**Staphylococcus aureus, Strain SA LinR #14**

**Catalog No. NR-45926**

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**Manufacturer:**
BEI Resources

**Product Description:**
Bacteria Classification: *Staphylococcaceae, Staphylococcus*
Species: *Staphylococcus aureus*
Strain: SA LinR #14
NARSA Catalog Number: NRS121
Original Source: *Staphylococcus aureus* (S. aureus), strain SA LinR #14 was isolated in 2001 from an 85-year-old male with dialysis-associated peritonitis in Massachusetts, USA.\(^1,2\)

**Comments:** *S. aureus*, strain SA LinR #14 is a methicillin-resistant *S. aureus* (MRSA) strain.\(^1\) It was deposited as resistant to linezolid; positive for *mec* (subtype IV); MLST sequence type (ST) 507; eGenomic *spa* type 7, eGenomic *spa* repeats YHGCMBQ68L; Ridom *spa* type 1064.\(^1\) *S. aureus*, strain SA LinR #14 was co-isolated with SA LinR #12 (NRS119) and SA LinR #13 (NRS120) from the first clinically reported case of a MRSA infection that demonstrated resistance to linezolid. Based on pulsed-field gel electrophoresis, SA LinR #12 and SA LinR #13 are identical and SA LinR #14 is closely related to both. While each strain has a different antibiogram, all three are resistant to linezolid due to a G2576T mutation in domain V in one or more 23S rRNA genes (*Escherichia coli* numbering).\(^2,1\) Note: Methicillin is no longer clinically used, however, the term methicillin-resistant *S. 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. Subsequently, MRSA infections have become widespread in both hospital and community settings.\(^3\) MRSA infections have been increasingly difficult to treat as this organism has developed resistance to a number of commonly used antibotics, including the preferred antibiotic of choice for the treatment of MRSA infections, vancomycin.\(^4\) More recently, strains have been isolated that are resistant to linezolid. These linezolid-resistant *S. aureus* (LRSA) strains typically have the same G2576T point mutation in their 23S rRNA genes preventing linezolid from binding to its site of action.\(^5-7\) A second, rarer mechanism of resistance is due to the presence of *cfr*, which encodes for a ribosomal methyltransferase that modifies a specific rRNA nucleotide located in the site of the drug action. While the *cfr* gene was initially identified on plasmids isolated from animal sources, an increasing number of human cases have been reported.\(^8,11\)

**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-45926 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 18 to 24 hours.

**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 SA LinR #14, NR-45926.”

**Biosafety Level:** 2

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References:
1. NARSA, NRS121

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