Awarded COFAS Marie Curie fellows
– For the FOIP programme

Karin Jensen

E-mail:
karinj@nmr.mgh.harvard.edu

Home University:
Karolinska Institute, Department of Clinical Neuroscience
www.ki.se

Host University:
Harvard University and Massachusetts General Hospital Laboratory for Neuroimaging Applications to Pain, Acupuncture & Placebo Research, USA
www.massgeneral.org

Project: The role of the brain in chronic low back pain

Abstract: Chronic low back pain (cLBP) represents one of the most common reasons for seeking health care and the disability leads to major suffering and staggering health care costs for society. In parallell to other musceloskeletal pain problems, most cLBP patients suffer from their symptoms in absence of any detectable physical damage and there is growing evidence that the symptoms are caused by dysfunctions within the central nervous system. Neuroimaging tools can contribute to the investigation of brain function in cLBP. The present project will use two novel approaches for fast and non-invasive assessments of clinical pain:

1. Arterial Spin Labeling: a completely non-invasive application to magnetic resonance imaging (MRI), offering a unique possibility to measure the brain activity during clinical pain in cLBP.
2. Default Mode Network connectivity: an MRI method for investigating the resting brain; i.e. when it is not actively engaged in a special task. The presence of chronic pain affects the entire brain and there are studies indicating altered intrinsic brain function in cLBP. Investigating the brain during rest will provide crucial understanding of the processes responsible for the general reorganisation of brain function in cLBP.

The short-term goal for the proposed project is to find biomarkers for cLBP through a fast, accessible and non-invasive methodology. The long-term goal is to provide biomarkers for development of effective treatments for cLBP and other centrally mediated pain conditions.

Career goals: My line of research has focused on the role of the brain in pain processing. My aim is to deepen the understanding of the brain processes involved in the initiation and maintenance of chronic pain and to search for biomarkers that can lead to development of effective treatment. During my doctoral studies, I investigated the brain's response to experimentally induced pain, a method that led to new insights about dysfunctional pain processing in chronic pain. In order to increase the understanding of the brain's role in pain pathology, my current post-doc position will provide the methods for investigating the brain response to naturally occurring pain in cLBP. Custom-made techniques for provoking back pain will be used during neuroimaging and state-of-the-art methods for functional MRI will allow for measurement of the intrinsic brain function in cLBP. My future goal is to establish an independent research group that uses the latest innovations in neuroimaging in order to develop better understanding and treatment of patients with chronic pain.