Product Information Sheet for NR-51560

Pseudomonas aeruginosa, Strain MRSN 8914

Catalog No. NR-51560

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For research use only. Not for use in humans.

Contributor:

Multidrug-Resistant Organism Repository and Surveillance Network (MRSN), Bacterial Disease Branch, Walter Reed Army Institute of Research, Silver Spring, Maryland, USA

Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Pseudomonadaceae*, *Pseudomonas*
Species: *Pseudomonas aeruginosa*
Strain: MRSN 8914
Original Source: *Pseudomonas aeruginosa (P. aeruginosa)*, strain MRSN 8914 was isolated in 2007 from a human bone sample in the United States as part of a surveillance program.[1]
Comments: *P. aeruginosa,* strain MRSN 8914 was deposited as part of the MRSN *Pseudomonas aeruginosa* Diversity Panel available from BEI Resources as NR-51829. NR-51560 was deposited as multi-locus sequence type (MLST) ST 1419, intermediately resistant to amikacin and ceftazidime and resistant to aztreonam, cefepime, ciprofloxacin, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tobramycin. Strain MRSN 8914 is reported to have one aminoglycoside acetyl transferase gene [*aac*(6')-Ib; conferring resistance to aminoglycoside antibiotics], two aminoglycoside nucleotidyl transferase genes [*ant*(2")-Ia and *ant*(3")-Ia (*aad*A1); conferring resistance to aminoglycoside antibiotics], one chromosomal aminoglycoside phosphotransferase gene [*aph*(3')-IIb; conferring resistance to kanamycin A and B, neomycin B and C, butirosin and seldomycin F5], three beta-lactamase genes (*bla*$_{OXA-10}$, *bla*$_{OXA-50}$ and *bla*$_{PAO}$; conferring resistance to beta-lactams), one chloramphenicol acetyltransferase gene (*cat*B7; conferring resistance to chloramphenicol), one fosfomycin-inactivating gene (*fos*A; conferring resistance to fosfomycin) and one dihydropteroate synthase gene (*sul*1*;* conferring resistance to sulfonamides).[1] The complete genome of *P. aeruginosa*, strain MRSN 8914 has been sequenced (GenBank: RXTB00000000).
Note: Environmental and clinical isolates of *P. aeruginosa* frequently contain viruses known as prophages.[2] During growth, some strains from the *Pseudomonas aeruginosa* Diversity Panel displayed plaques resulting from the activation of their inherent prophages. Please refer to the Certificate of Analysis to determine if phage plaques were observed for this strain.

P. aeruginosa is a Gram-negative, aerobic, rod-shaped bacterium with unipolar motility that thrives in many diverse environments including soil, water and certain eukaryotic hosts. It is a key emerging opportunistic pathogen in animals, including humans and plants. While it rarely infects healthy individuals, *P. aeruginosa* causes severe acute and chronic nosocomial infections in immunocompromised or catheterized patients, especially in patients with cystic fibrosis, burns, cancer or HIV.[3,4,5] Infections of this type are often highly antibiotic resistant, difficult to eradicate and often lead to death. The ability of *P. aeruginosa* to survive on minimal nutritional requirements, tolerate a variety of physical conditions and rapidly develop resistance during the course of therapy has allowed it to persist in both community and hospital settings.[5,6]

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-51560 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 Brain Heart Infusion broth or Nutrient broth or equivalent
Tryptic Soy agar with 5% defibrinated sheep blood or Brain Heart Infusion agar or Nutrient agar or equivalent
Incubation:
Temperature: 37°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 37°C for 1 day.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Pseudomonas aeruginosa*, Strain MRSN 8914, NR-51560. This strain is part of the *Pseudomonas aeruginosa* Diversity Panel provided by the Multidrug-Resistant Organism Repository and Surveillance Network (MRSN) at the Walter Reed Army Institute of Research (WRAIR)."

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

BEI Resources
www.beiresources.org
E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

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References:

1. McGann, P., Personal Communication.
2. Tsao, Y.-F., et al. "Phage Morons Play an Important Role in *Pseudomonas aeruginosa* Phenotypes." J. Bacteriol. 200 (2018): e00189-18. PubMed: 30150232.
3. Silva Filho, L. V., et al. "*Pseudomonas aeruginosa* Infection in Patients with Cystic Fibrosis: Scientific Evidence Regarding Clinical Impact, Diagnosis, and Treatment." J. Bras. Pneumol. 39 (2013): 495-512. PubMed: 24068273.
4. Dettman, J. R., et al. "Evolutionary Genomics of Epidemic and Nonepidemic Strains of *Pseudomonas aeruginosa*." Proc. Natl. Acad. Sci. USA 110 (2013): 21065-21070. PubMed: 24324153.
5. Morita, Y., J. Tomida and Y. Kawamura. "Responses of *Pseudomonas aeruginosa* to Antimicrobials." Front. Microbiol. 4 (2014): 422. PubMed: 24409175.
6. Lister, P. D., D. J. Wolter and N. D. Hanson. "Antibacterial-Resistant *Pseudomonas aeruginosa*: Clinical Impact and Complex Regulation of Chromosomally Encoded Resistance Mechanisms." Clin. Microbiol. Rev. 22 (2009): 582-610. PubMed: 19822890.

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www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898