

'*Intestinibacillus massiliensis*' gen. nov., sp. nov., isolated from human left colon

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Abstract

We report here the main characteristics of '*Intestinibacillus massiliensis*' strain Marseille-P3216^T that was isolated from a human left colon wash sample.

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Keywords: Culturomics, human gut, '*Intestinibacillus massiliensis*', microbiota, taxonogenomics

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Strain Marseille-P3216^T was isolated in the context of a culturomics study [1] centred on the composition of the human gut microbiome along the whole gastrointestinal tract. A left colon wash sample was collected from a 76-year-old patient who underwent endoscopic examination and who provided signed informed consent. This study was approved by the local ethics committee under number 2016-010.

Strain Marseille-P3216^T growth was obtained on 5% sheep's blood–Columbia agar medium (bioMérieux, Marcy l'Étoile, France) under anaerobic atmosphere (anaeroGEN; Oxoid, Dardilly, France) after a 1-day enrichment of the fresh left colon sample in an anaerobic blood culture bottle (Becton Dickinson, Pont de Claix, France) added with 5 mL of sheep's blood (bioMérieux) and 5 mL of 0.2 µm filtered (Thermo Fisher Scientific, Villebon-sur-Yvette, France) rumen at 37°C. After 48 to 72 hours of anaerobic incubation on 5% sheep's blood–enriched Columbia agar (bioMérieux), colonies were punctiform, convex, whitish to colorless and nonhaemolytic.

Bacterial cells were Gram-negative, motile rods 0.5 to 0.8 µm wide by 1.9 to 5 µm long. Strain Marseille-P3216^T tested negative for catalase or oxidase activity. No growth was obtained after a sporulation test (20 minutes at 80°C) neither under aerobic or microaerophilic (campyGen; Oxoid) conditions. Growth was obtained on blood-enriched agar under anaerobic atmosphere at 28°C and 37°C (no growth at 20, 45 and 55°C).

The 16S rRNA gene was sequenced using fD1-rP2 primers as previously described [2] using a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France). Strain Marseille-P3216^T exhibited a 93.40% sequence identity with *Eubacterium desmolans* strain ATCC 43058^T (GenBank accession no. L34618), the phylogenetically closest species with standing in nomenclature (Fig. 1), which putatively classifies strain Marseille-P3216^T as a member of a new genus within the family *Eubacteriaceae* in the phylum *Firmicutes*.

Strain Marseille-P3216^T's closest species, *Eubacterium desmolans*, is a Gram-positive rod described in 1986 after its isolation from cat faecal flora [3]. Curiously, within the family *Eubacteriaceae*, there was at least another species (*Eubacterium plautii*) that shows Gram-negative staining characteristics [4] (89.11% of 16S rRNA identity with '*Intestinibacillus massiliensis*') that was moved to the new genus *Flavonifractor* [5].

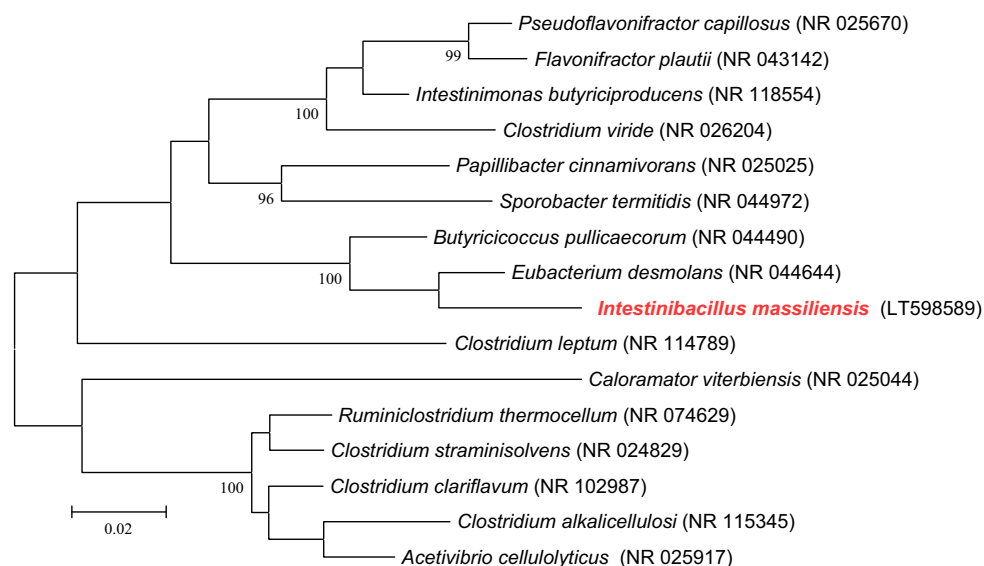


FIG. 1. Phylogenetic tree showing position of 'Intestinibacillus massiliensis' strain Marseille-P3216^T relative to other phylogenetically close neighbours. Sequences were aligned using CLUSTALW, and phylogenetic inferences were obtained using maximum-likelihood method within MEGA software. Numbers at nodes are percentages of bootstrap values obtained by repeating analysis 1000 times to generate majority consensus tree. Only bootstraps scores of at least 90 were retained.

On the basis of the 16S rRNA gene sequence divergence of strain Marseille-P3216^T with the phylogenetically closest species with standing in nomenclature [6], we propose here the creation of the new genus 'Intestinibacillus' (in.tes.ti.ni.ba.cil'lus, L. neut. n. *intestinum*, 'gut'; N.L. masc. n. *bacillus* 'wand, little staff'; N.L. masc. n. *Intestinibacillus*, 'microorganisms isolated from the intestine'). Strain Marseille-P3216 (= CSUR P3216) is the type strain of 'Intestinibacillus massiliensis' gen. nov., sp. nov. (mas.si.li.en'sis, L. masc. adj., *massiliensis*, 'from Massilia,' the Roman name of Marseille).

Matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) spectrum

The MALDI-TOF MS spectrum of 'Intestinibacillus massiliensis' strain Marseille-P3216^T is available online (<http://www.mediterranee-infection.com/article.php?laref=256&titre=urms-database>).

Nucleotide sequence accession number

The 16S rRNA gene sequence of 'Intestinibacillus massiliensis' strain Marseille-P3216^T was deposited in GenBank under accession number LT598589.

Deposit in a culture collection

Strain Marseille-P3216^T was deposited in the Collection de Souches de l'Unité des Rickettsies (CSUR, WDCM 875) under number P3216.

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Conflict of Interest

None declared.

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