

## POSTDOCTORAL RESEARCHER POSITION

## NEUROIMAGING & MULTIPLE SCLEROSIS

(2 YEARS)

GIGA - Cyclotron Research Centre - HUMAN IMAGING  
UNIVERSITY OF LIÈGE - BELGIUM

**Position Available: Image Analysis Specialist (Physicist or Biomedical Engineer)**

### About the Project

Multiple sclerosis (MS) is the leading cause of acquired non-traumatic disability in young adults. MS is a complex disease involving various pathological processes—*inflammation, demyelination, axonal loss, and remyelination*—affecting the entire central nervous system. These mechanisms vary across patients, contributing to differences in symptoms, prognosis, and treatment response. Progressive disability is linked to chronic inflammation and neurodegeneration, with cortical pathology playing a major role. Conventional MRI detects focal white matter lesions but is insensitive to cortical pathology and does not capture key MS mechanisms. To overcome these limitations, our project aims to *validate quantitative 7T MRI parameters (MT sat, R1, R2, QSM) as biomarkers of MS histological processes\**, by directly comparing them with neuropathological findings. A key focus is establishing reliable markers of cortical remyelination.

### Project Goals and Approach

This pioneering project is funded by the F.R.S.-FNRS WEAVE program and involves an international collaboration with:

- Dr. Evgeniya Kirilina (MPI CBS, Leipzig, Germany)
- Dr. Simon Hametner (Medical University of Vienna, Austria)
- GIGA-CRC Human Imaging (Liège, Belgium)

Together, we combine expertise in advanced neuroimaging, neuropathology, and biophysical modeling.

**GIGA-R – CRC Human Imaging**

B30, 8 Allée du VI Août, Quartier Agora, B-4000 Liège, Belgium

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<https://www.gigacrc.uliege.be>

**The project consists of three main stages:**

1. Histopathological characterization of cortical lesions and correlation with ultra-high-resolution post-mortem qMRI.
2. Development of a biophysical model linking cellular changes (inflammation, demyelination, remyelination) to quantitative MRI parameters.
3. Creation of sensitive qMRI biomarkers for in vivo assessment of disease progression in MS patients.

**Your Role**

We are looking for an Image Analysis Specialist (physicist or biomedical engineer) with:

- Strong experience in MRI image analysis (preprocessing, co-registration of histology and MRI, multimodal data integration).
- Skills in data processing and biophysical modeling.
- Ability to work in an interdisciplinary and collaborative environment.

**Why Joining Us?**

- Be part of a cutting-edge project at the intersection of neuroimaging, neuropathology, and computational modeling.
- Collaborate with leading international research teams.
- Contribute to breakthroughs in understanding and monitoring MS progression.

**Candidate Profile – Requirements**

- High motivation, autonomy, and excellent communication skills, with strong collaborative and organizational abilities.
- Master's degree (MSc) in a discipline related to the project
- Experience with neurological diseases and 7T MRI imaging is highly valued.
- Strong statistical and programming skills (e.g., Matlab, R, Python).
- Fluency in English is mandatory; proficiency in French is an asset.

**Work Environment**

- GIGA-Cyclotron Research Centre – Human Imaging is a highly collaborative research hub bringing together biologists, psychologists, neurologists, chemists, physicists, and engineers. Our teams combine expertise in sleep, cognition, aging, brain disorders, and neuroimaging to better understand the structure and function of the human brain.
- State-of-the-art equipment: 3T and 7T MRI scanners (Siemens), PET scanner (Siemens), electrophysiology labs (high-density EEG, EEG-TMS, EEG-fMRI, sleep unit), radiochemistry lab, and cyclotron (IBA).
- International collaborations with renowned centers in EU and United Kingdom.
- The project will be mentored by **Emilie Lommers**, **Gilles Vandewalle**, and **Mikhail Zubkov**.

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**Quality of Life**

- Liège is an affordable city with excellent connections to major European cities.
- A green and pleasant campus environment.
- Family-friendly and welcoming community.
- Renowned for its excellent gastronomy.

**Application Process**

Applicants are encouraged to apply as soon as possible and no later than March 21, 2026. Interviews for shortlisted candidates will be conducted via Microsoft Teams. The position is expected to start on June 1, 2026.

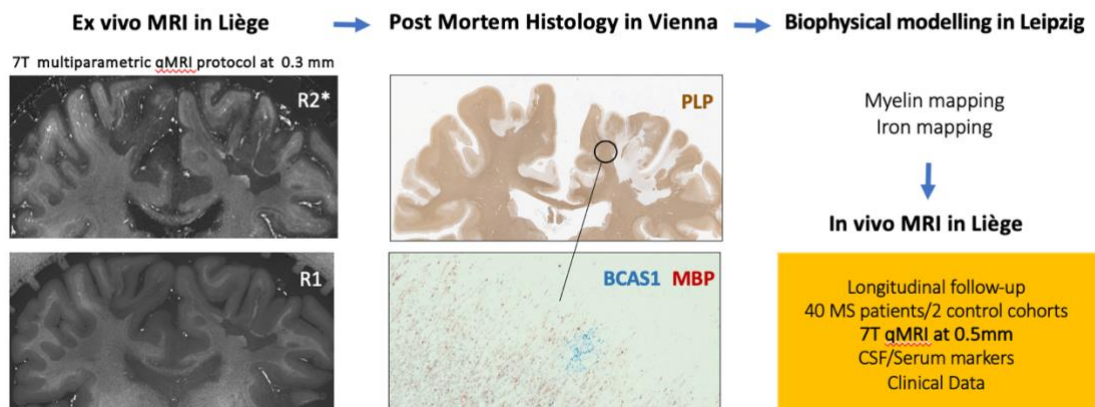
Please submit the following documents as a single merged PDF:

- Curriculum Vitae, including a description of your PhD thesis and the names of your jury members as well as a full list of publications.
- Proven active involvement in research projects in engineering, MR physics, images analysis or biostatistics
- Contact details for two referees (we will contact them directly).
- Motivation letter (maximum 2 pages) outlining your qualifications, research interests, and motivation for applying to this project.

Applications and informal enquiries can be sent to [gilles.vandewalle@uliege.be](mailto:gilles.vandewalle@uliege.be), [elommers@chuliege.be](mailto:elommers@chuliege.be), [pmaquet@uliege.be](mailto:pmaquet@uliege.be) and [m.zubkov@uliege.be](mailto:m.zubkov@uliege.be)

*In vivo* histology of MS

Demyelination, remyelination and chronic inflammation within cortex: validation of 7T qMRI with histology and biophysical modelling of MRI signal



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