

## **NEUROREGENERATIVE CHEMISTRY GROUP, HNP Toledo**



**PI:** Ernesto Doncel- Perez, PhD.

**Internship type:** Basic research

**Internship Language:** English/Spanish

**Location:** National Hospital for Paraplegics, Toledo. The hospital is at 60 minutes bus ride from Madrid. The National Hospital for Paraplegics is a monographic state hospital founded in 1974 to treat patients with spinal cord injuries and address their specific needs. The hospital is also among the very few in Europe for housing clinicians, basic scientists, therapists, psychologists and support personnel whose expertise relates directly to the spinal cord injury.

<http://hnparaplejicos.sescam.castillalamancha.es/en/profesionales/investigacion>

### **Summary**

Research in our laboratory focuses on regeneration and repair of a lesioned central nervous system (CNS). Specifically, we use rats and/or cell cultures to pursue three lines of research: 1) control of the glial scar formation and promotion of neural/axonal growth in the lesioned CNS area; 2) development of new biomarkers for Guillain Barré Syndrome; 3) study of bio-compatible and bio-degradable polymers and their potential as vehicles for drug delivery and/or possible substrates for cellular transplants in neurodegenerative diseases.

### **Methodology**

To accomplish these objectives we employ methodologies stemming from organic chemistry, cellular and molecular biology, immunohistochemistry, as well as animal models of the CNS pathologies (especially in spinal cord injury and peripheral neuropathy) pursuing the development of compounds that may be transferred to the clinic and used effectively as therapies in patients with spinal cord lesions and other pathologies of the CNS.

### **Activities**

Students will have the opportunity to perform dissections of neural tissue and isolation of neural cells, to grow cell cultures, to get familiar with molecular and cellular methodologies, confocal microscopy and imaging techniques, and quantification of neural markers.

### **Requirements**

Typically students should have passed an introductory biology 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.