



INTERNATIONAL INTERNSHIPS

FOM INTERNATIONAL PROGRAMS IN SPAIN (MADRID)

Internship site: Cajal Institute Madrid; Neurorigins laboratory

Internship type: Neuroscience research

Internship language: English/Spanish

Supervisor: Jorge García Marqués, PhD

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

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

Summary:

The brain contains a myriad of different types of neurons and glia. This cellular diversity is the structural basis of cognitive functions such as consciousness or language. The Neurorigins lab works to understand how this cellular diversity arises during brain development and how it is affected in different pathologies. Our aims are:

1. To understand the molecular mechanisms that determine cellular diversity in the brain; 2. To produce cell types with therapeutic potential in brain diseases; 3. To generate new genetic tools to study brain development.

Advancing these objectives will lead us to comprehend the basis of certain developmental diseases such as autism or intellectual disability. In addition, it will make it possible to generate cell types that can be used as therapy for diseases such as multiple sclerosis or Parkinson's disease.

We address these objectives through state-of-the-art methodology, which includes:

- Molecular biology techniques: PCR, qRT-PCR, electrophoresis, plasmid cloning, etc.
- In utero electroporation, with the purpose of introducing genes into brain stem cells.
- Generation of transgenic mouse lines by CRISPR (iGONAD).
- Histological techniques: tissue processing, immunolabeling, in situ hybridization, etc.
- Epifluorescence and confocal microscopy
- Stereotactic injections

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.