



## Master thesis project, fall 2023 at Karolinska Institutet – “The role of the gut microbiota in epilepsy”

Are you interested in the gut microbiota and its influence on the brain? Do you want to work with bioinformatics analyzing sequencing data? Are you interested in machine learning algorithms and their application as disease predictors based on the gut microbiota? We now have a master thesis project available at the Centre for Translational Microbiome Research at Karolinska Institutet.

*Department: Department of Microbiology, Tumor and Cell Biology (MTC), KI*

*Place: KI campus, Solna*

*Start: Mid-August 2023, if possible*

*Application: [stefanie.prast-nielsen@ki.se](mailto:stefanie.prast-nielsen@ki.se)*

Traumatic brain injury (TBI) is a serious condition *per se*. However, some patients subsequently develop epilepsy, others do not. The reason for this is currently unknown and we hypothesize that the microbes in the gut play an important role.

The gut microbiome, the most densely populated environment on the planet, plays an important role in human health far beyond the gut. Several neurological diseases have been associated with changes in the gut microbiome. We have used a mouse model of TBI and collected fecal samples from mice before TBI/sham (control) and after, but before developing epilepsy or not. These samples are currently being shotgun sequenced for taxonomic and functional profiling of the microbiota.

We are looking for a motivated master student for the bioinformatics analyses. You will characterize the taxonomic profiles and compare mice with TBI to controls as well as compare mice developing epilepsy to those who do not after TBI. You will then apply machine learning algorithms in an attempt to identify gut microbial predictors for epileptogenesis. If time permits, the same approach will be used for the functional profiles of the samples to gain insights into possible mechanisms.

Please note! For this project, basic bioinformatics knowledge and **basic proficiency in R or python** are needed!

The project will be performed at CTMR (Centre for Translational Microbiome Research), Biomedicum, KI Campus Solna under supervision of Docent Stefanie Prast-Nielsen.