

***Mycobacterium tuberculosis*, Strain HN4701**

**Catalog No. NR-19047**

**Product Description:** *Mycobacterium tuberculosis* (*M. tuberculosis*), strain HN4701 was isolated in 2008 from human pulmonary tissue in Texas, USA. Strain HN4701 was deposited as a multi-drug resistant (MDR) strain of tuberculosis with resistance to rifabutin, isoniazid, rifampicin, ethambutol and streptomycin.

**Lot<sup>1</sup>: 63383547**

**Manufacturing Date: 21MAY2015**

| TEST  | SPECIFICATIONS   | RESULTS  |
|---|--|--|
| <b>Phenotypic Analysis<sup>2</sup></b><br>Cellular morphology<br>Colony morphology <sup>3</sup><br><br>Growth rate<br>Growth at 26°C<br>Growth at 37°C<br>Acid-fast stain<br>Pigmentation in the dark (Scotochromogen)<br>Photoinduction for 1 hour (Photochromogen)<br>Nonchromogen (no pigment)<br>Biochemical tests<br>Niacin production <sup>4</sup><br>Nitrate reduction<br>Pyrazinamidase | Gram-positive rods<br>Report results<br><br>≥ 7 days<br>Negative<br>Positive<br>Positive (red colonies)<br>Negative (no pigment)<br>Negative (no pigment)<br>Positive (no pigment)<br><br>Positive<br>Positive<br>Positive | Gram-positive rods<br>Irregular, slight peaked, undulate, rough and cream (Figure 1)<br>20 days<br>Negative<br>Positive<br>Positive (red colonies)<br>Negative (no pigment)<br>Negative (no pigment)<br>Negative (no pigment)<br>Positive (no pigment)<br><br>Positive<br>Positive<br>Positive |
| <b>Genotypic Analysis</b><br>Sequencing of Heat Shock Protein 65 gene (~ 440 base pairs)  | ≥ 99% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456)  | 99.8% sequence identity to <i>M. tuberculosis</i> type strain (GenBank: AL123456) <sup>5</sup>   |
| <b>Purity (post-freeze)<sup>6</sup></b>   | Consistent with expected colony morphology   | Consistent with expected colony morphology   |
| <b>Viability (post-freeze)<sup>3</sup></b>  | Growth   | Growth   |

<sup>1</sup>NR-19047 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% CO<sub>2</sub>. 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% CO<sub>2</sub> to produce this lot.

<sup>2</sup>Information 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-Frèbault, 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.

<sup>3</sup>20 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub> on Middlebrook 7H10 agar with OADC enrichment

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

<sup>5</sup>Also consistent with *M. africanum*, *M. bovis*, *M. canettii* and *M. microti*

<sup>6</sup>Purity of this lot was assessed for 21 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub> on Middlebrook 7H10 agar with OADC enrichment and 20 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub> on Tryptic Soy agar plates.

Figure 1: Colony Morphology



Date: 25 AUG 2016

Signature:

A handwritten signature in black ink, appearing to read "David C. Archer".

BEI Resources Authentication

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.

ATCC® is a trademark of the American Type Culture Collection.

You are authorized to use this product for research use only. It is not intended for human use.

