



# PhD student position

## Experimental Research in Sensory Disorders

Our laboratory is looking for a PhD student candidate interested in a Thesis project in sensory neuroscience and wishing to apply for doctoral fellowships.

### ***Candidates are required to have:***

- Degree in biomedical-related sciences (Biomedical Sciences, Biology, Pharmacy, others).
- Master in Neuroscience or other biomedical research areas.
- Good academic record.
- Readiness to work with animal models, preferably holding certification for animal handling.
- Good English

### ***Project:***

Impaired function of the vestibular system in the inner ear results in disequilibrium and loss of gaze control. While acute and intense insults can cause apoptosis (sometimes necrosis) of the vestibular sensory hair cells, our laboratory has discovered that other phenomena are involved in the progressive loss of function caused by mild but persistent insults. Using rodent models of chronic vestibular toxicity, we have discovered that the earliest loss of vestibular function may be reversible, associated with detachment of the sensory hair cells from the afferent neuron terminals. Afterwards, the hair cells are eliminated by extrusion from the sensory epithelium, then causing permanent dysfunction (Sedó-Cabezón et al., 2015; Greguske et al., 2019).

Our current research is devoted to identify the molecular basis of these phenomena and their relationship to the functional outcomes at the organism level, as well as to establish their clinical relevance by studying human samples obtained during surgical removal of ear tumors. This research will provide a new framework to understand vestibular dysfunction, vertigo and age-related loss of equilibrium, and hopefully lead to new therapeutic approaches for vestibular pathologies.

The following techniques will be used: rodent handling and behavioral evaluation, micro-dissection techniques, immunofluorescent labeling, confocal microscopy and image analysis, scanning and transmission electron microscopy, qRT-PCR, RNAseq analysis.

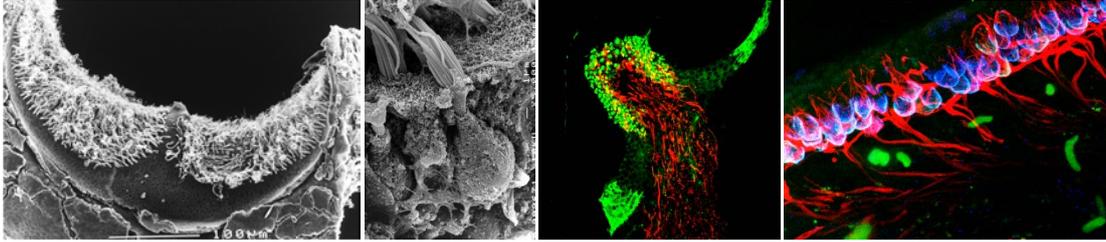
The laboratory has all the requirements for success in fellowship application: the project is funded by MINECO and the team is a recognized SGR team by Generalitat de Catalunya. Fellowship options include FI (Generalitat de Catalunya), IDIBELL, UB, Institute of Neuroscience of the UB, FPU (Ministerio). Other funding options may become available.

The laboratory is located at the Departament de Ciències Fisiològiques, Universitat de Barcelona (Campus Bellvitge) and offers a good work ambience and a dynamic scientific environment. It belongs to the Institute of Neuroscience of the UB (<http://www.neurociencies.ub.edu/>) and the neuroscience program of the IDIBELL institute (<https://idibell.cat/recerca/area-de-neurociencies/programa-de-neurociencies/>).

### ***Contact:***

Interested applicants are asked to send a C.V., including full academic record and short letter of interest to Dr. Jordi Llorens, Departament de Ciències Fisiològiques, Campus de Bellvitge, Universitat de Barcelona, Tf: 93-402 4277, e-mail: [jllorens@ub.edu](mailto:jllorens@ub.edu)

Vestibular sensory epithelia by scanning electron microscopy and confocal fluorescence microscopy.



**Related publications:**

- Greguske EA, Carreres-Pons M, Cutillas B, Boadas-Vaello P, Llorens J. Calyx junction dismantlement and synaptic uncoupling precede hair cell extrusion in the vestibular sensory epithelium during sub-chronic 3,3'-iminodipropionitrile ototoxicity in the mouse. **Archives of Toxicology** 93: 417-434 (2019)
- Martins-Lopes V, Bellmunt A, Greguske EA, Maroto AF, Boadas-Vaello P, Llorens J. Quantitative assessment of anti-gravity reflexes to evaluate vestibular dysfunction in rats. **Journal of the Association for Research in Otolaryngology** 20: 553-563 (2019)
- Sedó-Cabezón L, Jedynek P., Boadas-Vaello P., Llorens J. Transient alteration of the vestibular calyceal junction and synapse in response to chronic ototoxic insult in rats. **Disease Models and Mechanisms** 8: 1323-1337 (2015).