

## Postdoctoral position in Chemical Biology (12 months):

### S-GlyTag: Chemoenzymatic S-glycopeptide synthesis as a new protein labeling approach.

#### Context:

Protein bioconjugation has been used for many years as a powerful tool in many applications, ranging from diagnosis (cell imaging) to therapeutics (drug targeting). So far, several synthetic methodologies to label proteins with the desired compounds have been developed, mostly relying on the chemical reactivity of amino-acids side chains. However, the availability of these residues is intrinsically dependent of the sequence and the 3D structure of the labeled protein. Thus, these synthetic approaches cannot be considered as site-specific and protein-independent. The **S-GlyTag** project aims at developing an original chemo-enzymatic and site-specific labeling of a peptidic chain, based on a rare peptide glycosylation, that will be diverted to introduce bio-orthogonal reactive functions. This methodology will be applied in immunoconjugates field to synthesize a drug-conjugated peptide designed to target dedicated cancer cells.

*Within the framework of the "LabEx Synorg Post-doc 2023 Call", the S-GlyTag project was selected for funding with a 12 months research fellowship. The research project will be performed in the GlycoBio&Chemistry team in ICOA laboratory in Orleans ([www.icoa.fr](http://www.icoa.fr)), in collaboration with the Immunoconjugate group from the CEPR Laboratory in Tours.*

#### Activities:

The recruited postdoctoral researcher will :

- Synthesize by biocatalysis the substrates of the enzymatic system used. These substrates will be modified to carry orthogonal labeling functions.
- Develop the glycosylation reaction by the dedicated glycosyltransferases using the non-natural substrates synthesized and peptides of choice.
- Conduct a structure-activity relationship on the peptides to understand the required features for efficient and selective glycosylation.
- Apply this methodology on a peptide that will be grafted with sugars bearing orthogonal function, and couple it with a dedicated drug, to serve as a proof of concept.

*The successful applicant will acquire competences on the production and purification of peptides and proteins, as well as in biocatalysis if required*

#### Profile:

We look for a highly motivated candidate to carry out a multidisciplinary research project at the interface of chemistry and biology. The applicant shall hold a PhD in (bio)chemistry, chemical biology or equivalent. An experience in synthesis and subsequent purification and structural characterization of products (NMR, MS) is required, and an interest in proteins biochemistry and biocatalysis would be a strong advantage.

In addition, we are expecting:

- Good communication skills to work within a team
- Independence
- Good organizational skills
- Good writing and reporting skills

#### Complementary Information:

Place of work: ICOA laboratory, GlycoBio&Chemistry

Type of contract: fix-term

Duration: 12 months

Starting date: November 2023

Salary: 2 100 € / month (net salary)

Funding also provided for running costs to conduct the project

Required experience: None

Working time: full-time

**Application & selection process**

Applicant should provide an application file combining a curriculum vitae (including publications), a letter of motivation, PhD diploma (or attestation), 2 email contacts of scientific managers that can be contacted, and a brief summary of their research experiences. A single pdf should be addressed to Pr. Pierre Lafite ([pierre.lafite@univ-orleans.fr](mailto:pierre.lafite@univ-orleans.fr)) and Dr. Malika Mekhalfi ([malika.mekhalfi@univ-orleans.fr](mailto:malika.mekhalfi@univ-orleans.fr)). The deadline for the application is August 31st, 2023. We encourage candidates to apply as soon as possible.