

Zika Virus, MR 766

Catalog No. NR-50065

For research use only. Not for human use.

Contributor:

World Reference Center for Emerging Viruses and Arboviruses, University of Texas Medical Branch, Galveston, Texas, USA

Manufacturer:

BEI Resources

Product Description:

Virus Classification: *Flaviviridae, Flavivirus*

Species: Zika virus

Strain/Isolate: MR 766

Original Source: MR 766 is the prototype strain of Zika virus (ZIKV), and was isolated from the blood of a sentinel rhesus monkey in the Zika forest near Entebbe, Uganda, on April 20, 1947.¹ The complete genomic sequence of ZIKV, MR 766 was previously determined (GenBank: AY632535, DQ859059).²⁻⁴ The complete coding sequence of NR-50065, Lot No. 63856750 has also been determined (GenBank: KU963573).⁵

ZIKV is a member of the Spondweni serocomplex of mosquito-borne flaviviruses. ZIKV is vectored primarily by *Aedes* spp., but has also been isolated from *Anopheles*, *Eretmapodites*, and *Mansonia* mosquitoes.⁴ Phylogenetic analyses indicated that there are two major lineages of ZIKV, African and Asian.⁶ A third lineage circulating in West Africa was recently described.⁷

The first human infections with ZIKV were reported in Nigeria in 1954.⁸ Only sporadic infections were seen until 2007, when a large outbreak occurred in Yap State, Federated States of Micronesia.⁹ There was another large outbreak in French Polynesia in 2013, concomitant with a Dengue fever epidemic,^{10,11} and the virus has subsequently spread throughout the South Pacific.¹²⁻¹⁵ Autochthonous transmission of ZIKV in Brazil was reported early in 2015,^{16,17} and has since been reported in countries throughout Central America and the Caribbean. It seems likely that the Asian lineage of ZIKV was introduced into Brazil by travelers from one or more Pacific Island countries.¹⁸ The outbreak in the Americas has become the most widespread in history. Updates on areas with ongoing ZIKV transmission are available online from the Centers for Disease Control and Prevention.¹⁹ An estimated 80% of human ZIKV infections are asymptomatic, and symptomatic disease is generally mild and characterized by fever, maculopapular rash, arthralgia, and nonpurulent conjunctivitis. However, ZIKV infections were confirmed in infants with microcephaly,^{20,21} outbreaks in Brazil and elsewhere have been accompanied by a marked increase in the number of children born with microcephaly,²² and sufficient evidence has since accumulated to infer a causative relationship between prenatal ZIKV infection and

microcephaly and other severe brain anomalies.²³ The full teratogenic potential of ZIKV, the absolute and relative risks among infants exposed to ZIKV *in utero*, and factors that may modify these risks remain to be determined.

Material Provided:

Each vial contains approximately 1 mL of cell lysate and supernatant from *Cercopithecus aethiops* kidney epithelial cells (Vero; ATCC® CCL-81™) infected with ZIKV, MR 766.

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

Packaging/Storage:

NR-50065 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: Dulbecco's Modified Eagle's Medium containing 4 mM L-glutamine, 4500 mg per L glucose, 1 mM sodium pyruvate, and 1500 mg per L sodium bicarbonate, supplemented with 2% to 5% fetal bovine serum, or equivalent.

Infection: Cells should be 60% to 95% confluent (not 100%); thaw virus rapidly in a 37°C water bath; adsorb diluted virus to cells for one hour at 37°C.

Incubation: 2 to 8 days at 37°C and 5% CO₂

Cytopathic Effect: Cell rounding and detachment

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH, as part of the WRCEVA program: Zika Virus, MR 766, NR-50065."

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. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

Disclaimers:

You are authorized to use this product for research use only. It is not intended for human use.

Use of this product is subject to the terms and conditions of the BEI Resources Material Transfer Agreement (MTA). The MTA is available on our Web site at www.beiresources.org.

While BEI Resources uses reasonable efforts to include accurate and up-to-date information on this product sheet, neither ATCC® nor the U.S. Government makes any warranties or representations as to its accuracy. Citations

from scientific literature and patents are provided for informational purposes only. Neither ATCC® nor the U.S. Government warrants that such information has been confirmed to be accurate.

This product is sent with the condition that you are responsible for its safe storage, handling, use and disposal. ATCC® and the U.S. Government are not liable for any damages or injuries arising from receipt and/or use of this product. While reasonable effort is made to ensure authenticity and reliability of materials on deposit, the U.S. Government, ATCC®, their suppliers and contributors to BEI Resources are not liable for damages arising from the misidentification or misrepresentation of products.

Use Restrictions:

This material is distributed for internal research, non-commercial purposes only. This material, its product or its derivatives may not be distributed to third parties. Except as performed under a U.S. Government contract, individuals contemplating commercial use of the material, its products or its derivatives must contact the contributor to determine if a license is required. U.S. Government contractors may need a license before first commercial sale.

References:

1. Dick, G. W., S. F. Kitchen, and A. J. Haddow. "Zika Virus. I. Isolations and Serological Specificity." Trans. R. Soc. Trop. Med. Hyg. 46 (1952): 509-520. PubMed: 12995440.
2. Kuno, G., et al. "Phylogeny of the Genus Flavivirus." J. Virol. (1998): 73-83. PubMed: 9420202.
3. Kuno, G. and G. J. Chang. "Full-Length Sequencing and Genomic Characterization of Bagaza, Kedougou, and Zika Viruses." Arch. Virol. 152 (2007): 687-696. PubMed: 17195954.
4. Grard, G., et al. "Genomics and Evolution of Aedes-Borne Flaviviruses." J. Gen. Virol. 91 (2010): 87-94. PubMed: 19741066.
5. Shabman, R., et al. J. Craig Venter Institute, 9704 Medical Center Drive, Rockville, Maryland 20850, USA. Direct submission.
6. Haddow, A. D., et al. "Genetic Characterization of Zika Virus Strains: Geographic Expansion of the Asian Lineage." PLoS Negl. Trop. Dis. 6 (2012): e1477. PubMed: 22389730.
7. Berthet, N., et al. "Molecular Characterization of Three Zika Flaviviruses Obtained from Sylvatic Mosquitoes in the Central African Republic." Vector Borne Zoonotic Dis. 14 (2014): 862-865. PubMed: 25514122.
8. McNamara, F. N. "Zika Virus: A Report on Three Cases of Human Infection During an Epidemic of Jaundice in Nigeria." Trans. R. Soc. Trop. Med. Hyg. 48 (1954): 139-145. PubMed: 13157159.
9. Lanciotti, R. S., et al. "Genetic and Serologic Properties of Zika Virus Associated with an Epidemic, Yap State, Micronesia, 2007." Emerg. Infect. Dis. 14 (2008): 1232-1239. PubMed: 18680646.

10. Cao-Lormeau, V. M., et al. "Zika Virus, French Polynesia, South Pacific, 2013." Emerg Infect Dis. 20 (2014): 1085-1086. PubMed: 24856001.
11. Baronti, C., et al. "Complete Coding Sequence of Zika Virus from a French Polynesia Outbreak in 2013." Genome Announc. 2 (2014): e0050014. PubMed: 24903869.
12. Heang, V., et al. "Zika Virus Infection, Cambodia, 2010." Emerg. Infect. Dis. 18 (2012): 349-351. PubMed: 22305269.
13. Pyke, A.T., et al. "Imported Zika Virus Infection from the Cook Islands into Australia, 2014." PLoS Curr. 6 (2014): ecurrents.outbreaks.4635a54dbffba2156fb2fd76dc49f65 e. PubMed: 24944843.
14. Dupont-Rouzeyrol, M., et al. "Co-Infection with Zika and Dengue Viruses in 2 Patients, New Caledonia, 2014." Emerg. Infect. Dis. 21 (2015): 381-382. PubMed: 25625687.
15. Tognarelli, J., et al. "A Report on the Outbreak of Zika Virus on Easter Island, South Pacific, 2014." Arch. Virol. First online 26 Nov 2015. PubMed: 26611910.
16. Zanluca, C., et al. "First Report of Autochthonous Transmission of Zika Virus in Brazil." Mem. Inst. Oswaldo Cruz 110 (2015): 569-572. PubMed: 26061233.
17. Campos, G. S., A. C. Bandeira, and S. I. Sardi. "Zika Virus Outbreak, Bahia, Brazil." Emerg. Infect. Dis. 21 (2015): 1885-1886. PubMed: 26401719.
18. Musso, D. "Zika Virus Transmission from French Polynesia to Brazil." Emerg. Infect. Dis. 21 (2015): 1887. PubMed: 26403318.
19. <http://wwwnc.cdc.gov/travel/page/zika-travel-information>
20. CDC. "CDC Health Advisory: Recognizing, Managing, and Reporting Zika Virus Infections in Travelers Returning from Central America, South America, the Caribbean and Mexico." Atlanta, Georgia: US Department of Health and Human Services, CDC. 2016. <http://emergency.cdc.gov/han/han00385.asp>.
21. Mlakar, J., et al. "Zika Virus Associated with Microcephaly." New Engl. J. Med. 374 (2016): 951-958. PubMed: 26862926.
22. European Centre for Disease Prevention and Control. "Rapid Risk Assessment. Zika Virus Epidemic in the Americas: Potential Association with Microcephaly and Guillain-Barré Syndrome." Stockholm, Sweden: European Centre for Disease Prevention and Control. 2015. <http://ecdc.europa.eu/en/publications/Publications/zika-virus-americas-association-with-microcephaly-rapid-risk-assessment.pdf>
23. Rasmussen, S. A., et al. "Zika Virus and Birth Defects – Reviewing the Evidence for Causality." New Engl. J. Med. 374 (2016): 1981-1987. PubMed: 27074377.

ATCC® is a trademark of the American Type Culture Collection.

