Stenotrophomonas bentonitica BII-R7^T, a novel bacterial strain with bioremediation potential

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Stenotrophomonas bentonitica BII-R7^T, a Gram-stain negative, rod-shaped, aerobic bacterial strain, was isolated during a study targeting the culture-dependent microbial diversity occurring in bentonite formations from southern Spain [1]. Comparative *gyrB* and 16S rRNA gene sequence analyses showed that this isolate belongs unequivocally to the genus *Stenotrophomonas* (class *Gammaproteobacteria*). Members of this genus have been recently proposed for bioremediation strategies due to their versatility and particular characteristics [2]. This potential applicability was also demonstrated in our laboratory through several interaction experiments by using metals such as U and Se [3].

Based on a polyphasic approach comprising phenotypic (morphological, quinone system analysis, fatty acid profiling, etc.) and genotypic/molecular (Orthologous Average Nucleotide Identity, Original Average Nucleotide Identity, Genome-to-Genome Distance and GC percentage) we demonstrated that the isolate BII-R7^T represents a novel genospecies within this genus. Considering all analyses performed, the *Stenotrophomonas* species identified as closest to BII-R7^T were *Stenotrophomonas rhizophila* LMG 22075^T, *Stenotrophomonas pavanii* DSM 25135^T, *Stenotrophomonas maltophilia* DSM 50170^T, *Stenotrophomonas chelatiphaga* DSM 21508^T, and *Stenotrophomonas tumulicola* JCM 30961^T. A comprehensive comparative analysis of BII-R7^T genome and those from *Stenotrophomonas* close species mentioned above was performed in order to evaluate their genomic potential in heavy metal bioremediation strategies as well as other biotechnological applications.

[1]López-Fernández et al. (2014), Appl Geochem 49, 77-86.
[2]Mukherjee and Roy (2016), Front Microbiol 7: 967.
[3]López-Fernández et al. (2015), Goldschmidt 2015 Abstracts Book 1921.