



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 (ESR7) Isolation of new natural neurotrophin mimetics from marine microorganisms

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



HELLENIC REPUBLIC
National and Kapodistrian
University of Athens

The National and Kapodistrian University of Athens (NKUA) is the oldest and largest educational institution in Greece covering all areas of sciences and arts. The Marine Natural Products (MNP) group at NKUA is led by Prof. Vassilios Roussis. The NKUA MNP group has long experience in the isolation and structure elucidation of bioactive metabolites from marine organisms. The research activities include the isolation and structure elucidation of metabolites, chemical modifications and biotransformations of natural products, biological activity evaluation and metabolomic studies. The current interests focus on marine microorganisms, mainly actinobacteria and fungi, from the East Mediterranean, which is largely unexplored, as a source of novel bioactive metabolites.

Prof. Vassilios Roussis, Full Professor of Natural Products Chemistry, Director of the Laboratory of Pharmacognosy, with 30 years of research experience in isolation and structural identification of secondary metabolites with pharmacological activity from marine macro- and microorganisms. Author of 177 publications and 5 patents.

Description of tasks for the position

The aim of this project will be to isolate natural products from marine bacteria and/or fungi (from the East Mediterranean basin) that act as mimetics of neurotrophins using a bioassay-guided isolation protocol.

The procedure will include the following steps:

- Small scale fermentation of strains from the existing strain collection at NKUA.
- Strains that exhibit positive hits will be subjected to larger-scale fermentation and fractionation.
- Fractions exhibiting positive hits will be submitted to chromatographic separations using normal and reversed phase liquid chromatography, so as to yield pure secondary metabolites, to be evaluated for their bioactivity as neurotrophin mimetics.
- The isolated metabolites will be submitted to comprehensive spectroscopic (NMR, UV, IR) and spectrometric (HR-MS and MSn) analyses.

Requirements

- Applicants must hold a MSc or equivalent in the field of chemistry or pharmaceutical sciences. Preference will be given to candidates with experience in chromatographic and spectroscopic techniques.
- 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 EuroNeurotrophin 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 emails:

roussis@pharm.uoa.gr, eioannou@pharm.uoa.gr and info@euroneurotrophin.eu

IMPORTANT: Please also arrange for two recommendation letters to be submitted directly to roussis@pharm.uoa.gr, eioannou@pharm.uoa.gr and to info@euroneurotrophin.eu

Additional Information

For additional information about the research project and this individual position, please contact:
Professor Vassilios Roussis. Email: roussis@pharm.uoa.gr and Ass. Professor Efstathia Ioannou.
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