

## *Staphylococcus aureus*, Strain AJUL21

### Catalog No. NR-55235

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

#### Contributor:

Alex O'Neill, Professor, Faculty of Biological Sciences, University of Leeds, Leeds, United Kingdom

#### Manufacturer:

BEI Resources

#### Product Description:

Bacteria Classification: *Staphylococcaceae*, *Staphylococcus*

Species: *Staphylococcus aureus*

Strain: AJUL21

Original Source: *Staphylococcus aureus* (*S. aureus*), strain AJUL21 is deposited as a fosfomycin-resistant strain derived from *S. aureus*, strain SH1000 through introduction of plasmid pSK5487M containing the gene *fosB* (encoding fosfomycin resistance bacillithiol transferase) and a chloramphenicol resistance gene (*cat*) for selection.<sup>1,2</sup> Strain SH1000 is a model strain generated from strain NCTC 8325-4 in which the *rsbU* deletion was repaired.<sup>3,4</sup> 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.<sup>3,4</sup>

Comments: *S. aureus*, strain AJUL21 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 *qacR* 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.<sup>1,2</sup> The complete genome of *S. aureus*, strain SH1000 (available from BEI Resources as NR-55396) has been sequenced (GenBank: [CP059180.1](https://www.ncbi.nlm.nih.gov/nuclink/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 *mecA* gene. Subsequently, MRSA infections have become widespread in both hospital and community settings.<sup>5</sup>

#### Material Provided:

Each vial contains approximately 0.5 mL of bacterial culture in Tryptic Soy broth containing 25 µg per mL chloramphenicol supplemented with 10% glycerol.

Note: If homogeneity is required for your intended use, please purify prior to initiating work.

#### Packaging/Storage:

NR-55235 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 agar containing 25 µg per mL chloramphenicol 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 AJUL21, NR-55235."

#### 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](https://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. 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.
4. Novick, R. "Properties of a Cryptic High-Frequency Transducing Phage in *Staphylococcus aureus*." *Virology* 33 (1967): 155-166. PubMed: 4227577.
5. 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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