Internship Proposal

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Project Title:
Biochemical studies of membrane proteins involved in ion transport

Level:

Master

Project Summary:

We study the properties of membrane proteins that transport K+ (channels and active transporters) in and out of the cell. These studies involve characterization in vitro and in vivo with the final aim of understanding the molecular mechanisms of regulation of these proteins and their physiological function.

Work to be developed by the student:

Fluorescence-based transport assays in liposomes; Characterization of function; Generation of mutants for characterization in vitro and in vivo; Protein expression and purification; Measurement of binding properties;

References:

Harley CA, Bernardo-Seisdedos G, Stevens-Sostre WA, Jones DK, Azevedo MM, Sampaio P, Lorga-Gomes M, Trudeau MC, Millet O, Robertson GA, Morais-Cabral JH. "Conformation-sensitive antibody reveals an altered cytosolic PAS/CNBh assembly during hERG channel gating." PNAS (2021) 118:e2108796118.

Cereija TB, Guerra JPL, Jorge JMP, Morais-Cabral JH. "c-di-AMP, a likely master regulator of bacterial K+ homeostasis machinery, activates a K+ exporter." PNAS (2021) 118:e2020653118.

Rocha R, Teixeira-Duarte CM, Jorge JMP, Morais-Cabral JH. "Characterization of the molecular properties of KtrC, a second RCK domain that regulates a Ktr channel in Bacillus subtilis." J Struct Biol. (2019) 205:34-43.

Teixeira-Duarte CM, Fonseca F, Morais-Cabral JH. "Activation of a Nucleotide-Dependent RCK Domain Requires Binding of a Cation Cofactor to a Conserved Site." eLife (2019), 8:e50661

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