

TWO (2) PHD POSITIONS

REF # ORZ0243

- **Poirazi Lab** (www.dendrites.gr), Institute of Molecular Biology and Biotechnology (IMBB), Foundation for Research and Technology Hellas (FORTH), Heraklion, Greece
- **Vacancy terms:** Full Time, Fixed Term from 1st January 2021 for 1 year (renewable for 2 more years)
- **Salary:** PhD fellowship 9.600€ (net) per annum
- **Deadline:** midnight, 22nd October 2020
- **Project:** FET-Open GA-863245-NEUREKA: “A smart, hybrid neural-computo device for drug discovery”

About the position

We are looking for two talented and enthusiastic PhD students to join the Laboratory of Dr. Panayiota Poirazi at IMBB-FORTH. The PhD will be awarded by the University of Crete and applicants must be accepted in a PhD program at UoC before the start of the contract.

The successful applicants will work on a multidisciplinary collaborative project aiming to develop a new prototype technology that can be used for drug discovery for neurological diseases. In this new hybrid technology, computational neuronal networks that simulate dysfunction will drive cultured neurons to replicate Alzheimer’s disease. Nanoelectrodes will mediate the transmission between simulated and biological neurons, at multiple subcellular locations. Neuronal responses will be read out with advanced imaging techniques and will be fed back to the simulated neurons, closing the loop and enabling control of activity states across the hybrid population. A proof-of-concept will be provided for Alzheimer’s disease, using human (iPSC)-derived neurons while testing the effects of novel drug candidates. The NEUREKA partners include the University of Padua (Prof. Vassanelli), CNRS (Prof. Larrieu), the University of Milano Bicocca (Prof. Fanciulli) and Maxwell Biosystems.

The successful candidates will work on the development of computational circuit models of neurons equipped with dendritic nonlinearities and plasticity for different brain areas (based on the model developed in the Poirazi Lab, by Kastellakis et al, *Cell Reports*, 2016).

The **Poirazi Lab** investigates how dendrites and their integrative properties contribute to learning and memory related functions, using primarily computational techniques. In close collaboration with experimentalists, models are used to explain findings and predict new roles for dendrites in functions such as spatial navigation/learning, working and associative memory, visual processing *etc.* The lab has recently expanded its research to include experiments in mice, whereby the role of dendrites in prefrontal functions is investigated via behavioral, electrophysiological and imaging techniques. The laboratory offers a thriving, ambitious research environment which is well funded from several grants.

About you

We seek candidates interested in pursuing a PhD in computational neuroscience. They must be highly motivated and creative individuals who want to work in a dynamic, multi-disciplinary research

environment and be willing to interact with both experimental and theoretical neuroscientists. Previous experience should include solid programming skills, ideally including computational simulations of neurons. Experience or familiarity with related experimental procedures/data collection and analysis is desirable.

Characteristics of the ideal candidate:

- BSc in Biology, Neuroscience, Computer Science or Physics
- MSc in Computational Neuroscience, Neuroscience, Biology or a related subject.
- Solid programming skills using LINUX (python, NEURON, Matlab, BRIAN)
- Experience in computational modeling of neurons
- Experience with processing and analysis of neuronal data.
- Fluency in spoken and written English and Greek.
- Strong communication and interpersonal skills, being able to work comfortably both in a team and somewhat independently.
- Demonstrated ability to perform research (eg. publications, conference presentations)
- Certificate for enrollment in a PhD program from a Greek university (before the start of the contract).

Additional information

IMBB (www.imbb.forth.gr) is part of FORTH (www.forth.gr), one of the leading research foundations worldwide. IMBB is one of the most prominent life science research institutions in Greece, with an outstanding record of scientific achievements, state of the art infrastructure and a broad range of research, innovation and high quality, inspirational educational activities. In addition, IMBB is strongly committed to inclusivity, promoting equality and celebrating diversity among its staff and students.

The wide-range of research activities in the Institute aim at understanding the basic biological processes operating in living organisms. IMBB also hosts interdisciplinary research programs at the interface of biology with informatics, chemistry, physics or medicine and is heavily involved in providing post-graduate students high-level education through joint graduate programs with the University of Crete. An additional standing mandate of IMBB is the exploitation and translation of acquired knowledge to tangible societal benefits, including the development of new technologies, innovative products and services.

IMBB is located close to Heraklion which is the largest city and the administrative capital of the island of Crete, located south of the Greek mainland. It is the fifth largest city in Greece with a population of > 140,000 and is famous for its lively lifestyle and the outstanding outdoors.

Applications (full CV, statement of research interest and name and contact of 2-3 referees) should be sent by e-mail to orz0243@imbb.forth.gr, quoting “NEUREKA: PhD positions-ORZ0243” in the subject line.

The deadline for applications is October 22nd, 2020. Applications will be examined until the position is filled. Informal enquiries are welcome.