INPhINIT
"la Caixa" Fellowship Programme

Many people form part of history.
Only a few manage to change it.

IBEC
Institute for Bioengineering of Catalonia

EXCELENCIA SEVERO OCHOA

IBEC participates in "la Caixa" Fellowship Programme with a set of stimulating PhD projects and excellent research groups to host the fellows

Nanoscale bioelectrical characterization group

Group leader: GGomila

Modeling neuron-microelectromechanical systems interaction

The main goal of the Nanoscale bioelectrical characterization group is to develop new experimental setups based on atomic force microscopy and theoretical frameworks enabling the measurement of the electrical properties of biological samples at the nanoscale (for example, biomembranes, single viruses or single bacteria).

The main objective is to contribute to develop new label-free biological characterization methods and new electronic biosensors.

Selected references:

Biagi, M.C. et al. ACS Nano, 10, 280 (2016).
Esteban-Ferrer, D., et al. ACS Nano, 9, 9843 (2014)
Cuervo, A., et al. Proceeding of the National Academy of Science USA (PNAS), 111, E3624 (2014).
Fumagalli, L., et al. Nature Materials, 11, 808 (2012).
Fumagalli, L., et al. Nano Letters, 9, 1604-1608 (2009).

Funded Research Projects for the 2017-2020 period:

- Scanning probe microscopies for nanoscale fast, tomographic and composition imaging. Marie Curie Innovative Training Network.European Commission. Coordinator: Gabriel Gomila
- Scanning Electric Force Microscope for Electrophysiological Recordings at the Nanoscale. I+R Spanish Project. IP: Gabriel Gomila

Job position description

The successful candidate will develop multidisciplinary research adressed to model the electrical interaction between living neurons and nano/microelectromechanical systems with a multiscale/multiphysical approach. The objective is to open novel avenues in the understanding of the interaction between living neurons and microscale systems and to contribute to design new electrophysiological methods of medical relevance.

Requeriments:

- Degree and Master Degree in Mathematics, Physics or Engineering.
- Multidisciplinary qualifications (Physics/Math, Physics/Bio, Engineering/Bio, etc.) and specializations/experience in Nanotechnology, and/or Bioelectricity will be a plus.
- Experience in Software Programming and Numerical calculations will be valued.
- Abilities and skills required: to maintain accurate and up to date records, to organise and prioritise own work and organise research within the project schedule, computer literacy, analytical skills and effective team working, self-critical, capacity to learn and bring knowledge.
- High level of English and good communication skills.B14