

PROYECTO PID2020-117662GB-I00 “FROM DECODING INNER EAR NEURON IDENTITIES TO AN ORGANOID MODEL TO STUDY HEARING LOSS”

Alsina lab, Universitat Pompeu Fabra/Parc de Recerca Biomèdica de Barcelona

We are seeking a highly motivated and competitive student to start a PhD by July 2022 with a FPI PhD fellowship. Application to the FPI fellowship will be in october/november

The inner ear is one of the most sophisticated sensory organs of the peripheral nervous system. Hair cells and sensory neurons are the main specialized cell types involved in transmitting auditory and balance information. Our laboratory investigates the key molecular and cellular events involved in the generation of these cell types in the chick and zebrafish.

One of the breakthroughs of the last decade is the ability to generate "mini organs" or organoids in vitro from stem cells (Schutgens and Clevers, 2020). The first report from the generation of inner ear organoids from mouse ES was published in 2014 (Koehler and Hashino, 2014), followed by other reports and using human ES (Koehler et al. 2017). We have started to set up a human inner ear organoid system and the aim of this PhD Project is to develop a vascularized inner ear organoid. Our recent work has shown for the first time the requirement of cranial vasculature for SAG neuronal expansion and differentiation (Taberner et al. Cell Reports 2020).

We will follow several strategies to create a vascularized inner ear organoid and test which one achieves further differentiated hair cells and neurons, one by fusing neural and mesodermal spheres and the other by generating 3D engineered microvessels (in collaboration with M Bernabeu from EMBL-Barcelona). A new core facility on 3D printing, microfluidics has been created at the Barcelona Biomedical Research Park (PRBB).

The Alsina's lab (https://www.upf.edu/web/alsina_lab) at Developmental Biology Unit, Universitat Pompeu Fabra is located at the PRBB (www.prbb.org) with excellent research facilities in superresolution imaging, cell culture facilities, microfluidics, genomic and computational technologies and a large research community in the fields of developmental biology, systems biology and computational biology.

For list of recent publications see: https://www.upf.edu/web/alsina_lab/publications

Applicants must have a BSc in the biomedical sciences field, a master degree and profound curiosity. Experience in cell culture or zebrafish research is welcome.

Send CV, transcript of records and letter of motivation to berta.alsina@upf.edu

