



PREDOCTORAL TRAINING OPPORTUNITY –*Human Cerebral Cortex Development*

The **Labs of Neural Development and Human Modeling of Neurological Disorders** (Neurodevelopmental Disorders Group at Institut de Neurociències, University of Barcelona) directed by **Soledad Alcántara PhD** and **Alberto Ortega PhD** respectively, are seeking for an outstanding predoctoral candidate to apply to **Master-PhD bridge programme 2021** offered by Institut de Neurociències at University of Barcelona.

PROJECT DESCRIPTION

The broad objective of the project is to decipher the effect of metabolic and microenvironment perturbations during the human cerebral cortex development and the implement of biomimetic strategies for driving neural development and regeneration. We employ biochemical coupled to high-throughput approaches to identify proteomic changes in the fetal and adult human and mouse brain. By identifying changes in these scenarios, we aim to elucidate evolutive and age-dependent changes in the cerebral cortex and how they can modulate the generation and functional maturation of neural cells. We next aim to recreate these key microenvironment changes *in vitro* by implementing them into new biomaterial-based platforms, in order to improve human stem cell-based models of development and disease which have an enormous potential for the study of multiple neurological disorders and the design of new therapeutic strategies.

The lab utilizes both rodent animal models as well as stem cells and direct reprogramming methods to study different neural subtypes of the human central nervous system along with proteomic and functional physiological assays. The candidate will join a dynamic team that close interact with other developmental biology, stem cell biology, electrophysiology, computational and biotechnology labs at national and international institutions.

PROFILE OF THE CANDIDATES

We are seeking a candidate in possession or be completing a Master or be a Graduate in Health Science related degrees including Biomedicine, Biomedical Sciences, Biology, Pharmacology as well as Biotechnology, Biomedical Engineering, Biochemistry or Bioinformatics.

Academic record with an average grade equal to or greater than 8.

The candidate should have good interpersonal skills, be able to carry out inter-dependent research activities within multiple and international teams, enjoy challenging experimental work and be willing to develop new projects.

Expertise in any of the following approaches is desirable: cell culture techniques, bioinformatics, neurobiology as well as good command of written and spoken English.

HOST INSTITUTION and LOCATION

The University of Barcelona is one of Spain's top research universities. According to the Ibero-American SIR Ranking, it generates more scientific output than any other Spanish university. It ranks second in the country in terms of number of publications, after the Spanish National Research Council.

The candidates will work at the University of Barcelona Faculty of Medicine and Health Sciences. Specifically, Alberto Ortega's lab is located at Campus de Bellvitge, which is composed of a set of spaces for teaching and research at the Faculty of Medicine and Health Sciences. The hosting group will be part of the Bellvitge Biomedical Research Institute (IDIBELL), one of the three major research foundations at University of Barcelona. Bellvitge Campus is located at the south exit of Barcelona in the city of L'Hospitalet de Llobregat and very close to the Barcelona airport. It is a campus easily accessible by public transport and through the main roads of Barcelona.

HOW TO APPLY

Applications should be sent **at latest by July 21st** to salcantara@ub.edu and jalbertortega@gmail.com with the subject "Predoctoral job application", and a single .pdf file as attachment with:

- (1) 1 page **cover letter** describing previous lab research experience and what motivates you to work in this project.
- (2) a full **CV**

PROJECTS

- Proteomic characterization of the human cerebral cortex microenvironments during development: evolutionary and clinical relevance. PID2020-114407RA-I00. IP: Alberto Ortega
- Modeling the environmental control of neural progenitor's differentiation: a cross point of neurodevelopmental disorders and neural regeneration. PID2020-115748RB-I00. IP: Soledad Alcántara

PUBLICATIONS

<https://orcid.org/0000-0003-3313-2715>

<https://www.ncbi.nlm.nih.gov/myncbi/1ralxaOe9kmku/bibliography/public/>