



HAL
open science

'Actinotignum timonense' sp. nov., a new bacterial species isolated from a human urine sample.

S. Brahim, F. Cadoret, Pierre-Edouard Fournier, V. Moal, Didier Raoult

► To cite this version:

S. Brahim, F. Cadoret, Pierre-Edouard Fournier, V. Moal, Didier Raoult. 'Actinotignum timonense' sp. nov., a new bacterial species isolated from a human urine sample.. *New Microbes and New Infections*, 2017, 16, pp.47–48. 10.1016/j.nmni.2017.01.002 . hal-01795926

HAL Id: hal-01795926

<https://amu.hal.science/hal-01795926v1>

Submitted on 26 Aug 2024

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.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

'*Actinotignum timonense*' sp. nov., a new bacterial species isolated from a human urine sample

S. Brahimi^{1,2}, F. Cadoret¹, P.-E. Fournier¹, V. Moal^{1,3} and D. Raoult¹

1) Aix-Marseille Univ, Unité de Recherche sur les Maladies Infectieuses et Tropicales Emergentes (URMITE), CNRS 7278, IRD 198, INSERM 1095, UM63, Institut Hospitalo-Universitaire Méditerranée-Infection, Faculté de médecine, Marseille, 2) Université Blaise Pascal, Clermont-Ferrand, UFR Sciences et Technologies, Campus Universitaire des Cézéaux, Aubière and 3) APHM, Hôpital Conception, Centre de Néphrologie et Transplantation Rénale, Centre Hospitalo-Universitaire Conception, Marseille, France

Abstract

We report here the main characteristics of '*Actinotignum timonense*' strain Marseille-P2803^T (= CSUR P2803) that was isolated from the urine sample of a 59-year-old man with end-stage renal disease.

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

Keywords: '*Actinotignum timonense*', culturomics, kidney disease, taxonomy, urine

Original Submission: 6 December 2016; **Revised Submission:** 2 January 2017; **Accepted:** 3 January 2017

Article published online: 7 January 2017

Corresponding author: D. Raoult, Aix-Marseille Univ, Unité de Recherche sur les Maladies Infectieuses et Tropicales Emergentes (URMITE), CNRS 7278, IRD 198, INSERM 1095, UM63, Institut Hospitalo-Universitaire Méditerranée-Infection, Faculté de médecine, 27 Boulevard Jean Moulin, 13385, Marseille Cedex 5, France
E-mail: didier.raoult@gmail.com

As part of the study of the urinary microbiota [1] by culturomics [2], we investigated urine samples of adult kidney transplant recipients. The bacterial strain Marseille-P2803, which could not be identified by our systematic matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) screening on a Microflex spectrometer (Bruker Daltonics, Bremen, Germany) [3], was isolated from a urine sample of a 59-year-old man, treated by chronic haemodialysis for diabetic nephropathy. The patient provided informed, signed consent, and the agreement of the local ethics committee of the IFR48 (Marseille, France) was obtained under the number 09-022. The strain Marseille-P2803 was isolated after 7 days of direct seeding culture of the urine sample on a 5% sheep blood Columbia agar medium (bioMérieux, Marcy l'Étoile, France) incubated at 37°C in aerobic atmosphere. Agar-grown colonies were grey with a diameter <1 mm. Strain Marseille-P2803 cells were non-motile, Gram-positive bacilli, small rod-shaped, with a diameter from

400 nm to 500 nm. The strain Marseille-P2803 does not exhibit catalase or oxidase activities.

The complete 16S rRNA gene was sequenced using fD1-rP2 primers as previously described [4] and a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France). The strain Marseille-P2803 exhibited a 98.45% sequence similarity with *Actinotignum schaalii* (synonym *Actinobaculum schaalii*) strain CCUG 27420 (GenBank Accession number NR_116869), which is the phylogenetically closest species with standing nomenclature (Fig. 1). Consequently, it putatively classifies the strain Marseille-P2803 as a new member of the genus *Actinotignum* within the family *Actinomycetaceae* in the phylum *Actinobacteria*. *Actinotignum schaalii*, previously named *Actinobaculum schaalii* by Lawson *et al.* in 1997 [5], was isolated from human blood; cells were straight to slightly curved rods, Gram-positive and non-motile. The genus *Actinobaculum* was introduced to accommodate bacterial strains previously named *Actinomyces suis* and some *Actinomyces*-like organisms isolated from human clinical specimens. In 2015, *Actinobaculum schaalii* was reclassified as *Actinotignum schaalii* by Yassin *et al.* [6].

The strain Marseille-P2803 showing a 16S rRNA gene sequence divergence >1.3% with its phylogenetically closest species with standing in nomenclature [7,8], we propose the creation of the new species '*Actinotignum timonense*' sp. nov., (ti.mo.nen'se N.L. neut. adj. *timonense*, pertaining to La Timone,

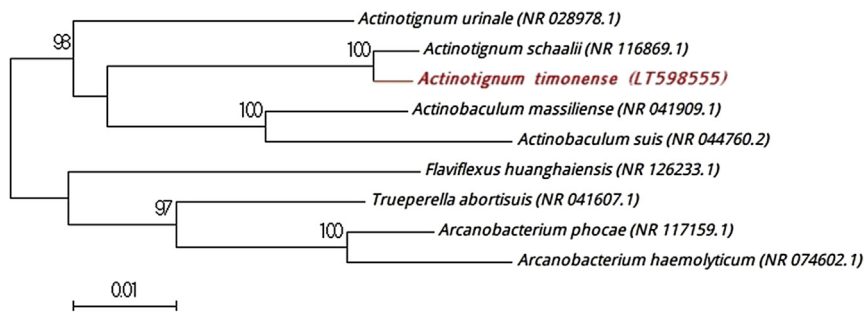


FIG. 1. Phylogenetic tree showing the position of ‘*Actinotignum timonense*’ strain Marseille-P2803^T relative to other phylogenetically close neighbours. GenBank Accession numbers are indicated in parentheses. Sequences were aligned using CLUSTALW, and phylogenetic inferences were obtained using the maximum-likelihood method within the MEGA software. Numbers at the nodes are percentages of bootstrap values obtained by repeating the analysis 500 times to generate a majority consensus tree. Only the bootstrap scores $\geq 90\%$ were retained. The scale bar indicates a 1% nucleotide sequence divergence.

the name of the hospital in Marseille, France, where the first strains were isolated). Strain Marseille-P2803^T is the type strain of ‘*Actinotignum timonense*’ sp. nov.

MALDI-TOF MS spectrum accession number. The MALDI-TOF MS spectrum of ‘*Actinotignum timonense*’ strain Marseille-P2803^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 was deposited in GenBank under Accession number LT598555.

Deposit in a culture collection. Strain Marseille-P2803^T was deposited in the Collection de Souches de l’Unité des Rickettsies (CSUR, WDCM 875) under number P2803.

Transparency declaration

The authors have no conflicts of interest to declare.

Funding

This work was funded by Méditerranée-Infection Foundation.

References

- [1] Lagier J-C, Hugon P, Khelaifia S, Fournier P-E, La Scola B, Raoult D. The rebirth of culture in microbiology through the example of culturomics to study human gut microbiota. *J Clin Microbiol Rev* 2015;28:237–64.
- [2] Hilt EE, McKinley K, Pearce MM, Rosenfeld AB, Zilliox MJ, Mueller ER, et al. Urine is not sterile: use of enhanced urine culture techniques to detect resident bacterial flora in the adult female bladder. *J Clin Microbiol* 2014;52:871–6.
- [3] Seng P, Abat C, Rolain JM, Colson P, Lagier J-C, 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] Drancourt M, Bollet C, Carlioz A, Martelin R, Gayral J-P, 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.
- [5] Lawson PA, Falsen E, Åkervall E, Vandamme P, Collins MD. Characterization of some *Actinomyces*-like isolates from human clinical specimens: reclassification of *Actinomyces suis* (Soltyz and Spratling) as *Actinobaculum suis* comb. nov. and description of *Actinobaculum schaalii* sp. nov. *Int J Syst Bacteriol* 1997;47:899–903.
- [6] Yassin AF, Spröer C, Pukall R, Sylvester M, Siering C, Schumann P. Dissection of the genus *Actinobaculum*: reclassification of *Actinobaculum schaalii* Lawson et al. 1997 and *Actinobaculum urinale* Hall et al. 2003 as *Actinotignum schaalii* gen. nov., comb. nov. and *Actinotignum urinale* comb. nov., description of *Actinotignum sanguinis* sp. nov. and emended descriptions of the genus *Actinobaculum* and *Actinobaculum suis*; and re-examination of the culture deposited as *Actinobaculum massiliense* CCUG 47753^T (= DSM 19118^T), revealing that it does not represent a strain of this species. *Int J Syst Evol Microbiol* 2015;65:615–24.
- [7] Huson DH, Auch AF, Qi J, Schuster SC. MEGAN analysis of metagenomic data. *Genome Res* 2007;17:377–86.
- [8] Kim M, Oh H-S, Park S-C, 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;64:346–51.