

***Mycobacterium tuberculosis*, Strain HN4693**

Catalog No. NR-19039

Product Description: *Mycobacterium tuberculosis* (*M. tuberculosis*), strain HN4693 was isolated in 2005 from human pulmonary tissue in Texas, USA. Strain HN4693 was deposited as an extensively drug-resistant (XDR) strain of tuberculosis with resistance to isoniazid, rifampicin, ethambutol, pyrazinamide, rifabutin, ethionamide, kanamycin, ofloxacin and streptomycin.

Lot¹: 63383539

Manufacturing Date: 21MAY2015

| TEST | SPECIFICATIONS | RESULTS |
|---|--|---|
| Phenotypic Analysis² Cellular morphology Colony morphology ³ Growth rate Growth at 26°C Growth at 37°C Acid-fast stain Pigmentation in the dark (Scotochromogen) Photoinduction for 1 hour (Photochromogen) Nonchromogen (no pigment) Biochemical tests Niacin production ⁴ Nitrate reduction Pyrazinamidase | Gram-positive rods Report results ≥ 7 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment) Positive Positive Positive | Gram-positive rods Irregular, slight peaked, undulate, rough and cream (Figure 1) 20 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment) Positive Positive Positive |
| Genotypic Analysis Sequencing of Heat Shock Protein 65 gene (~ 430 base pairs) | ≥ 99% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456) | 100% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456) ⁵ |
| Purity (post-freeze)⁶ | Growth consistent with expected colony morphology | Growth consistent with expected colony morphology |
| Viability (post-freeze)³ | Growth | Growth |

¹NR-19039 was produced by inoculation of the deposited material into Middlebrook 7H9 broth with ADC enrichment and grown for 36 days at 37°C in an aerobic atmosphere with 5% CO₂. Broth inoculum was added to Middlebrook 7H10 agar with OADC enrichment kolles, which were grown for 27 days at 37°C in an aerobic atmosphere with 5% CO₂ to produce this lot.

²Information on *Mycobacterium* testing is available from Ribón, W. "Biochemical Isolation and Identification of *Mycobacteria*." *Biochemical Testing*. (2012) Jose C. Jimenez-Lopez (Ed.), InTech, <http://www.intechopen.com/books/biochemical-testing/biochemical-isolation-and-identification-of-mycobacteria> and Lévy-Frébault, V. V. and F. Portaels. "Proposed Minimal Standards for the Genus *Mycobacterium* and for Description of New Slowly Growing *Mycobacterium* Species." *Int. J. Syst. Bacteriol.* 42 (1992): 315-323. PubMed: 1581193.

³20 days at 37°C in an aerobic atmosphere with 5% CO₂ on Middlebrook 7H10 agar with OADC enrichment

⁴All mycobacteria produce niacin but only *M. tuberculosis* accumulates it, resulting in a positive test for *M. tuberculosis*.

⁵Also consistent with *M. africanum*, *M. bovis* *M. canetti* and *M. microti*

⁶Purity of this lot was assessed for 21 days at 37°C in an aerobic atmosphere with 5% CO₂ on Middlebrook 7H10 agar with OADC enrichment and 21 days at 37°C in an aerobic atmosphere with 5% CO₂ on Tryptic Soy agar plates.

Figure 1: Colony Morphology



Date: 20 DEC 2016

Signature: 

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