M1 internship proposal

"Purification and characterization of a WT trans-membrane protein and its mutants"

The **context** of this M1 internship is in our biotechnological application of a 3D compartmental system made by liposomes, in which we utilize the transmembrane protein called NhaA that facilitates an electrogenic sodium/proton exchange. The reconstitution NhaA within lipid bilayer membranes of the liposomes has allowed us to create a 3D compartmental system capable of producing and storing energy. More details of the overall project are available at https://cordis.europa.eu/project/id/101142533.

The **objectives** of this M1 internship are to assist in *(i)* purifying the NhaA WT protein and mutants we have designed, *(ii)* characterizing the NhaA mutants with an *in vitro* activity assay based on an electrophysiological method, and *(iii)* comparing the activity of the mutants NhaA with the NhaA WT.

Methods to be utilized:

Overexpression and purification of membrane proteins

- Bacterial culture on Petri dish
- Membrane preparation
- His-tag purification followed by desalting

In vitro activity assay – Electrophysiology

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Tasks and **skills** expected from the M1 intern:

- Capability to work autonomously in a multidisciplinary and international environment
- Good level of English (spoken, written expression)
- Data processing
- Report on the results

Profile of the intern:

- Master 1 in pharmacology, biochemistry or related fields
- Particular interest in protein sciences
- It is desirable to have some experience and knowledge in cell/molecular biology

Practical information:

- Duration: 2 months
- Location: LMGP, Grenoble INP-UGA, 3 Parvis Louis Néel, 38000 Grenoble
- Start: mid-January/early-February 2026 (flexible)

Contact:

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