

Product Information Sheet for NR-55277

Spike Glycoprotein Receptor Binding Domain (RBD) from SARS-Related Coronavirus 2, Alpha Variant with C-Terminal Histidine Tag, Recombinant from HEK293 Cells

Catalog No. NR-55277

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For research use only. Not for use in humans.

Contributor:

Florian Krammer, Ph.D. and Fatima Amanat, Department of Microbiology, Icahn School of Medicine at Mount Sinai, New York, New York, USA, supported partially under government contract HHSN272201400008C, NIAID CEIRS program

Manufacturer:

BEI Resources

Product Description:

A recombinant form of the spike (S) glycoprotein receptor binding domain (RBD) from severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), Alpha variant [also referred to as United Kingdom (UK) variant; B.1.1.7 lineage] was produced in human embryonic kidney HEK293 cells and purified by affinity chromatography. NR-55277 lacks the signal sequence and contains 223 residues of the SARS-CoV-2 S glycoprotein RBD and features a C-terminal hexa-histidine tag.^{1,2,3,4} NR-55277 is an Alpha variant of SARS-CoV-2, which includes a N501Y mutation in the S glycoprotein RBD as compared to the SARS-CoV-2 reference sequence (GenPept: [QHD43416](#)).^{1,5,6} The predicted protein sequence is shown in Figure 1. NR-55277 has a theoretical molecular weight of 25,970 daltons. The crystal structure for trimeric S glycoprotein from SARS-CoV-2, B.1.1.7 lineage has been solved at 3.22 Å resolution (PDB: [7LWS](#)).⁶

Note: For a detailed protocol and list of related items, see <https://labs.icaohn.mssm.edu/krammerlab/covid-19/>

The S glycoprotein mediates viral binding to the host angiotensin converting enzyme 2 (ACE2). This protein forms a trimer, and when bound to a host receptor allows fusion of the viral and cellular membranes.⁷ The Alpha variant of SARS-CoV-2 includes multiple mutations that were first identified in the United Kingdom, and the most studied is N501Y.⁸ Structural modeling and mouse studies indicate N501Y increases S glycoprotein binding to ACE2, resulting in increased SARS-CoV-2 virulence.^{9,10}

Material Provided:

Each vial contains approximately 0.1 mL of NR-55277 in phosphate buffered saline (PBS), pH 7.4. The concentration, expressed as mg per mL, is shown on the Certificate of Analysis.

Note: The long-term stability of this preparation is not known at this time. It is recommended that users confirm the activity of the product if not used within three months of receipt.

Packaging/Storage:

NR-55277 was packaged aseptically in cryovials. The product is provided on dry ice and should be stored at -60°C or colder immediately upon arrival. Freeze-thaw cycles should be avoided.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Spike Glycoprotein Receptor Binding Domain (RBD) from SARS-Related Coronavirus 2, Alpha Variant with C-Terminal Histidine Tag, Recombinant from HEK293 Cells, NR-55277."

Biosafety Level: 1

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. [Biosafety in Microbiological and Biomedical Laboratories](#). 6th ed. Washington, DC: U.S. Government Printing Office, 2020; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

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References:

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8. [WHO](https://www.who.int)
9. Gu, H., et al. "Adaptation of SARS-CoV-2 in BALB/c Mice for Testing Vaccine Efficacy." *Science* 369 (2020): 1603-1607. PubMed: 32732280.
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Figure 1 – Predicted Protein Sequence

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1  RVQPTESIVR FPNITNLCPF GEVFNATRFA SVYAWNRRKRI SNCVADYSVL
51  YNSASFSTFK CYGVSP TKLN DLCFTNVYAD SFVIRGDEV R QIAPGQTGKI
101 ADYNYKL PDD FTGCVIAWNS NNLD SKVGGN YNYLYRLFRK SNLKPFERDI
151 STEIYQAGST PCNGVEGFNC YFPLQSYGFQ PTYGVGYQPY RVVVLSFELL
201 HAPATVCGPK KSTNLVKKNC VNFHHHHHHH

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RBD – Residues 1 to 223 (represents amino acid residues 319 to 541)

N501Y Mutation – **Residue 183**

Hexa-histidine tag – Residues 224 to 229