

## **NEUROGENESIS IN THE ADULT ANIMAL, Cajal Institute, CSIC**



**PI:** José Luis Trejo Pérez, PhD.

**Internship type:** Translational/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**

The work of the group focuses on both basic and therapeutic aspects of the formation of new neurons in the adult brain. Special attention is given to the effect of the physical exercise and an enriched environment or stress. With this goal, we evaluate hippocampus-dependent learning and memory, anxiety-like and depressive-like behaviors, as well as its impairments during some neurodegenerative diseases.

### **Methodology**

Our experimental work is based on rodent animal models and employs a multidisciplinary approach by combining methodologies like behavioral phenotyping of transgenic animals, stereology and confocal microscopy. We work on the analysis of the mechanisms regulating the formation of new neurons in the adult animal by means of several factors both exogenous (exercise, environment, stress, social hierarchy and sex behavior), and endogenous (hormonal and trophic milieu). By furthering our understanding of adult hippocampus neurogenesis more light will be shed on how mature neurons are normally generated in an adult brain.

### **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 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 dedication and involvement is essential.