

PhD position at the Institute of Neuroscience
Université Catholique de Louvain

Neurophysiological Biomarkers of Vagus Nerve Stimulation
Response in Refractory Epilepsy

Vagus Nerve Stimulation (VNS) is widely recognized as an adjunctive therapy for patients with refractory Epilepsy, and its clinical indications continue to expand. However, the mechanism of action of VNS remains only partially understood, and the clinical response to this therapy is highly variable and difficult to predict. In current clinical practice, VNS is typically proposed to patients who undergo a complete presurgical evaluation but are ultimately not eligible for epilepsy surgery. At present, no reliable predictive factors exist to identify which patients will benefit from VNS. Identifying such predictors could allow clinicians to select suitable candidates earlier during the presurgical evaluation process. Furthermore, a better understanding of the physiological mechanisms underlying VNS could help guide the optimization of stimulation parameters and ultimately improve therapeutic outcomes.

This project aims to investigate neurophysiological biomarkers of vagal activation using multimodal physiological recordings, including Electroencephalography, Evoked Potentials, and Pupillometry.

Main Objective: To identify and characterize biomarkers reflecting vagus nerve activation that could help guide the selection and optimization of VNS stimulation parameters.

The selected candidate will initially be funded for two years, with the possibility of a one-year extension, depending on progress and available funding.

The candidate will be need to apply for competitive doctoral fellowships from the Fonds de la Recherche Scientifique – FNRS, including the FRIA fellowship or the FNRS Aspirant fellowship, in order to secure funding for a full four-year PhD program. The supervisor and research team will provide guidance and support for these fellowship applications.

Start date 1/9-/10/2026

Profile:

We are looking for a highly motivated and dedicated candidate who meets the following criteria:

- A Master's degree (or equivalent) with distinction in Biomedical Engineering, or a closely related field
- Strong interest in neuroengineering, clinical neuroscience, and epilepsy research
- Programming skills, particularly in Matlab, are highly desirable (please specify your programming experience)
- Previous experience in electrophysiological signal processing is a strong advantage
- Excellent written and spoken English
- Basic oral communication skills in French

Application:

Interested candidates are requested to send their application to Dr. El Tahry Riëm (riem.eltahry@saintluc.uclouvain.be), with a copy to anoncler@ulb.ac.be

including:

1. A cover letter describing yourself and your interests
2. Your resume
3. Your transcripts
4. Recommendation letter from at least one reference person

www.enlab.be