

Place: Center for Molecular Medicine (<http://www.cmm.ki.se/>)
Dept. Clinical Neuroscience, Karolinska Institutet
Supervisor: Maja Jagodic, PhD
Start: ASAP
Period: Exam/master's project (20-30 weeks, with potential for extension)
Language: English

Project:

Investigation of micro RNA regulatory sequences and target prediction combining genome sequence data with expression data

Dysregulated expression of micro RNAs (miRNAs) has been associated with a variety of diseases. MiRNAs are small noncoding RNAs that bind the untranslated regions (UTR) of mRNA and negatively control gene expression in a post-transcriptional manner by either inhibition of translation or degradation of the mRNA. Every miRNA potentially regulates hundreds of target genes. Our aim is to investigate a contribution of miRNAs to susceptibility to pathogenic experimental neuroinflammation. To that aim, we compared miRNA profiles in activated lymph nodes of two inbred rat strain, one susceptible and one resistant to neuroinflammation, using Solexa deep-sequencing. Recently, we also obtained full genome sequence of the two strains. The goal of this exam/master's project is to determine:

- A contribution of genetic variation to detected differences in miRNAs, by investigating promoter sequences of miRNAs between the two inbred strains
- Differences in target genes of differentially expressed miRNAs, by investigating genomic sequences of predicted target UTRs in the two strains
- Pathways that are regulated by differentially expressed miRNAs and their affected target genes

Requirements:

- Knowledge of bioinformatics and programming
- Ability to take own initiative and responsibility
- Genuine interest in research

Contact details:

Maja Jagodic
Neuroimmunology Unit
CMM, L8:04
Tel: 08-517 762 58
E-mail: Maja.Jagodic@ki.se