A European training network for the discovery of neurotrophins small molecule mimetics as candidate therapeutic agents for neurodegeneration and neuroinflammation (EuroNeurotrophin)

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PhD student - Early Stage Researcher (ESR11)

Evaluation of activity on neurotrophin receptors and their role in signalling, in *in vitro* and *in vivo* neurodegenerative conditions, such as AD

EuroNeurotrophin Overview

EuroNeurotrophin will be the first European consortium to study small molecule neurotrophin mimetics (synthetic or natural) in depth, use them as molecular probes to interrogate neurotrophins and emphasise their clinical translation.

Neurodegenerative diseases (ND), like Alzheimer's disease, Parkinson's disease, Multiple Sclerosis and motor neuron disease, are on the rise worldwide. Preclinical studies point to the therapeutic potential of neurotrophins in preventing or slowing the progression of ND. The key idea behind this project is to address the major limitations of neurotrophins by developing **novel small molecule, neurotrophin mimetics** with favourable profiles of stability, tissue penetration and targeted biological actions.

EuroNeurotrophin meets the emerging need for training young researchers in drug discovery and development with a focus on the design, synthesis and isolation of new neuroprotective small molecule neurotrophin mimetics and their assessment using multimodal approaches, as well as their use towards market applications.

Host Institution

Foundation of Research and Technology (FORTH) is a non-profit research institute carrying out multidisciplinary research. It includes 4 Institutes in Heraklion and 3 more Institutes in other Greek cities. The Institute of Molecular Biology and Biotechnology (IMBB) with an outstanding track record of excellence, recently ranked as a top research institute in Greece. Most of its funding comes from international competitive grants.

Prof. Achilleas Gravanis, Professor of Pharmacology at the Medical School of Univ. of Crete, Researcher at Institute of Molecular Biology & Biotechnology FORTH, has > 27 years of experience in the study of the brain microenvironment and neurotrophins during development and aging, of the molecular mechanisms involved in neurodegeneration & neurogenesis and development of synthetic small molecules with neuroprotective & neurogenic properties. Author of 130 PubMed publications and 2 Intl. Patents on steroidal neurotrophin mimetics. Co-founder of Bionature EA, a spin-off company of UoC. Affiliated Professor Center of Drug Discovery Northeastern University, Collaborating

Scientist Emulate, WYSS/Harvard (Boston USA).
Assistant Prof. of Pharmacology (Medical Sch., Univ. of Crete) Ioannis Charalampopoulos is Collaborative Researcher at Institute of Molecular Biology & Biotechnology FORTH, has > 15 years of experience in the study of neuronal degeneration, neurotrophin receptors biology and signalling and development of synthetic analogs of endogenous neurotrophins. Author of 51 PubMed papers and inventor at 1 Intl. Patents on steroidal neurotrophin mimetics.

Description of tasks for the position

The aim of this project will be to test and evaluate the biological functions (like survival, proliferation or differentiation and cell death) and the underlying molecular mechanisms of novel synthetic and natural compounds in primary cultures of mature neuronal and glial cells, as well as their precursors, and specifically, on primary neuronal cultures of Dorsal Root Ganglion, Superior Cervical Ganglion, hippocampal and cortical neurons, embryonic and adult neural stem cells, exploring the activation and signalling pathways that originate from the specific and different in each neuronal population neurotrophin receptors (TrkA, B, C or $p75^{NTR}$). In addition, animal models of AD will be used and evaluation of the neuroprotective, anti-amyloid effects of synthetic compounds will be examined in brain slices and behavioural tasks. Documented familiarization with classical techniques of molecular/cellular biology and genetics is a requirement for consideration, while stem cell biology and animal handling experience would be an advantage for the position.

Requirements

- Applicants must hold a MSc or equivalent in the field of Molecular or Cellular Biology, Neuroscience, Pharmacy or Neuropharmacology, Biomedical studies or Regenerative Medicine/Biology.
- Applicants can be of any nationality.
- Applicants must have a very good knowledge (written and oral) of the English language.
- H2020 MSCA Mobility Rule: researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of the host organisation for more than 12 months in the 3 years immediately before the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status are not taken into account.
- H2020 MSCA eligibility criteria: Early Stage Researchers (ESRs) must, at the date of recruitment by the host organisation, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. Full-Time Equivalent Research Experience is measured from the date when the researcher obtained the degree entitling him/her to embark on a doctorate (either in the country in which the degree was obtained or in the country in which the researcher is recruited, even if a doctorate was never started or envisaged).

Benefits

- ✓ The position is full-time with a 12 month duration renewable to 36 months.
- ✓ A very attractive salary plus allowances package according to the allowance amounts defined in the rules for Early Stage Researchers (ESRs) EU Marie Skłodowska-Curie Actions Innovative Training Networks (ITN) (http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-msca_en.pdf)
- ✓ Network-wide specialised training and training in transferable/technical skills.
- ✓ Local specialist training provided by the host institution.
- ✓ Intersectoral and interdisciplinary secondments within the EuroNeutotrophin network.
- ✓ International exposure through participation in scientific conferences.

Application

The application form can be downloaded from our website (www.euroneurotrophin.eu). Interested candidates for the position should submit the completed application form along with their cv, motivation letter, copies of publications and/or thesis (if available) and scans of transcripts to the following e-mails:
gravanis@med.uoc.gr , charalampn@uoc.gr and info@euroneurotrophin.eu
IMPORTANT: Please also arrange for two recommendation letters to be submitted directly to gravanis@med.uoc.gr and/or charalampn@uoc.gr and to info@euroneurotrophin.eu

Additional Information

For additional information about the research project and this individual position, please contact:
Professor Achilleas Gravanis E-mail: gravanis@med.uoc.gr
Assistant Professor Ioannis Charalampopoulos E-mail: charalampn@uoc.gr