

1 PHD POSITION

COGNITIVE NEUROSCIENCE & NEUROIMAGING

(4 YEARS)

GIGA - CRC - HUMAN IMAGING
UNIVERSITY OF LIÈGE - BELGIUM

Topic

Neuroinflammation, Alzheimer's disease, PET & 7 Tesla MRI

Overview

Neuroinflammation mitigates external or internal attacks and promotes homeostasis in the short term. In the long run, neuroinflammation is increasingly recognised as a key component of etiopathology of neurodegenerative diseases including in Alzheimer's disease (AD) where it could precede and promote amyloid and tau pathologies. Few studies explored, however, the role of neuroinflammation and its association with AD biomarkers in human in the presymptomatic or prodromal stages of the disease. Neuroinflammation could, on the one hand, improve the detection of individuals at risk of developing AD in whom prevention could be applied earlier and, on the other hand, constitute a key intervention target to prevent pro-inflammation processes.

Whether neuroinflammation truly consists of an earlier stage of AD neuropathology compared to amyloid and tau pathologies is not yet established. Likewise, whether high-resolution MRI could provide non-invasive markers of neuroinflammation that could replace the costly and invasive PET scan assessments is not known. **The goal of the PhD project is to provide a detailed understanding of the relationships between PET scan markers of neuroinflammation, 7 Tesla quantitative MRI metrics and cognitive functioning in healthy individuals at lower and higher risk of developing AD and in prodromal phase AD patients (suffering from mild cognitive impairment).** The overall project includes a longitudinal arm with follow-up over 10 years, part of which may be included in the present PhD project.

Qualifications and requirements

- Candidates should be highly motivated, have excellent communication and organizational skills, and be able to work independently as well as part of a team;

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- Candidates must have an MSc in any discipline related to the project (engineering, MR physics, biomedical sciences, cognitive neuroscience, psychology, biology, etc.);
- Experience in cognitive neuroscience, neurological disease, PET/MRI imaging is highly appreciated;
- Good statistical and programming skills are requested (e.g. Matlab, R, Python);
- Mastery of English is a requirement; mastery of French is a bonus. Learning French will be requested from those not mastering the language.

Work environment

[GIGA-CRC Human Imaging](#) is a **highly collaborative** group of 10 research teams including biologists, psychologists, neurologists, chemists, physicists and engineers, covering **diverse expertise** in sleep, cognition, aging, brain disorders, and neuroimaging, and aiming to better characterise the structure and function of the human brain.

- **Top of the range equipment:** 3T and 7T MRI (Siemens), PET scan (Siemens), electrophysiology labs (High-density EEG, EEG-TMS, EEG-fMRI, sleep unit), radiochemistry lab and cyclotron (IBA). All within the same building.
- **Collaborations** with renown imaging centre in Germany and UK (e.g. [Max Planck Institute for Human Cognitive and Brain Sciences](#), Leipzig; German Center for Neurodegenerative Diseases – [DZNE – Bonn](#); [Department of Imaging Neuroscience](#)/ Functional Imaging Laboratory UCLondon).
- The project will be mentored by [Gilles Vandewalle](#) and [Fabienne Collette](#).

Quality of life

- Liège is an **affordable** city, well connected to other major European cities.
- Green & pleasant campus
- Family friendly & **welcoming** community
- Collaboration (rather than competition) between research groups

Application

Applicants are invited to apply **as soon as possible and before the 31st of January 2026**. Interviews will be conducted online (via Teams) for shortlisted candidates but on site is also possible. The contract is **meant to start on April 1st 2026** (could be adapted). Please prepare for your application the following documents in one, merged PDF:

- CV (including a short [3-5 sentences] description of your MSc thesis);
- Grade list during your BSc and MSc;
- Contact information for two referees (we will contact them);
- A motivation letter (maximum 2 pages) describing your personal qualifications, research interests, and motivation for applying to the project.

Applications and informal enquiries can be sent to gilles.vandewalle@uliege.be & f.collette@uliege.be

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