

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

V. Jurado¹, J.M., Gonzalez¹, L. Laiz¹, M.C. Portillo¹, M. Hernandez Marine², C. Saiz-Jimenez¹

¹Instituto de Recursos Naturales y Agrobiología, CSIC, Sevilla, Spain
(RTPHC-CSIC)

²Facultad de Farmacia, Universidad de Barcelona, Spain

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 rhizosphere.

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.