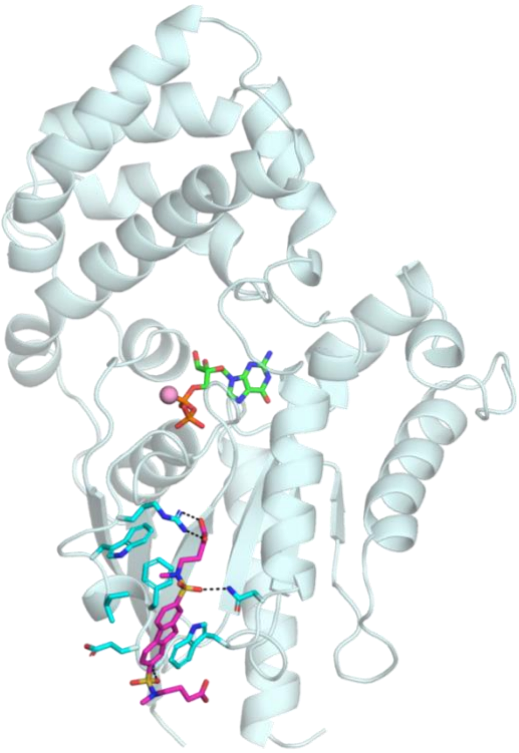
Ph.D. contract offer

A 4-year-long contract is available for a thesis project supervised by **Dr. Francisco J Blanco** studying the structure-function of two proteins relevant for human health and disease.



Protein Gαi3 (cyan) with GDP (green), magnesium (pink) and the inhibitor IGGi-11 (purple).

THE PROJECT

The alfa subunits of heterotrimeric **G proteins** act as molecular switches by their ability to bind and hydrolyze GTP, and their dysregulation causes cancer. We will study the **molecular recognition** of inhibitors of two such proteins: **Gαi3,** which promotes **breast cancer metastasis** when overactivated by regulatory proteins, and **Gα11**, which causes **uveal melanoma** when overactivated by mutations. The ultimate aim is to facilitate the development of therapeutic molecules.

Protein samples will be prepared for structural characterization by NMR, crystallography, and other techniques. Functional assays in cancer cells are planned with our collaborator at Boston University during a 4-month-long stay.

Starting date (tentative): January 2025

Requirement: Master of Science

Contact: fjblanco@ibv.csic.es

THE HOST GROUP AND INSTITUTION

The Biomolecular NMR group is part of the Department of Molecular Basis of Disease at the Instituto de Biomedicina de Valencia, IBV-CSIC

The laboratory is at the Centro de Investigación Príncipe Felipe (associated unit to IBV), located in the Ciutat de les Arts i les Ciències in Valencia, a city with a rich history and a high standard of living.

Publications of the group relevant to the project:

- Molecular mechanism of Gαi activation by non-GPCR proteins with a Gα-Binding and Activating motif. Ibáñez de Opakua et al (2017) Nature Commun 8, 15163. Doi: 10.1038/ncomms15163.
- The Gαi-GIV binding interface is a druggable protein-protein interaction. DiGiacomo et al. (2017) Sci Rep 7, 8575. Doi: 10.1038/s41598-017-08829-7.
- Small-molecule targeting of GPCR-independent noncanonical G-protein signaling in cancer. Zhao et al. (2023) PNAS 120, e2213140120. Doi: 10.1073/pnas.2213140120.

Full record of the group:

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