

SARS-Related Coronavirus 2, Isolate hCoV-19/South Africa/KRISP-K005325/2020

Catalog No. NR-54009

For research use only. Not for use in humans.

Contributor:

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Manufacturer:

BEI Resources

Product Description:

Virus Classification: *Coronaviridae*, *Betacoronavirus*

Species: Severe acute respiratory syndrome-related coronavirus 2

Strain/Isolate: hCoV-19/South Africa/KRISP-K005325/2020 (also referred to as 501Y.V2.HV and 501Y.V2.HV001)^{1,2,3}

Original Source: Severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), isolate hCoV-19/South Africa/KRISP-K005325/2020 was isolated from an oropharyngeal swab from a 40-year-old human male in Ugu district, KwaZulu-Natal, South Africa on November 16, 2020.^{1,3,4}

Note: Genome sequence information is provided on the Certificate of Analysis and includes an analysis of all sequence variations observed for each lot.

Comments: Under the nomenclature system introduced by GISAID (Global Initiative on Sharing All Influenza Data), SARS-CoV-2, isolate hCoV-19/South Africa/KRISP-K005325/2020 is assigned lineage B.1.351 and GISAID clade GH using Phylogenetic Assignment of Named Global Outbreak LINEages (PANGOLIN) tool.^{4,5,6} The complete genome of the clinical isolate of SARS-CoV-2, hCoV-19/South Africa/KRISP-K005325/2020 has been sequenced (GISAID: EPI_ISL_678615).^{3,4} The following mutations are reported to be present in the clinical isolate: Spike A243del, Spike A701V, Spike D80A, Spike D215G, Spike D614G, Spike E484K, Spike K417N, Spike L18F, Spike L242del, Spike L244del, Spike N501Y, E (Envelope protein) P71L, N (Nucleocapsid protein) T205I, NSP3 (Non-structural protein 3) Q57H, NSP3 S171L, NSP3 W131L, NSP7a (Non-structural protein 7a) V93F, NSP2 (Non-structural protein 2) T85I, NSP3 K837N, NSP5 (Non-structural protein 5) K90R, NSP6 (Non-structural protein 6) F108del, NSP6 G107del, NSP6 S106del, NSP12 (Non-structural protein 12) P323L.^{3,4} The deposited virus (at passage three) was reported to have additional mutations as compared to the clinical isolate: N R32H, ORF1a (Open reading frame 1a) N4358K, ORF9b (Open reading frame 9b) A29T.^{1,3}

In December 2019, an outbreak of a respiratory illness (COVID-19) began in Wuhan, Hubei Province, China. The outbreak is associated with a seafood market and although environmental samples from the market are positive for the novel coronavirus, an association with a particular animal has not been determined.⁷ SARS-CoV-2 has been isolated from patients from several countries and the sequences of some of these isolates have been deposited with GISAID.

Material Provided:

Each vial contains approximately 0.5 mL of cell lysate and supernatant from *Cercopithecus aethiops* kidney epithelial cells with human signaling lymphocytic activation molecule (hSLAM) infected with SARS-CoV-2, isolate hCoV-19/South Africa/KRISP-K005325/2020.

Note: If homogeneity is required for your intended use, please purify prior to initiating work.

Packaging/Storage:

NR-54009 was packaged aseptically in screw-capped plastic cryovials. The product is provided frozen and should be stored at -60°C or colder immediately upon arrival. For long-term storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

Growth Conditions:

Host: *Cercopithecus aethiops* kidney epithelial with human signaling lymphocytic activation molecule (Vero-hSLAM)

Growth Medium: Eagle's Minimum Essential Medium containing Earle's Balanced Salt Solution, non-essential amino acids, 2 mM L-glutamine, 1 mM sodium pyruvate and 1.5 g per L of sodium bicarbonate supplemented with 2% fetal bovine serum or equivalent

Infection: Cells should be 70% to 90% confluent

Incubation: 3 to 5 days at 37°C and 5% CO₂

Cytopathic Effect: Cell rounding and sloughing

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: SARS-Related Coronavirus 2, Isolate hCoV-19/South Africa/KRISP-K005325/2020, NR-54009, contributed by Alex Sigal and Tulio de Oliveira."

Biosafety Level: 3

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:

1. Sigal, A. and T. de Oliveira, Personal Communications.
2. Tegally, H., et al. "Emergence and Rapid Spread of a New Severe Acute Respiratory Syndrome-Related Coronavirus 2 (SARS-CoV-2) Lineage with Multiple Spike Mutations in South Africa." *medRxiv* (2020): doi.org/10.1101/2020.12.21.20248640.
3. Cele, S., et al. "Escape of SARS-CoV-2 501Y.V2 Variants from Neutralization by Convalescent Plasma." *medRxiv* (2021): doi.org/10.1101/2021.01.26.21250224.
4. [GISAID](https://www.gisaid.org)
5. Rambaut, A., et al. "A Dynamic Nomenclature Proposal for SARS-CoV-2 Lineages to Assist Genomic Epidemiology." *Nat. Microbiol.* 5 (2020): 1403-1407. PubMed: 32669681.
6. Mercatelli, D. and F. M. Giorgi. "Geographic and Genomic Distribution of SARS-CoV-2 Mutations." *Front. Microbiol.* (2020): doi.org/10.3389/fmicb.2020.01800. PubMed: 32793182.
7. Gralinski, L. E. and V. D. Menachery. "Return of the Coronavirus: 2019-nCoV." *Viruses* 12 (2020): 135. PubMed: 31991541.

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