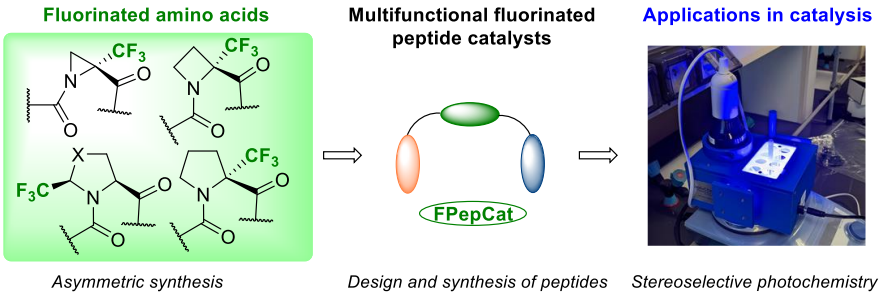
6-month research internship

Development of new fluorinated peptides for the stereoselective organocatalysis of photoredox reactions

Abstract:

The current environmental context leads the chemical industry and in particular the pharmaceutical industry to pursue its transformation towards more sustainable and less energy consuming processes. Photoredox catalysis has its place in this transformation as it uses a sustainable source of energy (light) and emits little waste (reagents in catalytic quantity). It allows the generation of extremely reactive radical species that presents in return a considerable synthetic challenge when it comes to controlling the three-dimensional geometry of the products.[1]

Capitalizing on the previous work of the host team concerning the synthesis of new fluorinated amino acids,[2] this project proposes to develop peptides including this type of amino acid in order to serve as multifunctional catalysts[3] that can be involved in complex mechanisms merging stereoselective organocatalysis with photoredox catalysis.



Therefore, this final year master project offers the students an opportunity to synthesize chiral fluorinated amino acids, to rationally construct short peptides incorporating these fluorinated building blocks and to test their ability to catalyse photoredox reactions in a stereoselective manner.

Host team:

The Chemical Biology team of the **BioCIS laboratory** is based on the Neuville campus **of CY Cergy Paris University**. It brings together chemists from all backgrounds in the field of peptide synthesis, catalysis and medicinal chemistry. More information on https://biocis.cyu.fr/english-version.

Required skills:

Solid skills in synthesis, analysis and characterisation of organic molecules are expected as well as a mastery of bibliographic research tools. Knowledge of peptide synthesis in solution and on solid phase would be a plus.

Application: CV, cover letter and grades of the 2 past academic years should be sent to Pierre Milbeo (pierre.milbeo@cyu.fr) before **November 15, 2022**. Start of internship **January-February 2023**.

[1] Bor-Cherng Hong, *Org.Biomol.Chem.*, **2020**, 18, 4298-4353; [2] Chaume et al., *J.Org.Chem.*, **2013**, 78, 20, 10144-10153; Ouerfelli et al., *Org.Lett.*, **2020**, 22, 8, 2946-2949 ; Lensen et al., *Org.Lett.*, **2015**, 17, 2, 342-345 ; [3] Metrano et al., *Chem.Rev.*, **2020**, 120, 20, 11479-11615