PHD IN STRUCTURAL BIOLOGY SCHOLARSHIP

Analysis of turn-rich bioactive peptide properties through an approach combining solution and solid-state NMR and theoretical calculations

Project

Bioactive peptides have emerged as a promising class of drugs in the field of pharmacology, due to their specificity and their capacity to selectively target distinct biological processes. Their use as therapeutic agents has become widespread, with various administration routes (dry or wet forms). An important question is how the peptide structure may be affected by the nature of the formulation.

The main objective of this project is to evaluate the impact of the physical state of bioactive peptides, especially those rich in turns in drug preformulation stages. To this end, we plan to develop an approach combining liquid and solid-state NMR, as well as theoretical calculations. We will first investigate the complementarity of liquid and solid-state NMR in β-turn characterization using model peptides. Then we will apply the developed methodologies to bioactive peptides of interest.

Host laboratories & research environment

The student will be based at the COBRA laboratory (https://www.lab-cobra.fr/). The lab is localized in the Mont Saint Aignan University campus (https://www.univ-rouen.fr/university-of-rouen-normandy/), in the North west of Rouen (France).

The selected candidate will be recruited and register for the PhD program at the University of Rouen Normandie. He/she will benefit from the state-of-the-art analytical instrumentation park available at the COBRA laboratory for liquid NMR structural biology studies (including liquid/solid state NMR 600 MHz spectrometer, liquid state NMR 600 MHz spectrometer equipped with a cryoprobe, liquid CD spectrometer). He/She will have access to the CRIANN (Centre Régional Informatique et d'Applications Numériques de Normandie) Computing Center for theoretical calculations and will benefit from Dr. V. Tognetti expertise for calculation analyses.

He/She will be welcome at the University of Groningen for few months in Pr. P. VAN DER WEL's laboratory, who has recognized expertise in the study of biomolecules using solid state NMR.

Eligibility

The applicant should have a Master Degree with a speciality in Analytical Chemistry, Physical Chemistry or Structural Biology. He/She must also have taken courses on NMR spectroscopy. Crystallisation, peptide/protein NMR or molecular modeling knowledge would be an asset. Fluency in English (both oral and written) is mandatory.

Application procedure and complementary information:

Applications should be sent by e-mail to Isabelle SEGALAS-MILAZZO (isabelle.milazzo@univ-rouen.fr) and Laure GUILHAUDIS (laure.guilhaudis@univ-rouen.fr) and should include: ◆ A detailed CV ◆ A cover letter ◆ A short research summary of past accomplishments ◆ Transcripts of Master grades ◆ Two recommendation letters or contact details of two referees.

Application deadline: 26/05/2024. Shortlisted applicants will be invited for oral interview.

Expected starting date: 01/10/2024

Contacts:

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