

Recombinant Murine Coronavirus, icA59-ns2dm

Catalog No. NR-43001

For research use only. Not for use in humans.

Contributor:

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Manufacturer:

BEI Resources

Product Description:

Virus Classification: *Coronaviridae*, *Coronavirinae*, *Betacoronavirus*

Species: Murine coronavirus, [formerly murine hepatitis virus (MHV), formerly mouse hepatitis virus]¹

Strain/Isolate: icA59-ns2dm

Original Source: NR-43001 is a recombinant murine coronavirus that was produced using a vaccinia virus-based reverse genetics system, and derived from cloned, full-length MHV-A59 cDNA.² The icA59-ns2dm virus carries two site-directed mutations in the catalytic region of the cyclic phosphodiesterase ns2, resulting in amino acid substitutions at positions 46 (H46A) and 126 (H126R).³ Viruses carrying either of these two mutations are attenuated for replication in mouse liver following intrahepatic inoculation, but not in mouse brain following intracranial inoculation.⁴ The ns2 phosphodiesterase inhibits the interferon-inducible oligoadenylate synthase (OAS)-RNase L pathway by cleaving 2',5'-oligoadenylate, the product of OAS, preventing activation of the cellular endoribonuclease L, thus blocking viral RNA degradation and facilitating hepatitis development.⁵

Comments: The complete genome of the recombinant double mutant strain has been sequenced (GenBank: [KF268339](https://www.ncbi.nlm.nih.gov/nuccore/KF268339)). In order to remove contaminating mycoplasma, the second viral passage at BEI Resources was performed by lipofectamine-mediated transfection of extracted viral RNA.

Material Provided:

Each vial contains approximately 1 mL of cell lysate and supernatant from *Mus musculus* liver epithelial cells infected with recombinant murine coronavirus, icA59-ns2dm.

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

Packaging/Storage:

NR-43001 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: NCTC clone 1469 cells (ATCC® CCL-9.1™)

Growth Medium: Dulbecco's Modified Eagle's Medium supplemented with 10% fetal bovine serum

Infection: Cells should be 80% to 90% confluent

Incubation: 1 to 9 days at 37°C and 5% CO₂

Cytopathic Effect: Cell enlargement and detachment

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Recombinant Murine Coronavirus, icA59-ns2dm, NR-43001."

Biosafety Level: 2

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. [ICTV Taxonomy History for Murine coronavirus](#)
2. Coley, S. E., et al. "Recombinant Mouse Hepatitis Virus from Cloned, Full-Length cDNA Replicates to High Titers *in vitro* and is Fully Pathogenic *in vivo*." J. Virol. 79 (2005): 3097-3196. PubMed: 15709029.
3. Weiss, S. R., Personal Communication.
4. Roth-Cross, J. K., et al. "Organ-Specific Attenuation of Murine Hepatitis Virus Strain A59 by Replacement of Catalytic Residues in the Putative Viral Cyclic Phosphodiesterase ns2." J. Virol. 83 (2009): 3743-3753. PubMed: 19176619.
5. Zhao, L., et al. "Antagonism of the Interferon-Induced OAS-RNase L Pathway by Murine Coronavirus ns2 Protein is Required for Virus Replication and Liver Pathology." Cell Host. Microb. 11 (2012): 607-616. PubMed: 22704621.

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