

**Staphylococcus aureus, Strain HIP11983**

**Catalog No. NR-46411**

**For research use only. Not for human use.**

**Contributor:**

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**Manufacturer:**

BEI Resources

**Product Description:**

Bacteria Classification: *Staphylococcaceae, Staphylococcus*

Species: *Staphylococcus aureus*

Strain: HIP11983 (also referred to as VRSA-2)

NARSA Catalog Number: VRS2

Original Source: *Staphylococcus aureus* (*S. aureus*), strain HIP11983 was isolated in 2002 in Pennsylvania, USA, from a plantar ulcer of a 70-year-old male with cellulitis along the plantar fascia and polymicrobial osteomyelitis of the right calcaneus and who had no recent history of vancomycin therapy.<sup>1,2</sup>

Comments: *S. aureus*, strain HIP11983 is a vancomycin-resistant *S. aureus* (VRSA) strain.<sup>1-3</sup> *S. aureus*, strain HIP11983 was deposited as positive for *mec* (subtype II) and *vanA*; negative for *vanB*, *vanC1*, *vanC2*, *vanD*, *vanE*, PVL and arginine catabolic mobile element (ACME) genes; pulsed-field type USA100; *spa* repeats TJMBMDMGMK; Ridom *spa* type t002.<sup>1-6</sup> *S. aureus*, strain HIP11983 is a USA100 isolate. USA100 isolates have the same MLST profile (ST 5) and SCC*mec* (subtype II) and are usually resistant to erythromycin and spectinomycin as well as being multiresistant to other commonly used therapeutic agents. USA100 is the most prevalent U.S health care-associated pulsed-field type and is endemic in many U.S. hospitals.<sup>4</sup> The complete genome sequence of *S. aureus*, strain HIP11983 is available (GenBank: [AHBL00000000](http://AHBL00000000)).

*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 septicemia and endocarditis. *S. aureus* infections are difficult to treat due to resistance to numerous antibiotics. The development and dissemination of methicillin-resistant *S. aureus* (MRSA) strains has proven to be particularly difficult to contain and treat.<sup>7</sup> Vancomycin has been the preferred antibiotic of choice for the treatment of MRSA infections, however, there have now been MRSA strains isolated that are also resistant to vancomycin.<sup>7,8</sup> It is believed that this resistance results from either mutations that ultimately lead to a reduction of vancomycin at its site of action or from the acquisition of the vancomycin resistance gene, *vanA*, from *Enterococcus faecalis*.<sup>7-9</sup> The *vanA* gene is carried by the Tn1546

transposon that resides on a plasmid in all VRSA strains.<sup>8</sup> For VRSA strains carrying both *mecA* and *vanA*,  $\beta$ -lactams and glycopeptides seem to have a synergistic effect against these strains, both *in vitro* and in an animal model.<sup>9,10</sup> Combination therapy, therefore, may be a more effective treatment option for VRSA infections than monotherapy with either antibiotic.<sup>9,10</sup>

**Material Provided:**

Each vial contains approximately 0.5 mL of bacterial culture in Brain Heart Infusion broth supplemented with 6  $\mu$ g/mL vancomycin and 10% glycerol.

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

**Packaging/Storage:**

NR-46411 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:**

Note: This strain demonstrates *van*-plasmid instability.

Variable glycopeptide MICs have been observed for this strain depending on pre-test subculturing practices. Subculturing this strain on a rich agar medium containing 4 to 6  $\mu$ g/ml of vancomycin is recommended to maintain the *van*-plasmid.<sup>1</sup>

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 HIP11983, NR-46411."

**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](http://www.cdc.gov/biosafety/publications/bmbl5/index.htm).

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**References:**

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