Ana Aragón (ESR 9)

Development of Human Cell-Based Models for study of Blood Brain Barrier Molecular Permeability

Profile

Ana Aragón González
a.aragon@sheffield.ac.uk

Host

The University Of Sheffield.

University of Sheffield,
United Kingdom

Social

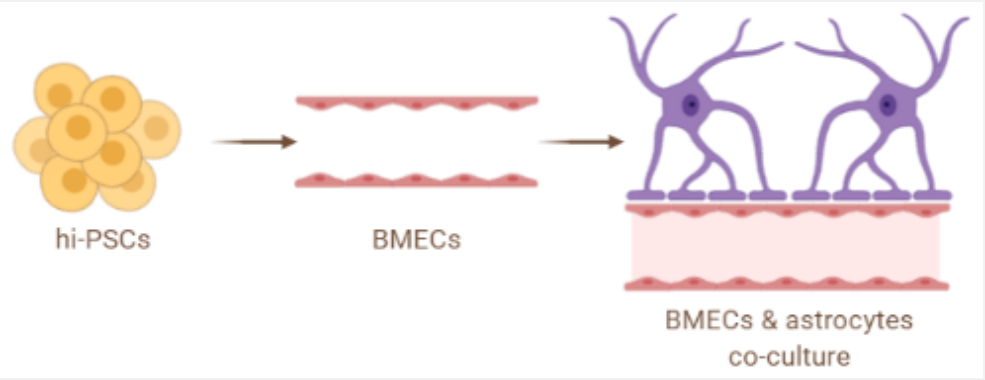
Twitter: @eneurotrophin

Group: EuroNeurotrophin

Project: EuroNeurotrophin

My Research

The aim of my project is the development of Human Cell-Based Models for the study of Blood Brain Barrier Molecular (BBB) permeability. The main goal is to reproduce the human BBB by the controlled differentiation of hi-PSCs into microvascular cells. To check the BBB integrity and filtration properties, primary astrocytes and hi-PSCs-derived microvascular cell co-culture will be developed. With these models, we shall then evaluate neurotrophic agonists and antagonists. As such, the permeability properties of small molecules having neurotrophic mimetic properties identified during the EuroNeurotrophin project will be tested.



Scientific CV

- 2019-present: **EuroNeurotrophin Early Stage Researcher**, University of Sheffield, Sheffield Institute for Translational Neuroscience.
- 2018-2019: **Master of Neuroscience** in University of Barcelona, Spain and practices in Vall d'Hebron Research Institute. Master thesis: 'Astrocyte's role in neuroinflammation: a key cell in neurodegenerative diseases'
- 2017-2018: **Erasmus+ fellowship** in the University of Wroclaw, Poland and practices in Cytobiochemistry Department. Bachelor thesis: 'Molecular bases study of two anemia hemolytic disease cases with an heterozigotic mutation in NT5C3A gene'
- 2013-2017: **Degree of Biochemistry** in the University of Cordoba, Spain

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 765704

EuroNeurotrophin

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

Project Coordinator

Dr Theodora Calogeropoulou,
National Hellenic Research Foundation, Greece

Project Partners

ΕΘΝΙΚΟ ΙΔΡΥΜΑ ΕΡΕΥΝΩΝ
National Hellenic Research Foundation

Heidelberg Institute for Theoretical Studies
HITS

UNIVERSITÀ DI SIENA
1240

UNIVERSITÉ CAEN NORMANDIE

HELLENIC REPUBLIC
National and Kapodistrian University of Athens

TECHNISCHE UNIVERSITÄT DRESDEN

FORTH
Foundation for Research & Technology - Hellas

The University Of Sheffield.

VU VRIJE UNIVERSITEIT AMSTERDAM

Project Contact

info@euroneurotrophin.eu
www.euroneurotrophin.eu

Introduction

Neurodegenerative diseases like Alzheimer's disease or Parkinson's disease are on the rise in developed societies worldwide affecting millions of people. Neurodegenerative diseases primarily affect neurons in the human brain and currently there exists no cure for any of them since most of the available drugs fail to tackle the pathogenesis of neurodegenerative diseases.

Preclinical studies point to the therapeutic potential of neurotrophins, which have been shown to control a number of aspects of survival, development and function of neurons. However, the poor pharmacokinetic properties of neurotrophins render their use as drugs prohibitive.

Objectives

EuroNeurotrophin will address the major limitations of neurotrophins by developing novel small molecule, neurotrophin mimetics with favourable profiles of stability, tissue penetration and targeted biological actions. In the long term, the project will contribute to the further development of small molecule therapeutics for the treatment of neurodegenerative diseases and neuroinflammation, revealing new concepts of neurotrophin receptors signalling and to create a pan-European Neurotrophin Network.

Furthermore, EuroNeurotrophin aims at creating a new generation of young scientists with a broad understanding and skill set in chemical biology with emphasis on the neuroscience field and to educate 14 young researchers regarding the knowledge underpinning the neurotrophin related field as well as on drug and natural products research for neurodegenerative diseases.

Impact

Neurotrophins offer one of the most compelling opportunities to significantly improve the treatment of serious age-related, neurological diseases such as Alzheimer's, Parkinson's, MND/ALS. A major therapeutic advantage of neurotrophic factors is that they tackle both the symptoms of a disease (improving clinical status) as well as its pathogenesis (delaying disease progression) without any prerequisite deep insight into the aetiology or specific pathogenic variables driving the disease process.

We will study neurotrophin small molecule mimetics (synthetic or natural) in depth, and will use them as molecular probes to interrogate the role of neurotrophins and their receptors. It will contribute important new knowledge to the next frontier in biomedical sciences.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 765704