

***Mycobacterium palustre*, Strain FI-05088**

**Catalog No. NR-49070**

**Product Description:** *Mycobacterium palustre* (*M. palustre*), strain FI-05088 was isolated from a cervical lymph node of a human subject.

**Lot<sup>1</sup>: 64362432**

**Manufacturing Date: 01AUG2016**

TEST	SPECIFICATIONS	RESULTS
<b>Phenotypic Analysis<sup>2,3</sup></b> Cellular morphology Colony morphology <sup>4</sup>  Growth rate Growth at 45°C Growth at 55°C Acid-fast stain Pigmentation in the dark (Scotochromogen) Photoinduction for 1 hour (Photochromogen) Nonchromogen (no pigment) Biochemical tests Catalase Catalase (semiquantitative) Catalase (68°C) Iron uptake Nitrate reduction Tween 80 hydrolysis Urease Growth in the presence of 5% sodium chloride Growth in the presence of thiophene-2-carboxylic acid hydrazide (TCH) Growth on MacConkey agar without crystal violet	Rods Report results  ≥ 7 days Positive Report results Positive (red colonies) Positive Negative (no pigment) Negative  Report results Negative Report results Report results Report results Positive Positive Report results Report results  Report results	Rods Circular, convex, entire, smooth and cream (Figure 1) 13 days Positive Negative Positive (red colonies) Negative (no pigment) <sup>5</sup> Negative (no pigment) Positive <sup>5</sup>  Negative Negative Negative Negative Negative Positive Positive Positive Positive Positive Positive
<b>Genotypic Analysis</b> Sequencing of 16S ribosomal RNA gene (~ 1820 base pairs)  Digital DNA-DNA hybridization (dDDH) <sup>6</sup>	≥ 99% sequence identity to <i>M. palustre</i> type strain (GenBank: AJ308603.1) ≥ 70% for species identification	100% sequence identity to <i>M. palustre</i> type strain (GenBank: AJ308603.1) Not determined <sup>7,8</sup> (Table 1)
<b>Purity (post-freeze)</b> Middlebrook 7H10 agar with OADC enrichment <sup>9</sup>  Tryptic Soy agar <sup>9</sup>	Growth consistent with expected colony morphology Report results	Growth consistent with expected colony morphology Growth consistent with expected colony morphology
<b>Viability (post-freeze)<sup>4</sup></b>	Growth	Growth

<sup>1</sup>NR-49070 was produced by inoculation of the deposited material into Middlebrook 7H9 broth with ADC enrichment and grown for 14 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 6 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-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.

<sup>3</sup>Phenotypic characterization of *M. palustre* was performed following: Torkko, P., et al. "*Mycobacterium palustre* sp. nov., a Potentially Pathogenic, Slowly Growing Mycobacterium Isolate from Clinical and Veterinary Specimens and from Finnish Stream Waters." *Int. J. Syst. Evol. Microbiol.* 52 (2002): 1519-1525. PubMed: 12361253.

<sup>4</sup>13 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub> on Middlebrook 7H10 agar with OADC enrichment

<sup>5</sup>NR-49070 was deposited as *M. palustre* and reported to be positive for pigmentation in the dark (scotochromogen). Testing performed in triplicate by BEI Resources indicates NR-49070 tested positive as a nonchromogen.

<sup>6</sup>Relatedness between bacterial strains has traditionally been determined using DDH. For additional information, refer to Auch, A.F., et al. "Digital DNA-DNA Hybridization for Microbial Species Delineation by Means of Genome-to-Genome Sequence Comparison." *Stand. Genomic Sci.* 2 (2010): 117-134. PubMed: 21304684.

<sup>7</sup>The whole genome of *M. palustre*, strain FI-05088 (Contig Total Length ~ 5.8 megabase pairs) was sequenced using the Illumina® MiSeq® system and was assembled and analyzed with CLC Genomics Workbench Version 7.0.2.

<sup>8</sup>The required whole genome sequence for the type strain of this species is not available. dDDH testing rules out all species listed in Table 1, however, this does not rule out species for which the type strains whole genome sequences are not available.

<sup>9</sup>Purity of this lot was assessed for 13 days at 37°C in an aerobic atmosphere with 5% CO<sub>2</sub>.

Figure 1: Colony Morphology

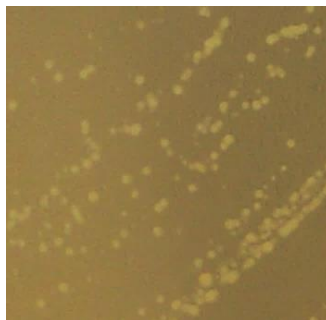


Table 1: Digital DNA-DNA hybridization (dDDH)

Species	Strain	Accession #	GGD vs. NR-49070 (Deposited as: <i>M. palustre</i> )
<i>M. abscessus</i> subsp. <i>abscessus</i>	Hauduroy L948 <sup>T</sup>	NC_010397.1	19.3
<i>M. abscessus</i> subsp. <i>bolletii</i>	BD <sup>T</sup>	AHAS00000000.1	19.2
<i>M. abscessus</i> subsp. <i>massiliense</i>	CCUG 48898 <sup>T</sup>	NZ_AP014547.1	19.7
<i>M. aromaticivorans</i>	JS19b <sup>T</sup>	JALN00000000.2	20.2
<i>M. aurum</i>	ATCC 23366 <sup>T</sup>	CVQQ01000001.1	20.6
<i>M. austroafricanum</i>	E9789-SA12441 <sup>T</sup>	HG964450.1	19.7
<i>M. avium</i> subsp. <i>avium</i>	ATCC 25291 <sup>T</sup>	ACFI00000000.1	25.9
<i>M. avium</i> subsp. <i>paratuberculosis</i>	ATCC 19698 <sup>T</sup>	AGAR00000000.1	26.6
<i>M. avium</i> subsp. <i>silvaticum</i>	6409 <sup>T</sup>	AYOC00000000.1	26.4
<i>M. bohemicum</i>	CIP 105808 <sup>T</sup>	CSTD01000001.1	25.8
<i>M. canariasense</i>	502329 <sup>T</sup>	BCSY00000000.1	20.7
<i>M. celatum</i>	ATCC 51131 <sup>T</sup>	BBUN00000000.1	23.3
<i>M. chelonae</i>	CM 6388 <sup>T</sup>	CP010946.1	19.3
<i>M. chlorophenicolum</i>	PCP-I <sup>T</sup>	JYNL00000000.1	20.5
<i>M. chubuense</i>	48013 <sup>T</sup>	NC_018027.1	20.6
<i>M. colombiense</i>	10B <sup>T</sup>	AFVW00000000.2	25.1
<i>M. conceptionense</i>	D16 <sup>T</sup>	CTEF00000000.1	20.3
<i>M. cosmeticum</i>	LTA-388 <sup>T</sup>	CCBB00000000.1	20.6
<i>M. crocinum</i>	czh-42 <sup>T</sup>	BBHD00000000.1	21.9
<i>M. farcinogenes</i>	IEMVT 75 <sup>T</sup>	CCAY00000000.1	20.2
<i>M. fluoranthivorans</i>	FA4 <sup>T</sup>	BBFT00000000.1	21.4
<i>M. fortuitum</i> subsp. <i>fortuitum</i>	ATCC 6841 <sup>T</sup>	CP014258.1	20.2
<i>M. fortuitum</i> subsp. <i>acetamidolyticum</i>	NCH E11620 <sup>T</sup>	BCSZ00000000.1	20.2
<i>M. gastri</i>	ATCC 15754 <sup>T</sup>	AZYN00000000.1	23.2
<i>M. genavense</i>	228 <sup>T</sup>	JAGZ00000000.1	24.3
<i>M. haemophilum</i>	ATCC 29548 <sup>T</sup>	CP011883.2	23.2
<i>M. hassiacum</i>	3849 <sup>T</sup>	ARBU00000000.1	20.9

Species	Strain	Accession #	GGD vs. NR-49070 (Deposited as: <i>M. palustre</i> )
<i>M. hodleri</i>	EMI2 <sup>T</sup>	BBGO00000000.1	23
<i>M. intracellulare</i>	ATCC 13950 <sup>T</sup>	NC_016946.1	25.4
<i>M. kansasii</i>	ATCC 12478 <sup>T</sup>	NC_022663.1	23
<i>M. kyorinense</i>	KUM 060204 <sup>T</sup>	BBKA00000000.1	22.9
<i>M. mageritense</i>	938 <sup>T</sup>	CCBF000000000.1	20.4
<i>M. neoaurum</i>	ATCC 25795 <sup>T</sup>	JMDW00000000.1	19.7
<i>M. neworleansense</i>	W6705 <sup>T</sup>	CWKH00000000.1	20.4
<i>M. novocastrense</i>	73 <sup>T</sup>	BCTA00000000.1	20.6
<i>M. obuense</i>	47001 <sup>T</sup>	JYNU00000000.1	20.2
<i>M. pallens</i>	czh-8 <sup>T</sup>	BBHE00000000.1	22
<i>M. parascrofulaceum</i>	HSC-68 <sup>T</sup>	ADNV00000000.1	26.2
<i>M. pseudoshottsii</i>	L15 <sup>T</sup>	BCND00000000.1	22
<i>M. pyrenivorans</i>	17A3 <sup>T</sup>	BBHB00000000.1	22.7
<i>M. rufum</i>	JS14 <sup>T</sup>	JROA00000000.1	20.7
<i>M. rutilum</i>	czh-117 <sup>T</sup>	BBHF00000000.1	24.1
<i>M. septicum</i>	W4964 <sup>T</sup>	CBMO000000000.1	20.2
<i>M. setense</i>	ABO-M06 <sup>T</sup>	JTJW00000000.1	20.1
<i>M. simiae</i>	ATCC 25275 <sup>T</sup>	CBMJ000000000.2	23.3
<i>M. smegmatis</i>	ATCC 19420 <sup>T</sup>	LN831039.1	20.2
<i>M. thermoresistibile</i>	ATCC 19527 <sup>T</sup>	BCTB00000000.1	20.6
<i>M. triplex</i>	90-1019 <sup>T</sup>	CCAU000000000.1	24.5
<i>M. tuberculosis</i>	H37Rv <sup>T</sup>	NC_000962.3	22.8
<i>M. vaccae</i>	ATCC 15483 <sup>T</sup>	BCRS00000000.1	20.6
<i>M. vanbaalenii</i>	PYR-1 <sup>T</sup>	NC_008726.1	20.4
<i>M. vulneris</i>	NLA000700772 <sup>T</sup>	CCBG000000000.1	20.5
<i>M. yongonense</i>	05-1390 <sup>T</sup>	NC_021715.1	25.4
<i>Nocardia asteroides</i>	NBRC 15531 <sup>T</sup>	BAFO00000000.2	19.3

Date: 20 JUL 2017

Signature:



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