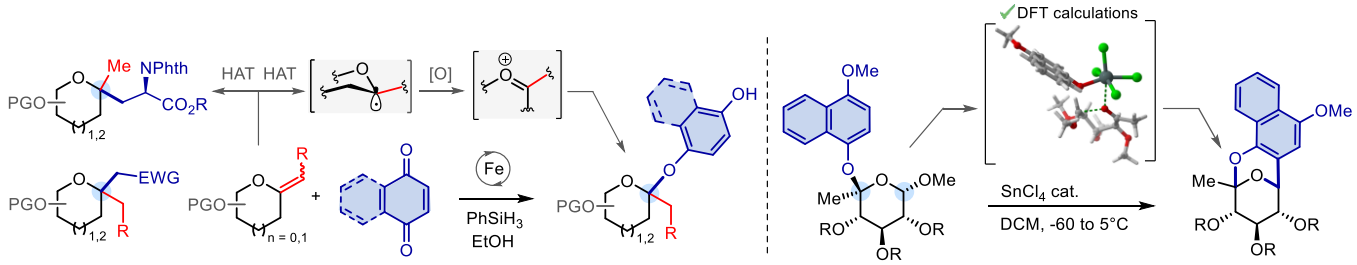
EXPLORATION OF UNFREQUENTED REGIONS OF GLYCOCHEMICAL SPACE USING NOVEL SYNTHETIC METHODOLOGIES

Philippe Compain

Laboratoire d'Innovation Moléculaire et Applications (LIMA)
Univ. Strasbourg I CNRS I UHA (UMR 7042)
ECPM, 25 Rue Becquerel, 67000 Strasbourg, France
philippe.compain@unistra.fr

Despite recent advances, harnessing the vast therapeutic potential of carbohydrates remains a formidable challenge in glycoscience. One promising approach involves the development of glycomimetics [1] – molecules that mimic the structure and function of natural carbohydrates while circumventing their common pharmacological limitations. In addition to their potential as drug candidates, glycomimetics offer enhanced stability and serve as powerful mechanistic probes for dissecting carbohydrate-mediated biological processes. The synergy between glycomimetics and advanced synthetic methodologies holds great promise for driving major progress in glycobiology and addressing urgent medical needs. In our recent work [2], we have combined novel synthetic strategies with non-classical molecular architectures to explore uncharted areas of chemical and intellectual space. We have developed efficient methodologies for constructing quaternary (pseudo)anomeric centers through iron-hydride hydrogen atom transfer (HAT) and gold-catalyzed processes, facilitating the creation of new glycomimetic scaffolds [3]. Additionally, we are investigating the synthetic potential of bifunctional glycosides – an underexplored class of intermediates with two reactive (pseudo)anomeric centers [3a,4]. These "superglycosides" exhibit unique reactivity profiles, particularly in cascade reactions [4], and have the potential to significantly expand the glycoscience toolbox for therapeutic discovery.



The key aspects and implications of this work will be presented and discussed in more detail during the keynote lecture.

References:
1. For recent reviews, see: (a) B. Hevey, *Pharmaceuticals* **2019**, *12*, 55. (b) S. Leusmann, P. Ménová, E. Shanin, A. Titz, C. Rademacher, *Chem. Soc. Rev.* **2023**, *52*, 3663.
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3. (a) H. Liu, A. G. Laporte, D. Tardieu, D. Hazelard, P. Compain, *J. Org. Chem.* **2022**, *87*, 13178. (b) H. Liu, M. Lang, D. Hazelard, P. Compain, *J. Org. Chem.* **2023**, *88*, 13847. (c) M. Lang, D. Tardieu, B. Pousse, P. Compain, N. Kern, *Chem. Commun.* **2024**, *60*, 3154. (d) M. Lang, S. Walter, D. Hatey, A. Blanc, P. Compain, N. Kern, *Org. Lett.* **2024**, *26*, 38, 8017.
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