

**Antimicrobial Resistance Panel 10:
Escherichia coli mrdA Mutants**

Catalog No. NR-55649

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

For research use only. Not for use in humans.

Contributor:

Thomas Krucker, Ph.D., and Jennifer Leeds, Ph.D., Novartis Institutes for BioMedical Research, Emeryville, California, USA

Manufacturer:

BEI Resources

Product Description:

NR-55649 consists of a 2-member panel of *Escherichia coli* (*E. coli*), strain BW25113 derivatives harboring clinically relevant mutations in *mrdA*, which encodes for penicillin-binding protein 2 (PBP2).¹ These mutant strains were produced through recombination with PCR-amplified mutant *mrdA*.¹ *E. coli*, strain NB27079-CDK0001 was created by the introduction of PCR amplified *mrdA* genomic sequence from drug-resistant *E. coli* clinical isolate ATCC® BAA-2471™. *E. coli*, strain NB27079-CDK0004 was created by the introduction of PCR amplified *mrdA* genomic sequence from *E. coli* clinical isolate IHMA.^{1,2}

Table 1: Mutant Strains

| Item No. | Description | Point mutation |
|----------|----------------------------------|----------------|
| NR-51873 | <i>E. coli</i> , NB27079-CDK0001 | PBP2 L573Q |
| NR-51874 | <i>E. coli</i> , NB27079-CDK0004 | PBP2 V5221 |

Detailed information for each mutant strain, including antibiotic susceptibility profile, is available on the individual Certificate of Analysis.

Material Provided:

Each panel contains one vial each of the bacterial strain in the panel. 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:

Each isolate 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 equivalent
Tryptic Soy 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: Antimicrobial Resistance Panel 10: *Escherichia coli mrdA* Mutants, NR-55649.”

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. 6th ed. Washington, DC: U.S. Government Printing Office, 2020; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

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. This material may be subject to third party patent rights.

References:

1. Srijan, R., et al. "Identification of Mutations in the *mrdA* Gene Encoding PBP2 that Reduce Carbapenem and Diazabicyclooctane Susceptibility of *Escherichia coli* Clinical Isolates with Mutations in *ftsI* (PBP3) and which Carry *bla*_{NDM-1}." *mSphere* 4 (2019). PubMed: 31270174.
2. Datsenko, K. A. and B. L. Wanner. "One-Step Inactivation of Chromosomal Genes in *Escherichia coli* K-12 Using PCR Products." *Proc. Natl. Acad. Sci. USA*. 97 (2000): 6640-5. PubMed: 10829079.

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

