The Epilepsy Research group in A. I. Virtanen institute for Molecular Sciences (University of Eastern Finland, Kuopio campus) is offering new Master thesis projects. We are looking candidates especially for following projects:

Cortical interneuron network after traumatic brain injury

Recent paper described presence of microlesions in the human epileptic cortex. It is not yet known if also TBI can trigger these cellular alterations and are those microlesions present in the rat cortex before seizure onset.

Specific task is: The aim of this study is to investigate the total numbers of interneurons around the lesion location (perilesional cortex) using unfolded maps after lateral fluid-percussion injury. Additionally, expression of interneuron related genes will be analyzed using existing transcriptome data and bioinformatics approach. Later, their expression in cortex samples will be validated using real-time quantitative PCR.

Skills/requirements needed from the student: Student should have basic laboratory skills. Hands-on-training for methodology will be given in the laboratory by Noora Puhakka, PhD.

Group leader: Asla Pitkänen
Responsible scientist/contact person: Noora Puhakka, PhD
Email address: noora.puhakka (at) uef.fi
Duration of the project: Negotiable (3-6 months)
Salary: Possibility to pay salary or grant: No

Localized molecular changes after traumatic brain injury

Description of the project: Traumatic brain injury (TBI) triggers a cascade of molecular and cellular changes that can lead to development of post-traumatic co-morbidies, such as epilepsy and Alzheimer's disease. The focus of this project is in microRNAs, master regulators of gene expression, and their contribution to pathological changes. Based on our previous bioinformatics and histologic analysis we aim to define localized changes in specific microRNAs and their targets.

Specific task is: The aim of this study is to study localized alteration in miRNA after lateral fluid-percussion injury using Laser Capture Microscope (LCM) and real-time PCR (RT-PCR).

Skills/requirements needed from the student: Student should have basic laboratory skills. Knowledge in histological techniques is a plus but not necessary. Hands-on-training for specific methodologies will be provided directly in the laboratory.

Group leader: Asla Pitkänen
Responsible scientist/contact person: Noora Puhakka, PhD
Email address: noora.puhakka (at) uef.fi
Duration of the project: Negotiable (3-6 months).
Salary: Possibility to pay salary or grant: No