

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

Catalog No. NR-54005

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For research use only. Not for use in humans.

Contributor and Manufacturer:

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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), South Africa variant was produced in human embryonic kidney HEK293 cells and purified by affinity chromatography.¹ NR-54005 lacks the signal sequence and contains 223 residues of the SARS-CoV-2 S glycoprotein RBD and features a C-terminal hexa-histidine tag.^{2,3} NR-54005 is a South African variant of SARS-CoV-2, which includes K417N, E484K and N501Y mutations in the S glycoprotein RBD as compared to the SARS-CoV-2 reference sequence (GenPept: [QHD43416](#)).⁴ The predicted protein sequence is shown in Figure 1. NR-54005 has a theoretical molecular weight of 25,960 daltons.

Note: For a detailed protocol and list of related items, see <https://labs.icaahn.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.⁵ New SARS-CoV-2 mutations in the S glycoprotein are currently under study, and the South African variant includes three mutations in the RBD that may have functional significance, K417N, E484K and N501Y.⁴ Structural modeling and mouse studies indicate N501Y increases S glycoprotein binding to ACE2, resulting in increased SARS-CoV-2 virulence.^{6,7} In addition, the E484K mutation has been identified in escape mutants for convalescent antisera.⁸

Material Provided:

Each vial contains approximately 0.1 mL of NR-54005 in phosphate buffered saline (PBS). 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-54005 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, South Africa Variant with C-Terminal Histidine Tag, Recombinant from HEK293 Cells, NR-54005.”

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/bmb15/index.htm.

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Figure 1 – Predicted Protein Sequence

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1  RVQPTESIVR FPNITNLCPF GEVFNATRFA SVYAWNRKRI SNCVADYSVL
51  YNSASFSTFK CYGVSPTKLN DLCFTNVYAD SFVIRGDEV R QIAPGQTGNI
101 ADYNYKLPDD FTGCVIAWNS NNLDSKVGGN YNYLYRLFRK SNLKPFERDI
151 STEIYQAGST PCNGVKGFNC YFPLQSYGFQ PTYGVGYQPY RVVVLSFELL
201 HAPATVCGPK KSTNLVKKNC VNFHHHHHHH
    
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RBD – Residues 1 to 223 (represents amino acid residues 319 to 541)
 K417N, E484K and N501Y Mutations – **Residues 99, 166, 183**
 Hexa-histidine tag – Residues 224 to 229