

Brucella melitensis*, Strain 16MΔ*vjbR

Catalog No. NR-50276

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Contributor:

Thomas A. Ficht, Professor, College of Veterinary Medicine and Biological Sciences, Department of Veterinary Pathobiology, Texas A&M University, College Station, Texas, USA

Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Brucellaceae*, *Brucella*

Species: *Brucella melitensis*

Biotype/Biovar: 1

Strain: 16MΔ*vjbR*

Original Source: *Brucella melitensis* (*B. melitensis*), strain 16MΔ*vjbR* is attenuated for virulence in mice and small ruminants through modification of *B. melitensis*, strain 16M, following passage in a Spanish goat.^{1,2} The parent strain, 16M (BEI Resources NR-256, ATCC® 23456™) was isolated from an infected goat by the Bureau of Animal Industry in Washington, DC and deposited to ATCC® in 1967 by Dr. W. J. Brinley-Morgan, Head, Diseases of Breeding Department, The Central Veterinary Laboratory, Ministry of Agriculture, Fisheries and Food, New Haw, Weybridge, Surrey, England.

Comments: *B. melitensis*, strain 16MΔ*vjbR* contains a deletion of the *vjbR* gene which prevents expression of VirB, thus rendering the strain avirulent in mice and susceptible to death in phagocytes.^{1,2} The *vjbR* gene (locus BMEI1116) encodes the *luxR*-like quorum-sensing-related transcriptional regulator. Strain 16MΔ*vjbR* is non-lethal to immunocompromised mice and does not cause abortion in pregnant sheep or fever in Rhesus macaques. The complete genome sequence of the parent strain, *B. melitensis*, strain 16M, is available (GenBank: [AE008917](#) and [AE008918](#)).

B. melitensis, strain 16MΔ*vjbR* is excluded from Select Agent status. Please refer to the [Select Agent Exclusions](#) at the Federal Select Agent Program website for more information.

B. melitensis is a non-motile, aerobic, Gram-negative coccobacillus which displays the highest degree of human virulence among *Brucella* species. A type IV secretion system has been identified as essential for intracellular survival and multiplication of *Brucella*.³

Brucella species are the etiological agents of brucellosis, a zoonotic disease endemic in many areas of the world, and characterized by chronic infections in animals leading to

abortion and infertility. Transmission from animal to human via contact with infected animal products or through the air may lead to Malta (or undulant) fever, a long debilitating disease treatable by a prolonged course of antibiotics. *Brucella* species are recognized as potential agricultural, civilian, and military bioterrorism agents.⁴

Material Provided:

Each vial contains approximately 0.7 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-50276 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:

Note: Passage of this organism can result in the accumulation of rough variants. It is recommended that working stocks are prepared from a frozen seed stock.

Media:

Brucella or Tryptic Soy broth or equivalent
Brucella or Tryptic Soy agar or Tryptic Soy agar with 5% defibrinated sheep blood or equivalent

Incubation:

Temperature: 37°C
Atmosphere: Aerobic

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 tube, slant and/or plate at 37°C for 1 to 3 days.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Brucella melitensis*, Strain 16MΔ*vjbR*, NR-50276."

Biosafety Level: 3

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/bmbI5/index.htm.

Disclaimers:

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References:

1. Weeks, J. N., et al. "*Brucella melitensis* VjbR and C₁₂-HSL Regulons: Contributions of the N-dodecanoyl Homoserine Lactone Signaling Molecule and LuxR Homologue VjbR to Gene Expression." *BMC Microbiol.* 10 (2010): 167. PubMed: 20529360.
2. Arenas-Gamboa, A. M., et al. "Extended Safety and Efficacy Studies of the Attenuated *Brucella* Vaccine Candidates 16MΔ*vjbR* and S19Δ*vjbR* in the Immunocompromised IRF-1^{-/-} Mouse Model." *Clin. Vaccine Immunol.* 19 (2012): 249-260. PubMed: 22169089.
3. Boschirolì, M. L., et al. "Type IV Secretion and *Brucella* Virulence." *Vet. Microbiol.* 90 (2002): 341-348. PubMed: 12414154.
4. Halling, S. M., et al. "Completion of the Genome Sequence of *Brucella abortus* and Comparison to the Highly Similar Genomes of *Brucella melitensis* and

Brucella suis." *J. Bacteriol.* 187 (2005): 2715-2726. PubMed: 15805518.

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