Projects available in Dr. Nestrasil’s lab:

1./ **Neuroimaging of diseases affecting CNS – Human Studies**

To develop neuroimaging methods and establish surrogate markers of disease severity. We use MR volumetry, diffusion tensor imaging, and MR Spectroscopy to describe disease pathology and to monitor changes caused by treatment interventions.

Diseases:
- mucopolysaccharidoses (MPS I, MPS II, MPS IIIA, MPS IIIB, MPS VI),
- gangliosidoses (GM1, GM2, both infantile and juvenile),
- cerebral malaria in pediatric patients.
- essential tremor

Student’s role on the project: data analysis, literature review

The expected product for the student: poster presentation (annual MSI poster exhibition), co-authorship on an abstract or a manuscript.

2./ **Neuroimaging of diseases affecting CNS – Animal Studies (dog, mice)**

To develop neuroimaging methods and establish surrogate markers of disease severity. We use MR volumetry, diffusion tensor imaging, and MR Spectroscopy to describe disease pathology and to monitor changes caused by treatment interventions.

*At the moment not available, will be available in Spring semester.*

Diseases:
- mucopolysaccharidoses (MPS I – dog, mice, MPS IIIB – dog only),

Student’s role on the project:
Fall semester 2014: data collection, literature review
Spring semester 2015: data collection and analysis, literature review

The expected product for the student: poster presentation (annual MSI poster exhibition), co-authorship on an abstract or a manuscript.

3./ **3D kinematic gait analysis in pediatric diseases**

*At the moment not available, will be available in Spring semester.*

We are collecting the 3D kinematic data to determine markers of gait pathology in MPS patients. Along with 3D kinematics we collect video recordings of gait and perform goniometric (range-of-motion) measurements.

Diseases:
- mucopolysaccharidoses (MPS I, MPS II, MPS IIIA, MPS IIIB, MPS VI),

Student’s role on the project: data collection and analysis.

The expected product for the student: co-authorship on an abstract or a manuscript.