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Coronavirus Host Cell Attachment and Entry Antibody Sampler Kit



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1 Kit (9 x 20 microliters)

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source	
ACE2 Antibody	4355	20 µl	120-135 kDa	Rabbit	
DPP4/CD26 (D6D8K) Rabbit mAb	67138	20 µl	90, 120 kDa	Rabbit IgG	
CD13/APN (D6V1W) Rabbit mAb	32720	20 µl	160 kDa	Rabbit IgG	
Basigin/EMMPRIN (E1S1V) Rabbit mAb	13287	20 µl	38-58 kDa	Rabbit IgG	
EEA1 (C45B10) Rabbit mAb	3288	20 µl	170 kDa	Rabbit IgG	
IFITM1 Antibody	13126	20 µl	14 kDa	Rabbit	
Cathepsin B (D1C7Y) XP [®] Rabbit mAb	31718	20 µl	44, 27, 24 kDa	Rabbit IgG	
IFITM3 (D8E8G) XP [®] Rabbit mAb	59212	20 µl	15 kDa	Rabbit IgG	
VCP (7F3) Rabbit mAb	2649	20 µl	89 kDa	Rabbit IgG	
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 Coronavirus Host Cell Attachment and Entry Antibody Sampler Kit provides an economical means of detecting key host cell proteins involved in the attachment and cellular entry of coronaviruses. The kit includes enough antibodies to perform two western blot experiments with each primary antibody. Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than Storage 0.02% sodium azide. Store at -20°C. Do not aliquot the antibodies. Background Coronaviruses are a group of viruses that contain single-stranded, positive-sense RNA genomes. Several members of this group, which include severe acute respiratory syndrome coronaviruses (SARS-CoV and SARS-CoV-2) and Middle East respiratory syndrome coronavirus (MERS-CoV), are highly pathogenic and have caused significant disease outbreaks in human hosts. In order for human coronaviruses to transcribe and replicate their genomes within host cells, they must first attach and gain entry into host cells using a variety of cell surface receptors and components of the endocytic machinery. ACE2 is a carboxypeptidase that catalyses the conversion of angiotensin I to angiotensin 1-9, or of angiotensin II to the vasodilator angiotensin 1-7 (1). Research studies have identified ACE2 as the receptor for SARS and SARS-CoV-2 coronaviruses (2-4). DPP4 (CD26) is a type II transmembrane glycoprotein expressed ubiquitously in most tissues and different cell types (5,6). In addition to its peptidase activity, DPP4 interacts with multiple important cell surface ligands, such as adenosine deaminase, fibronectin, and IGF2 receptor to influence processes like T cell activation, cell migration, and proliferation (7). Research studies have shown that DPP4 serves as a cellular receptor for the MERS-CoV spike protein (8). Aminopeptidase N (APN, CD13) is a widely expressed, membrane-bound proteolytic enzyme that breaks down peptides during digestion, cleaves cell surface antigens during antigen presentation, and acts as a receptor for human viruses, including several coronaviruses. This multifunctional protein is implicated in the regulation of many biological processes, including angiogenesis, cell proliferation, cell migration, inflammation, and immune response (9,10). Basigin (EMMPRIN, CD147) is a type I integral membrane receptor protein belonging to the immunoglobulin superfamily (11). Multiple functions have been ascribed to Basigin; foremost among these is stimulating the secretion of extracellular matrix metalloproteinases by adjacent fibroblasts, a function which has been implicated in promoting tumor progression (12-14). Research studies have suggested that Basigin serves as a novel host cell surface receptor for SARS-CoV-2 (15).

EEA1 is an early endosomal marker and a Rab5 effector protein essential for early endosomal

	membrane fusion and trafficking (16,17). Research studies have shown that efficient coronavirus host cell entry and replication relies upon early endosomes containing EEA1 (18).
	Interferon-induced transmembrane protein (IFITM) family members are composed of short amino- and carboxy-termini, two transmembrane domains, and a cytoplasmic domain (19). The primary function of IFITM family proteins appears to be viral restriction, as IFITM proteins inhibit cytosolic entry of coronaviruses by preventing fusion of viral and host membranes (20,21).
	Valosin-containing protein (VCP) is a highly conserved and abundant 97 kDa protein that belongs to the AAA family of proteins. These protein complexes participate in many cellular functions, including vesicle transport and fusion, fragmentation and reassembly of the golgi stacks during mitosis, nuclear envelope formation and spindle disassembly following mitosis, cell cycle regulation, DNA damage repair, apoptosis, B and T cell activation, NF-kB-mediated transcriptional regulation, endoplasmic reticulum (ER)-associated degradation, and protein degradation (22). Research studies have shown that VCP facilitates the release of some coronaviruses from the early endosomal compartment (23).
	Cathepsin B, part of the papain family of proteases, is a widely expressed lysosomal cysteine endopeptidase (24,25). Research studies have suggested that cathepsin B facilitates host cell entry of SARS-CoV by promoting fusion of viral and endosomal membranes (26).
Background References	 Schmidt, B.L. et al. (2000) <i>J Clin Microbiol</i> 38, 1279-82. Li, W. et al. (2005) <i>EMBO J</i> 24, 1634-43. Hoffmann, M. et al. (2020) <i>Cell</i> 181, 271-280.e8. Lan, J. et al. (2020) <i>Nature</i> 581, 215-220. Mentzel, S. et al. (1996) <i>J Histochem Cytochem</i> 44, 445-61. Röhrborn, D. et al. (2015) <i>J Diabetes Res</i> 2015, 606031. Wang, N. et al. (2013) <i>Cell Res</i> 23, 986-93. Luan, Y. and Xu, W. (2007) <i>Curr Med Chem</i> 14, 639-47. Mina-Osorio, P. (2008) <i>Trends Mol Med</i> 14, 361-71. Biswas, C. et al. (2011) <i>Mol Cell Biol</i> 31, 2591-604. Sweeny, L. et al. (2012) <i>Exp Cell Res</i> 318, 1788-98. Lescaille, G. et al. (2012) <i>BMC Cancer</i> 12, 115. Swang, K. et al. (2020) <i>Signal Transduct Target Ther</i> 5, 283. Mur, Y. and Ku, 1995) <i>J Biol Chem</i> 270, 13503-11. Christoforidis, S. et al. (1999) <i>Nature</i> 397, 621-5. Burkard, C. et al. (2011) <i>PLoS Pathog</i> 10, e1004502. Diamond, M.S. and Farzan, M. (2013) <i>Nat Rev Immunol</i> 13, 46-57. Brass, A.L. et al. (2011) <i>PLoS Pathog</i> 7, e1002337. Wang, Q. et al. <i>J Struct Biol</i> 146, 44-57. Wong, H.H. et al. (2015) <i>J Virol</i> 89, 11116-28. Chan, S.J. et al. (1986) <i>Proc Natl Acad Sci U S A</i> 83, 7721-5. Fong, D. et al. (1986) <i>Proc Natl Acad Sci U S A</i> 83, 2909-13. Simmons, G. et al. (2005) <i>Proc Natl Acad Sci U S A</i> 102, 11876-81.
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