

Japanese Encephalitis Virus, Nakayama

Catalog No. NR-90

(Derived from ATCC® VR-74™)

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Contributor:

ATCC®

Product Description:

Virus Classification: *Flaviviridae*, *Flavivirus*

Species: Japanese encephalitis virus (JEV)

Strain/Isolate: Nakayama

Genotype: III

Original Source: Isolated in 1935 from cerebral spinal fluid of a fatally infected 6-year-old patient in Tokyo, Japan¹

Comments: JEV, Nakayama was deposited at ATCC® by Dr. William M. Hammon of the Department of Epidemiology and Microbiology, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pennsylvania. The complete genome of JEV, Nakayama has been sequenced (GenBank: EF571853).²

JEV is an arbovirus transmitted in a zoonotic cycle among rice-field mosquitoes of the *Culex* species, with pigs as amplifying hosts and wading birds as intermediate hosts.³ It is the most important cause of epidemic encephalitis worldwide, with around 50,000 cases and 10,000 deaths per year affecting essentially children below 10 years of age.⁴ Approximately half the survivors have severe neurological disabilities. Most cases occur in rural areas of Southeast Asia, but the geographical area affected by JEV is expanding. In the absence of an effective antiviral treatment, prevention constitutes the best defense against this disease. Several vaccines are now available⁵⁻⁷ and others are under development.^{8,9}

Material Provided:

Each vial contains approximately 1 mL of cell lysate and supernatant from African green monkey kidney cells (Vero; ATCC® CCL-81™) infected with JEV, Nakayama.

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

Packaging/Storage:

NR-90 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: Vero cells (ATCC® CCL-81™)

Growth Medium: Minimum Essential Medium supplemented with 2% irradiated fetal bovine serum, or equivalent (lot-specific details are on the Certificate of Analysis)

Infection: Cells should be 80–90% confluent (not 100% confluent)

Incubation: 3 to 7 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 the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: Japanese Encephalitis Virus, Nakayama, NR-90.”

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. 5th ed. Washington, DC: U.S. Government Printing Office, 2007; see www.cdc.gov/od/ohs/biosfty/bmb15/bmb15toc.htm. Vaccination is recommended for all laboratory workers with a potential for exposure to infectious JEV.¹⁰

Disclaimers:

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References:

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3. Solomon, T. "Control of Japanese Encephalitis--Within Our Grasp?" N. Engl. J. Med. 355 (2006): 869-871. PubMed: 16943399.
4. Diagona, M., P. M. Preux and M. Dumas. "Japanese Encephalitis Revisited." J. Neurol. Sci. 262 (2007): 165-170. PubMed: 17643451.
5. Yang, S. E., et al. "The Efficacy of Mouse-Brain Inactivated Nakayama Strain Japanese Encephalitis Vaccine--Results from 30 Years Experience in Taiwan." Vaccine 24 (2006): 2669-2673. PubMed: 16314007.
6. Shlim, D. R. and T. Solomon. "Japanese Encephalitis Vaccine for Travelers: Exploring the Limits of Risk." Clin. Infect. Dis. 35 (2002): 183-188. PubMed: 12087525.
7. Kurane, I. and T. Takasaki. "Immunogenicity and Protective Efficacy of the Current Inactivated Japanese Encephalitis Vaccine against Different Japanese Encephalitis Virus Strains." Vaccine 18 (2000): 33-35. PubMed: 10821971.
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10. Centers for Disease Control and Prevention. "Inactivated Japanese Encephalitis Virus Vaccine. Recommendations of the Advisory Committee on Immunization Practices (ACIP)." MMWR Recomm. Rep. 42 (1993): 1-15. PubMed: 8381504.

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