

Bacteriophage PMB12, Infectious for *Bacillus subtilis*

Catalog No. HM-616

For research use only. Not for human use.

Contributor:

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Manufacturer:

BEI Resources

Product Description:

Virus Classification: *Caudovirales, Myoviridae, unclassified Myoviridae*

Species: Bacteriophage PMB12

Host: *Bacillus subtilis* (*B. subtilis*)

Original Source: Bacteriophage PMB12 was isolated from soil.^{1,2}

Comments: Bacteriophage PMB12 ([HMP ID 9756](#)) 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 PMB12 is currently being sequenced at the [J. Craig Venter Institute](#).

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 PMB12 is a harmless, pseudotemperate virus that enhances the sporulation rate of *B. subtilis*^{1,2}, a generally nonpathogenic bacterium commonly found in soil that produces spores that are highly resistant to extreme environments. Bacteriophage PMB12 also infects *B. pumilus*.^{1,3} It belongs to the unclassified *Myoviridae* family of viruses, which are non-enveloped and display contractile, 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. Each vial of HM-616 lot 60076182 contains approximately 0.5 mL of bacteriophage in LB broth supplemented with 10 mM MgSO₄ and 25% glycerol.

Packaging/Storage:

HM-616 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: *B. subtilis*

Growth medium for host:

Tryptic Soy broth or Nutrient broth or equivalent

Tryptic Soy agar or Nutrient 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 1 day.

Growth Medium for bacteriophage:

LB agar supplemented with 10 mM MgSO₄ or equivalent

LB soft agar overlay (0.7%) supplemented with 10 mM MgSO₄ or equivalent

Incubation of host with bacteriophage:

Temperature: 30°C

Atmosphere: Aerobic

Propagation³:

1. Prior to opening the vial, an actively growing broth culture (1 day 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 0.7% 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 1 day.

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 *B. subtilis*; 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 PMB12, Infectious for *Bacillus subtilis*, HM-616.”

Biosafety Level: 1

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 <http://www.cdc.gov/biosafety/publications/bmb15/index.htm>.

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References:

1. [HMP ID 9756](#) (Bacteriophage PMB12)
2. M. G. Bramucci, K. M. Keggins and P. S. Lovett. "Bacteriophage PMB12 Conversion of the Sporulation Defect in RNA Polymerase Mutants of *Bacillus subtilis*." J. Virol. 24 (1977): 194-200. PubMed: 409853.
3. Silver-Mysliwec, T. H. and M. G. Bramucci. "Bacteriophage-Enhanced Sporulation: Comparison of Spore-Converting Bacteriophages PMB12 and SP10." J. Bacteriol. 172 (1990): 1948-1953. PubMed: 2108128.
4. Kinney, D. M. and M. G. Bramucci. "Analysis of *Bacillus subtilis* Sporulation with Spore-Converting Bacteriophage PMB12." J. Bacteriol. 145 (1981): 1281-1285. PubMed: 6782091.
5. Mysliwec, T. H., et al. "The *Bacillus subtilis spo0J* Gene: Evidence for Involvement in Catabolite Repression of Sporulation." J. Bacteriol. 173 (1991): 1911-1919. PubMed: 1900505.

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