUMAN TARGETS

From research on SARS-host protein interactions, key human targets have been identified for their involvement in viral pathogenicity. These include cell surface receptors like ACE-2 and Neuropilin-1, as well as proteases such as TMPRSS2 and Furin.

ACE-2

Research on SARS-host protein interactions has shown that the viral spike (S) protein binds human ACE-2 receptor, resulting in fusion of viral and cell membranes for viral entry.

Our monoclonal Human ACE-2 Antibody (MAB933) was recently validated for IHC and Western blot by the Human Protein Atlas project. Our polyclonal Human ACE-2 Antibody (AF933) has been published in some of the latest research pertaining to SARS-CoV-2 viral entry.

The protein expression profile of ACE2 in human tissues
Hikmet, F. et al., Human Protein Atlas Project, bioRxiv, 2020
Human ACE-2 Monoclonal Antibody (MAB933) used for IHC and WB

SARS-CoV-2 Cell Entry Depends on ACE2 and TMPRSS2 and Is Blocked by a Clinically Proven Protease Inhibitor.
Hoffmann M. et al.; Leibniz Institute for Primate Research, Cell, 2020
Human ACE-2 Polyclonal Antibody [AF933] used for blocking.

SARS-CoV-2 productively infects human gut enterocytes
Lamers M M. et al.; Hubrecht Institute, Science, 2020
Human ACE-2 Polyclonal Antibody [AF933] used for IHC.

VIEW ALL ACE-2 ANTIBODIES

TMPRSS2 AND TMPRSS4

For the virus to enter the host cell, the S protein requires cleaving and activating by host cell proteases such as TMPRSS2 and TMPRSS4.

VIEW ANTI-TMPRSS2 ANTIBODIES
VIEW ANTI-TMPRSS4 ANTIBODIES

FURIN

The enzyme furin has been protein of interest in SARS-CoV-2 research, since it was found that the viral S protein contains a furin-cleavage-site (FCS) in its sequence.

VIEW ANTI-FURIN ANTIBODIES

NEUROPILIN-1

Neuropilin 1 (NRP1), also known as CD304, is a cell surface receptor that is known to bind furin-cleaved substrates. It is able to interact with the SARS-CoV-2 spike protein and enhance viral infection of the cell.

VIEW ANTI-NRP1 ANTIBODIES
ANTIBODIES TO KEY HUMAN TARGETS

SARS-CoV-2 research is evolving at an extraordinary pace and new proteins of interest are being identified all the time. Below are just some of the other human targets that are being investigated for their role in SARS-CoV-2 replication and disease.

CATHEPSIN B / L
Cathepsins B and L are other proteases that may be involved in priming of the SARS-CoV-2 S protein and facilitating infection of the cell.
VIEW ANTI-CATHEPSIN L ANTIBODIES
VIEW ANTI-CATHEPSIN B ANTIBODIES

PIKFYVE
Phosphatidylinositol 3-phosphate 5-kinase (PIKfyve) is an enzyme that synthesizes a key phosphoinositide (PI(3,5)P2) involved in regulating endosome dynamics. Inhibition of this enzyme may reduce SARS-CoV-2 infection.
VIEW ANTI-PIKFYVE ANTIBODIES

CD147
The transmembrane protein CD147 or EMPRINN has been proposed as an alternate receptor to ACE-2 for viral invasion.
VIEW ANTI-CD147 ANTIBODIES

RDRP
RNA-dependent RNA polymerase (RdRP) is an enzyme critical to the replication of RNA viruses such as SARS-CoV-2.
VIEW OUR SARS RDRP ANTIBODY

IGG, IGA, IGM
Antibodies specific to other immunoglobulins (Igs) are necessary to probe for their presence in serum, or to detect your primary antibody reagent.
VIEW SECONDARY ANTIBODIES

BROWSE ALL ANTIBODIES BY APPLICATION

FLOW CYTOMETRY  IHC/ICC  NEUTRALIZATION  WESTERN BLOT  SIMPLE WESTERN™  MATCHED PAIRS

MORE USEFUL LINKS

COVID-19 RESEARCH RESOURCES FROM NOVUS BIOLOGICALS
RECOMBINANT PROTEINS FOR CORONAVIRUS RESEARCH
FLOW CYTOMETRY WORKFLOWS FOR COVID-19 RESEARCH
SMALL MOLECULES FOR COVID-19 RESEARCH