

***Bacillus atrophaeus*, Strain NRS 1221A**

Catalog No. NR-687

For research use only. Not for use in humans.

Contributor and Manufacturer:

ATCC®

Product Description:

Bacteria Classification: *Bacillaceae*, *Bacillus*

Species: *Bacillus atrophaeus* (Previously referred to as *Bacillus subtilis*, *Bacillus subtilis* var. *niger* and *Bacillus globigii*)^{1,2}

Strain: NRS 1221A

Original Source: *Bacillus atrophaeus*, strain NRS 1221A was isolated by Elizabeth McCoy and deposited to ATCC® in 1947 by N. R. Smith, Frederick S. Bacon Laboratories in Massachusetts as *Bacillus globigii* "red strain".²

Comments: *Bacillus atrophaeus*, produces L-deoxynojirimycin, an inhibitor of glycosyl hydrolases,³ and used as a bioindicator in sterilization.^{4, 5, 6, 7, 8}

Bacillus atrophaeus (*B. atrophaeus*) are Gram-positive, aerobic, endospore-forming, rod shaped bacteria who are very similar to *B. subtilis* except for the production of a pigment on media containing an organic source of nitrogen and the identification was confirmed by analysis of the 16S rDNA gene sequence.⁹ Members of this species have been used as sterilization control organisms, sources of restriction endonucleases and as nonpathogenic surrogates for *B. anthracis*. *B. atrophaeus*, strain NRS 1221A has been used as a stimulant at the US Army Dugway Proving Ground and is commonly referred to as BG (*Bacillus globigii*).⁹

Material Provided:

Each vial contains approximately 0.5 mL of bacterial culture in Tryptic Soy broth supplemented with 10% glycerol.

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

Packaging/Storage:

NR-687 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:

Media:

Tryptic Soy broth or equivalent

Tryptic Soy agar or equivalent

Incubation:

Temperature: 30°C

Atmosphere: Aerobic

Propagation:

1. Keep vial frozen until ready for use, then thaw.
2. Transfer the entire thawed aliquot into a single tube of broth.
3. Use several drops of the suspension to inoculate an agar slant and/or plate.
4. Incubate the tube, slant and/or plate at 30°C for 1 day.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Bacillus atrophaeus*, Strain NRS 1221A, NR-687."

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](#), 6th ed. Washington, DC: U.S. Government Printing Office, 2020.

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References:

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2. Fritze, D. and R. Pukall. "Reclassification of Bioindicator Strains *Bacillus subtilis* DSM 675 and *Bacillus subtilis* DSM 2277 as *Bacillus atrophaeus*." *Int. J. Syst. Evol. Microbiol.* 51 (2001): 35-37. PubMed: 11211269.
3. British patent 155, 409
4. Sella S. R, L. P. Vandenberghe and C. R. Soccol. "*Bacillus atrophaeus*: Main Characteristics and Biotechnological Applications: A Review." *Crit. Rev. Biotechnol.* 35 (2015): 533-45. PMID: 24963702.
5. U.S. Department of Defense. Sterilization test strip set, bacterial spore. Washington, DC: US Department of Defense; Military Specification S-36586A.
6. U.S. Pharmacopeia. Biological indicator for dry-heat sterilization, paper strip. U.S. Pharmacopeia. 23rd rev. Rockville, MD: U.S. Pharmacopeia; 1995. pp. 200-202.
7. U.S. Pharmacopeia. Biological indicator for ethylene oxide sterilization, paper strip. U.S. Pharmacopeia. 23rd rev. Rockville, MD: U.S. Pharmacopeia; 1995. pp. 202-204.
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9. Burke, S. A., et al. "Detection of Molecular Diversity in *Bacillus atrophaeus* by Amplified Fragment Length Polymorphism Analysis." Appl. Environ. Microbiol. 70 (2004): 2786-2790. PubMed: 15128533.

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