

SARS-Related Coronavirus 2, Mouse-Adapted (in Isolate USA-WA1/2020 Backbone), Infectious Clone (ic2019-nCoV MA) in Calu-3 Cells

Catalog No. NR-55328

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: Infectious clone of isolate MA (ic2019-nCoV MA)^{1,2}

Original Source: Severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), isolate MA was developed by reverse engineering SARS-CoV-2, isolate USA-WA1/2020 for efficient interaction between viral spike protein and the mouse orthologue of the human receptor, angiotensin-converting enzyme 2 (ACE2).^{1,2}

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

Comments: SARS-CoV-2, isolate MA recombinant virus contains substitution mutations Q498Y/P499T engineered into the spike protein.² SARS-CoV-2, isolate MA is able to infect cells using mouse ACE2 for entry, and is able to replicate in upper and lower respiratory systems of both young adult and older adult mice.² The complete genome of SARS-CoV-2, isolate MA has been sequenced (GenBank: [MT844088](https://www.ncbi.nlm.nih.gov/nuccore/MT844088)).

Under the nomenclature system introduced by GISAID (Global Initiative on Sharing All Influenza Data), SARS-CoV-2, isolate USA-WA1/2020, the backbone on which SARS-CoV-2, isolate MA was built, is assigned lineage A and GISAID clade S using Phylogenetic Assignment of Named Global Outbreak LINEages (PANGOLIN) tool.^{3,4}

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.⁵

Material Provided:

Each vial contains approximately 0.1 mL of spin-clarified cell lysate and supernatant from *Homo sapiens* lung adenocarcinoma epithelial cells (Calu-3) infected with ic2019-nCoV MA.

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

Packaging/Storage:

NR-55328 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: *Homo sapiens* lung adenocarcinoma epithelial cells (Calu-3; ATCC® HTB-55™)

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 1500 mg per L of sodium bicarbonate supplemented with 2% fetal bovine serum, or equivalent

Infection: Cells should be 70% to 80% 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, Mouse-Adapted (in Isolate USA-WA1/2020 Backbone), Infectious Clone (ic2019-nCoV MA) in Calu-3 Cells, NR-55328, contributed by Ralph S. Baric."

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/bmb15/index.htm.

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References:

1. Baric, R. S., Personal Communication.
2. Dinnon, H. K., et al. "A Mouse-Adapted Model of SARS-CoV-2 to Test COVID-19 Countermeasures." *Nature* 586 (2020): 560-566. PubMed: 32854108.
3. 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.
4. 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.
5. Gralinski, L. E. and V. D. Menachery. "Return of the Coronavirus: 2019-nCoV." *Viruses* 12 (2020): 135. PubMed: 31991541.

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