SEMINAR FRIDAY 23.11.12

PLACE: Department of Radiology (H112), «Biblioteket»
TIME: 12:00-13:00
TITLE: Functional and structural brain connectivity in irritable bowel syndrome (IBS)

SPEAKERS
Prof Arvid Lundervold: Welcome
Prof Trygve Hausken: Clinical and pathophysiological motivation for the brain-gut IBS project
Kiniena Tekie: Diffusion tensor imaging and analysis of the brain in IBS
Eivind Valestrand: Resting state fMRI recordings and analysis before and after meal intake

ABSTRACT
Irritable bowel syndrome (IBS) affects as many as 20% of the general population and has great impact on daily activities, significantly reducing quality of life. Symptoms include bloating, discomfort, abdominal pain and change of stool frequency or form. The recent years concept of the brain-gut axis has increased the understanding of how the brain influences and interacts with the bowel. Through the use of functional magnetic resonance imaging (fMRI) and diffusion tensor imaging (DTI) we aim to compare the brain networks of these patients with healthy controls.

Subjects in this project are scanned in two segments. In the first segment, we record structural 3D MRI, DTI and fMRI. The fMRI is performed with subjects in so-called “resting state”, a special form of task-less fMRI examination where the subjects are instructed to lie still in the scanner, with eyes open, and asked not to fall asleep. After the first segment of the examination, the person is given 500 ml TORO meat-soup, repositioned in the scanner, and examined with a second structural 3D MRI and resting state fMRI scan.

Through R-fMRI we gain insight into the temporal characteristics and spatial organization of spontaneous low frequency fluctuations in the BOLD signal before and after the meal, and how these activity patterns in IBS might differ from the those observed in healthy controls.

DTI provides information about the (long-term) white matter integrity and structural connectivity of the brain. The analysis of R-fMRI recordings, using e.g. independent component analysis and graph theory, provide information about the resting state networks in brain and its functional connectivity. This approach might give new insight into the mechanisms behind IBS.