4 Year PhD Studentship available for September 2019

**Department:** Neuroscience, Psychology and Behaviour

**Supervisors:** Dr Vincenzo Marra and Professor Ian Forsythe

**Eligibility:** UK/EU applicants only

**Project Title:** *Presynaptic homeostatic plasticity in hyperexcitable neuronal networks.*

**Project Description:**

Information transmission in the nervous system relies on synaptic connections between neurons. While the strength of these connections is constantly changing through activity-dependent plasticity, the output of large neuronal networks is reliable over time. Homeostatic plasticity ensures network activity remains within physiological boundaries by modulating cellular excitability and strength of synaptic connections. In some cases, homeostatic mechanisms fail to regulate the level of neuronal activity leading to epileptiform discharges. This project will use electrophysiology, optical imaging and electron microscopy to assess functional and structural changes occurring at presynaptic terminals and their effect on network excitability. Previous work in the lab has shown changes in vesicular organization in a mouse model of focal epilepsy. The project will build on these results to study fundamental aspects of synaptic function and their role in regulating network activity in healthy and epileptic brains.

The student will receive training in a wide range of techniques including: electrophysiology (patch clamp and extracellular recordings), live fluorescence imaging (calcium and vesicular imaging), functional labelling for electron microscopy and the use of computational tools for the analysis of large datasets.

**References:**


Funding details:
4-year funding including UK/EU tuition fee waiver and stipend at RCUK rates

Entry requirements:
Applicants are required to hold/or expect to obtain a UK Bachelor Degree 2:1 or better in a relevant subject. The University of Leicester English language requirements apply where applicable.

How to apply:
You should submit your application using our online application system.

Apply for Neuroscience, Psychology and Behaviour Research/September 2019

In the proposal section include the supervisors name and project title. You do not need a full research proposal

In the personal statement section please outline why you want to be considered for this project.

Project / Funding Enquiries: Dr Vincenzo Marra vm120@leicester.ac.uk
Application enquiries to pgradmissions@le.ac.uk