



Marie Skłodowska-Curie European Training Network “Bio2Brain” (H2020-MSCA-ITN-2020):
Nose-to-Brain Delivery of Biopharmaceuticals for the therapy of central nervous system
diseases: A design-based approach for efficient drug delivery systems

JOB POSTING

PhD position

Recruiting organisation:

Centre for Research and Technology (CERTH), Hellas

Chemical Process and Energy Resources Institute (CPERI), PI: Dr. Alexandros Alexopoulos

Subproject title:

A computational approach to optimal design of drug delivery systems (DDS)

Starting date:

01.10.2020

Job description:

The advertised subproject will be carried out by a PhD student (“Early-stage Researcher”) at CERTH/CPERI over a period of 36 months. The ESR will be registered for the PhD programme at Aristotle University of Thessaloniki (AUTH).

The overall goal of this subproject is the development of a computational methodology for the rational and quantitative selection of materials and drug delivery systems in order to enhance the nose-to-brain delivery of therapeutic agents.

The specific goals are:

1. Elucidation of the different mechanisms and phenomena related to intranasal drug administration;
2. Rational and quantitative selection of materials for enhanced nose-to-brain delivery of therapeutic agents via the development of a computational methodology;
3. Optimal design of a novel formulation-application and drug delivery technology for the intranasal administration of selected APIs to the brain via the olfactory cleft by combining quantitative mathematical models with in-vitro, ex-vivo and in-vivo experimental results

The main working tasks of the advertised subproject are:

- (1) Computational modelling of drug release from complex systems (e.g., carriers embedded in a hydrogel matrix).
- (2) Computational modelling of drug transport through hydrogel and biological membranes.



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Secondments are planned as follows:

- (1) Contipro a.s., Czech Republic: Two months;
- (2) Fraunhofer IGB, Germany: Two months;
- (3) Biberach University of Applied Sciences, Germany: Two months.

This subproject is fully funded by the Marie Skłodowska-Curie European Training Network „Bio2Brain“ (H2020-MSCA-ITN-2020). The monthly gross salary consists of a living allowance, mobility allowance and family allowance (if applicable). This is € 42,005,88 per annum which includes the single person’s mobility allowance or € 48,005.88 per annum, which includes the married person’s/dependents mobility allowance

For more information on MSCA-ITN, please see: <https://ec.europa.eu/research/mariecurieactions/> .

The recruited researcher will have the opportunity to work as part of an international, interdisciplinary team of 13 PhD students, based at universities and industrial firms throughout Europe.

The successful candidate will attend yearly summer schools as well as international meetings and will receive training on transferable skills. The ESR is expected to finish the project with a PhD thesis and to disseminate the results through patents (if applicable), publications in peer-reviewed journals and presentations at international conferences.

Background information:

Marie Skłodowska-Curie European Training Networks (ETNs) are joint research and training projects funded by the European Union. Funding is provided for PhD students from both inside and outside Europe to carry out individual project work in a European country other than their own.

The Bio2Brain network will create a research environment for the interdisciplinary and intersectoral training of 13 ESRs for project work lasting for 36 months. They are supported by 11 academic teams (beneficiaries and partner universities), 6 key industrial stakeholders and an academic non-profit organization.

Disorders of the central nervous system (CNS), including multiple sclerosis as well as Alzheimer’s and Parkinson’s diseases, affect around 165 million people in Europe. These disorders are often associated with severe suffering of the patients and their families, as well as an enormous burden on the social systems.

The Bio2Brain trans-European research network aims to promote efficient drug administration to the CNS. The research and training programme covers the development of new advanced materials, formulations, and engineered proteins for the intranasal CNS delivery of monoclonal antibodies (mAbs). The ESRs will obtain experience in the entire transdisciplinary development cycle of the medicinal product, from pharmacological drug pathway validation, product and process design, synthesis to characterization, as well as validation and quality control. The training will be complemented with useful tools for the time to market and commercialisation phase.

Requirements:



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Qualifications / experience:

- Early-stage researcher: a researcher without a PhD, who is in the first four years (full-time equivalent research experience) of their research career, measured from the date when the ESR obtained the degree, which would formally entitle to embark on a doctorate.
- Graduation in the field of chemical engineering or related fields – M.Sc.
- Experience in at least one of the following areas: development of computational models for complex systems, use of commercial multiphysics software, statistical mechanics, polymer physics, modelling of biological systems.
- Basic knowledge of thermodynamics, physical chemistry, polymers, biology, numerical methods, fluid and mass transfer.
- Practical experience of molecular dynamics software, fluid dynamics of viscous fluids, mass transfer in macromolecules, hydrogel physics, drug delivery is a plus.
- Basic knowledge of data analysis and Microsoft Office.
- Well-structured and autonomous working style, flexible and co-operative, very good organizational and communication skills, good writing and presentation skills, willing to travel and go on secondments.
- Fluency in written and spoken English is a must.

Disabled applicants will be given preference, if equally qualified. Goals related to gender equality and diversity policy are an integral part at our institution. Therefore, we are pleased to receive applications from qualified women and diverse persons.

Mobility:

The applicant must not have resided or carried out their main activity (work, studies etc.) in Greece for more than 12 months in the past three years. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.

How to apply:

Interested candidates are strongly advised, prior to applying, to read carefully the job description and to contact Alexandros Alexopoulos at aleck@certh.gr in case of any questions or doubts.

To apply, please click the link below and upload at least: Your complete CV, a half-page summary of master/diploma thesis, certificates of examination grades, a letter of motivation (up to 1 page) describing your research career goals, skills and experience, and names and contact information of at least two academic referees who could write a letter of recommendation.

For further information about CERTH, please see: <http://www.certh.gr>

For questions, please contact:

Dr. Alexandros Alexopoulos: aleck@certh.gr



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Assessment of applications starts 6 April 2021

Interviews are planned for April/ May 2021.