

***Mycobacterium tuberculosis*, Strain XTB13-238**

Catalog No. NR-49373

Product Description: *Mycobacterium tuberculosis* (*M. tuberculosis*), strain XTB13-238 was isolated in 2011 from the sputum of a patient with tuberculosis in the Republic of Belarus. Strain XTB13-238 was deposited as resistant to amikacin, capreomycin, cycloserine, ethambutol, isoniazid, kanamycin, ofloxacin, para-aminosalicylic acid, rifampin and streptomycin.

Lot¹: 64064237

Manufacturing Date: 12MAY2016

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	> 16 µg/mL 32 µg/mL 8 µg/mL ⁷ > 40 µg/mL ⁷ > 4 µg/mL > 40 µg/mL 4 µg/mL 16 µg/mL > 64 µg/mL ⁷ > 16 µg/mL ⁷ > 16 µg/mL > 32 µg/mL ⁷
Genotypic Analysis Sequencing of Heat Shock Protein 65 gene (~ 430 base pairs)	≥ 99% sequence identity to <i>M. tuberculosis</i> , strain XTB13-238 (GenBank: JLNQ01000001.1)	100% sequence identity to <i>M. tuberculosis</i> , strain XTB13-238 (GenBank: JLNQ01000001.1) ⁸
Purity (post-freeze) Middlebrook 7H10 agar with OADC enrichment ⁹ Tryptic Soy agar ¹⁰	Growth consistent with expected colony morphology Report results	Growth consistent with expected colony morphology No growth
Viability (post-freeze)³	Growth	Growth

¹NR-49373 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 63 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.

⁷For 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.

⁸Also consistent with *M. africanum*, *M. bovis*, *M. canettii* and *M. microti*

⁹Purity of this lot was assessed for 50 days at 37°C in an aerobic atmosphere with 5% CO₂.

¹⁰Purity of this lot was assessed for 21 days at 37°C in an aerobic atmosphere with 5% CO₂.

Figure 1: Colony Morphology



Date: 10 NOV 2017

Signature:

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