

## Understanding the complex lipid metabolism in Actinomycetes

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Actinomycetes are very distinctive organisms in the components of their lipid metabolism. For example, *Mycobacterium* has two fatty acid synthases (FAS), a typical prokaryotic one, or so call FAS II system, and a eukaryotic like synthase called FAS I. These two systems need to be tightly regulated in order to sustain lipid homeostasis, and this is obtained throughout a tight transcriptional control. On the other hand, the acyl-CoA carboxylases, which are the enzymes that provide the substrates for the biosynthesis of fatty acids, or other more complex lipids of the cell wall, are also particular in these organisms in relation to their substrate specificity and the structures of the proteins that form these enzymes complexes. In this talk I will present the work that my laboratory has carried out in both of these subjects in *Streptomyces* and in *Mycobacterium*, and also the use of these enzymes in different biotechnological approaches