06
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SÉMINAIRE

Microbiology's platypus

Damien Devos
Center of Organismal Studies, Heidelberg

We study a poorly characterized bacterial gender of the Planctomycetes phylum, Gemmata obscuriglobus. Planctomycetes are major players in the global nitrogen and carbon cycles and are uniquely capable of anaerobic ammonium oxidation (a globally important nitrogen transformation). Within that phylum, the bacteria of the gender Gemmata are particularly interesting due to their complex intracellular membranous organization that is sustained by proteins showing similarity to the eukaryotic equivalent ones and their capability to internalize fully folded proteins in a process reminiscent of eukaryotic endocytosis (Lohnienne et al., 2010).We use a combination of computational, molecular biology, and electron-microscopy to first, decipher the peculiar biology of the Planctomycetes and second, to understand their contribution to eukaryotic origin. Computationally, we use structure to push the limits of sequence homology detection. Amongst other tools, we use protein architecture correlation to detect potential relationship between distantly related proteins (Santarella-Mellwig et al. PLoS Biol. 2010).