

***Pseudomonas aeruginosa*, Strain MRSN 5519**

Catalog No. NR-51546

This reagent is the tangible property of the U.S. Government.

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 5519

Original Source: *Pseudomonas aeruginosa* (*P. aeruginosa*), strain MRSN 5519 was isolated in 2004 from a human wound sample in the United States as part of a global surveillance program.¹

Comments: *P. aeruginosa*, strain MRSN 5519 was deposited as part of the MRSN *Pseudomonas aeruginosa* Diversity Panel available from BEI Resources as NR-51829. NR-51546 was deposited as multi-locus sequence type (MLST) ST 235, resistant to amikacin, aztreonam, cefepime, ceftazidime, ciprofloxacin, gentamicin, imipenem, levofloxacin, meropenem, piperacillin/tazobactam and tobramycin. Strain MRSN 5519 is reported to have two aminoglycoside acetyltransferase genes [*aac*(6')-Ib and *aac*(6')-31; conferring resistance to aminoglycoside antibiotics], one aminoglycoside nucleotidyltransferase gene and one aminoglycoside aminotransferase gene (*aadA2* and *aadA6*, respectively; conferring resistance to spectinomycin and streptomycin), one chromosomal aminoglycoside phosphotransferase gene [*aph*(3')-IIb; conferring resistance to kanamycin A and B, neomycin B and C, butirosin and seldomycin F5], two beta-lactamase genes (*bla*_{OXA-50} and *bla*_{PAO}; conferring resistance to beta-lactams), one chloramphenicol acetyltransferase gene (*catB7*; conferring resistance to chloramphenicol), one fosfomycin-inactivating gene (*fosA*; conferring resistance to fosfomycin) and one dihydropteroate synthase gene (*sul1*; conferring resistance to sulfonamides).¹ The complete genome of *P. aeruginosa*, strain MRSN 5519 has been sequenced (GenBank: [RXTQ00000000](https://www.ncbi.nlm.nih.gov/nuclseq/RXTQ00000000)).

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-51546 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 5519, NR-51546. 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.

Disclaimers:

You are authorized to use this product for research use only. It is not intended for human use.

Use of this product is subject to the terms and conditions of the BEI Resources Material Transfer Agreement (MTA). The MTA is available on our Web site at www.beiresources.org.

While BEI Resources uses reasonable efforts to include accurate and up-to-date information on this product sheet, neither ATCC® nor the U.S. Government makes any warranties or representations as to its accuracy. Citations from scientific literature and patents are provided for informational purposes only. Neither ATCC® nor the U.S. Government warrants that such information has been confirmed to be accurate.

This product is sent with the condition that you are responsible for its safe storage, handling, use and disposal. ATCC® and the U.S. Government are not liable for any damages or injuries arising from receipt and/or use of this product. While reasonable effort is made to ensure authenticity and reliability of materials on deposit, the U.S. Government, ATCC®, their suppliers and contributors to BEI Resources are not liable for damages arising from the misidentification or misrepresentation of products.

Use Restrictions:

This material is distributed for internal research, non-commercial purposes only. This material, its product or its derivatives may not be distributed to third parties. Except as performed under a U.S. Government contract, individuals contemplating commercial use of the material, its products or its derivatives must contact the contributor to determine if a license is required. U.S. Government contractors may need a license before first commercial sale.

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.

ATCC® is a trademark of the American Type Culture Collection.

