

PhD in Chemical Sciences
Department of Chemistry "Ugo Schiff"
University of Florence

PhD seminar "Proline racemase as an innovative target to tackle infectious diseases - Design, synthesis of inhibitors and evaluation of their activity against *Trypanosoma cruzi* and *Clostridioides difficile*"

CURRICULUM VITAE

Prof. Nicolas Gouault



1 Short CV

Université de Rennes 1, Rennes Institute of Chemical Sciences, UMR CNRS 6226

Associate Professor

nicolas.gouault@univ-rennes.fr

Formation

2015 Habilitation

2004-: Assistant Professor at the University of Rennes 1. Faculty of Pharmacy, CORINT team (Organic Chemistry and Interfaces), UMR 6226/ISCR.

2002-2004: ATER (Temporary Teaching and Research Attaché), pharmaceutical chemistry laboratory, Faculty of Pharmacy (Rennes).

2002: Postdoctoral internship: Biomolecule Synthesis and Activation, UMR CNRS 6052 in the group of Dr R. Grée.

1998-2002: PhD in chemistry Chemistry at the University of Rennes 1, under the supervision of Dr. Michèle David, on the synthesis of heterocycles on solid supports involving "cyclo-release" strategies. 1996: Internship in an R&D laboratory of the company ORIL S.A. (SERVIER Group) in Bolbec (France) under the direction of Dr. Langlois.

Research interests

Heterocyclic chemistry, medicinal chemistry, gold catalysis, supported synthesis.

Collaborations

Dr. Paola Minoprio, Institut Pasteur, Paris, around new anti-parasitic agents (*Trypanosoma cruzi*, Chagas disease).

Pr. F. Barbut, St Antoine Hospital, Paris, development of new antibiotics (*Clostridium difficile*).

Dr. Y. Arlot-Bonnemains, IGDR, Rennes 1, development of new antimetabolites.

Dr. P. Brodin, Pasteur Institute, Lille, Development of new painkillers using the mycolactone toxin.

Pr. J. Davis, University of South Alabama, valorization of natural piperidines.

Dr. E. Chevet, COSS, Rennes 1, Development of new IRE1 inhibitors.

2 Bibliometric data

40 Publications, 2 patent, 27 communications.

3 Selection of the 10 most relevant publications and/or patents

1. Gantasala, N.; Fournet, C.; Le Roch M.; Lalli, C.; Pabbaraja, S.; Gouault, N. Accessing spiropiperidines from dihydropyridones through tandem triflation-allylation and ring-closing metathesis (RCM). *Org Biomol Chem.* **2023**, *21*, 5245.
2. Brahmaiah, D.; Bhavani, A.K.D.; Aparna, P.; Kumar, N.S.; Solhi, H.; Le Guevel, R.; Baratte, B.; Robert, T.; Ruchaud, S.; Bach, S.; Jadav, S.S.; Reddy, C.R.; Mosset, P.; Gouault, N.; Levoine, N.; Grée, R. Structure Activity Relationship Studies around DB18, a Potent and Selective Inhibitor of CLK Kinases. *Molecules* **2022**, *27*, 6149.
3. de Melo, G.D.; Coatnoan, N.; Gouault, N.; Cupif, J.F.; Renault, J.; Cosson, A.; Uriac, P.; Blondel, A.; Minoprio, P. Prodrugs as new therapies against Chagas disease: in vivo synergy between *Trypanosoma cruzi* proline racemase inhibitors and benzimidazole. *J Glob Antimicrob Resist.* **2022**, *28*, 84.
4. De Aguiar Amaral, P.; Autheman, D.; Diaz de Melo, G.; Gouault, N.; Cupif, J.-F.; Goyard, S. et al. Designed mono- and di-covalent inhibitors trap modeled functional motions for *Trypanosoma cruzi* proline racemase in crystallography. *PLoS Negl. Trop. Dis.* **2018**, *12*, e0006853.
5. Abrahams, A.; Mouchet, N.; Gouault, N.; Lohézic Le Dévéhat, F.; Le Roch, M.; Rouaud, I.; Gilot, D.; Galibert, M.-D. Integrating targeted gene expression and a skin model system to identify functional inhibitors of the UV activated p38 MAP kinase. *Photochem. Photobiol. Sci.* **2016**, *15*, 1468.
6. Chen, L.; Mullen, G., E.; Le Roch, M.; Cassity, C., G.; Gouault, N.; Fadamiro, H., Y.; Barletta, R., E.; O'Brien, R., A.; Sykora, R., E.; Stenson, A., C.; West, K., N.; Horne, H., E.; Hendrich, J., M.; Xiang, K., R.; Davis Jr, J., H. On the formation of a protic ionic liquid in nature. *Angew. Chem., Int. Ed.* **2014**, *53*, 11762.
7. Nguyen, K., H.; Tomasi, S.; Le Roch, M.; Toupet, L.; Renault, J.; Uriac, P.; Gouault, N. Gold-Mediated Synthesis and Functionalization of Chiral Halopyridones. *J. Org. Chem.* **2013**, *78*, 7809.
8. Berneman, A.; Montout, L.; Goyard, S.; Chamond, N.; Cosson, A.; d'Archivio, S.; Gouault, N.; Uriac, P.; Blondel, A.; Minoprio, P. Combined approaches for drug design points the way to novel proline racemase inhibitor candidates to fight Chagas' disease. *PLoS One* **2013**, *8*, e60955.
9. Nguyen, K.-H.; Chollet-Krugler, M.; Gouault, N.; Tomasi, S. UV-protectant metabolites from lichens and their symbiotic partners. *Natural Product Reports* **2013**, *30*, 1490.
10. Trinh, T. T. H.; Nguyen, K.-H.; de Aguiar Amaral, P.; Gouault, N. Total synthesis of (-)-epimyrtenine by a gold-catalyzed hydroamination approach. *Beilstein J. Org. Chem.* **2013**, *9*, 2042.