

***Structural Biology on Protein cages and macromolecular assemblies:
structure, dynamic and function from an integrative structural biology
approach***

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Abstract

Enzymes encapsulation inside shell-forming protein cages represents a powerful strategy for controlling catalytic activity in living organisms due to the reaction pathways can be restricted to specific compartments (e.g. the encapsulins are widespread examples in the prokaryotic realm).

Hence, the goals of my current research aims to understand, the structural relation between the encapsulins protein cages and their encapsulated proteins at atomistic level, shed light over the atomistic details of the capsid stability and also find new small molecules (drug-like) that can interfere the multimeric self-assembly equilibria in order to reach a biomedical and biotechnological impact.

In the context of this seminar, I am going to present the main interest and last progress on my lab in the context of the protein cages, but also results on protein dynamics and integrative methods to study protein structure and protein dynamics by solid state NMR and CryoEM on big macromolecular assemblies (Gauto et al., Nat. comm., 2019, Gauto et al. Nat. Comm., 2022, Gauto et al. JACS, 2019).