

## **DEVELOPMENTAL NEUROBIOLOGY, Cajal Institute, CSIC**



**PI:** Fernando de Castro Soubriet, MD, PhD.

**Internship type:** Basic research

**Internship Language:** English

**Location:** The Cajal Institute is located at the Avenue of Dr. Arce 37, which is at 20 min. metro ride from the Foundation Ortega y Gasset-Gregorio Marañón. <http://www.cajal.csic.es/index.html>

### **Summary**

Our main research interest is centered on the study of oligodendrocytes, the cells that form myelin sheath around nerve fibers and facilitates the nerve impulse transmission. These cells die in multiple sclerosis (MS) and other demyelinating diseases. Therefore, we study the basis of myelination and demyelination to identify potential biomarkers to better diagnose multiple sclerosis and to advance the neural repair therapy of the disease. We are especially interested in oligodendrocyte precursors (OPCs) in the adult CNS.

### **Methodology**

Our experimental work employs tissue samples from patients suffering from MS and animal models of the disease. We study demyelinating pathology in mice by inducing experimental autoimmune encephalomyelitis (EAE) and in human tissue samples where we can confirm how the pathology actually unfolds in human brain. Additionally, we analyze the cerebrospinal fluid of patients with the aim of detecting components that may help us diagnose earlier the disease and differentiate between groups of patients so as to predict its outcomes and determine possible treatments.

### **Activities**

Depending on their knowledge, curiosity and time dedication, students will have the opportunity to learn about the various aspects of the research process, including literature search, experimental design implementation and protocol execution, animal and/or human tissue samples handling, cell culture, data collection and analysis.

### **Requirements**

Typically students should have passed an introductory neuroscience course. The research questions are generated by faculty but approaches and methods are feasible for students participating in research for the first time. The internship is designed to maximize student experience and learning while doing meaningful research. Student's involvement is essential.