

# *Actinomyces urinae* sp. nov., isolated from 13-year-old girl affected by nephritic syndrome

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## Abstract

Here, we report the main characteristics of *Actinomyces urinae* strain Marseille-P2225<sup>T</sup> (CSURP2225) isolated from a human urine sample. © 2016 The Authors. Published by Elsevier Ltd on behalf of European Society of Clinical Microbiology and Infectious Diseases.

**Keywords:** *Actinomyces urinae*, culturomics, genomics, taxono-genomics, taxonomy

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A bacterial strain that could not be identified by our systematic matrix-assisted laser desorption-ionization time-of-flight (MALDI-TOF) screening on a Microflex spectrometer (Bruker Daltonics, Bremen, Germany) [1] was isolated in our search unit in 2015 using culturomics methodology [2,3] to study the human urinary microbiome. This strain was isolated from the urine sample of a 13-year-old girl affected by nephritic syndrome. The urine sample was collected in April 2015. The patient's relatives gave a signed informed consent and the study was validated by the ethics committee of the Institut Federatif de Recherche IFR48 under number 09-022.

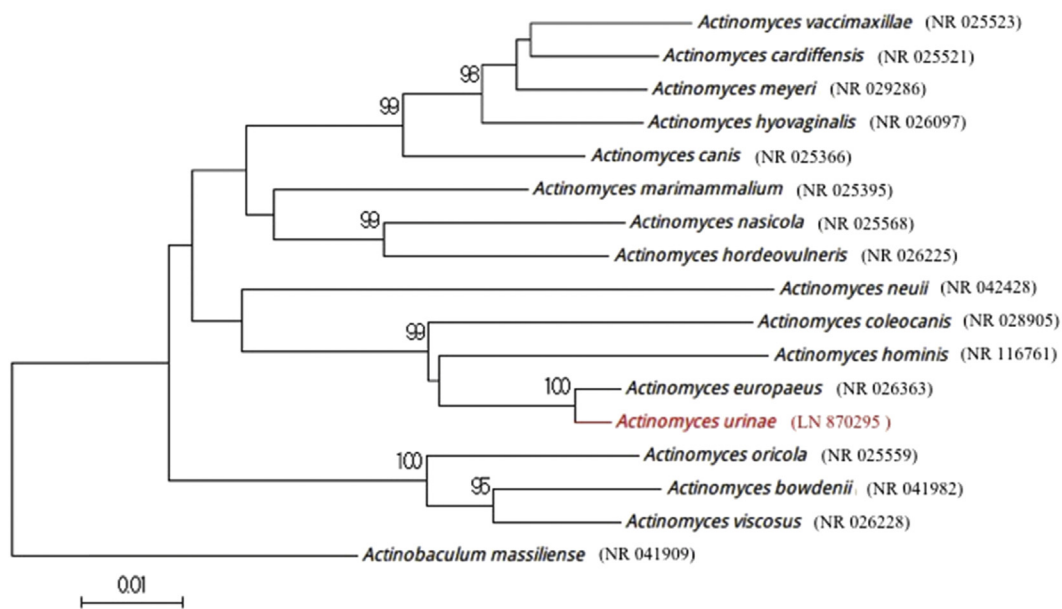
Strain Marseille-P2225 initially grew after a 10-day incubation in an anaerobic blood culture (Becton Dickinson, Le Pont-de-Claix, France) supplemented with 5 mL of 0.2- $\mu$ m filtered rumen fluid. A pure culture of the strain Marseille-P2225 was then isolated after 48 h of incubation at 37°C spread on 5% sheep blood–Columbia agar medium (bioMérieux, Marcy l'Etoile, France) in an anaerobic atmosphere generated using the GENbag Anaer systems (bioMérieux). Strain Marseille-P2225 has translucent, beige micro-colonies with a mean diameter

of 100  $\mu$ m. Bacterial cells were Gram-positive, elongated bacillus-shaped, ranging in length from 400 to 600 nm and width from 200 to 400 nm. Strain Marseille-P2225 was catalase-negative and oxidase-negative. We used fD1-rP2 primers as previously described with a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France) to sequence the 16S rRNA gene [4]. Strain Marseille-P2225 exhibited a 98.4% sequence identity with *Actinomyces europaeus* strain CCUG 32789A (GenBank Accession number NR114971) [5], the phylogenetically closest species with standing nomenclature (Fig. 1), which putatively classifies it as a member of the genus *Actinomyces* within the family *Actinomycetaceae* in the phylum *Actinobacteria*.

As the strain Marseille-P2225 exhibited a 16S rRNA sequence divergence >1.3% from its phylogenetically closest species with standing in nomenclature [6,7], we propose the creation of the new species *Actinomyces urinae* sp. nov., because this bacteria is close to other *Actinomyces* species [5] and was first described in a human urine sample. Strain Marseille-P2225<sup>T</sup> is the type strain of the new species *Actinomyces urinae* sp. nov. (u.ri.na'e. L. N. gen. fem. *urinae*, of *urina*, the Latin name of urine).

**MALDI-TOF spectrum.** The spectrum of *Actinomyces urinae* strain Marseille-P2225<sup>T</sup> is available at: <http://mediterranean-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 LN870295.



**FIG. 1.** Phylogenetic tree showing the position of *Actinomyces urinae* strain Marseille-P2225 relative to other phylogenetically close neighbours. Sequences were aligned using CLUSTAL W, 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 bootstraps score of at least 90% were retained. The scale bar indicates a 1% nucleotide sequence divergence.

**Deposit in a culture collection.** Strain Marseille-P2225 was deposited in the Collection de Souches de l'Unité des Rickettsies (CSUR, WDCM 875) under number P2225.

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## Transparency Declaration

The authors have no conflicts of interest.

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