Revision 1

Store at -20C

#45394

SARS-CoV-2 Virus-Host Interaction Antibody Sampler Kit

1 Kit (8 x 20 microliters)

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
SARS-CoV-2 Spike Protein (S1) (E5S3V) Rabbit mAb	99423	20 µl	110, 220 kDa	Rabbit IgG
SARS-CoV-2 Spike Protein (RBD) (E7B3E) Rabbit mAb	63847	20 µl	110, 220 kDa	Rabbit IgG
Cleaved SARS-CoV-2 Spike Protein (Ser686) Antibody	84534	20 µl	100 kDa	Rabbit
ACE2 (E5O6J) XP® Rabbit mAb	92485	20 µl	120-135 kDa	Rabbit IgG
Neuropilin-1 (D62C6) Rabbit mAb	3725	20 µl	120-140 kDa	Rabbit IgG
Basigin/EMMPRIN (E1S1V) Rabbit mAb	13287	20 µl	38-58 kDa	Rabbit IgG
Furin Antibody	43996	20 µl	90 kDa	Rabbit
Cathepsin L Antibody	71298	20 µl	25-42 kDa	Rabbit
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

The SARS-CoV-2 Virus-Host Interaction Antibody Sampler Kit provides an economical means of detecting key viral and host proteins involved in SARS-CoV-2 infection of human host cells. The kit includes enough antibodies to perform two western blot experiments with each primary antibody.

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. *Do not aliquot the antibodies.*

Background

The cause of the COVID-19 pandemic is a novel and highly pathogenic coronavirus, termed SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2). SARS-CoV-2 is a member of the Coronaviridae family of viruses (1). The SARS-CoV-2 virion is comprised of four key structural proteins: spike (S), envelope (E), membrane (M), and nucleocapsid (N) (2). Coronavirus spike proteins are class I fusion proteins and harbor an ectodomain, a transmembrane domain, and an intracellular tail (3,4). The highly glycosylated ectodomain projects from the viral envelope surface and facilitates attachment and fusion with the host cell membrane. The ectodomain can be further subdivided into the receptor-binding domain (RBD) S1 and membrane-fusion (S2) subunits, which are produced upon proteolysis by host proteases. S1 and S2 subunits are reassociated after cleavage, assembling into crown-like homotrimers (2,4).

The SARS-CoV-2 spike protein contains a novel tetrabasic "furin cleavage site" (FCS) at the S1/S2 junction. Research studies suggest this site is cleaved by proprotein convertases (e.g., furin) or lysosomal proteases (e.g., cathepsin L) (5,6). S1/S2 cleavage elicits a confirmational change in the spike protein that positions elements of the trimeric RBD in an exposed "up" position, priming it for interaction with host receptor proteins. Cleavage can occur at multiple steps of the viral lifecycle, including during viral packaging, or upon contact of the intact virion with the host cell surface. This novel cleavage event has been suggested to contribute to the high infectivity rate of the SARS-CoV-2 virus (7).

The SARS-CoV-2 virus has been shown to utilize the angiotensin-converting enzyme 2 (ACE2) protein as its primary receptor for cellular entry (8). However, research studies have suggested that other cell surface proteins may serve as receptors or co-receptors for SARS-CoV-2. These include neuropilin-1 (NPN1), a single-pass transmembrane receptor that can function as part of a semaphorin receptor complex, and as a vascular endothelial growth factor (VEGF) receptor (9), and Basigin/EMMPRIN (CD147), a type I integral membrane receptor belonging to the immunoglobulin superfamily (10).

Background References

1. Zhou, P. et al. (2020) *Nature* 579, 270-273.
2. Tortorici, M.A. and Veesler, D. (2019) *Adv Virus Res* 105, 93-116.
3. Li, F. et al. (2006) *J Virol* 80, 6794-800.
4. Li, F. (2016) *Annu Rev Virol* 3, 237-261.
5. Coutard, B. et al. (2020) *Antiviral Res* 176, 104742.
6. Jaimes, J.A. et al. (2020) *iScience* 23, 101212.

7. Hasan, A. et al. (2021) *J Biomol Struct Dyn* 39, 3025-3033.
8. Shang, J. et al. (2020) *Nature* 581, 221-224.
9. Cantuti-Castelvetri, L. et al. (2020) *Science* 370, 856-860.
10. Wang, K. et al. (2020) *Signal Transduct Target Ther* 5, 283.

Trademarks and Patents

Limited Uses