

## **Certificate of Analysis for NR-46411**

## Staphylococcus aureus, Strain HIP11983

## Catalog No. NR-46411

**Product Description:** *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. *S. aureus*, strain HIP11983 is a vancomycin-resistant *S. aureus* strain.

Lot<sup>1</sup>: 62471644 Manufacturing Date: 02APR2014

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis		
Cellular morphology	Gram-positive cocci	Gram-positive cocci
Colony morphologies <sup>2,3</sup>	Report results	Colony type 1: Punctiform and
com, marphanegrae		cream (Figure 1)
		Colony type 2: Circular, convex,
		entire, smooth and cream
		(Figure 1)
Motility (wet mount)	Report results	Non-motile
Hemolysis <sup>4</sup>	Report results	β-hemolytic
Biochemical Characterization	<b>'</b>	'
Catalase	Positive	Positive
Coagulase⁵	Report results	Positive
VITEK® 2 Compact (GP card)	Consistent with S. aureus	Consistent with S. aureus
VITEK <sup>®</sup> MS (MALDI-TOF)	Consistent with S. aureus	Consistent with S. aureus
Antihintin Cunnantihilitu Bustila		
Antibiotic Susceptibility Profile VITEK® (AST-GP71 card)6		
Beta-lactamase <sup>7</sup>	Report results	Positive
Cefoxitin screen	Report results	Positive
Benzylpenicillin	Report results	Resistant (≥ 0.5 μg/mL)
Oxacillin	Resistant	Resistant (≥ 0.5 µg/mL)
Gentamicin	Resistant	Resistant (≥ 16 µg/mL)
Ciprofloxacin	Resistant	Resistant (≥ 8 µg/mL)
Levofloxacin	Report results	Resistant (≥ 8 µg/mL)
Moxifloxacin	Report results	Resistant (= 4 µg/mL)
Clindamycin (inducible resistance)	Report results	Negative
Erythromycin	Resistant	Resistant (≥ 8 μg/mL)
Clindamycin	Resistant	Resistant (≥ 8 μg/mL)
Quinupristin/dalfopristin	Sensitive	Sensitive (≤ 0.25 µg/mL)
Linezolid	Sensitive	Sensitive (= 1 µg/mL)
Daptomycin	Report results	Sensitive (= 0.25 µg/mL)
Vancomycin	Resistant	Resistant (≥ 32 μg/mL)
Minocycline	Report results	Sensitive (≤ 0.5 µg/mL)
Tetracycline	Report results	Resistant (≥ 16 µg/mL)
Tigecycline	Report results	Sensitive (≤ 0.12 µg/mL)
Nitrofurantoin	Report results	Sensitive (≤ 16 µg/mL)
Rifampicin	Report results	Sensitive (≤ 0.5 μg/mL)
Etest <sup>®</sup> antibiotic test strips <sup>8</sup>	·	
Chloramphenicol <sup>9</sup>	Report results	Sensitive (= 2 µg/mL)
Teicoplanin <sup>9</sup>	Report results	Resistant (= 24 µg/mL) Resistant (> 32 µg/mL) <sup>10,11</sup>
Trimethoprim/sulfamethoxazole <sup>9</sup>	Sensitive	Resistant (> 32 μg/mL) <sup>10,11</sup>

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SUPPORTING INFECTIOUS DISEASE RESEARCH

Genotypic Analysis Sequencing of 16S ribosomal RNA gene (~ 1420 base pairs)	Consistent with S. aureus	Consistent with S. aureus
Viability (post-freeze) <sup>3</sup>	Growth	Growth

S. aureus, strain HIP11983 was deposited to BEI Resources as part of the NARSA collection. NR-46411 was produced by inoculation of the deposited material into Brain Heart Infusion broth with 6 μg/mL vancomycin and grown 26 hours at 37°C in an aerobic atmosphere. Broth inoculum was added to Brain Heart Infusion agar with 6 μg/mL vancomycin kolles which were grown 23 hours at 37°C in an aerobic atmosphere to produce this lot. Purity of this lot was assessed for 7 days under propagation conditions.

Figure 1



**Date:** 27 JUN 2014

Signature: (

Title: Technical Manager, BEI Authentication or designee

ATCC®, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC®'s knowledge.

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<sup>&</sup>lt;sup>2</sup>Two colony types were observed. Plating of the individual colony types showed that they did not revert to the mixed colony type. The 16S ribosomal RNA gene of each colony type was sequenced and found to be consistent with the other colony type and *S. aureus*.

<sup>&</sup>lt;sup>3</sup>21 hours at 37°C in an aerobic atmosphere on Brain Heart Infusion agar with 6 μg/mL vancomycin

<sup>&</sup>lt;sup>4</sup>21 hours at 37°C in an aerobic atmosphere on Tryptic Soy agar with 5% defibrinated sheep blood

<sup>&</sup>lt;sup>5</sup>4 hours at 37°C in rabbit serum with 0.15% EDTA (Coagulase Plasma BBL™ 240827)

<sup>&</sup>lt;sup>6</sup>Minimum Inhibitory Concentration (MIC); MIC Interpretation Guideline: CLSI M100-S22 (2012)

<sup>&</sup>lt;sup>7</sup>The production of beta-lactamase was detected using a Cefinase™ Paper Disc (BBL™ 231650)

<sup>&</sup>lt;sup>8</sup>24 hours at 37°C in an aerobic atmosphere on Mueller Hinton agar

<sup>&</sup>lt;sup>9</sup>For both chloramphenicol (bioMérieux Etest<sup>®</sup> 412308) and teicoplanin (bioMérieux Etest<sup>®</sup> 412459) a MIC ≤ 8 μg/mL is sensitive, a MIC = 16 μg/mL is intermediate and a MIC ≥ 32 μg/mL is resistant. For trimethoprim/sulfamethoxazole (bioMérieux Etest<sup>®</sup> 412480) a MIC ≤ 2 μg/mL is sensitive and a MIC ≥ 4 μg/mL is resistant.

<sup>&</sup>lt;sup>10</sup> S. aureus, strain HIP11983 was deposited as being sensitive to trimethoprim/sulfamethoxazole. ATCC® quality control determined that S. aureus, strain HIP11983 is resistant to trimethoprim/sulfamethoxazole. Repeat testing confirmed ATCC® s initial results.

<sup>&</sup>lt;sup>11</sup>The susceptibility to trimethoprim/sulfamethoxazole was interpreted using three methods: individual MICs for trimethoprim and sulfamethoxazole (NARSA); combined MIC for trimethoprim/sulfamethoxazole (VITEK®); MIC for trimethoprim (Etest®).