

***Mycobacterium tuberculosis*, Strain XTB13-209**

Catalog No. NR-49363

Product Description: *Mycobacterium tuberculosis* (*M. tuberculosis*), strain XTB13-209 was isolated in 2012 from the sputum of a patient with tuberculosis in the Republic of Belarus. Strain XTB13-209 was deposited as a drug-susceptible strain.

Lot¹: 64064214

Manufacturing Date: 10MAY2016

| 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) 21 days Negative Positive Positive (red colonies) Negative (no pigment) Negative (no pigment) Positive (no pigment) Positive Positive Positive |
| Antibiotic Susceptibility Profile Sensititre™ System ^{5,6} Amikacin Cycloserine Ethambutol Ethionamide Isoniazid Kanamycin Moxifloxacin Ofloxacin Para-aminosalicylic acid Rifabutin Rifampin Streptomycin | Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results Report results | 0.5 µg/mL ^{7,8} 16 µg/mL ≤ 0.5 µg/mL ⁹ ≤ 0.3 µg/mL ⁹ 0.12 µg/mL ^{8,10} 2.5 µg/mL 0.5 µg/mL 1 µg/mL ≤ 0.5 µg/mL ⁹ 0.25 µg/mL ^{8,9,11} 0.5 µg/mL ≤ 0.25 µg/mL ⁹ |
| Genotypic Analysis Sequencing of Heat Shock Protein 65 gene (~ 410 base pairs) | ≥ 99% sequence identity to <i>M. tuberculosis</i> , strain XTB13-209 (GenBank: JLIM01000003.1) | 99.8% sequence identity to <i>M. tuberculosis</i> , strain XTB13-209 (GenBank: JLIM01000003.1) ¹² |
| Purity (post-freeze) Middlebrook 7H10 agar with OADC enrichment ¹³ Tryptic Soy agar ¹⁴ | Growth consistent with expected colony morphology Report results | Growth consistent with expected colony morphology No growth |
| Viability (post-freeze)³ | Growth | Growth |

¹NR-49363 was produced by inoculation of the deposited material into Middlebrook 7H9 broth with ADC enrichment. Broth inoculum was added to Middlebrook 7H10 agar with OADC enrichment kolles, which were grown for 61 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.

- ³21 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*.
- ⁵Sensititre™ System *Mycobacterium tuberculosis* MIC Plate, Thermo Scientific™, catalog number MYCOTB
- ⁶Minimum Inhibitory Concentration (MIC); No Clinical & Laboratory Standards Institute (CLSI) interpretations of the Sensititre™ System data for *M. tuberculosis* are currently available.
- ⁷Two MICs were observed for amikacin (0.25 µg/mL and 0.5 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.
- ⁸Variability in the MIC result by the Sensititre™ method has been demonstrated (Lee, J., et al. "Sensititre MYCOTB MIC Plate for Testing *Mycobacterium tuberculosis* Susceptibility to First- and Second-Line Drugs." *Antimicrob. Agents Chemother.* 58 (2014): 11-18. PubMed: 24100497.), with the results for a single antibiotic typically within one doubling dilution.
- ⁹For streptomycin, ethionamide, para-aminosalicylic acid, rifabutin and ethambutol, the endpoint for these drugs is determined by the well with approximately 80% inhibition of growth compared to the positive control well with no drug.
- ¹⁰Two MICs were observed for isoniazid (0.06 µg/mL and 0.12 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.
- ¹¹Two MICs were observed for rifabutin (≤ 0.12 µg/mL and 0.25 µg/mL) under identical test conditions. The highest MIC is being reported as the test result.
- ¹²Also consistent with *M. africanum*, *M. bovis*, *M. canettii*, *M. caprae* and *M. microti*
- ¹³Purity of this lot was assessed for 93 days at 37°C in an aerobic atmosphere with 5% CO₂.
- ¹⁴Purity of this lot was assessed for 21 days at 37°C in an aerobic atmosphere with 5% CO₂.

Figure 1: Colony Morphology



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