Laboratoire GBCM – EA 7528 - Equipe de Chimie Moléculaire
Conservatoire national des arts et métiers, Site Synergie
8-10 rue de la Procession, 93210 Saint-Denis

Postdoctoral Position in Organic/Bioconjugation Chemistry

Keywords
Organic synthesis, peptidic chemistry, coordination chemistry, physicochemistry, metallic complexes, bioconjugation.

General information

- Location: Conservatoire national des arts et métiers, Laboratoire GBCM (EA 7528), Site Synergie, 8-10 rue de la Procession, 93210 Saint-Denis ; https://gbcm.cnam.fr/)
- Contract period: 12 months renewable 1 year
- Date of publication: 12/09/2025
- Expected date of employment: ASAP in 2026; no later than February 28, 2026
- **Deadline for application: 30/11/2025**

Laboratory

The Equipe de Chimie Moléculaire of GBCM Lab has a strong experience in the design and synthesis of therapeutic compounds (inflammatory diseases, etc) and contrast agents dedicated to molecular imaging in MRI and nuclear medicine.

The team offers a one-year post-doctoral position in organic synthesis renewable one year to join the consortium involved in the project FASTHROMBI (FASt 18-fluorine radiolabeling for THROMBus Imaging) funded by the French National Agency of research (ANR) – CE18 - Innovation biomédicale (AAPG-2025).

Scientific context

A significant number of cardiovascular diseases, such as stroke, myocardial infarction, pulmonary embolism, and deep vein thrombosis, result from the formation of a thrombus within the vessel lumen, potentially followed by the migration of emboli into the distal circulation.

Anatomical imaging techniques (ultrasound, computed tomography, MRI, and invasive angiography) allow, depending on the explored vascular territory, the direct identification of large thrombi or their indirect detection through vascular filling defects. However, this approach has limited sensitivity for small thrombi, which are often difficult to distinguish from the vascular wall, particularly in the presence of cardiac or vascular prostheses. Moreover, no anatomical imaging modality enables a systematic and rapid detection of thrombi throughout the entire vascular network or differentiates between acute and chronic thrombi. Positron emission tomography (PET) combined with a radiopharmaceutical targeting specific molecules present in acute thrombosis could offer increased sensitivity for detecting small thrombi along the entire vascular system, thereby improving the identification of their origin in cardiovascular diseases.

In FASTHROMBI, fibrin has been selected as the molecular target. Radiopharmaceuticals targeting this protein offer additional clinical benefits, particularly by enabling the distinction between recent and older thrombi. This distinction is crucial for refining the etiological diagnosis of ischemic lesions and guiding anticoagulant treatment decisions.

Based on preclinical data available in the literature on radiolabeled fibrin-specific peptides (FSPs),[1] the FASTHROMBI project aims to develop an innovative PET tracer for molecular thrombus imaging. This tracer is based on the use of an FSP as the targeting agent and an innovative mild radiofluorination approach, recently developed in the Equipe de Chimie Moléculaire of GBCM Lab, relying on the coordination of the gallium-fluoride species {Ga-^{18}F}.[2,3]

The project is delineated in two work packages (WP). WP1 addresses rational design (Property-Based Drug Design approach), synthesis, characterization of the peptide based fibrin-specific probes and radiolabeling with {Ga-^{18}F} metallic center sequestered in a chelating agent. WP2 addresses its biodistribution using PET-CT imaging and the evaluation of its efficiency in different contexts, including in rat models of acute arterial and venous thrombosis and ex vivo human thrombi.

Missions

The postdoctoral researcher will be responsible for the synthesis of the probes proposed in WP1 of FASTHROMBI. He/she will carry out these missions in collaboration with Master's students and will participate in their supervision. He/she will collaborate with chemists, radiochemists, biologists, radiopharmacists, and imaging specialists in an interdisciplinary and translational research setting.

Candidate profile

- Ph.D. degree in organic chemistry with a solid experience in synthesis (organic/peptide), analytic chemistry, and purification techniques including methods appropriate for biomolecular compounds (semi-preparative HPLC, ...);
- Experience or solid understanding of bioconjugation, protein purification, radiochemistry, nuclear imaging and/or targeted radionuclide therapy are valuable assets but not mandatory;
- Independent and proactive individual opens to working in a dynamic and interdisciplinary environment;
- Good communication skills (written and oral) and willingness to prepare manuscripts;
- Ability to mentor students.

Application process

Send the following documents to Prof. Marc PORT, marc.port@lecnam.net, Dr. Fabienne DIOURY, fabienne.dioury@lecnam.net

- A cover letter describing relevant experiences and motivation;
- A detailed CV including list of internships or projects and list of publications and communications;
- The name and email of recommendation referee(s).

References

(1) Oliveira, B. L. and al. *J. Nucl. Med.* **2015**, *56* (10), 1587–1592. https://doi.org/10.2967/jnumed.115.160754.
(2) Dioury, F. and al. *Chem. Eur. J.* **2024**, e202403358. https://doi.org/10.1002/chem.202403358
(3) San, C. and al. *L'Actualité chimique*, **Avril 2024**, n°494, pp. 33-45. https://hal.science/hal-04638804