

Antimicrobial Resistance Panel 12: *Pseudomonas aeruginosa* RND Efflux Pump Mutants

Catalog No. NR-55651

Product Description:

NR-55651 consists of a 20-member panel of *Pseudomonas aeruginosa* (*P. aeruginosa*) resistance-nodulation-cell division (RND) family efflux pump mutant strains.

The kit components were produced by inoculation of the deposited material into Tryptic Soy broth and grown for 1 day at 37°C in an aerobic atmosphere. Broth inoculums were added to Tryptic Soy agar kolles, which were grown for 1 day at 37°C in an aerobic atmosphere to produce the individual lots. Quality control testing was completed under propagation conditions unless otherwise noted.

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

Table 1: Kit Components

COMPONENT NUMBER	STRAIN	LOT NUMBER	MANUFACTURING DATE
NR-51901	<i>P. aeruginosa</i> , NB52109-CDR0036 ¹	70047831	07OCT2021
NR-51912	<i>P. aeruginosa</i> , NB52020-CDS0001	70047833	07OCT2021
NR-51913	<i>P. aeruginosa</i> , NB52019-CDK0005	70047835	07OCT2021
NR-51914	<i>P. aeruginosa</i> , NB52019-CDK0006	70047837	06OCT2021
NR-51915	<i>P. aeruginosa</i> , NB52019-CDK0007	70047839	06OCT2021
NR-51916	<i>P. aeruginosa</i> , NB52019-CDK0008	70047841	13OCT2021
NR-51917	<i>P. aeruginosa</i> , NB52019-CDK0028	70047843	13OCT2021
NR-51918	<i>P. aeruginosa</i> , NB52019-CDK0029	70047845	06OCT2021
NR-51919	<i>P. aeruginosa</i> , NB52019-CDK0002	70047847	07OCT2021
NR-51920	<i>P. aeruginosa</i> , NB52019-CDK0032	70047849	06OCT2021
NR-51921	<i>P. aeruginosa</i> , NB52019-CDK0009	70047851	07OCT2021
NR-51922	<i>P. aeruginosa</i> , NB52019-CDK0026	70047853	06OCT2021
NR-51924	<i>P. aeruginosa</i> , NB52023-CDJ0014	70047855	06OCT2021
NR-51925	<i>P. aeruginosa</i> , NB52245- CDJ0015	70047857	06OCT2021
NR-51926	<i>P. aeruginosa</i> , NB52245-CDJ0021	70047859	06OCT2021
NR-51928	<i>P. aeruginosa</i> , NB52245-CDJ0054	70047862	07OCT2021
NR-51952	<i>P. aeruginosa</i> , NB52245-CDJ0018	70047864	06OCT2021
NR-51953	<i>P. aeruginosa</i> , NB52245-CDJ0019	70047866	06OCT2021
NR-51968	<i>P. aeruginosa</i> , NB52109/K2153	70046518	13AUG2021
NR-51970	<i>P. aeruginosa</i> , NB52245	70047868	07OCT2021

¹The strain designation on the vial label is incorrect. The correct strain designation is NB2109-CDR0036.

Table 2: *P. aeruginosa*, Strain NB52109-CDR0036 (NR-51901)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozane/tazobactam Ciprofloxacin Chloramphenicol Gentamicin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	> 256 µg/mL 2 µg/mL 3 - 4 µg/mL 1 µg/mL 0.75 µg/mL 0.25 – 0.38 µg/mL > 256 µg/mL 12 µg/mL 4 µg/mL 1.5 µg/mL 0.38 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.5%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 3: *P. aeruginosa*, Strain NB52020-CDS0001 (NR-51912)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Circular, convex, entire, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozane/tazobactam	Report results Report results Report results Report results Report results	> 256 µg/mL 0.25 µg/mL 4 µg/mL 0.5 µg/mL 0.5 µg/mL

TEST	SPECIFICATIONS	RESULTS
Chloramphenicol Ciprofloxacin Gentamicin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results	> 256 µg/mL 1.5 µg/mL 0.5 µg/mL 1.5 µg/mL 8 µg/mL 0.125 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 4: *P. aeruginosa*, Strain NB52019-CDK0005 (NR-51913)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth, translucent and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozone Chloramphenicol Ciprofloxacin Gentamycin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	> 3 µg/mL 8 µg/mL 1.5 µg/mL 2 to 3 µg/mL 1.5 to 2 µg/mL 32 µg/mL 0.125 µg/mL 6 µg/mL 8 µg/mL 0.5 µg/mL 4 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 5: *P. aeruginosa*, Strain NB52019-CDK0006 (NR-51914)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, convex, entire, smooth, and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozone Ciprofloxacin Chloramphenicol Gentamycin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	192 µg/mL 6 to 8 µg/mL 1 µg/mL 2 µg/mL 0.75 µg/mL 0.064 µg/mL 6 to 8 µg/mL 3 to 4 µg/mL 16 to 32 µg/mL 0.16 to 0.25 µg/mL 1 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 6: *P. aeruginosa*, Strain NB52019-CDK0007 (NR-51915)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth, and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozone Ciprofloxacin	Report results Report results Report results Report results Report results Report results	≥ 256 µg/mL 2 µg/mL 1.5 µg/mL 1 µg/mL 0.5 to 0.75 µg/mL 0.094 µg/mL

TEST	SPECIFICATIONS	RESULTS
Chloramphenicol Gentamycin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results	32 µg/mL 3 µg/mL > 12 µg/mL 0.38 µg/mL 1.5 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 7: *P. aeruginosa*, Strain NB52019-CDK0008 (NR-51916)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphologies ¹ Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Colony type 1: Irregular, low convex, undulate, rough and cream Colony type 2: Circular, low convex, entire, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozone Ciprofloxacin Chloramphenicol Gentamycin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	> 256 µg/mL 0.25 µg/mL 0.75 µg/mL 0.5 µg/mL 0.38 to 0.5 µg/mL 0.064 µg/mL 8 µg/mL 1.5 to 4 µg/mL 12 µg/mL 0.125 to 0.19 µg/mL 0.75 to 1 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ²	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Two colony types were observed. VITEK® MS (MALDI-TOF) analysis identified cells from both colony types as *P. aeruginosa*. Plating of the individual colony types showed that colony type 2 reverted to colony type 1 after 1 day of incubation.

²Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 8: *P. aeruginosa*, Strain NB52019-CDK0028 (NR-51917)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth, translucent and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozone Ciprofloxacin Chloramphenicol Gentamycin Imipenem Levofloxacin	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	> 256 µg/mL 1.5 µg/mL 1 µg/mL 1.5 µg/mL 0.75 µg/mL 0.094 µg/mL 12 µg/mL 6 µg/mL 0.38 µg/mL 0.38 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 9: *P. aeruginosa*, Strain NB52019-CDK0029 (NR-51918)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, convex, undulate, opaque, and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozone Ciprofloxacin Chloramphenicol	Report results Report results Report results Report results Report results Report results Report results	> 256 µg/mL 2 µg/mL 1 µg/mL 1.5 µg/mL 0.5 µg/mL 0.125 µg/mL 0.24 µg/mL

TEST	SPECIFICATIONS	RESULTS
Gentamycin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results	8 µg/mL 0.75 µg/mL 0.38 µg/mL 0.38 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 10: *P. aeruginosa*, Strain NB52019-CDK0002 (NR-51919)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozone Ciprofloxacin Chloramphenicol Gentamycin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	> 256 µg/mL 2 µg/mL 1.5 µg/mL 1 µg/mL 0.5 to 0.75 µg/mL 0.19 µg/mL > 256 µg/mL 8 µg/mL 0.38 to 0.5 µg/mL 0.75 µg/mL 0.19 to 0.25 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 11: *P. aeruginosa*, Strain NB52019-CDK0032 (NR-51920)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozone Ciprofloxacin Chloramphenicol Gentamycin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	4 µg/mL 0.5 µg/mL 0.25 µg/mL 0.75 µg/mL 0.38 to 0.5 µg/mL 0.012 µg/mL 1 µg/mL 0.5 to 0.5 µg/mL 6 to 8 µg/mL 0.032 µg/mL 1 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere on Tryptic Soy agar with and without 5% CO ₂	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 12: *P. aeruginosa*, Strain NB52019-CDK0009 (NR-51921)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, convex, entire, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozone Ciprofloxacin	Report results Report results Report results Report results Report results Report results	128 µg/mL 8 µg/mL 1.5 µg/mL 2 to 3 µg/mL 0.75 to 1 µg/mL 0.064 to 0.125 µg/mL

TEST	SPECIFICATIONS	RESULTS
Chloramphenicol Gentamycin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results	32 µg/mL 3 µg/mL 0.16 to 0.25 µg/mL 0.38 µg/mL 1 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere on Tryptic Soy agar with and without 5% CO ₂	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 13: *P. aeruginosa*, Strain NB52019-CDK0026 (NR-51922)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, convex, undulate, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Chloramphenicol Gentamycin	Report results Report results	192 to 256 µg/mL 4 to 6 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere on Tryptic Soy agar with and without 5% CO ₂	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 14: *P. aeruginosa*, Strain NB52023-CDJ0014 (NR-51924)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile		

Certificate of Analysis for NR-55651

TEST	SPECIFICATIONS	RESULTS
Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Chloramphenicol Gentamicin	Report results Report results	32 to 48 µg/mL 0.38 to 0.50 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.2%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 15: *P. aeruginosa*, Strain NB52245-CDJ0015 (NR-51925)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth and cream (Figure 1) Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Chloramphenicol Gentamycin	Report results Report results	≥ 256 µg/mL 0.38 to 0.50 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 16: *P. aeruginosa*, Strain NB52245-CDJ0021 (NR-51926)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Circular, low convex, entire, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips		

TEST	SPECIFICATIONS	RESULTS
1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar		
Chloramphenicol Gentamicin	Report results Report results	4 µg/mL 8 to 16 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.2%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 17: *P. aeruginosa*, Strain NB52245-CDJ0054 (NR-51928)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozane/tazobactam Ciprofloxacin Chloramphenicol Gentamicin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	16 µg/mL 0.25 µg/mL 0.5 µg/mL 1.0 µg/mL 0.38 µg/mL 0.38 µg/mL > 256 µg/mL 0.5 µg/mL ≥ 32 µg/mL 8.0 µg/mL 0.5 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 18: *P. aeruginosa*, Strain NB52245-CDJ0018 (NR-51952)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Irregular, low convex, undulate, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime Ceftolozane/tazobactam Chloramphenicol Ciprofloxacin Gentamicin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results	16 µg/mL 0.25 µg/mL 0.25 µg/mL 0.5 to 0.75 µg/mL 0.75 µg/mL 4 to 6 µg/mL 0.023 µg/mL 0.5 µg/mL 0.38 to 0.5 µg/mL 0.064 µg/mL 0.032 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.3%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 19: *P. aeruginosa*, Strain NB52245-CDJ0019 (NR-51953)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK® MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Circular, low convex, undulate, smooth and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Azithromycin Aztreonam Cefepime Ceftazidime	Report results Report results Report results Report results	32 µg/mL 12 µg/mL 4 µg/mL 3 µg/mL

TEST	SPECIFICATIONS	RESULTS
Ceftolozane/tazobactam Chloramphenicol Ciprofloxacin Gentamicin Imipenem Levofloxacin Meropenem	Report results Report results Report results Report results Report results Report results Report results	0.75 µg/mL ≥ 256 µg/mL 0.5 µg/mL 0.75 µg/mL 0.5 µg/mL 3 µg/mL 2 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar with 5% defibrinated sheep blood	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 20: *P. aeruginosa*, Strain NB52109/K2153 (NR-51968)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology Motility (wet mount) VITEK [®] MS (MALDI-TOF)	Gram-negative rods Report results Report results <i>P. aeruginosa</i>	Gram-negative rods Circular, peaked with flat edges, undulate, opaque, rough and cream Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest [®] antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar Chloramphenicol Ofloxacin	Report results Report results	192 µg/mL 3 to 4 µg/mL
Genotypic Analysis Digital DNA-DNA hybridization (dDDH) ¹	≥ 70% for species identification	<i>P. aeruginosa</i> (96%)
Purity (post-freeze) 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability (post-freeze)	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

Table 21: *P. aeruginosa*, Strain NB52245 (NR-51970)

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology	Gram-negative rods Report results	Gram-negative rods Irregular, convex, undulate, smooth and cream

TEST	SPECIFICATIONS	RESULTS
Motility (wet mount) VITEK® MS (MALDI-TOF)	Report results <i>P. aeruginosa</i>	Motile <i>P. aeruginosa</i> (99.9%)
Antibiotic Susceptibility Profile Etest® antibiotic test strips 1 day at 35°C in an aerobic atmosphere on Mueller Hinton agar		
Azithromycin	Report results	6 to 8 µg/mL
Aztreonam	Report results	0.16 to 0.25 µg/mL
Cefepime	Report results	0.38 µg/mL
Ceftazidime	Report results	0.75 µg/mL
Ceftolozane/tazobactam	Report results	0.5 µg/mL
Chloramphenicol	Report results	2 to 4 µg/mL
Ciprofloxacin	Report results	0.023 µg/mL
Gentamicin	Report results	0.25 to 0.5 µg/mL
Imipenem	Report results	2 µg/mL
Levofloxacin	Report results	0.064 µg/mL
Meropenem	Report results	0.125 to 0.19 µg/mL
Genotypic Analysis Next Generation Sequencing Digital DNA-DNA hybridization (dDDH) ¹	Mutations confirmed ≥ 70% for species identification	Pending <i>P. aeruginosa</i> (95.2%)
Purity 7 days at 37°C in an aerobic atmosphere with and without 5% CO ₂ on Tryptic Soy agar	Growth consistent with expected colony morphology	Growth consistent with expected colony morphology
Viability	Growth	Growth

¹Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A. F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

/Sonia Bjorum Brower/
Sonia Bjorum Brower

26 OCT 2023

Technical Manager or designee, ATCC Federal Solutions

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected by ATCC® and the contributor to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

ATCC® is a trademark of the American Type Culture Collection.
You are authorized to use this product for research use only. It is not intended for human use.

