

Staphylococcus aureus, Strain GA-355

Catalog No. NR-46214

For research use only. Not for human use.

Contributor:

Centers for Disease Control and Prevention, Atlanta, Georgia, USA

Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Staphylococcaceae, Staphylococcus*

Species: *Staphylococcus aureus*

Strain: GA-355

NARSA Catalog Number: NRS685

Original Source: *Staphylococcus aureus* (*S. aureus*), strain GA-355 was isolated in 2006 from the blood of a 60-year-old male with bloodstream, osteomyelitis and/or an infected abscess in Georgia, USA.¹

Comments: *S. aureus*, strain GA-355 is a clinically-associated methicillin-resistant *S. aureus* (MRSA) strain. Strain GA-355 was deposited as positive for *mec* (subtype IV); and negative for PVL and *tst*. *S. aureus*, strain GA-355 is a USA500 isolate.¹ USA500 isolates have a common MLST sequence type (ST 8), *spa* motif (MBQBLO) and *agr* group (I) and are PVL-negative.²⁻⁵ USA500 isolates are multi-drug resistant healthcare-associated MRSA strains, but have been also associated with sporadic community-acquired infections.^{2,4} USA500 is believed to be the predecessor of the most common community-associated pulsed-field type, USA300.⁵ Note: Methicillin is no longer clinically used, however, the term methicillin-resistant *Staphylococcus aureus* (MRSA) continues to be used to describe *S. aureus* strains resistant to all penicillins.

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. For the last forty-five years hospital-acquired (HA) MRSA strains have disseminated worldwide. More recently, MRSA strains have been isolated that are not hospital acquired and are referred to as community-associated (CA) MRSA. These CA-MRSA strains differ phenotypically and genotypically from HA-MRSA strains and they are more frequently recovered from skin and soft tissue sources rather than post-operative wounds.^{6,7}

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-46214 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:

Brain Heart Infusion broth or Tryptic Soy broth or equivalent
Brain Heart Infusion 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 provided by the Network on Antimicrobial Resistance in *Staphylococcus aureus* (NARSA) for distribution by BEI Resources, NIAID, NIH: *Staphylococcus aureus*, Strain GA-355, NR-46214."

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. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmb15/index.htm.

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References:

1. NARSA, NRS685
2. McDougal, L. K., et al. "Pulsed-Field Gel Electrophoresis Typing of Oxacillin-Resistant *Staphylococcus aureus* Isolates from the United States: Establishing a National Database." J. Clin. Microbiol. 41 (2003): 5113-5120. PubMed: 14605147.
3. Tenover, F. C., et al. "Characterization of Nasal and Blood Culture Isolates of Methicillin-Resistant *Staphylococcus aureus* from Patients in United States Hospitals." Antimicrob. Agents Chemother. 56 (2012): 1324-1330. PubMed: 22155818.
4. Diep, B. A., et al. "Roles of 34 Virulence Genes in the Evolution of Hospital- and Community-Associated Strains of Methicillin-Resistant *Staphylococcus aureus*." J. Infect. Dis. 193 (2006): 1495-1503. PubMed: 16652276.
5. Li, M., et al. "Comparative Analysis of Virulence and Toxin Expression of Global Community-Associated Methicillin-Resistant *Staphylococcus aureus* Strains." J. Infect. Dis. 202 (2010): 1866-1876. PubMed: 21050125.
6. Deurenberg, R. H. and E. E. Stobberingh. "The Evolution of *Staphylococcus aureus*." Infect. Genet. Evol. 8 (2008): 747-763. PubMed: 18718557.
7. Davis, S. L., et al. "Epidemiology and Outcomes of Community-Associated Methicillin-Resistant *Staphylococcus aureus* Infection." J. Clin. Microbiol. 45 (2007): 1705-1711. PubMed: 17392441.

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