PhD position
Joint supervision between University of Rouen & University of Florence.

Towards stereocontrolled *s-cis* and *s-trans* peptidic bond mimics by regiocontrolled [3+2] cycloaddition reactions.

Start : October 1rst 2022
Duration : 36 months

Missions : In the frame of the graduate school for research XL-Chem (https://www.xl-chem.fr/), a co-financed joint supervised position is available at UMR 6014 CNRS COBRA (Rouen) and Dipartimento di chimica Ugo Schiff (Florence). The PhD candidate will implement Solid Phase Peptide Synthesis (SPPS) compatible regiocontrolled [3+2] cycloaddition reactions to mimic either s-cis or s-trans conformation of the peptidic bond, and evaluated the biological activity of obtained polypeptidic scaffolds.

Activities
- Organic chemistry
- SPPS
- NMR, UV and mass analysis
- Biological evaluation of pseudopeptides activity
- Bibliography
- Research article writing
- Regular reports

Skills
- Master degree in Organic synthesis or advanced molecular sciences
- Chemistry / biology interface

Context :
Joint supervision between Pr. AnnaMaria Papini (Florence) and Pr. Pierre-Yves Renard (Rouen).
First 18 months will take place in UMR 6014 CNRS COBRA (http://www.lab-cobra.fr/) at Rouen's University, and will be devoted to the implementation of SPPS compatible methods for the synthesis of diverse heteroaromatic derivatives through [3+2] cycloaddition methods, allowing to mimic either *s-cis* or *s-trans* conformation of the peptidic bond with. Salary and working contract will be the usual French « contrat doctoral » (1 520 euros net wages).

18 next months will take place in the Interdepartmental Laboratory of Peptide & Protein Chemistry & Biology, Dipartimento di Chimica “Ugo Schiff“ (https://www.chim.unifi.it/) of the Universitá degli studi di Fierenze. The PhD candidate will receive a 1 200 € monthly **grant** to implement the [3+2] cycloaddition methods on SPPS to synthesize geometrically constrained biologically active polypeptides analogues, study by NMR their 3D conformation, and evaluate their biological activity.

Additional financing to cover Rouen <–> Florence travel expenses and accommodation, and to present results in an international congress.

Additional certificate in entrepreneurship and business administration possible through Xl-chem graduate school of research.

Required documents :
- Vitae (1 page)
- Contact names
- Summary of research work (<3 pages)

Bibliography :

- **On-resin microwave-assisted copper-catalysed azide-alkyne cycloaddition of H1-relaxin B single chain “stapled” analogues** D’Ercole A, Sabatino G, Pacini L, Impresari E, Capecchi I, **Papini AM**, Rovero P. *Peptide Science* **2020**, *4*,.e24159.
- **Regioselective solid-phase synthesis of peptide analogues containing 3,4- or 3,5-disubstituted isoxazole as s-cis or s-trans peptide bond mimic**. Bruyat C, Jean L, **Renard PY** *Eur J Org Chem*. **2019**, 3134-3141
- **Copper-catalyzed azide alkyne cycloaddition (CuAAC)-mediated macrocylization of peptides: impact on conformation and biological activity.** C. Testa C, **A.M. Papini AM**, M. Chorev M, P Rovero P, *Rev. Curr. Topics Med. Chem*. **2018**; *18*, 591-610.
- **Use of an Air-stable Cu(I)-NHC Catalyst for the Efficient Synthesis of Peptidotriazoles** Bruyat C, Gauther A, Jean L, **Renard PY**, *J. Org. Chem.* **2018** *83 (21)*, pp 13515–13522.
- **Design, Synthesis and Conformational Studies of [DOTA]-Octreotide Analogues Containing [1,2,3]Triazolyl as a Disulfide Mimetic.** Testa C, D’Addona D, Scrima M, Tedeschi AM, D’Ursi AM, Bernhard C, Denat F, Bello C, Rovero P, Chorev M, **Papini AM**. *Pept. Sci.* **2018**; *110*, e4071.
- **1,4-disubstituted-[1,2,3]triazolyl-containing analogues of MT-II: design, synthesis, conformational analysis, and biological activity** Testa C, Scrima M, Grimaldi M, D'Ursi AM, Dirain ML, Lubin-Germain N, Singh A, Haskell-Luevano C, Chorev M, Rovero P, **Papini AM**.. *J. Med. Chem.* **2014**; *57*, 9424-9434.

Application :

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