



Automne 2019
Conférence
au Département de chimie

CONFÉRENCIER

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DATE

Lundi, 9 septembre 2019

TITRE

Fluorinated and multivalent glycomimetics as biochemical probes for bacterial enzymes

RÉSUMÉ

Our laboratory is interested in the mechanistic and inhibition studies of essential enzymes involved in the bacterial cell wall biosynthesis of infectious agents such as *Mycobacterium tuberculosis*. We are also involved in the design of molecules targeting the virulence mechanisms of bacterial pathogens. In particular, we are interested in the inhibition of specific bacterial sugars found in the LipoPolySaccharide (LPS) of gram- negative bacteria. Within this context, we have developed novel synthetic methodologies for the preparation of fluorinated^[1] and electron- deficient *exo*-glycals.^[2] In particular, we developed synthetic pathways allowing the synthesis of 2 fluoro-sugars such as ADP-2F- heptose, as well as fluorinated or trifluoromethylated *exo*-glycals.^[1] We also designed and synthesized analogues of galactofuranosides bearing a CF₂-CF₂ substructure. Some of the final molecules were coupled to nucleoside monophosphates (UMP or AMP) to generate nucleotide-sugars designed as enzyme inhibitors or inactivators.^[3] Another approach explored in our laboratory is the multivalent inhibition of therapeutically relevant enzymes. As a recent example, glycofullerenes were developed as bacterial heptosyltransferase inhibitors.^[4]

References: [1] L. Dumitrescu, G. Eppe, A. Tikad, S. El Bkassiny, W. Pan; S. Gurcha, G. Besra; A. Arda, J. Jiménez-Barbero, S.P. Vincent, Chem. Eur. J. 2014, 20, 15208; C. J.-M. Frédéric, J. Cornil, M. Vandamme, L. Dumitrescu, A. Tikad, R. Robiette, S.P. Vincent Org. Lett. 2018, 20 (21), 6769-73. [2] C. Frédéric, A. Tikad, J. Fu, W. Pan, R. B. Zheng, A. Koizumi, X. Xue, T. L. Lowary, S.P. Vincent Chem. Eur. J. 2016, 22, 15913. [3] K.E. van Straaten, C.M. Sevrain, S.A. Villaume, J. Jiménez-Barbero, B. Linclau, S.P. Vincent, D.A.R. Sanders J. Am. Chem. Soc. 2015, 37, 1230. [4] A. Tikad, H. Fu, C. Sevrain, S. Laurent, J.-F. Nierengarten, S.P. Vincent Chem. Eur. J. 2016, 22, 13147-55.

La conférence aura lieu à **14h30 au local 2840** du **Pav. Alexandre-Vachon**
Cordiale invitation à toutes et à tous !

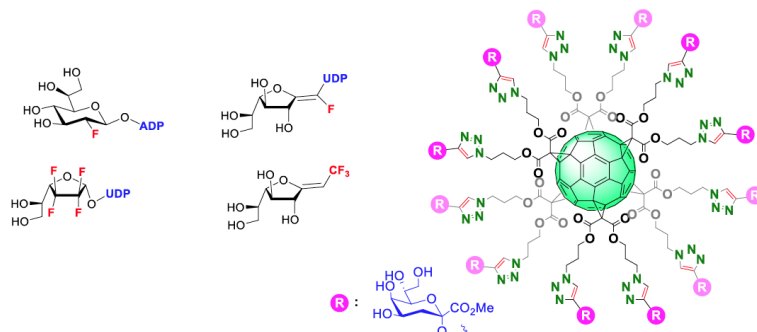


Figure 1. Representative examples of the designed inhibitors.

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