

***Francisella tularensis* subsp. *novicida*,
Strain GB2**

Catalog No. NR-575

For research use only. Not for human use.

Contributor:

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Product Description:

Bacteria Classification: *Francisellaceae*, *Francisella*

Species: *Francisella tularensis* subsp. *novicida*

Strain: GB2

Original Source: *Francisella tularensis* (*F. tularensis*) subsp. *novicida*, strain GB2 is a spontaneous *mgIA* mutant of the wild-type strain U112.

Comments: The GB2 strain lacks the ability to grow in macrophages and has reduced phosphatase activity.¹

Francisella tularensis subsp. *novicida*, strain GB2 is excluded from Select Agent status. Please see <http://www.cdc.gov/od/sap/sap/exclusion.htm#background>

F. tularensis is one of the most infectious bacterial pathogens known and is the causative agent of the febrile zoonotic disease tularemia. The natural reservoir of the bacterium is thought to be rodents, although most human cases result from the bite of a blood-feeding arthropod vector.²

F. tularensis subsp. *novicida* is a Gram-negative, facultative bacterium, which grows predominantly in macrophages when living in mammalian hosts.³ It is commonly used for studying *F. tularensis* pathogenesis since it is highly virulent in mice but has minor effects on humans.²

The subspecies designation of NR-575 has been confirmed by PCR amplification of an approximately 3300 base pair subspecies specific sequence (RD-1; Region of Difference-1)⁴ from extracted DNA.

Material Provided:

Each vial contains approximately 0.5 mL of bacterial culture in 0.5X 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-575 was packaged aseptically in screw-capped plastic 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 Agar or Broth with 0.1% cysteine
Cystine Heart Agar with 5% defibrinated rabbit blood

Incubation:

Temperature: 37°C

Atmosphere: Aerobic with 5% CO₂

Propagation:

1. Keep vial frozen until ready for use; thaw slowly.
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 tubes and plate at 37°C for 24 to 48 hours.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: *Francisella tularensis* subsp. *novicida*, Strain GB2, NR-575."

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, 2007; see www.cdc.gov/od/ohs/biosfty/bmb15/bmb15toc.htm.

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References:

1. Baron, G. S. and F. E. Nano. "MglA and MglB are Required for the Intramacrophage Growth of *Francisella novicida*." Mol. Microbiol. 29 (1998): 247-259. PubMed: 9701818.
2. de Bruin, O. M., J. S. Ludu, and F. E. Nano. "The *Francisella* Pathogenicity Island Protein IgIA Localizes to the Bacterial Cytoplasm and Is Needed for Intracellular Growth." BMC Microbiol. 7 (2007): 1-10. PubMed: 17233889.
3. McLendon, M. K., M. A. Apicella, and L. A. Allen. "*Francisella tularensis*: Taxonomy, Genetics, and Immunopathogenesis of a Potential Agent of Biowarfare." Annu. Rev. Microbiol. 60 (2006): 167-185. PubMed: 16704343.
4. Broekhuijsen, M., et al. "Genome-Wide DNA Microarray Analysis of *Francisella tularensis* Strains Demonstrates Extensive Genetic Conservation within the Species but Identifies Regions that are Unique to the Highly Virulent *F. tularensis* subsp. *tularensis*." J. Clin. Microbiol. 41 (2003): 2924-2931. PubMed: 12843022.
5. Petersen, J. M., et al. "Laboratory Analysis of Tularemia in Wild-Trapped, Commercially Traded Prairie Dogs, Texas, 2002." Emerg. Infect. Dis. 10 (2004): 419-425. PubMed: 15109407.
6. Kugeler, K. J., et al. "Real-time PCR for *Francisella tularensis* Types A and B." Emerg. Infect. Dis. 12 (2006): 1799-1801. PubMed: 17283646.

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