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'*Ileibacterium massiliense*' gen. nov., sp. nov., a new bacterial species isolated from human ileum of a patient with Crohn disease

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Abstract

We propose here the main characteristics of '*Ileibacterium massiliense*' strain Marseille-P3115, which was isolated from the ileum liquid sample of a patient with Crohn disease.

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Keywords: Culturomics, gut microbiota, *Ileibacterium massiliense*, microbiota, taxonogenomics

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Culturomics is a complementary approach to metagenomics in studying the human microbiota [1]. We used this technique in April 2016 to study the gut microbiota from stepped samples from the digestive tract of patients who underwent upper endoscopy and colonoscopy simultaneously. Thus, we identified strain Marseille-P3115 from the ileum liquid sample of a 25-year-old patient with Crohn disease. The patient provided informed signed consent, and the ethics committee of the Institut Fédératif de Recherche IFR48 validated the study under number 2016-010.

Strain Marseille-P3115 was first isolated through a pre-incubation of 30 days in an anaerobic blood culture bottle (BD BACTEC, Plus Anaerobic/F Media, Le Pont de Claix, France) earlier enriched with 5 mL of 0.2 µm filtered rumen and 5 mL of sheep's blood. This liquid culture medium was then seeded on Columbia agar supplemented with sheep's blood (Columbia agar + 5% sheep's blood; bioMérieux, Marcy l'Etoile, France). The first growth was obtained after 1 day of incubation at 37°C in an anaerobic atmosphere (anaeroGEN Compact, Oxoid,

Thermo Scientific, Dardilly, France). After a growth of 48 hours on Columbia agar (bioMérieux), the microcolonies had a mean diameter of 0.08 mm and were white and circular. Bacterial cells were Gram-negative bacilli, with a mean diameter of 0.3 µm and a mean length of 1 µm. Strain Marseille-P3115 had no catalase activity and no oxidase activity. This strain was also nonmotile and non-endospore forming.

Given that our systematic matrix-assisted desorption ionization–time of flight mass spectrometry (MALDI-TOF MS) screening (Microflex LT; Bruker Daltonics, Bremen, Germany) [2] could not identify strain Marseille-P3115, the 16S rRNA gene was sequenced using fD1-rP2 primers as previously described [3] using a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France). Strain Marseille-P3115 exhibited a 90.7% sequence similarity with *Mogibacterium neglectum* ATCC 700924^T (GenBank accession no. AB037875), the phylogenetically closest species with standing in nomenclature (Fig. 1). *Mogibacterium neglectum* was first isolated from the human oral cavity in 2002 [4].

The 16S rRNA gene sequence divergence exceeded 5% [5] with its phylogenetically closest species with standing in nomenclature, so we propose the creation of the new genus '*Ileibacterium*' gen. nov. (il.ei.bac.te'ri.um, Gr. n. *ilei*, 'ileum'; Gr. n. *bakterion*, 'bacterium'; N.L. neut. n. *Ileibacterium*, 'bacterium isolated from the human ileum sample'). '*Ileibacterium massiliense*' gen. nov., sp. nov. (mas.si.li.en'se, L. neut. adj., *massiliense*

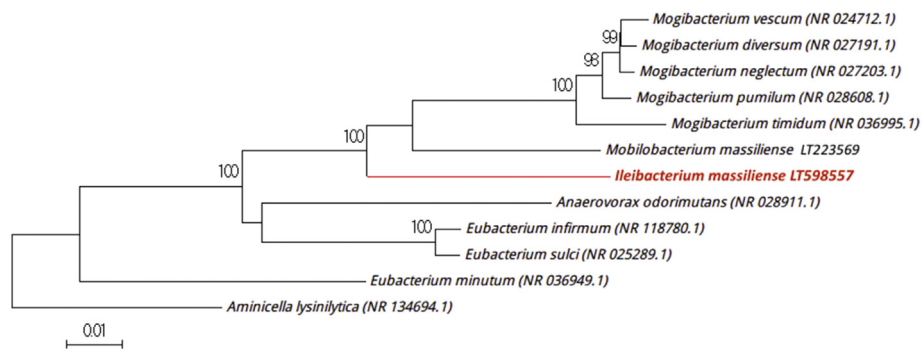


FIG. 1. Phylogenetic tree showing position of *Ileibacterium massiliense* strain Marseille-P3115^T relative to other phylogenetically close neighbours. Sequences were aligned using Musclev v3.8.31 with default parameters, and phylogenetic inferences were obtained using neighbour-joining method with 1000 bootstrap replicates within MEGA6 software. Only bootstrap values >95% are shown. Scale bar represents 1% nucleotide sequence divergence.

for Massilia, the Latin name of Marseille, where the strain was first isolated), is classified as a member of the *Eubacteriaceae* family. The type strain of the new species '*Ileibacterium massiliense*' gen. nov., sp. nov., is strain Marseille-P3115^T.

MALDI-TOF MS spectrum

The MALDI-TOF MS spectrum of '*Ileibacterium massiliense*' strain Marseille-P3115^T is available online (<http://www.mediterranee-infection.com/article.php?laref=256&titre=urms-database>).

Nucleotide sequence accession number

The 16S r RNA gene sequence of '*Ileibacterium massiliense*' strain Marseille-P3115^T was deposited in GenBank under accession number LT598557.

Deposit in a culture collection

'*Ileibacterium massiliense*' strain Marseille-P3115^T was deposited in the Collection de Souches de l'Unité des Rickettsies (CSUR, WDCM 875) under number P3115 and in the Deutsche Sammlung von Mikroorganismen und Zellkulturen (DSMZ) under number DSM 103486.

Conflict of Interest

None declared.

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