

'Millionella massiliensis' gen. nov., sp. nov., a new bacterial species isolated from human right colon

M. Mailhe, D. Ricaboni, A. Benezech, F. Cadoret, Pierre-Edouard Fournier,
Didier Raoult

► **To cite this version:**

M. Mailhe, D. Ricaboni, A. Benezech, F. Cadoret, Pierre-Edouard Fournier, et al.. 'Millionella massiliensis' gen. nov., sp. nov., a new bacterial species isolated from human right colon. *New Microbes and New Infections*, Wiley Online Library 2017, 17, pp.11-12. 10.1016/j.nmni.2016.11.016 . hal-01795983

HAL Id: hal-01795983

<https://hal-amu.archives-ouvertes.fr/hal-01795983>

Submitted on 22 May 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



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

M. Mailhe¹, D. Ricaboni^{1,3}, A. Benezech², F. Cadoret¹, 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 Gastroentérologie, 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, Milan, Italy

Abstract

We report here the main characteristics of '*Millionella massiliensis*' strain Marseille-P3215^T (= CSUR P3215), which was isolated from a human right colon liquid sample.

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

Keywords: Culturomics, genomics, gut microbiota, '*Millionella massiliensis*', taxonomy

Original Submission: 25 October 2016; **Revised Submission:** 10 November 2016; **Accepted:** 15 November 2016

Article published online: 21 November 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 the context of the culturomics development [1] for the study of the human microbiome [2], a bacterial strain that could not be identified by our systematic matrix-assisted desorption ionization–time of flight mass spectrometry (MALDI-TOF MS) (Bruker Daltonics, Bremen, Germany) [3] was cultivated in May 2016. This strain was isolated from the right colon liquid sample [4] of a 76-year-old woman who underwent a colonoscopy as part of colonic polyp control. The patient received clear information and provided signed informed consent. The study was validated by the ethics committee of the Institut Federatif de Recherche IFR48 under number 2016-010.

The initial growth was obtained on Columbia agar supplemented with 5% sheep's blood (bioMérieux, Marcy l'Etoile, France) after 7-day inoculation at 37°C under anaerobic atmosphere (AnaeroGen Compact; Oxoid, Thermo Scientific, Dardilly, France). Strain Marseille-P3215^T was also able to grow at 45°C in anaerobic conditions. Agar-grown colonies were circular and white, with a mean diameter of 0.1 mm. Bacterial cells were Gram-negative bacilli, lanky shaped,

ranging in length from 2100 to 2900 nm and in width from 700 to 900 nm. Strain Marseille-P3215^T was non-spore forming and nonmotile, and it exhibited no oxidase activity, whereas catalase was positive.

The 16S rRNA gene was sequenced using fD1-rP2 primers as previously described [5], using a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France). Strain Marseille-P3215^T exhibited a 94.30% sequence identity with *Rikenella microfusus* strain ATCC 29728^T (accession no. L16498), the phylogenetically closest species with standing in nomenclature [6] (Fig. 1), which was first isolated in 1978 from faecal and caecal specimens of animals and humans [7].

Because of a 16S rRNA sequence divergence of >5% [8] with its phylogenetically closest species with standing in nomenclature [9], we propose the creation of the new genus *Millionella* gen. nov. (Mil.li.o.nel'la, N.L. fem. n. *Millionella*, in honor of French microbiologist Matthieu Million, who was the pioneer (2010) of the culturomics revolution). *Millionella massiliensis* gen. nov., sp. nov. (mas.si.li.en'sis, L. fem. adj. *massiliensis*, from Massilia, the roman name of Marseille, where the strain was first cultivated) is classified as a member of the family *Rikenellaceae* in the phylum *Bacteroidetes*. Strain Marseille-P3215^T is the type strain of the new species '*Millionella massiliensis*' gen. nov., sp. nov.

The MALDI-TOF MS spectrum of '*Millionella massiliensis*' strain Marseille-P3215^T is available online (<http://www>.

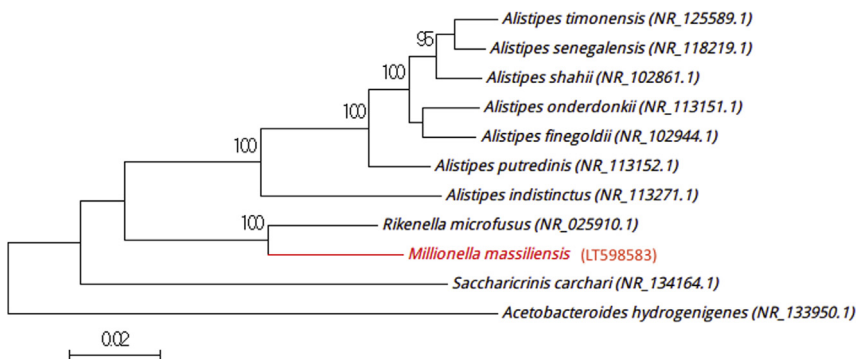


FIG. 1. Phylogenetic tree showing position of 'Millionella massiliensis' strain Marseille-P3215^T relative to other phylogenetically close neighbors. Sequences were aligned using Muscle v3.8.31 with default parameters, and phylogenetic inferences were obtained using neighbor-joining method with 1000 bootstrap replicates within MEGA6 software. Only bootstrap values >95% are shown. Scale bar represents 2% nucleotide sequence divergence.

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

Nucleotide sequence accession number

The 16S r RNA gene sequence was deposited in GenBank under accession number LT598583.

Deposit in a culture collection

Strain Marseille-P3215^T was deposited in the Collection de Souches de l'Unité des Rickettsies (CSUR, WDCM 875) under the number P3215.

Acknowledgement

This study was funded by the Fondation Méditerranée Infection.

Conflict of Interest

None declared.

References

- [1] Lagier JC, Armougom F, Million M, Hugon P, Pagnier I, Robert C, et al. Microbial culturomics: paradigm shift in the human gut microbiome study. *Clin Microbiol Infect* 2012;18:1185–93.
- [2] Lagier JC, Hugon P, Khelaifa S, Fournier PE, La Scola B, Raoult D. The rebirth of culture in microbiology through the example of culturomics to study human gut microbiota. *Clin Microbiol Rev* 2015;28:237–64.
- [3] 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.
- [4] Raoult D, Henrissat B. Are stool samples suitable for studying the link between gut microbiota and obesity? *Eur J Epidemiol* 2014;29:307–9.
- [5] 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.
- [6] 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.
- [7] Collins MD, Shah HN, Mitsuoka T. Reclassification of *Bacteroides microfusus* (Kaneuchi and Mitsuoka) in a new genus *Rikenella*, as *Rikenella microfusus* comb. nov. *Syst Appl Microbiol* 1985;6:79–81.
- [8] Huson DH, Auch AF, Qi J, Schuster SC. MEGAN analysis of metagenomic data. *Genome Res* 2007;17:377–86.
- [9] Stackebrandt E, Frederiksen W, Garrity GM, Grimont PAD, Kämpfer P, Maiden MCJ, et al. Report of the Ad Hoc Committee for the Re-evaluation of the Species Definition in Bacteriology. *Int J Syst Evol Microbiol* 2002;52(Pt 3):1043–7.