

## SARS-CoV-2 proteins (version 2020.2) in the IUPHAR/BPS Guide to Pharmacology Database

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### Abstract

Coronaviruses are large, often spherical, enveloped, single-stranded positive-sense RNA viruses, ranging in size from 80-220 nm. Of the four structural proteins encoded in the viral genome, the RNA winds around the highly basic nucleocapsid (N) protein. The three other structural proteins, envelope (E), membrane (M) and spike (S), are transmembrane proteins. The E protein is a small (9-12 kDa) single transmembrane domain protein, which enables virus assembly with the M protein, a larger (23-35 kDa) 3TM protein. Coronaviruses are named for the crown-shaped appearance of the virus due to the large (120+ kDa) S spike 1TM glycoprotein, which forms extended homotrimers. The spike protein binds to the animal host cell by interacting with specific anchoring proteins, typically proteinases, such as [angiotensin-converting enzyme 2](#) or [aminopeptidase N](#). This binding facilitates viral entry into the cell and the release of the genome. Aside from the four structural proteins, the remainder of the genome encodes accessory or non-structural proteins and includes proteinases to cleave the two encoded polyproteins. The remainder of the genome encodes elements for viral replication, assembly and release, as well as proteins which manipulate the host's innate immune system.

### Contents

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Please note that the database version for the citations given in GtoPdb are to the most recent preceding version in which the family or its subfamilies and targets were substantially changed. The links below are to the current version. If you need to consult the cited version, rather than the most recent version, please contact the GtoPdb curators.

### Database links

#### SARS-CoV-2 proteins

<http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=1034>

#### Targets

[SARS-CoV-2 Envelope protein](#)

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3116>

[SARS-CoV-2 Main protease](#)

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3111>

[SARS-CoV-2 Membrane glycoprotein](#)

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3117>

[SARS-CoV-2 Non-structural protein 6](#)

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[SARS-CoV-2 Non-structural protein 8](#)

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3120>  
SARS-CoV-2 Nucleoprotein

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3121>  
SARS-CoV-2 Protein 3a

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3115>  
SARS-CoV-2 Protein 7a

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3119>  
SARS-CoV-2 Protein 9b

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3122>  
SARS-CoV-2 Protein non-structural 7b

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3123>  
SARS-CoV-2 Replicase polyprotein 1a

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SARS-CoV-2 Replicase polyprotein 1ab

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3125>  
SARS-CoV-2 Spike glycoprotein

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3114>

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