

**Powassan Virus, 12542 (A-77-115)**

**Catalog No. NR-51180**

**For research use only. Not for use in humans.**

**Contributor:**

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**Manufacturer:**

BEI Resources

**Product Description:**

Virus Classification: *Flaviviridae*, *Flavivirus*

Species: Powassan Virus

Strain/Isolate: 12542 (A-77-115)

Original Source: Powassan virus (POWV), 12542 (A-77-115) was isolated from the brain of a fox (*Vulpes* spp.) in July 1977 in Braxton County, West Virginia, USA. POWV, 12542 (A-77-115) is a lineage II isolate.<sup>1</sup>

Comments: The non-structural protein (NSP) 5 of POWV, 12542 (A-77-115) has been sequenced (GenBank: [AF310949.1](https://www.ncbi.nlm.nih.gov/nuclseq/AF310949.1)).<sup>2</sup>

POWV is the sole recognized North American member of the tick-borne encephalitis serological complex of the flaviviruses.<sup>3</sup> It is transmitted to small- and medium-sized mammals by *Ixodes scapularis*, *Ixodes cookei* and several other *Ixodes* tick species.<sup>4,5</sup> POWV infects humans during spillover transmission from the natural transmission cycles causing a rare but severe neuroinvasive disease, with 50% of survivors displaying long-term neurological sequelae. Genomic sequencing demonstrates that POWV consists of two distinct genetic lineages, which may be defined by geographical and host associations.<sup>4,5</sup> Lineage I, which is the POWV prototype lineage, is maintained predominantly by *Ixodes cookei* and shows a high level of conservation in nucleotide and amino acid sequences over time. Lineage II, which consists of deer tick virus (DTV), is maintained by *Ixodes scapularis*.<sup>4,5</sup> Serological studies support a close relationship between POWV and DTV, with cross-neutralization studies showing that they are indistinguishable serologically.<sup>3</sup>

**Material Provided:**

Each vial contains approximately 1 mL of cell lysate and supernatant from *Chlorocebus* (formerly *Cercopithecus*) *aethiops* kidney epithelial cells infected with POWV, 12542 (A-77-115).

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

**Packaging/Storage:**

NR-51180 was packaged aseptically in 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: *Chlorocebus* (formerly *Cercopithecus*) *aethiops* kidney epithelial cells (Vero; ATCC® CCL-81™)

Growth Medium: Eagle's Minimum Essential Medium (ATCC® 30-2003) supplemented with 2% fetal bovine serum (ATCC® 30-2020), or equivalent

Infection: Cells should be 60% to 70% confluent

Incubation: 6 to 10 days at 37°C and 5% CO<sub>2</sub>

Cytopathic Effect: Cell rounding and sloughing

**Citation:**

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Powassan Virus, 12542 (A-77-115), NR-51180."

**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 (BMBL). Current Edition. Washington, DC: U.S. Government Printing Office.

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**References:**

1. Russell, B., Personal Communication.
2. Kuno, G., et al. "Genomic Sequencing of Deer Tick Virus and Phylogeny of Powassan-Related Viruses of North America." Am. J. Trop. Med. Hyg. 65 (2001): 671-676. PubMed: 11716135.
3. Mandl, C. W., et al. "Complete Genomic Sequence of Powassan Virus: Evaluation of Genetic Elements in Tick-Borne Versus Mosquito-Borne Flaviviruses." Virology 194 (1993): 173-184. PubMed: 8097605.
4. Ebel, G. D. "Update on Powassan Virus: Emergence of a North American Tick-Borne Flavivirus." Annu. Rev. Entomol. 55 (2010): 95-110. PubMed: 19961325.
5. Hermance, M. E. and S. Thangamani. "Powassan Virus: An Emerging Arbovirus of Public Health Concern in North America." Vector Borne Zoonotic Dis. 17 (2017): 453-462. PubMed: 28498740.

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