Novel species of the genus Phyllobacterium in the biofilms covering the walls of Roman Catacombs

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ABSTRACT

Molecular surveys of microbial communities in Roman catacombs of Saint Callixtus (Rome, Italy) have revealed the presence of Phyllobacterium 16S rRNA gene sequences. In these environment, Phyllobacterium appears to be linked to the development of cyanobacterial colonization of catacomb walls. This finding represents a novel niche for members of this genus since previously described Phyllobacterium has always been associated to plant nodules or the rhizosphera.

To complement molecular surveys, attempts to culture strains of the genus Phyllobacterium resulted in the isolation of two strains, CSC19 and CSC32. These two strains were characterized following a polyphasic approach. The 16S rRNA gene sequence allow to classify these strains within the genus Phyllobacterium. Previously described species of this genus P. myrsinacearum and P. trifolii show significant differences with the two isolated strains. Further genotypic and phenotypic tests suggested the proposal of a new species Phyllobacterium catacumbae, so far constituted by the two isolates obtained during this study.

Our results showed that members of Phyllobacterium are common components of the microbial communities in catacombs and they might have interest as potential biodeteriorating agents in these environments.

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