

***Staphylococcus aureus*, Strain H2138 (Isolate 10)**

Catalog No. NR-46062

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Contributor:

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Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Staphylococcaceae*, *Staphylococcus*

Species: *Staphylococcus aureus*

Strain: H2138 (Isolate 10)

NARSA Catalog Number: NRS271

Original Source: *Staphylococcus aureus* (*S. aureus*), strain H2138 (Isolate 10) was isolated in 2002 from a wound drain site of 52-year-old male in the United Kingdom.^{1,2}

Comments: *S. aureus*, strain H2138 (Isolate 10) is a linezolid-resistant *S. aureus* (LRSA), methicillin-resistant *S. aureus* (MRSA) strain and is the second clinically isolated linezolid-resistant MRSA strain.^{1,2,3} It was deposited as resistant to linezolid, tedizolid, ciprofloxacin, oxacillin and penicillin; intermediate resistance to erythromycin; positive for *mec* (subtype IV); MLST sequence type (ST) 22; eGenomic *spa* type 382, eGenomic *spa* repeats TJJEJNF2MNF2MOMOKR; Ridom *spa* type t032; phage type E-MRSA 15.^{1,2,3} *S. aureus*, strain H2138 (Isolate 10) developed from a linezolid susceptible strain during treatment.² It is reported to have a G2576T mutation in domain V of the 23s rRNA gene (*Escherichia coli* numbering) and a Q3K mutation in the L3 ribosomal protein.^{2,3} 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. Subsequently, MRSA infections have become widespread in both hospital and community settings.⁴ MRSA infections have been increasingly difficult to treat as this organism has developed resistance to a number of commonly used antibiotics, including the preferred antibiotic of choice for the treatment of MRSA infections, vancomycin.⁵ More recently, strains have been isolated that are resistant to linezolid. These LRSA strains typically have

the same G2576T point mutation in their 23S rRNA genes preventing linezolid from binding to its site of action.^{6,7,8} 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.^{9,10,11}

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-46062 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 H2138 (Isolate 10), NR-46062."

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/bmbl5/index.htm.

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References:

1. NARSA, NRS271
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