Position Offered: PREDOCTORAL RESEARCHER

Project: *Application of digital techniques to establish cellular response profiles that determine the severity of cardiac arrhythmias and help personalize treatment*

Technological and scientific fields: Biomedicine, Cell physiology, Artificial intelligence, Massive data processing, Advanced image analysis

Location: Barcelona, Catalunya, IIBB-CSIC, https://www.iibb.csic.es/es

Research Group/PI: Cardiac Rhythm and Contraction Group, Leif Hove-Madsen, https://www.iibb.csic.es/es/research/1365

PROJECT SUMMARY

The aim of this PhD project is to determine the relationship between the response of the heart and isolated cardiomyocytes from the same individual in order to establish profiles of the nature and progression of responses at different biological scales (molecule, cell, organ), that can predict the severity of the resulting cardiac arrhythmia and help establish personalized therapies. To achieve this, the candidate will learn acquiring data in experimental models prone to cardiac arrhythmia, develop and use advanced algorithms for signal detection in big data sets and implement deep learning techniques and genetic association techniques. The training includes short stays in international laboratories.

PROFESSIONAL PROFILE

Minimum requirements:

- Academic qualifications required: Graduate in Biomedical Engineering, Biomedical Sciences or similar. The candidate will enroll in the Biomedical Engineering program at Universitat Politécinca de Catalunya.
- Language requirements: Spanish and English. The candidate will enroll in the Biomedical Engineering program at Universitat Politécinca de Catalunya and train in English speaking laboratories.

Merits to be considered:

Qualifications, knowledge and experience that are not essential, but valuable.

- Certificate of animal experimentation
- Knowledge of non-invasive electrophysiological or imaging techniques used in cells or in vivo
- Knowledge of programming in Matlab or Python

WHAT IS OFFERED

The candidate will participate in an international research project learning state-of-the art techniques:

1. Acquire and analyze large data sets using electrophysiological or imaging techniques in isolated cardiomyocytes or *in vivo*, supervised by experts in the field.
2. Develop algorithms for supervised or non-supervised analysis of the experimental data sets or data from biobanks, supervised by experts in the field.
3. Training includes 3 month stays with Prof. SW Chen, Univ. Calgary to analyze data from whole heart imaging techniques and with Prof. MS Olesen, Univ. Copenhagen to learn analyzing data from biobanks

Contract conditions:

Predoctoral Researcher contract of 4 years' duration. Gross annual salary of 23,871.33 €.

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

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