Burkholderia pseudomallei, Strain Bp82 (Δ*purM*)

Catalog No. NR-51280

For research use only. Not for human use.

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Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Burkholderiaceae*, *Burkholderia*
Species: *Burkholderia pseudomallei* (formerly *Pseudomonas pseudomallei*)[1]
Strain: Bp82
Original Source: *Burkholderia pseudomallei (B. pseudomallei)*, strain Bp82 is an attenuated strain of *B. pseudomallei*, strain 1026b.[2] Strain Bp82 was attenuated via a partial deletion of the *purM* gene, resulting in adenine and thiamine auxotrophy.
Comment: *B. pseudomallei*, strain Bp82 is an adenine auxotroph that was engineered through deletion of a portion of the *purM* gene, which encodes phosphoribosyl formylglycinamide cycloligase. The product of the reaction catalyzed by this enzyme, aminoimidazole ribotide, is a precursor of *de novo* adenine and thiamine biosynthesis. The partial deletion of the *purM* gene was confirmed through PCR and sequencing. Strain Bp82 was tested and found to be avirulent in mouse and hamster models.[2] The parent strain, 1026b, was originally isolated in 1993 from a blood culture of a female rice farmer with diabetes mellitus at Sappasithiprasong hospital in Ubon, Ratchathani, Thailand,[2] and is available from BEI Resources as NR-4074. The complete genome sequence of *B. pseudomallei*, strain 1026b has been determined by two sequencing centers (GenBank: CP002833.1, CP002834.1 and CP004379.1, CP004380.1).

B. pseudomallei, strain Bp82 (Δ*purM*) is excluded from Select Agent status. Please refer to the Select Agent Exclusions at the National Select Agent Registry website for more information.

B. pseudomallei are motile, aerobic, Gram-negative coccobacilli. Virulence factors that may play a role in their pathogenesis include a type III secretion system, capsular polysaccharide, lipopolysaccharide and flagellin proteins.[3]

B. pseudomallei are the causative agent of melioidosis, a severe infectious disease that is endemic in areas of Southeast Asia and northern Australia. Humans and animals typically become infected through contact with soil and surface water since *B. pseudomallei* is a naturally occurring saprophyte in endemic locations. Melioidosis is a risk to travelers to tropical areas, especially if they have impaired immunity due to diabetes, renal disease or alcoholism.[3] *B. pseudomallei* are characteristically resistant to a variety of hostile conditions including nutrient deficiency, temperature extremes and exposure to many antibiotics (penicillin, ampicillin, first and second generation cephalosporins, gentamicin, tobramycin and streptomycin).[3,4]

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-51280 was packaged aseptically, in screw-capped plastic cryovials. The product is provided frozen and should be stored at -80°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, Nutrient broth, Brain Heart Infusion broth or equivalent
Tryptic Soy agar, Nutrient agar, Tryptic Soy agar with 5% defibrinated sheep blood or equivalent
Note: *B. pseudomallei*, strain Bp82 is an adenine/thiamine auxotroph. For optimal growth 40 µg/mL adenine and 0.0005% thiamine can be added to the media. Slow growth was still observed without the addition of adenine and thiamine.[2]
Incubation:
Temperature: 30°C to 37°C
Atmosphere: Aerobic ± 5% CO_2
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 30°C for 1 to 3 days.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Burkholderia pseudomallei*, Strain Bp82 (Δ*purM*), NR-51280."

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/bmbl5/index.htm.

Disclaimers:

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References:

1. Yabuuchi, E., et al. "Proposal of *Burkholderia* gen. nov. and Transfer of Seven Species of the Genus *Pseudomonas* Homology Group II to the New Genus, with the Wild Type Species *Burkholderia cepacia* (Palleroni and Holmes 1981) comb. nov." Microbiol. Immunol. 36 (1992): 1251-1275. PubMed: 1283774.
2. Propst, K. L., et al. "A *Burkholderia pseudomallei* ΔpurM Mutant is Avirulent in Immunocompetent and Immunodeficient Animals: Candidate Strain for Exclusion from Select-Agent Lists." Infect. Immun. 78 (2010): 3136-3143. PubMed: 20404077.
3. Cheng, A. C. and B. J. Currie. "Melioidosis: Epidemiology, Pathophysiology, and Management." Clin. Microbiol. Rev. 18 (2005): 383-416. PubMed: 15831829.
4. Wiersinga, W. J., et al. "Melioidosis: Insights into the Pathogenicity of *Burkholderia pseudomallei*." Nat. Rev. Microbiol. 4 (2006): 272-282. PubMed: 16541135.

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