

'*Tidjanibacter massiliensis*' gen. nov., sp. nov., a new bacterial species isolated from human colon

M. Mailhe¹, D. Ricaboni^{1,3}, A. Benezech², J.-C. Lagier¹, P.-E. Fournier¹ and D. Raoult¹

1) Aix-Marseille Université, URMITE, UM63, CNRS7278, IRD198, Inserm 1095, Institut Hospitalo-Universitaire Méditerranée-Infection, Faculté de médecine, 2) Service de Gastroenterologie, Hôpital Nord, Assistance Publique-Hôpitaux de Marseille, Marseille, France and 3) Département des sciences cliniques et biomédicales, Luigi Sacco, Division des Maladies Infectieuses III, Université de Milan, Via GB Grassi, 74, 20157 Milan, Italy

Abstract

We report the summary of main characteristics of *Tidjanibacter massiliensis* strain Marseille-P3084^T, a new bacterial species isolated from the liquid sample of the colon of a patient with a history of irritable bowel syndrome.

© 2017 The Authors. Published by Elsevier Ltd on behalf of European Society of Clinical Microbiology and Infectious Diseases.

Keywords: Culturomics, gut microbiota, new species, taxonogenomics, '*Tidjanibacter massiliensis*'

Original Submission: 20 November 2016; **Revised Submission:** 7 December 2016; **Accepted:** 7 December 2016

Article published online: 13 December 2016

Corresponding author: D. Raoult, Aix-Marseille Université, URMITE, UM63, CNRS7278, IRD198, Inserm 1095, Institut Hospitalo-Universitaire Méditerranée-Infection, Faculté de médecine, 27 Boulevard Jean Moulin, 13385, Marseille cedex 05, France
E-mail: didier.raoult@gmail.com

In April 2016, a 48-year-old patient underwent a colonoscopy to investigate a history of irritable bowel syndrome. We studied samples from the wash of his right and left colon by culturomics [1] to analyse the bacterial repertoire of the human gut microbiota from stored samples of the digestive tract. Informed consent was obtained from the patient, and the ethics committee of the Institut Fédératif de Recherche IFR48 approved the study under number 2016-010.

We isolated strain Marseille-P3084^T, which could not be identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) (Microflex; Bruker Daltonics, Bremen, Germany) [2], and we sequenced its 16S rRNA gene using fDI-rP2 primers as previously described [3] with a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France).

Strain Marseille-P3084^T was first isolated after direct inoculation of the samples on Colombia agar with 5% of sheep's blood (COS; bioMérieux, Marcy l'Etoile, France) and a 3-day incubation in an anaerobic atmosphere (anaeroGen Compact;

Oxoid, Thermo Scientific, Dardilly, France) at 37°C. Colonies were white and punctiform. Cells were Gram-negative bacilli with a length of 1.2 µm and a width of 0.5 µm. Strain Marseille-P3084^T did not exhibit catalase or oxidase activities. This strain was motile and non-endospore forming.

Strain Marseille-P3084^T had a 92.1% sequence similarity [4] with *Alistipes putredinis* type strain ATCC 29800^T (GenBank accession no. L16497), the phylogenetically closest species with standing in nomenclature (Fig. 1), which was first isolated from human sources in 2003 [5]. Strain Marseille-P3084^T displayed a sequence divergence of >5% [6] with its phylogenetically closest species with standing in nomenclature, so we propose the creation of a new genus '*Tidjanibacter*' gen. nov. (ti.dja.ni.bac'ter, N.L. masc. n., *Tidjani* in honor of Maryam Tidjani Alou, a Nigerian pioneer of culturomics, and *bacter*, 'bacterium'). '*Tidjanibacter massiliensis*' gen. nov., sp. nov. (mas.si.li.en'sis, L. masc. adj. *massiliensis*, 'Massilia,' the Roman name of Marseille), is part of the *Rikenellaceae* family and the *Bacteroidetes* phylum. Strain Marseille-P3084 is the type strain of the new species *Tidjanibacter massiliensis* gen. nov., sp. nov.

MALDI-TOF MS spectrum

The MALDI-TOF MS spectrum of *Tidjanibacter massiliensis* strain Marseille-P3084^T is available online (<http://www>).

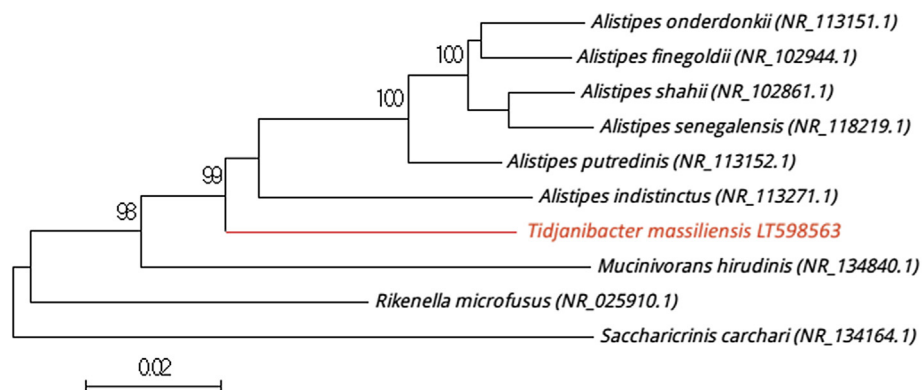


FIG. 1. Phylogenetic tree showing position of *Tidjanibacter massiliensis* strain Marseille-P3084^T relative to other phylogenetically close neighbours. Sequences were aligned using Muscle 3.8.31 with default parameters, and phylogenetic inferences were obtained using neighbour-joining method with 1000 bootstrap replicates within MEGA6 software. Only bootstrap values >95% are shown. Scale bar represents 2% nucleotide sequence divergence.

mediterranean-infection.com/article.php?laref=256&titre=urms-database).

Nucleotide sequence accession number

The 16S rRNA gene sequence of *Tidjanibacter massiliensis* strain Marseille-P3084^T was deposited in GenBank under accession number LT598563.

Deposit in a culture collection

Tidjanibacter massiliensis strain Marseille-P3084^T was deposited in the Collection de Souches de l'Unité des Rickettsies (CSUR, WDCM 875) under number P3084 and in the Deutsche Sammlung von Mikroorganismen und Zellkulturen (DSMZ) under number DSM 103552.

Acknowledgements

This study was funded by the Fondation Méditerranée Infection. The authors thank M. Lardière for English-language review.

Conflict of Interest

None declared.

References

- [1] Lagier JC, Khelaifia S, Tidjani Alou M, Ndongo S, Dione N, Hugon P, et al. Culture of previously uncultured members of the human gut microbiota by culturomics. *Nat Microbiol* 2016;1:203.
- [2] Seng P, Abat C, Rolain JM, Colson P, Lagier JC, Gouriet F, et al. Identification of rare pathogenic bacteria in a clinical microbiology laboratory: impact of matrix-assisted laser desorption ionization–time of flight mass spectrometry. *J Clin Microbiol* 2013;51:2182–94.
- [3] Drancourt M, Bollet C, Carlioz A, Martelin R, Gayral JP, Raoult D. 16S ribosomal DNA sequence analysis of a large collection of environmental and clinical unidentifiable bacterial isolates. *J Clin Microbiol* 2000;38:3623–30.
- [4] Kim M, Oh HS, Park SC, Chun J. Towards a taxonomic coherence between average nucleotide identity and 16S rRNA gene sequence similarity for species demarcation of prokaryotes. *Int J Syst Evol Microbiol* 2014;64(Pt 2):346–51.
- [5] Rautio M, Eerola E, Väisänen-Tunkelrott ML, Molitoris D, Lawson P, Collins MD, et al. Reclassification of *Bacteroides putredinis* (Weinberg et al., 1937) in a new genus *Alistipes* gen. nov., as *Alistipes putredinis* comb. nov., and description of *Alistipes finegoldii* sp. nov., from human sources. *Syst Appl Microbiol* 2003;26:182–8.
- [6] Huson DH, Auch AF, Qi J, Schuster SC. MEGAN analysis of metagenomic data. *Genome Res* 2007;17:377–86.