Cytomegalovirus, GDGrP53 (Ganciclovir Resistant)

Catalog No. NR-59748

For research use only. Not for use in humans.

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Manufacturer:
BEI Resources

Product Description:
Virus Classification: *Orthoherpesviridae*, *Cytomegalovirus*
Species: Cytomegalovirus (Human Betaherpesvirus 5)
Strain/Isolate: GDGrP53
Original Source: Human cytomegalovirus (HCMV), GDGrP53 was derived from marker transfer from mutant 759rD100 and wild-type strain AD169.[1]
Comments: HCMV, GDGrP53 is a polymerase ganciclovir-resistant mutant of human cytomegalovirus that was isolated by transferring the ganciclovir-resistance mutation contained in the *pol* gene of mutant 759^{r}D100 into wild-type strain AD169. HCMV GDGrP53 is cross-resistant to ganciclovir phosphate, Cidovir (HPMPC), HPMPA, and DHPC.[1] The complete genome of wild type HCMV, AD169 has been sequenced (GenBank: X17403.1).

HCMV is one of nine distinct human herpesvirus species known to cause disease. HCMV is transmitted by close contact with saliva, semen, urine or breast milk containing the virus.[2] Immunocompetent adults generally experience subclinical to moderate disease when infected with HCMV, whereas immunosuppressed individuals, such as those with AIDS or transplant recipients, tend to have a more serious disease.[2] HCMV can be passed from a mother to her fetus during pregnancy, with approximately 10 to 15% of cases resulting in intellectual disability, jaundice, microcephaly, seizures, lack of coordination, muscle weakness, visual and hearing impairment and thrombocytopenia.[2]

Infection with HCMV can be divided into two phases: symptomatic, in which the virus is actively replicating, and latent, characterized by the detection of viral DNA and the absence of virions.[2] In the latent phase, the expression of the viral genome is suppressed, and there is a very limited transcription profile, but the genome can be reactivated by differentiation of the host cells, inflammation, immunosuppression, or critical diseases.[2,3]

The current treatment of acute HCMV infections relies on antiviral drugs such as ganciclovir, valganciclovir, cidofovir, and foscarnet.[2,3] The FDA recently approved the drug Letermovir for the prophylaxis of HCMV infections in adult patients, but no drugs are available for asymptomatic infants or infants with CMV congenital infection.[2] There is also no approved treatment for latent infections. Vaccines against HCMV are still in development.[2]

Material Provided:
Each vial contains approximately 1 mL of sonicated and spin-clarified cell lysate and supernatant from human foreskin fibroblast cells (HFF-1) infected with CMV, GDGrP53, supplemented with 10% glycerol.

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

Packaging/Storage:
NR-59748 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: Human foreskin fibroblast cells (HFF-1; ATCC® SCRC-1041™)
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 1.5 g/L of sodium bicarbonate supplemented with 10% fetal bovine serum, or equivalent
Infection: Cells should be 70% to 90% confluent
Incubation: 1 day, passage, then incubate up to 15 days at 37°C and 5% CO_2
Cytopathic Effect: Focal cell rounding

Citation:
Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Cytomegalovirus, GDGrP53 (Ganciclovir Resistant), NR-59748."

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

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References:

1. Sullivan, V., et al. "A Point Mutation in the Human Cytomegalovirus DNA Polymerase Gene Confers Resistance to Ganciclovir and Phosphonylmethoxyalkyl Derivatives." Antimicrob. Agents Chemother. 37(1993): 19-25. PubMed: 8381637.
2. Chen, S.-J. S.-C. Wang and Y.-C. Chen. "Antiviral Agents as Therapeutic Strategies Against Cytomegalovirus Infections." Viruses 12 (2019): 21. PubMed: 31878068.
3. Griffiths, P., I. Baraniak and M. Reeves. "The Pathogenesis of Human Cytomegalovirus." J. Pathol. 235 (2015): 288-297. PubMed: 25205255.

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