

PhD student - Early Stage Researcher (ESR) (f/m)

INSPIRE-MED (Integrating Magnetic Resonance Spectroscopy and Multimodal Imaging for Research and Education in MEDicine)

## ESR #15: Development of robust, user-friendly analysis and reporting tools for automatic MRS(I) processing for use in a clinical setting

**Location:** University Hospital Bern / Neuroradiology / SCAN, Bern, Switzerland

**Gross salary (pre-employer/employee and income tax):** 3963 €/month

**Mobility allowance (pre-employer/employee and income tax):** 600 €/month

**Family allowance (pre-employer/employee and income tax):** 500 €/month (if applicable)

**Start date:** between January and October 2019

**Duration:** 36 Months

**Project description:** This position is one of the 15 ESR positions of the INSPIRE-MED European Training Network, which focuses on the development of Magnetic Resonance Spectroscopy (MRS) and MR Spectroscopic Imaging (MRSI) combined with Positron Emission Tomography (PET), enhanced by machine learning techniques.

Although *in vivo* MRS(I) is a powerful diagnostic technique first used in the mid 80tees of last century, the technique still did not arrive as a widely used clinical tool in (neuro-) radiology, and is mainly used in specialized academic medical centers only. This ambitious sub-project wants to improve the clinical usability of the technique, and at the same time, improve the awareness amongst clinicians of the potentials of the technique. This sub project is therefore on the crossroads of (a.) optimizing clinical application of MRS(I) in neuroradiology by fully automating the post processing (neuro-oncology and inborn diseases), (b.) application of machine learning to MRS(I)/MRI neuro-radiological patient data, and (c.) in close collaboration with neuro-radiologists, the development of a web application enabling clinicians worldwide to browse and view interesting clinical MRS(I). The successful candidate will further develop her/his algorithms based on MRS(I) methods which resulted from previous EU-projects, as well as locally developed applications/methods.

**Research environment:** This project is hosted by University Hospital Bern, Switzerland and the successful candidate will work in the Support Center for Advanced Neuroimaging (SCAN) which is part of the Institute for Diagnostic and Interventional Neuroradiology that operates two 1.5 Tesla scanners, three 3 Tesla scanners and, from the second quarter of 2019 onwards, one 7 Tesla scanner.

The University Hospital Bern belongs to the Insel Gruppe AG, and with a total of 8300 employees, is the biggest hospital group in Switzerland.

The selected candidate will be able to take advantage of the unique set-up of the INSPIRE-MED network, encompassing 12 academic and 9 industrial partners providing the young researchers with transferable and generic skills as well as a comprehensive, wide-ranging education on the basic principles of medical imaging and image analysis. This multi-disciplinary environment encompasses physics, mathematical and computer sciences, with applications in medicine and biological sciences.

**Your profile:** You should have a master's degree in computer science, electrical engineering or physics, or a similar degree with an equivalent academic level, and you should *really* like to develop software. You should have proven experience in developing numerical algorithms and/or the development of web applications (using e.g. HTML5, Javascript, NodeJS, AngularJS etc.) and/or desktop applications in JAVA/C++, favourably applied to biomedical data processing. Experience in the field of MRI/MRS-technology would be nice, but is not a required. Interest in applied research should motivate your application. The candidate should have strong social abilities allowing an active participation to the European network, fruitful exchanges with other students and researchers, and an excellent integration in the team of your research group. You should be ready and able to travel in Europe for the network meetings as well as for sharing the experiences with your secondment teams.

**Eligibility and Mobility Rule:** Early-Stage Researchers shall, at the time of recruitment by the host organisation, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. At the time of recruitment by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 years immediately prior to the reference date.

**To apply:** Please send your CV and motivation letter to Johannes Slotboom (PhD) preferably by e-mail to [johannes.slotboom@insel.ch](mailto:johannes.slotboom@insel.ch), or by surface mail to [University Hospital Bern / Inselspital, Institute for Diagnostic and Interventional Neuroradiology \(DIN/SCAN\)](#), Freiburgstrasse 10, CH-3010 Bern, Switzerland.