## ERASMUS+ TRAINEESHIP / PLACEMENT OFFER

**Project title:** Changes in synaptic plasticity and lipid raft composition induced in vitro by hypoxia and oxygen-glucose deprivation.

**Project description:**
This project will use in vitro models of brain hypoxia (Hypx) and oxygen-glucose deprivation (OGD) to evaluate early changes in synaptic plasticity related proteins and lipid raft composition following these insults and the neuroprotective action of vasoactive intestinal peptide (VIP) VPAC1 receptors. Hypx will be induced by suppression of oxygenation (2% saturation) in artificial cerebral fluid (aCSF) superfused hippocampal slices in vitro, thus mimicking the transient changes observed in the ischemic penumbra during stroke; OGD will be induced by simultaneous suppression of oxygenation and reduction of the glucose concentration from 10mM to 3mM glucose. The neuroprotective role of endogenous VIP will be tested when a VPAC1 VIP receptor antagonist is present during Hypx or OGD in vitro.

Western blot analysis of total hippocampal membranes obtained from these model slices will evaluate AMPA receptor GluR1 phosphorylation (associated with enhanced synaptic plasticity) and GluR2 expression (associated with pathological altered synaptic mechanisms). Kv4.2 channels phosphorylation (A-current, regulation of dendritic plasticity and excitability), f-actin and cavedin (lipid raft markers) and structural pre and post-synaptic GABAergic and glutamatergic markers (PSD-95, gephyrin, VGAT, VGlut and synaptophysin).

This proposal is designed for an MSc thesis project and not for short-term internships. For other opportunities or additional information please contact the supervisor.

### Department

**Chemistry and Biochemistry**

### R&D Unit

**BiolSI**

### Field of study

**Neurochemistry**

<table>
<thead>
<tr>
<th>Supervisor</th>
<th>Diana Cunha-Reis</th>
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<tbody>
<tr>
<td>Personal webpage</td>
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<tr>
<td>Number of weeks offered:</td>
<td>26</td>
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<tr>
<td>Number of working hours per week:</td>
<td>35</td>
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<td>Publication date:</td>
<td>17 / 09 / 2021</td>
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<td>Closing date:</td>
<td>31 / 12 / 2021</td>
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### 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 and akin areas;
- Previous training in Neuroscience/Neurochemistry will be valued;
- Previous experience with Western-blot and tissue fractionation techniques will be valued but are not a requirement.

### 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 30 / 11 / 2021 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.