

'*Arcanobacterium urinimassiliense*' sp. nov., a new bacterium isolated from the urogenital tract

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Abstract

Herein we report the main characteristics of '*Arcanobacterium urinimassiliense*' strain Marseille-P3248^T (=CSUR P3248) isolated from a urine sample of a 54-day-old girl with rotavirus gastroenteritis.

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Keywords: '*Arcanobacterium urinimassiliense*', culturomics, human microbiota, rotavirus gastroenteritis, taxonomy

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In 2016, as a part of the culturomics study [1,2] of the human microbiome, a bacterial strain that could not be identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) using a Microflex spectrometer (Bruker Daltonics, Bremen, Germany) [3] was isolated from a urine sample of a 54-day-old girl with rotavirus gastroenteritis. The study was approved by the local ethics committee of the Institut Federatif de Recherche IFR48 (Marseille, France) under the agreement number 09-022. The parents provided written informed consent.

The sample was preincubated in an anaerobic blood culture bottle (Becton Dickinson, Le Pont-de-Claix, France) supplemented with 4 mL rumen that was filter-sterilized through a 0.2 µm pore filter (Thermo Fisher Scientific, Villebon-sur-Yvette, France) and 5 mL of defibrinated sheep's blood (bio-Mérieux, Marcy l'Etoile, France). After 30 days of preincubation, the supernatant was cultured on homemade R medium (Timone Hospital, Marseille, France) and then incubated in anaerobic

atmosphere generated using the GENbag Anaer system (bio-Mérieux). After 3 days of incubation, strain Marseille-P3248^T was isolated. On agar, colonies were small and beige with a mean diameter of 200 µm. Bacterial cells were Gram variable and rod shaped, with length ranging from 400 to 600 nm and width ranging from 300 to 400 nm. Strain Marseille-P3248^T was nonmobile. Catalase and oxidase reactions were negative.

The 16S rRNA gene was sequenced using the fD1-rP2 primers as previously described [4], using a 3130-XL sequencer (Applied Biosciences, Saint-Aubin, France). Strain Marseille-P3248^T exhibited 94.7% sequence similarity with *Arcanobacterium phocae* strain DSM 10002 (GenBank accession no. NR-117159) [5], its phylogenetically closest species with standing in nomenclature (Fig. 1). Because this sequence was smaller than the 98.65% threshold set defined by Kim *et al.* [6] to support a new species, strain Marseille-P3248^T can be classified as a new species of *Arcanobacterium* genus belonging to the family *Actinomycetaceae* classified within the *Actinobacteria* phylum.

Because strain Marseille-P3248^T exhibited a 16S rRNA gene sequence divergence of 3.95% with its phylogenetically closest species with standing in nomenclature [6], we propose that strain Marseille-P3248 may be the representative strain of the new species called '*Arcanobacterium urinimassiliense*' (u.ri.ni.mas.sil.i.en'se, N.L. u.ri.no, N.L. gen. fem. *urina*, 'urine,' from which this bacterium was first cultivated; and mas.si.li.en'sis, L. gen. adj. *massiliensis*, from 'Massilia,' the Latin name of

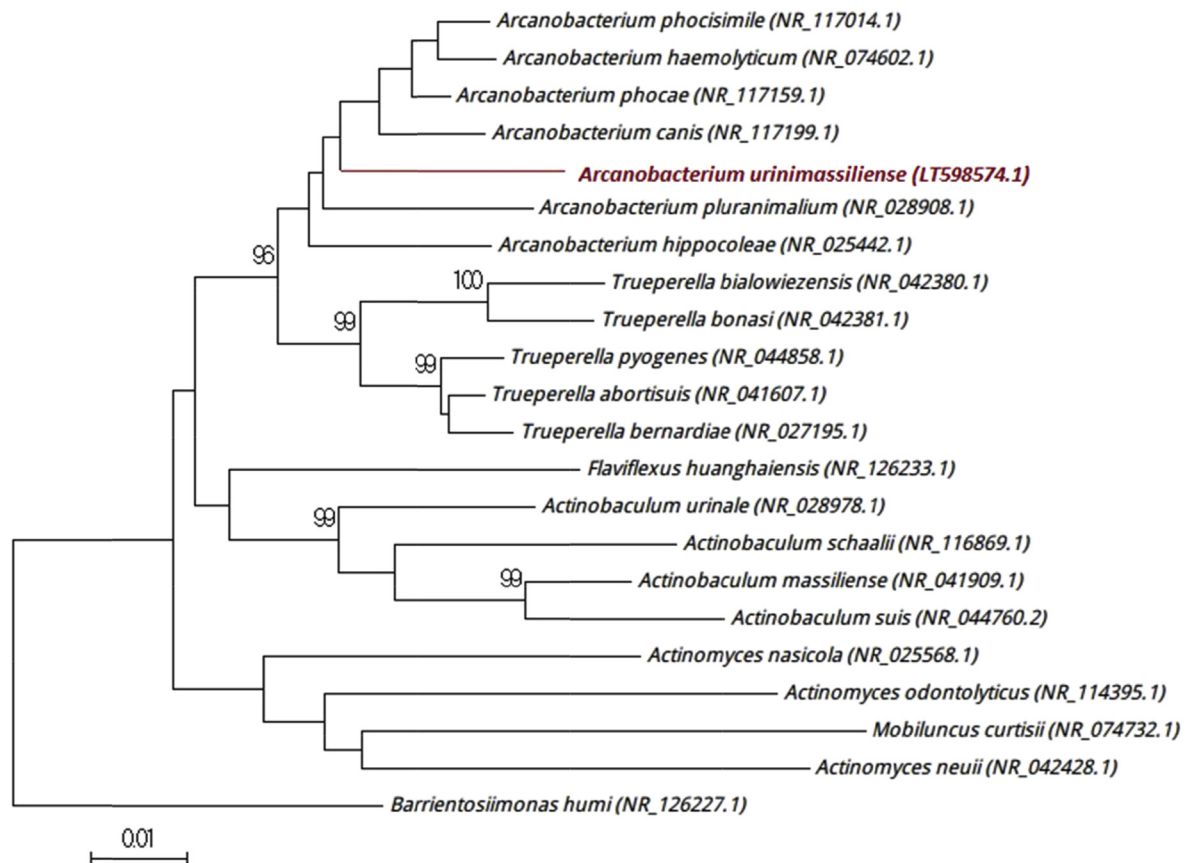


FIG. 1. Phylogenetic tree showing position of '*Arcanobacterium urinimassiliense*' strain Marseille-P3248^T relative to other phylogenetically close neighbours. Sequences were aligned by CLUSTALW, and phylogenetic inferences were obtained by maximum-likelihood method within MEGA software. Number at node is percentages of bootstrap value ($\geq 95\%$) obtained by repeating analysis 500 times to generate majority consensus tree. GenBank accession numbers are indicated in parentheses. Scale bar indicates 1% nucleotide sequence divergence.

Marseille, France, where the microorganism was first isolated). Strain Marseille-P3248^T is the type strain.

MALDI-TOF MS spectrum

The MALDI-TOF MS spectrum of '*Arcanobacterium urinimassiliense*' strain Marseille-P3248^T is available online (<http://mediterranee-infection.com/article.php?leref=256&titre=urms-database>).

Nucleotide sequence accession number

The 16S rRNA gene sequence of the strain Marseille-P3248^T was deposited in GenBank under accession number LT598574.

Deposit in a culture collection

Strain Marseille-P3248^T was deposited in the Collection de Souches de l'Unité des Rickettsies (CSUR) under number P3248.

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Conflict of Interest

None declared.

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