



## PhD Thesis Application

**Laboratory:** Unité en Sciences Biologiques et des Biotechnologies (US2B) UMR CNRS 6286

**Supervisor (contact):**

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**Inhibiteurs des galectines comme option thérapeutique pour le traitement de l'endométriose // Galectin inhibitors as therapeutic option for endometriosis treatment**

**Research proposal:**

Endometriosis is a chronic gynecological disease with pelvic pain and infertility that affects 6 to 10% (more than 176 millions) of women of childbearing age and 30 to 50% of infertile women worldwide. Current medical therapy and surgical treatment are often accompanied with high recurrence rate and many complications and underlines the need for the development of novel, effective approaches to treat the disease. Along this line, galectins show increased levels in endometriosis patients and represent promising targets as they contribute in maintaining chronic inflammation through macrophage reprogramming, facilitate lesions implantation and Galectins form a family of proteins which exert their mode of action through the binding to  $\beta$ -galactoside motifs.

As part of this project, sugar-derived inhibitors will be designed and synthesized based on rational approaches involving molecular modeling coupled with artificial intelligence and/or cellular screening in association with metabolic functionalization. The synthesized compounds will be characterized from a physicochemical and biochemical point of view (in particular by fluorescence polarization). The biological activity of the compounds will be evaluated in endometriosis models in partnership with a team from the Faculty of Medicine of the University of Murcia (Spain).

Keywords: Glycosciences, medicinal chemistry, organic chemistry, screening, endometriosis

**Skills**

The successful candidate is expected to have knowledge in organic chemistry. An experience in glycoscience will be appreciated. Strong interest for chemistry/biology interface is required. The actual project will be oriented depending of the skills/appetence of the selected candidate for modelling or cell biology. Know how to communicate orally in English.

**Working environment:**

Research will be carried out within the team "Molecular Engineering & Glycobiology" at the Unit in Biological Sciences and Biotechnologies (US2B) UMR CNRS 6286. This Unit is located at the campus Lombarderie of the Faculty of Sciences and Techniques of Nantes Université. US2B conducts research in fundamental biology through *in silico*, *in vitro* and *in cellulo* approaches centered on the study of the functions of proteins and sugars, in particular the impact of modifications or the modulation of their interactions on their biological activities. Thanks to the multiple expertise at its disposal, US2B is able to conduct multidisciplinary research at the interface between biology, biochemistry, chemistry and computing science.

**Funding**

Application to the call launched by the PEPR "WOMEN'S HEALTH, COUPLES' HEALTH" "PHD FELLOWSHIPS FOR RESEARCH ON INFERTILITY OR ENDOMETRIOSIS"

Deadline for submission of file: April 6, 2025; Selection: May 2025