

Bacteriophage JBD18, Infectious for *Pseudomonas aeruginosa*

Catalog No. HM-601

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Contributor:

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Manufacturer:

BEI Resources

Product Description:

Virus Classification: *Caudovirales*, *Siphoviridae*, *Unclassified Siphoviridae*

Family: *Siphoviridae*

Strain/Isolate: JBD18

Host: *Pseudomonas aeruginosa*

Original Source: Bacteriophage JBD18 was isolated from a diverse panel of clinical and environmental isolates of *Pseudomonas aeruginosa* (*P. aeruginosa*) by inducing resident prophages.¹⁻³

Comments: Bacteriophage JBD18 ([HMP ID 9843](#)) is a reference genome for [The Human Microbiome Project](#) (HMP). HMP is an initiative to identify and characterize human microbial flora. The complete genome of bacteriophage JBD18 was sequenced at the [J. Craig Venter Institute](#) (GenBank: [JX495041](#)).³

Note: HMP material is taxonomically classified by the depositor. Quality control of these materials is only performed to demonstrate that the material distributed by BEI Resources is identical to the deposited material.

Bacteriophage JBD18 is a highly selective virus that is extremely effective at lysing *P. aeruginosa*, the second most common pathogen responsible for hospital-acquired bacterial pneumonia and the first causative agent of morbidity and mortality in cystic fibrosis patients.^{4,5} Bacteriophage JBD18 belongs to the unclassified *Siphoviridae* family of viruses, which are non-enveloped and display long, noncontractile, filamentous tails, linear dsDNA and hexagonal capsids.

Material Provided:

Each vial contains approximately 0.5 mL of bacteriophage in Luria-Burtani (LB) broth supplemented with 10 mM MgSO₄ and 10% glycerol.

Packaging/Storage:

HM-601 was packaged aseptically in cryovials. The product is provided frozen and should be stored at -20°C or colder immediately upon arrival. For long-term storage, the product should be stored at -80°C or colder or in the vapor phase of a liquid nitrogen freezer. Freeze-thaw cycles should be avoided.

Growth Conditions:

Host: *P. aeruginosa* (strain EnvKY1 recommended)

Note: Bacteriophage JBD18 was not able to form plaques on wild-type *P. aeruginosa*, strain PA14.³

Growth medium for host:

Tryptic Soy broth or equivalent

Tryptic Soy agar or equivalent

Incubation of host:

Temperature: 37°C

Atmosphere: Aerobic

Propagation of host:

Note: Host homogeneity is recommended for your intended use, please colony purify your bacterial host prior to use.

1. Keep bacterial stock frozen until ready for use, then thaw.

2. Transfer a thawed aliquot into a single tube of broth.

3. Incubate the tube at 37°C for 24 hours.

Growth medium for bacteriophage:

LB agar supplemented with 10 mM MgSO₄ or equivalent

LB soft agar overlay (0.5%) supplemented with 10 mM MgSO₄ or equivalent

Incubation of host with bacteriophage:

Temperature: 30°C

Atmosphere: Aerobic

Propagation of bacteriophage:

1. Prior to opening the vial, an actively growing broth culture (24-hour incubation) of the recommended host strain should be prepared. Keep bacteriophage vial frozen until ready for use, then thaw.

2. Pre-warm plates and overlay the surface with 2.5 mL of melted 0.5% agar containing 1 to 2 drops of the host. Allow overlay to harden.

3. Prepare serial dilutions of thawed bacteriophage (if desired) and spot onto the plate. Allow to dry.

4. Incubate the plate at 30°C for 24 hours.

Note: Spotting the phage on plates makes visualizing the lysis easier. If phage is added directly to soft-agar before pouring plates, hazy or tiny plaques may be difficult to see. Resistant host bacteria may also mask plaque formation.

Cytopathic Effect: Lysis of *P. aeruginosa*; individual plaques should be countable at higher dilutions.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH as part of the Human Microbiome Project: Bacteriophage JBD18, Infectious for *Pseudomonas aeruginosa*, HM-601."

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/bmb15/index.htm.

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References:

1. Davidson, A., Personal Communication.
2. [HMP ID 9843](#) (Bacteriophage JBD18)
3. Cady, K. C., et al. "The CRISPR/Cas Adaptive Immune System of *Pseudomonas aeruginosa* Mediates Resistance to Naturally Occurring and Engineered Phages." *J. Bacteriol.* 194 (2012): 5728-5738. PubMed: 22885297.
4. Morello, E., et al. "Pulmonary Bacteriophage Therapy on *Pseudomonas aeruginosa* Cystic Fibrosis Strains: First Steps Towards Treatment and Prevention." *PLoS One* 6 (2011): e16963. PubMed: 21347240.
5. Debarbieux, L., et al. "Bacteriophages Can Treat and Prevent *Pseudomonas aeruginosa* Lung Infections." *J. Infect. Dis.* 201 (2010): 1096-1104. PubMed: 20196657.
6. Fokine, A. and M. G. Rossman. "Molecular Architecture of Tailed Double-Stranded DNA Phages." *Bacteriophage* 4 (2014): e28281. PubMed: 24616838.

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