# Product Information Sheet for NR-55241

## *Staphylococcus aureus*, Strain AJUL27

## Catalog No. NR-55241

## For research use only. Not for use in humans.

### Contributor:
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### Manufacturer:
BEI Resources

### Product Description:
Bacteria Classification: *Staphylococcaceae*, *Staphylococcus*
Species: *Staphylococcus aureus*
Strain: AJUL27
Original Source: *Staphylococcus aureus (S. aureus)*, strain AJUL27 is deposited as a novobiocin-resistant spontaneous mutant of *S. aureus*, strain SH1000, generated by a two-step selection with novobiocin, resulting in a double mutation in the DNA gyrase (*gyr*A) gene with substitutions $G_{85}S$ and $D_{89}G$.[1,2,3] Strain SH1000 is a model strain generated from strain NCTC 8325-4 in which the *rsb*U deletion was repaired.[4,5] Strain NCTC 8325-4 is a derivative of *S. aureus*, strain NCTC8325 (NRS77) resulting from successive cycles of UV treatment curing it of phages Φ11, Φ12 and Φ13.[4,5]
Comments: *S. aureus*, strain AJUL27 was deposited to BEI Resources as part of an *S. aureus* cross-resistance panel, available from BEI Resources as NR-55306, consisting of 22 strains engineered through the introduction of constitutively expressed resistance determinants on plasmid pSK5487M, downstream of the *qac*R promoter, and six spontaneous resistant mutant strains, each with a defined resistance genotype, established in a uniform genetic background of *S. aureus*, strain SH1000. The panel also includes one *Escherichia coli,* strain DH5α containing the empty plasmid pSK5487M for use as a cloning vector. The panel was developed to detect cross-resistance between established and novel antibacterial agents.[1,2] The complete genome of *S. aureus*, strain SH1000 (available from BEI Resources as NR-55396) has been sequenced (GenBank: CP059180.1).

*S. aureus* is a Gram-positive, cluster-forming coccus that normally inhabits human nasal passages, skin and mucus membranes. It is also a human pathogen and causes a variety of pus-forming infections as well as food-poisoning and toxic shock syndrome. In 1961, two years after the introduction of methicillin, a penicillinase-resistant penicillin, *S. aureus* developed methicillin-resistance due to acquisition of the *mec*A gene. Subsequently, MRSA infections have become widespread in both hospital and community settings.[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-55241 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 Tryptic Soy agar with 5% defibrinated sheep blood 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: *Staphylococcus aureus*, Strain AJUL27, NR-55241."

### 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:
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## References:

1. O'Neill, A. J., Personal Communication.
2. Galarion, L. H., et al. "A Platform for Detecting Cross-Resistance in Antibacterial Drug Discovery." J. Antimicrob. Chemother. 76 (2021): 1467-1471. PubMed: 33755133.
3. Vickers, A. A., A. J. O'Neill and I. Chopra. "Emergence and Maintenance of Resistance to Fluoroquinolones and Coumarins in *Staphylococcus aureus*: Predictions from *In Vitro* Studies." J. Antimicrob. Chemother. 60 (2007): 269-273. PubMed: 17556355.
4. Herbert, S., et al. "Repair of Global Regulators in *Staphylococcus aureus* 8325 and Comparative Analysis with Other Clinical Isolates." Infect. Immun. 78 (2010): 2877-2889. PubMed: 20212089.
5. Novick, R. "Properties of a Cryptic High-Frequency Transducing Phage in *Staphylococcus aureus*." Virology 33 (1967): 155-166. PubMed: 4227577.
6. Deurenberg, R. H. and E. E. Stobberingh. "The Evolution of *Staphylococcus aureus*." Infect. Genet. Evol. 8 (2008): 747-763. PubMed: 18718557.

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