

“*Bacillus mediterraneensis*,” a new bacterial species isolated from human gut microbiota

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Abstract

We present a brief description of “*Bacillus mediterraneensis*” strain Marseille-P2366^T (= CSUR P2366 = DSM 102091), a new species isolated from the gastrointestinal tract of a healthy 13-month-old boy from Senegal.

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While exploring the human gut microbiome using the culturomics approach [1,2], we isolated a bacterial strain from the stool sample of a healthy 13-month-old boy from Senegal. The study was conducted after oral consent was given by the boy's parents, and the ethics committee of the Institut Federatif de Recherche 48 validated the study under agreement 09-022. Strain Marseille-P2366 was first isolated after a 7-day pre-incubation in an aerobic blood culture bottle (Becton Dickinson, Le Pont de Claix, France) supplemented with sheep's blood and filter-sterilized rumen and subculture on 5% sheep's blood-enriched Columbia agar (bioMérieux, Marcy l'Etoile, France). Light brown and smooth colonies with a diameter of 5 mm were obtained. The bacterial cells were Gram-positive rod-shaped bacilli exhibiting a mean diameter of 0.54 µm and a mean length of 2.25 µm. Oxidase activity was positive but catalase activity was negative. Strain Marseille-P2366^T could not be identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) using a Microflex spectrometer (Bruker Daltonics, Leipzig, Germany) [3,4]. We thus relied on 16S rRNA gene sequencing using the

fD1-rP2 primers as previously described [5] and a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France) for identification. The obtained sequence was 98.4% similar to “*Bacillus foraminis*” strain CV53 [6] (GenBank accession no. NR_042274.1), the phylogenetically closest species with standing in nomenclature (Fig. 1).

Because the degree of similarity level was lower than the 98.65% threshold to define a new species [7], we propose strain Marseille-P2366^T to be the representative strain of a new species within the genus *Bacillus* that we named *Bacillus mediterraneensis* (me.di.te.ra.ne.en'sis L. masc. adj., mediterraneensis, of Mediterraneum, the Latin name of the Mediterranean Sea by which Marseille, where strain Marseille-P2366^T was isolated, is located).

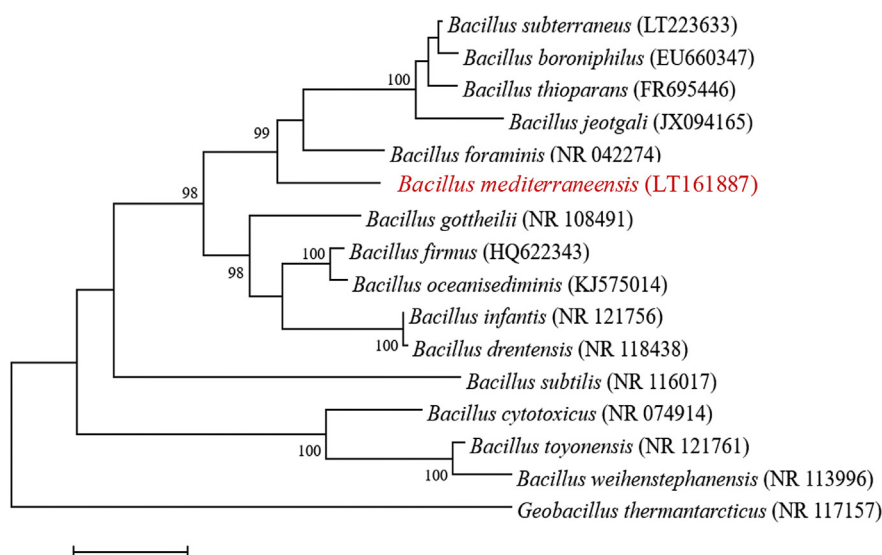
MALDI-TOF MS spectrum

The MALDI-TOF MS spectrum of “*B. mediterraneensis*” is available at <http://www.mediterraneeinfection.com/article.php?laref=256&titre=urms-database>.

Nucleotide sequence accession number

The 16S rRNA gene sequence was deposited in GenBank under accession number LT161887.

FIG. 1. Phylogenetic tree showing position of "Bacillus mediterraneensis" strain Marseille-P2366^T relative to other phylogenetically close neighbours. Sequences were aligned using CLUSTALW and phylogenetic inferences obtained using maximum-likelihood method within MEGA software. Number at nodes is percentage of bootstrap values obtained by repeating analysis 500 times to generate majority consensus tree. Only values $\geq 95\%$ were indicated. *Geobacillus thermantarcticus* was used as outgroup. Scale bar indicates 1% nucleotide sequence divergence.



Deposit in a culture collection

Strain Marseille-P2366^T was deposited in the Collection de Souches de l'Unité des Rickettsies (CSUR, WDCM 875) under number P2366.

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Conflict of Interest

None declared.

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