

ONE (1) POSTDOC AND ONE (1) PHD STUDENT POSITION

- **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 October 2021 for 1 year
- **Salary:** Postdoc salary commensurate with experience: 26.000€ - 36.000€ per annum, PhD fellowship 9.600€ (net) per annum
- **Deadline:** midnight, 20th, August 2021 (GMT+3)
- **Project:** FET-Open GA-863245-NEUREKA: “A smart, hybrid neural-computo device for drug discovery”

About the position

We are looking for one talented and enthusiastic PhD student and one motivated postdoc 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). They will also work with developing and/or applying techniques for processing calcium imaging data (from behaving animals and/or cultured neurons) and the interfacing of the model with nanoelectrodes and neuronal outputs.

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.

POSTDOCTORAL POSITION [REF # ORZ-0318]

We seek candidates holding a PhD in Neuroscience and a keen interest 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 demonstrate the ability to work independently (e.g. via designing and carrying out work with custom-built set ups) and provide a multidisciplinary training (e.g. knowledge of techniques beyond programming, such as advanced imaging of neuronal activity, ideally 2 photon calcium imaging, and behavioral assays). Experience or familiarity with related computational skills, including use of specialized software (ScanImage, ImageJ, IgorPro, Adobe Illustrator) and programming experience (Python, Matlab) is desirable. Candidates will also have the opportunity to become involved with computational modeling of neuronal circuits, which is well established in our lab.

Characteristics of the ideal candidate:

- PhD in Neuroscience, Neurophysiology or a related subject.
- Experience in developing, using and troubleshooting custom-built set ups (e.g. imaging and behavioral set ups)
- Experience in advanced imaging techniques (2 photon calcium imaging and confocal imaging)
- Experience in behavioral assays
- IT skills in specialized packages (ScanImage, ImageJ, IgorPro, Adobe Illustrator) and programming experience (Python, Matlab)
- Experience with analysis and processing of experimental data.
- Experience in scientific writing/communication/presentations delivery/publishing (proven by a corresponding list of publications).
- Fluency in spoken and written English and Greek.
- Strong communication and interpersonal skills, being able to work comfortably both in a team and independently.
- Ability to work with minimal supervision, prioritizing own workload to deal with urgent tasks, while maintaining a high standard of accuracy and attention to detail.
- Willingness to travel.

Applications (full CV, statement of research interest and name and contact of 2-3 referees) should be sent by e-mail to orz0318@imbb.forth.gr, quoting “*NEUREKA: Postdoctoral position (ORZ-0318)*” in the subject line.

The deadline for applications is midnight, August 20th, 2021 (GMT+3). Applications will be examined until the position is filled. Informal enquiries are welcome.

PHD STUDENT POSITION [REF # ORZ-0319]

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 and their dendrites. Prior experience with modelling synaptic plasticity mechanisms is desirable.

Characteristics of the ideal candidate:

- BSc in Biology, Neuroscience or Computer Science
- MSc in Computational Neuroscience or Neuroscience
- Solid programming skills using LINUX (python, NEURON, Matlab)
- Experience in computational modeling of neurons
- Experience with processing and analysis of neuronal data.
- Experience or familiarity in experimental procedures in neuroscience
- 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 (e.g. publications, conference presentations)

Applications (full CV, statement of research interest and name and contact of 2-3 referees) should be sent by e-mail to orz0319@imbb.forth.gr, quoting “NEUREKA: PhD position (ORZ-0319)” in the subject line.

The deadline for applications is midnight, August 20th, 2021 (GMT+3). Applications will be examined until the position is filled. Informal enquiries are welcome.

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.

GDPR Disclaimer

FORTH is compliant with all legal procedures for the processing of personal data as defined by the Regulation EU/2016/679 on the protection of natural persons with regard to the processing of personal data.

FORTH processes the personal data and relevant supporting documents that you have submitted to us. Processing of that data is carried out exclusively for the needs and purposes of this specific call. Such data shall not be transmitted to or communicated to any third party unless required by law.

FORTH retains the above data up to the announcement of the final results of the call, unless further process and reservation is required by law or for purposes of exercise, enforcement, prosecution of certain one's legitimate legal rights' as defined in the Regulation EU/2016/679 and/or in national law.

We inform you that under the Regulation EU/2016/679 you have the rights to be informed about your personal data, access to, rectification and erasure, restrictions of process and objection to as provided by applicable regulation and national laws.

We acknowledge also to you, that you have the right to file a complaint to the national Data Protection Authority. For any further information regarding exercise of your personal data protection rights, you may contact the Data Protection Officer at FORTH at dpo@admin.forth.gr.

You have the right to withdraw your application and consent for the processing of your personal data at any time. We inform you that, in this case, FORTH shall destroy such documents and/or supporting documents submitted and shall delete the related personal data.