



PREDOCTORAL RESEARCHER POSITION GRANT

The Hospital del Mar Research Institute is the research center of the Barcelona Mar Health Park Consortium and a member of the Barcelona Biomedical Research Park (PRBB). It provides an exceptional framework for translational research and offers state-of-the-art technological platforms (flow cytometry, animal facility, microscopy, etc.) as well as close collaboration with the Hospital del Mar.

POSITION

Predoctoral researcher position as a part of the Research Group on Neuronal Mechanisms of Perception and Memory with a predoctoral contract supported by the grant reference PID2022-137527NB-I00, funded by MCIN/AEI/10.13039/501100011033 and the European Social Fund (FSE).

OFFER

- Predoctoral researcher position.
- Predoctoral researcher employment contract governed by Article 21 of Law 14/2021, of June 1, on Science, Technology, and Innovation, and Royal Decree 103/2019, of March 1, on the Statute of Research Personnel in Training.
- Full-time contract.
- Salary according to the provisions of Royal Decree 103/2019, of March 1, on the Statute of Research Personnel in Training, paid in 12 instalments.
- Incorporation within 3 months from the definitive resolution



CANDIDATE REQUIREMENTS

- ✓ Degree in physics or equivalent qualification.
- ✓ Training in Programming in MATLAB, Python or similar.
- ✓ Research experience will be positively valued.

At the time of hiring, the candidate must provide proof of admission to a doctoral program.

Once the candidate has enrolled in the doctoral program, they will need to submit a copy of the formalized enrollment to the contracting institution.

SELECTION CRITERIA

- 1) Academic and/or scientific-technical trajectory of the candidate. (Up to 50 points).
 - 1.a) Scientific-technical contributions: The academic record and other curricular merits of the candidate will be evaluated, as well as their suitability for the tasks to be carried out based on their training and professional experience. (Up to 45 points).
 - 1.b) Mobility and internationalization: The relevance and impact of the candidate's stays in national and international research centers and/or the industrial sector will be assessed, considering the prestige of the hosting entity and the activities carried out there. (Up to 5 points).
- 2) Suitability of the candidate for the research activities to be carried out. The candidate's suitability for the project or research activities will be evaluated based on their previous training and experience. This will include the added value that the completion of the project will bring to their research career, as well as the contribution to the institution and research group. (Up to 50 points).



THE PROJECT

In very particular cases, however, it is possible to perform invasive single-cell recordings in human subjects. This is the case with patients suffering from epilepsy refractory to medication, who are implanted with intracranial electrodes to localise the seizure-originating area and evaluate the possibility of its surgical resection²⁶. The intracranial recordings often cover the MTL, given the involvement of this area in different forms of epilepsy. Given that subjects typically remain about 1 week in the epilepsy ward, until sufficient clinical data is collected, this procedure provides the unique opportunity of recording the activity of multiple single-neurons in awake and behaving human subjects performing different tasks, who, in contrast to animals, can give direct and detailed feedback of their experience and behaviour.

The project will characterize and model the activity of hippocampal neurons and their relation to memory processes. Human recordings will be performed in subjects suffering from epilepsy refractory to medication, who are implanted with intracranial electrodes for clinical reasons. Recordings will be performed at Hospital del Mar, in Barcelona, and to secure having enough number of subjects and neurons, they will be also performed in parallel by collaborators at the Hospital El Cruce in Buenos Aires, Argentina.

Regarding the mentioned project, the person who joins will carry out the following tasks:

- o Recording and analysis of neuronal activity data in the human hippocampus.
- o Analysis of behavioral tasks and correlation of neuronal activity at different scales (single cell, local field potentials, etc.).
- o Data modeling and memory formation and storage mechanisms.

APPLICATION OF CANDIDATES

You can submit your application to: rquian@imim.es; evitas@imim.es.

For more information:

https://www.imim.es/programesrecerca/neurociencies/mecanismes_neuronals_percepcio_i_memoria.html