



ERASMUS+ TRAINEESHIP / PLACEMENT OFFER

Project title: Basal phosphorylation of synaptic proteins/channels and hippocampal synaptic plasticity in development and aging

Project description:

Synaptic remodelling contributes to altered cognition and synaptic plasticity during postnatal development and upon ageing. Recently, we showed that hippocampal LTP, a cellular synaptic plasticity event crucial for learning and memory, undergoes postweaning developmental maturation and distinct modulation by the neuropeptide vasoactive intestinal peptide (VIP). LTP also changes with ageing. Hippocampal CA1 LTP depends on rapid events like phosphorylation of AMPA receptors, the autophosphorylation of CaMKII and other protein kinases like PKM. Their basal phosphorylation levels may condition LTP expression, but it no studies evaluated this during postweaning development or aging.

Developmental and ageing-associated changes in synaptic plasticity markers, VIP and VIP receptors will be performed by western blot:

a) During postweaning development (3- to 12-week-old rats).

b) Along aging in rats (4-21 months).

Western blot analysis will be performed in total hippocampal membranes and/or Percoll-purified hippocampal synaptosomes to evaluate phosphorylation levels of AMPA receptor subunit GluA1, CaMKII and PKM. Plus, membrane levels of NMDA receptor subunits NMDA GRIN1, GRIN2 and AMPA GluA2 subunit (associated with pathological synaptic mechanisms) and levels of VIP and VIP VPAC1 and VPAC2 receptors and GABAergic markers will also be evaluated.

Proposal designed for MSc thesis project (min. 6 months). Contact supervisor for other opportunities.

Department: Chemistry and Biochemistry

R&D Unit: BiolSI (Epilepsy and Aging Lab, GER)

Field of study: Neurochemistry, Neurobiology, Biochemistry, Synaptic Physiology

Supervisor: Diana Cunha-Reis

Personal webpage: <https://ciencias.ulisboa.pt/perfil/dcreis>

Number of weeks offered: 24-32

Within the months: from November to July

Number of working hours per week: 35

Publication date: 01 / 11 / 2023

Closing date: 31 / 01 / 2023

Requirements

General:

- A very good academic record;
- Good writing and presentation skills;
- Good social and organisational skills;
- Very good proficiency in spoken and written English; knowledge of Portuguese language is an asset.

Specific:

- Level of education: Bachelor's degree in Biochemistry, Biology and akin areas;
- Previous experience with mentioned techniques and nervous system will be valued but not required.
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Applications

Applications should include the following information:

- a cover letter, including a description of your research interests and an explanation for why you are applying for this project;
- a curriculum vitae (CV);
- an official transcript of grades issued by your home institution;

and be submitted no later than 31 / 01 / 2023 via email to internacional@ciencias.ulisboa.pt.

Contacts

For inquiries regarding this project you are welcome to contact: dcreis@ciencias.ulisboa.pt.

For inquiries regarding the application procedure you are welcome to contact: internacional@ciencias.ulisboa.pt.