

Post-Doctoral Position

Organic Synthesis

■ Details

Workplace : Institut CARMeN (UMR CNRS 6064), INSA Rouen Normandie (Rouen, France)

Contrat period : 12 months (renewable)

Expected starting date : in the course of 2026

Salary & Funding : ~ 2900 € gross / month **&** ANR-25-CE07-4944 (# F-PhoRDiol)

■ Contexte : Due to its intrinsic properties, when a fluorine atom is incorporated into an organic molecule, its physicochemical and biological properties could be modulated.^[1] As a result, fluorinated molecules have found numerous applications, especially in the pharmaceutical industry (20-30% of marketed drugs contain at least one fluorine atom).^[2] In this context, fluorinated analogues of “common” carbohydrates have received substantial attention, leading thus to applications in biochemistry and medicinal chemistry.^[3] However, the synthesis and use in medicinal chemistry of fluorinated analogues of so-called “rare” sugars, despite being frequently found in biologically active products, remain limited.

■ Project : The proposed postdoctoral fellowship is part of a joint research project between two French teams from the Institut CARMeN (ex-COBRA) (« Hétérocycles » and « Synthèse de Biomolécules Fluorées ») located at the University of Rouen Normandy and an Italian team (« PhotoGreen Lab») located at the University of Pavia. These teams are respectively involved in the synthesis of rare sugars,^[4] the development of new radical fluorination reactions,^[5] and theoretical calculations.^[6] The experimental work will consist of: **a)** exploiting radical deoxyfluorination reactions developed in our laboratory for the synthesis of fluorinated analogues of “rare” sugars; **b)** studying their reactivity in glycosylation reactions; **c)** studying the chemical stability of glycosylated products.

■ Key-words : organic synthesis, fluorine chemistry, radical chemistry, carbohydrate chemistry, photochemistry.

■ References :

- [1] D. O'Hagan, *Chem. Soc. Rev.* **2008**, *37*, 308–319.
- [2] M. Inoue, Y. Sumii, N. Shibata, *ACS Omega* **2020**, *5*, 10633-10640.
- [3] a) E. Leclerc, X. Pannecoucke, M. Ethève-Quelquejeu, M. Sollogoub, *Chem. Soc. Rev.* **2013**, *42*, 4270-4283; b) B. Linclau, A. Ardá, N.-C. Reichardt, M. Sollogoub, L. Unione, S. P. Vincent, J. Jiménez-Barbero, *Chem. Soc. Rev.* **2020**, *49*, 3863-3888; c) R. Hevey, *Chem. Eur. J.* **2021**, *27*, 2240-2253.
- [4] A. Geulin, Y. Bourne-Branchu, K. Ben Ayed, T. Lecourt, A. Joosten, *Chem. Eur. J.* **2023**, *29*, e202203987.
- [5] a) É. Vincent, J. Brioche, *Chem. Eur. J.* **2024**, *30*, e202401419; b) A. Ngo Ndimba, É. Vincent, J. Brioche, *Eur. J. Org. Chem.* **2022**, *2022*, e202201165; c) É. Vincent, J. Brioche, *Eur. J. Org. Chem.* **2021**, *2021*, 2421–2430; d) J. Brioche, *Tetrahedron Lett.* **2018**, *59*, 4387–4391.
- [6] a) T. Wan, L. Capaldo, D. Ravelli, W. Vitullo, F. J. de Zwart, B. de Bruin, T. Noël, *J. Am. Chem. Soc.* **2023**, *145*, 991-999; b) T. Wan, Ł. W. Ciszewski, D. Ravelli, L. Capaldo, *Org. Lett.* **2024**, *26*, 5839-5843.

■ Candidate profile : We are looking for a candidate with a PhD in organic chemistry (synthetic methodology or total synthesis) and who has: solid theoretical knowledge in organic chemistry; excellent experimental skills; a strong interest in research and experimental work. The candidate will need to be curious, organized and autonomous in his/her work, and to demonstrate good adaptability. Experience in radical chemistry and/or glyco-chemistry will be considered as an asset but is not mandatory.

■ Application procedure : CV, cover letter, research summary and contact details of 2 references able to provide recommendation letters. Please, send all the document by email to Dr Antoine Joosten (antoine.joosten@insa-rouen.fr) and Dr Julien Brioche (julien.brioche@univ-rouen.fr)

Applications will be reviewed and interviews conducted until the position is filled.

Please do not hesitate to contact us for further information.