

Product Information

SARS-CoV-2 Receptor Binding Domain

Spike protein RBD recombinant, expressed in HEK 293 cells

SAE1000

Storage Temperature -20 °C

GenBank: QHD43416

Product Description

SARS-CoV-2 belongs to Coronaviridae (CoVs), a large family of viruses that usually cause mild to moderate upper-respiratory tract diseases.¹ CoVs are single-stranded RNA viruses. They have a high mutation rate and are therefore highly diverse.¹ Their hosts include human and non-human mammals, as well as birds.¹

SARS-CoV-2 infects cells which express angiotensin converting enzyme 2 (ACE2).² ACE2 binds to the viral envelope-associated spike (S) protein as a cellular receptor, following proteolytic cleavage of both S and ACE2 by serine proteases.³ S protein is believed to be the target of neutralizing antibodies because it is the main trans-membrane glycoprotein responsible for receptor-binding and virion entry.⁴

The S protein is a trimeric protein. During the binding to ACE2, S protein undergoes a substantial structural rearrangement to facilitate the fusion of the viral membrane with the host cell membrane.⁵ The receptor binding domain (RBD) of S protein is the domain that specifically binds to ACE2. RBD is the major target for neutralizing antibodies for coronaviruses⁶, and anti-RBD antibodies likely correlate with virus neutralization.⁷

This product is expressed in human HEK 293 cells as a glycoprotein with a calculated molecular mass of 25 kDa (amino acids 319-541) and includes a C-terminal polyhistidine tag. The DTT-reduced protein migrates as a ~35 kDa polypeptide on SDS-PAGE because of glycosylation. This protein is produced in human cells, without the use of serum. The human cells expression system allows human like glycosylation and folding, and often supports higher specific binding of the protein.

This product is supplied as a lyophilized powder in phosphate buffered saline (PBS), pH 7.4, with no carrier proteins. It is aseptically filled.

The activity of this product is tested by a functional ELISA. Immobilization of Spike protein Receptor Binding Domain at 2 µg/mL (100 µL/well), allows binding of ACE2, biotin tagged (Cat. No. SAE0171). The half maximal binding (binding which produces 50% of the optimal binding response) is ≥ 2 µg/mL.

Purity ≥ 95% (SDS-PAGE)

Precautions and Disclaimer

This product is for research use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store the product at -20 °C. The product retains its activity for at least 2 years as supplied. After initial thawing, it is recommended to store the protein in working aliquots at -20 °C.

References

1. Hamed, M.A., *Bull. Natl. Res. Cent.* **44**, 86 (2020).
2. St. John, A. L., *J. Immunol.* (2020).
3. Heurich, A. H., *J. Virol.* **88**, 1293-1307 (2014).
4. Wrapp, D., *et al.*, *Science*, **367** (6483), 1260-1263 (2020).
5. Li, F., *Annu. Rev. Virol.* **3**, 237-261 (2016).
6. Berry, J.D., *et al.*, *MAbs*, **2**, 53-66 (2010).
7. Amanat, F., *et al.*, *Nat. Med.* (2020).

Notice

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

The information in this document is subject to change without notice and should not be construed as a commitment by the manufacturing or selling entity, or an affiliate. We assume no responsibility for any errors that may appear in this document.

Technical Assistance

Visit the tech service page at SigmaAldrich.com/techservice.

Standard Warranty

The applicable warranty for the products listed in this publication may be found at SigmaAldrich.com/terms.

Contact Information

For the location of the office nearest you, go to SigmaAldrich.com/offices.

The life science business of Merck operates as MilliporeSigma in the U.S. and Canada.

Merck and Sigma-Aldrich are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates. All other trademarks are the property of their respective owners. Detailed information on trademarks is available via publicly accessible resources.

© 2021 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved.

SAE1000dat Rev 06/21

For research use only. Not for use in diagnostic procedures.

