



INTERNATIONAL INTERNSHIPS

FOM INTERNATIONAL PROGRAMS IN SPAIN (MADRID)

Internship site: Cajal Institute Madrid; Mitochondrial physiology and dynamics laboratory

Internship type: Neuroscience research

Internship language: English/Spanish

Supervisor: Rubén Quintana-Cabrera, PhD

Location: Av. del Dr. Arce, 37, 28002 Madrid

Website: <http://www.cajal.csic.es/ingles/>

Summary:

The mitochondria are the organelles in charge of carrying out cellular respiration and, with it, the production of most of the energy that our tissues need. Furthermore, these organelles are essential in the regulation of metabolism, senescence, or cell death, among other multiple functions that ultimately determine tissue physiology. Our work seeks to unravel the mechanisms that underlie a wide variety of neurological disorders, particularly neurodegenerative and oncogenic, which have in common an alteration of mitochondrial function. To explore how they occur, we study the interplay between the morphology, ultrastructure, and dynamics of these organelles in the regulation of metabolism, respiration, redox status, and neural bioenergetics. We focus our main interest on the coordination of mitochondrial function between cells and tissues through intercellular transfer of mitochondrial content. In summary, we intend to clarify the molecular bases that govern mitochondrial physiology, particularly in relation to its dynamics and exchange between cells. This process has been shown to be key to the viability of neural cells and is emerging strongly as a therapy in the reconstitution of mitochondrial function in the nervous system. Knowing the mechanisms that govern mitochondrial reconfiguration in the nervous system, where the mitochondrial contribution in the etiology of multiple pathological conditions is long known, we intend to address new therapies against neurodegeneration or brain tumor formation.

Activities:

Depending on their knowledge, curiosity and time dedication, students will have the opportunity to learn about, observe and/or participate in different activities of ongoing research in our lab. They will have a chance to attend and participate in our weekly meetings and journal clubs, they will get familiar with the concepts of experimental design in real research and with the process of acquiring and analyzing data. The internship is designed to stimulate the students' scientific curiosity, improve their analytical capacity, and maximize their learning experience within the context of meaningful research. The instructor will check students' weekly progress.

Requirements: Background in basic sciences and/or neuroscience. Typically, students should have passed at least introductory biology/psychology/neuroscience courses and have clear interest in neuroscience.