ACE2-SARS-CoV2-binding region Recombinant Protein

PROT-ACE2-bd

Ordering Information
Web ***www.encorbio.com***
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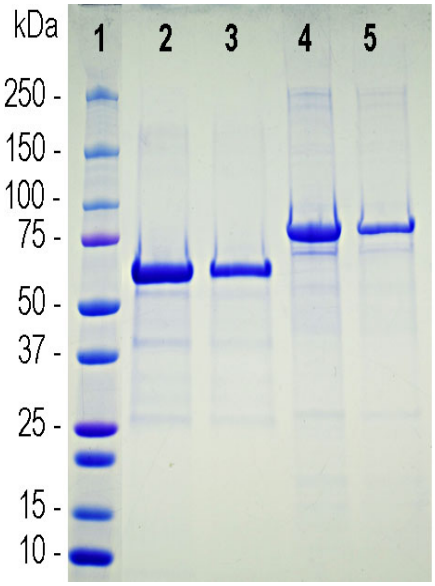
Phone ***352-372-7022***
Fax ***352-372-7066***

HGNC Name: *ACE2*
RRID: *Pending*
Format: *Supplied as 1mg/mL in 6M urea, 10mM phosphate buffer pH=7.5*
Storage: *Stable at 4°C for several months. For longer term store at -20°C, minimize freeze/thaw cycles*
UniProt: *Q9BYF1*

Applications	Host	Molecular Wt.	HGNC	UniPort
Antibody generation, ELISA		63kDa, 70kDa by SDS-PAGE	ACE2	Q9BYF1



SDS-PAGE gel of recombinant human ACE2 virus binding region. Lane 1 shows protein molecular weight standards of apparent size indicated in kiloDaltons. Lanes 2 and 3 are 5.6µg and 2.8µg BSA and 4 and 5 are the ACE2 construct running at an apparent molecular weight about 70kDa, somewhat higher than the 63kDa predicted from the amino acid sequence. This discrepancy is likely due to the highly acidic nature of the protein. The protein was expressed in E. coli and extracted from inclusion bodies using 6M urea.

There has been an enormous amount of interest in the novel virus SARS-CoV2 for very obvious reasons. It is a corona virus, a member of a large family of spherical viruses with prominent spikes which give them the appearance of a cartoon sun, which is why they are called corona viruses. The SARS-CoV2 virus was first identified in Wuhan, China, at the end of 2019 and almost certainly originated from bats, possibly infecting humans indirectly from another animal host (1,2). The virus transmits very readily and has a significant mortality with particular risk to individuals with comorbidities such as diabetes, hypertension, immune compromise and heart problems. While no age group seems to be safe the majority of patients who have serious symptoms or succumb are of advanced age. Much research has shown that a part of the “spike” or S protein on the surface of the virus has a high affinity binding site for angiotensin converting enzyme 2 (ACE2) a protein on the surface of human cells in the lung epitheliun and other tissues (3). This specific binding is required for internalization of the virus and is the first step in viral infection. Accordingly antibodies or other reagents which bind to the ACE2/SARS-CoV2 interaction site may interfere with viral internalization and hence infection. Recent cryoEM studies have characterized the exact interface (4). We have therefore made two recombinant constructs, this one including the segment of ACE2 which binds the SARS-CoV2 spike protein, and also PROT-R-SARS-CoV2-bd, containing the region of the SARS-CoV-2 spike protein which binds to ACE2.

References:

1. Wu, F et al. A new coronavirus associated with human respiratory disease in China. Nature doi:10.1038/s41586-020-2008-3.2020 579:265-269 (2020).
2. Ren, L-L et al. Identification of a novel coronavirus causing severe pneumonia in human: a descriptive study. Chin Med J (Engl) doi:10.1097/CM9.0000000000000722 133:1015-24 (2020).
3. Walls, A C et al. Structure, Function, and Antigenicity of the SARS-CoV-2 Spike Glycoprotein. Cell doi: 10.1016/j.cell.2020.02.058 180:1-12 (2020)
4. Yan, R et al. Structural basis for the recognition of SARS-CoV-2 by full-length human ACE2. Science doi:10.1126/science.abb2762 367:1444–8 (2020).

Abbreviation Key:

mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.