



UNIVERSITÉ
DE NAMUR



PhD thesis offer – Biophysics/cell biology/virology

Position :

PhD thesis on the identification of unconventional endocytic pathways involved in the entry of emerging viruses.

Description of the thesis subject

The proposed PhD thesis aims to decipher the molecular mechanisms of new unconventional endocytic pathways involved in the cellular entry of Chikungunya virus for the development of new antiviral therapeutic strategies. This thesis project builds on previous work of the two host laboratories on clathrin-independent endocytosis mechanisms in mammalian cells^{1,2}, as well as their characterization by biophysical approaches³.

To meet the thesis objectives, the candidate will be responsible for implementing advanced approaches in biophysics, cell biology, virology and imaging (such as atomic force microscopy and high-resolution imaging technologies). These approaches will be used on cultured cells.

This thesis project will be carried out in co-supervision between the teams of Laura Picas in France (IRIM, Montpellier, <https://www.irim.cnrs.fr/index.php/recherche/equipes/biologie-quantitative-du-traffic-membranaire-et-pathogenese>) and Henri-François Renard in Belgium (UNamur/NARILIS, Namur, <https://www.narilis.be/research-group/henri-francois-renard>).

1. Renard, H.-F. *et al.* Endophilin-A2 functions in membrane scission in clathrin-independent endocytosis. *Nature* **517**, 493–496 (2015).
2. Renard, H.-F. *et al.* Endophilin-A3 and Galectin-8 control the clathrin-independent endocytosis of CD166. *Nat. Commun.* **11**, 1457 (2020).
3. El Alaoui, F. *et al.* Structural organization and dynamics of FCho2 docking on membranes. *eLife* **11**, e73156 (2022).

Work environment

The PhD thesis will be carried out within the framework of a collaborative project between IRIM, Montpellier, France (<http://www.irim.cnrs.fr>) and Unamur/NARILIS, Namur, Belgium (<https://www.narilis.be/>). The selected candidate will benefit from active supervision and expertise specific to both research environments, as well as a multidisciplinary collaborative framework.

IRIM is located on the CNRS Campus of the "Route de Mende", equipped with an imaging platform in an L2 environment (<http://www.mri.cnrs.fr>), as well as in an L3 environment (<http://www.cemipai.cnrs.fr>), allowing the use of advanced microscopy techniques. This CNRS campus brings together around 500 researchers in biology, generating a site rich in scientific and technological interactions. The University of Namur is located in the center of French-speaking Belgium, 45 minutes by train from the capital city Brussels. The university is human-sized and offers quality education to more than 7,000 students each year and hosts more than 900 researchers from all fields of expertise. Within the latter, NARILIS institute (Namur Research Institute in Life Sciences) brings together more than 150 researchers in the field of life sciences, with the objective of improving human and animal health, and promotes multidisciplinary interactions between biologists, chemists, physicists, or medical doctors from the university hospital CHU UCL Namur (Mont-Godinne). The environment is equipped with state-of-the-art technological platforms, particularly in bio-imaging and proteomics.

Features of the candidate

- The selected candidate must hold a master's degree in cellular/molecular biology, infectiology, biophysics or any other diploma of the same level in the field of life sciences.
- He/she must have the ability to work in a team, within collaborative, dynamic and multidisciplinary environments.
- The candidate must be attracted by interdisciplinarity, the thesis project sitting at the interface between biophysics, cellular/molecular biology and virology.
- Other skills required: organizational skills, rigor, autonomy, passion/enthusiasm, fluency in oral and written English, as well as a strong ability to summarize and present results.
- Experience in mammalian cell culture, membrane trafficking and/or imaging (confocal/airyscan, TIRF, STED, lattice lightsheet...) will be considered an asset.
- Any other element attesting to the excellence of the academic background and experimental skills of the candidate must be provided and will be taken into consideration in the evaluation of applications.

Important notes: The position is open to international students and does not require knowledge of French. The candidate is aware that the proposed project involves international mobility during the thesis between France and Belgium, in two different research environments.

Constraints and risks

Part of the experiments will be carried out in a type 3 (L3) laboratory. The candidate will be trained to be autonomous in a confined area.

Start of thesis: 01/02/2023

Duration of thesis: 36 months (with possible extension)

Applications:

The application file must include: (1) a detailed CV, (2) a cover letter and (3) at least two reference letters.

The application file must be sent **as a single PDF document** to laura.picas@irim.fr and henri-francois.renard@unamur.be. **Applications that do not meet these criteria will not be considered.**

Application deadline: November 30th, 2022, 00:00 (UTC+2).