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# CASE REPORTS

## Bacteremia Caused by *Janibacter melonis*

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**We report a case of bacteremia caused by *Janibacter melonis*, a recently described aerobic actinomycete originally isolated from a spoiled oriental melon. Our patient's blood culture isolate was identified by partial 16S rRNA gene sequencing. This is the first report of the recovery of *Janibacter* species from humans.**

### CASE REPORT

The patient was a 40-year-old horse-riding instructor in otherwise good health who presented for medical attention with acute onset of low-grade fever and right-sided facial swelling, pain, and erythema developing 1 day after being bitten in the right cheek by an unidentifiable insect. The insect stinger remained embedded in the subcutaneous facial tissues but was subsequently manually removed in its entirety, on the first day of illness, by the patient's friend using a kitchen knife. There were no gastrointestinal symptoms, although he also complained of a headache. He was initially treated with oral steroids for a presumed allergic reaction, but his symptoms did not improve over the next 2 days, after which he was referred to the hospital emergency department. At that time, physical examination revealed a temperature of 38.0°C and demonstrated a 3-cm-by-4-cm area of extensive right-sided facial swelling, tenderness, and erythema surrounded by an area of less-intense swelling and erythema involving the entire right side of the face, jaw, and external ear but without a sharp border of demarcation between normal and abnormal skin. The rest of the examination was unremarkable. Initial blood work revealed a normal white blood cell count with no evidence of a neutrophilia. Serological tests for antistreptolysin O and anti-DNase B antibody titers were within normal limits. Computed tomography scans of the face revealed extensive soft-tissue swelling and inflammatory stranding throughout the subcutaneous tissues but no evidence of an abscess. Despite the absence of P'eau d'orange, he was diagnosed with erysipelas and treated with intravenous cefazolin, 2 g every 8 h, after two sets of aerobic and anaerobic blood cultures were drawn. He fever subsided and his facial symptoms improved slowly while on intravenous antibiotic therapy, although this was later discontinued and changed to intravenous clindamycin, 600 mg every 8 h, due to a suspected allergic reaction (worsening erythema) to the former antibiotic. After 3.5 days of incubation, one of the aerobic blood culture bottles became positive for short, fat, nonmotile, gram-negative coccobacilli that grew scantly on nonselective blood and chocolate agar media after overnight incubation at 37.0°C in a 5%-$CO_2$ atmosphere, while no growth was observed on MacConkey agar media. The organism repeatedly stained gram negative, although sensitivity to vancomycin (5 μg) special-potency identification disks suggested it possessed a typical gram-positive cell wall ultrastructure. Cells were catalase positive but oxidase negative. After 24 h of incubation, colonies were small (<0.5 mm), white, and had a "bleach-like" odor. The organism did not resemble any previously known bacterium of medical importance. The isolate was subsequently characterized by partial 16S rRNA gene sequencing using MicroSeq 500 kits and an ABI Prism 3100 genetic analyzer (Applied Biosystems, Foster City, CA). A GenBank BLAST search revealed a 99.8% match (one base pair mismatch) of our isolate's 16S rRNA gene sequence profile (GenBank accession number AY964645) with that of a recently characterized strain of *Janibacter melonis* (GenBank accession number AY552568) and a 99.2% match (eight base pair mismatches) with another strain of *J. melonis* (GenBank accession number AY552569), based on the 439-bp sequence of our isolate (corresponding to bases 70 to 509 using the *E. coli* numbering scheme). Further phylogenetic analysis indicated that our sequence clustered tightly with the 16S rRNA sequences of the two *J. melonis* strains in the GenBank database and helped confirm the species identification of the current isolate (Fig. 1). Our patient's clinical symptoms completely resolved 3 weeks after initial presentation.

**Discussion.** The genus *Janibacter* was first proposed and described by Martin and colleagues in 1997 shortly after these researchers identified two strains of novel actinobacteria that had been isolated from sludge samples collected from a wastewater treatment plant in Germany (4). The name *Janibacter limosus* was assigned to these strains based on the natural habitat of the organism (limosus [adjective] = muddy or per-

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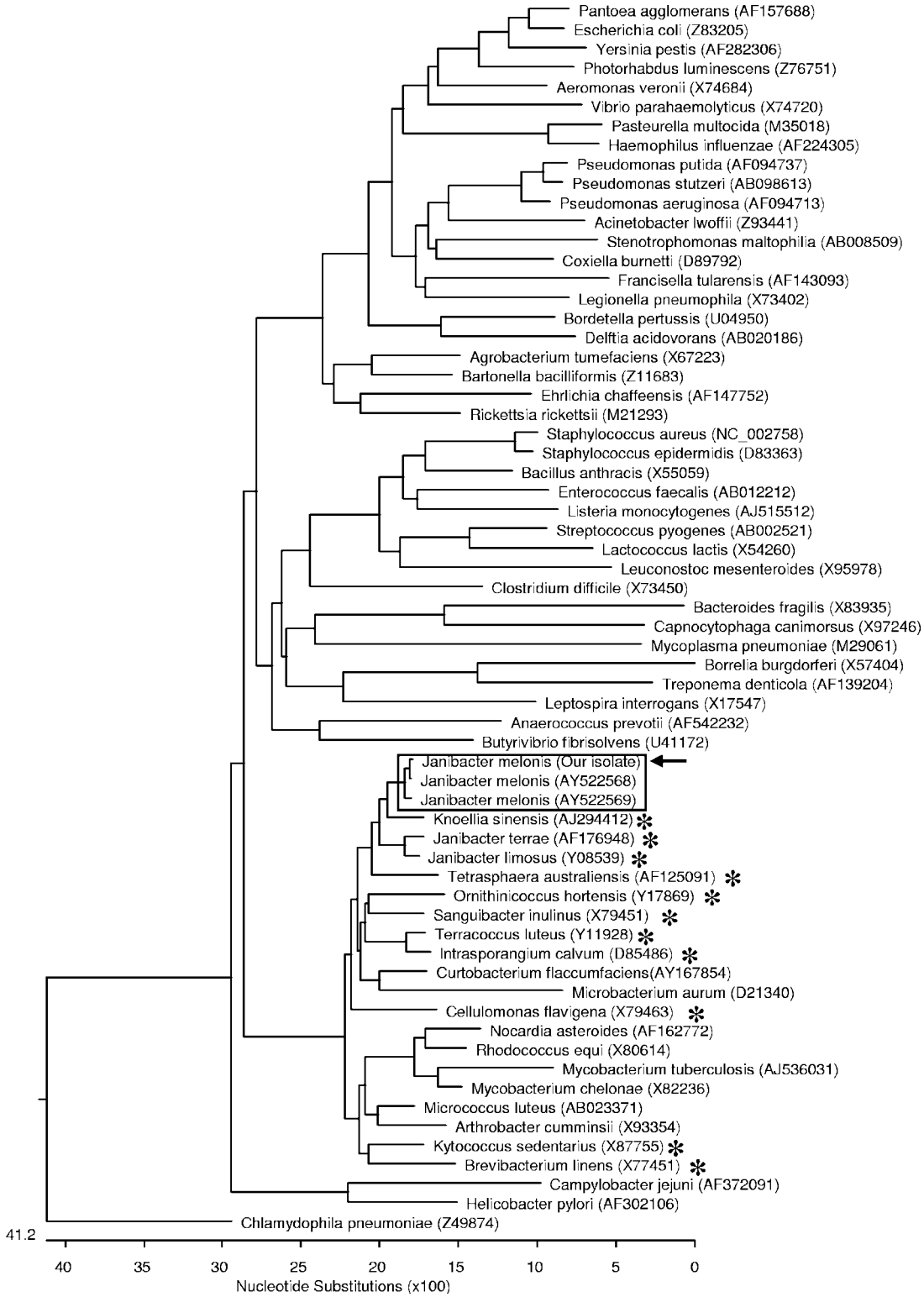


FIG. 1. Phylogenetic tree showing the 16S rRNA gene relationships of our *J. melonis* isolate with representative strains of *Janibacter* species, other aerobic actinomycetes, and various medically important bacteria. The tree was constructed by Clustal W analysis (DNASTAR, Inc., Madison, WI), based on analysis of the first 439 bp of the respective 16S rRNA gene sequences obtained from the GenBank database, with their nucleotide sequence accession numbers in brackets. *Chlamydophila pneumoniae* was the outgroup used to root the tree. Our *J. melonis* isolate and the two previously published *J. melonis* isolates are boxed, with our isolate delineated with an arrow. Species marked with an asterisk have yet to be isolated from humans.

taining to sludge) (4). Since then, additional species of *Janibacter* have been described, including *J. brevis* (2), *J. terrae* (6), and, more recently, *J. melonis* (7), although *J. brevis* is no longer considered to be a valid species, since it has been shown to be identical to *J. terrae* (3). *Janibacter terrae* has been isolated from various polluted environments in Germany, France, Japan, and Portugal, including wastewater treatment plants, contaminated soil from industrial sites, river water, forest soil, and nonsaline alkaline groundwater (3, 5, 6). *Janibacter melonis* is a newly described member of the genus that was isolated from the inner part of an abnormally spoiled oriental melon (*Cucumis melo*) collected from a cultivation field in Korea (7) but has since not been isolated from other sources. To date, there are no reports of the recovery of any *Janibacter* species from humans, and hence, the pathogenic potential of this group of bacteria has heretofore remained unknown. However, the isolation of *Janibacter melonis* from our patient's bloodstream suggests, but does not prove, a possible causal link between infection with this organism and human illness. No attempts were made to recover the organism from the patient's infected facial skin. The possibility that our patient's isolate represented clinically unimportant transient bacteremia from an unknown source of colonization or blood culture contamination from transient skin colonization cannot be determined with any certainty. Our patient did not recall consuming any spoiled fruit or other foods in the days preceding the onset of his illness, and there was no history of international travel or contact with wastewater treatment plants. Conceivably, he may have indirectly acquired this bacterium from the biting insect, with the original source being the physical environment.

Microscopically, cells of *Janibacter melonis* are obligately aerobic, gram-positive, non-acid-fast, nonmotile, non-spore-forming cocci (0.8 to 1.0 um in diameter) (7). However, our patient's isolate formed coccobacilli that appeared to stain gram negative; but coccobacillary forms have been observed with other *Janibacter* species (2–4, 6, 7), and the results of special potency vancomycin disk testing suggested that our isolate had a true gram-positive cell wall ultrastructure. Colonies of *J. melonis* are typically smooth, circular, convex, glistening, cream-colored, and 1.5 to 3.0 mm in diameter after 7 days of aerobic incubation on nonselective agar media, with an optimal growth temperature of 30°C (7). Like other members of the genus *Janibacter*, strains of *J. melonis* are catalase positive, oxidase negative, and asaccharolytic (2–4, 6, 7). In contrast to *J. limosus* and *J. terrae*, *J. melonis* strains hydrolyze esculin but not gelatin, do not produce hydrogen sulfide, and do not grow in high concentrations of salt (2–4, 6, 7). Phylogenetically, *J. melonis* displays the closest relationships with other *Janibacter* species in addition to several other actinobacteria in the physical environment, including *Knoellia sinensis* (1) and *Tetrasphaera* spp. (Fig. 1), organisms which have also never previously been recovered from humans.

In conclusion, *J. melonis* represents a potentially clinically important aerobic actinomycete, although the true clinical significance of this organism and other *Janibacter* species in humans awaits further study.

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