BIOTECHNOLOGY AND BIOSCIENCES SEMINARS

Dipartimento di Biotecnologie e Bioscienze – UNIMIB

Wednesday, September 20, 2023, 4:30 p.m., BIOS building, room U3-09

Exploiting the fluorine-directing effect to access rare L-hexoses

Vito Ferro

School of Chemistry and Molecular Biosciences, The University of Queensland, St Lucia, Brisbane, QLD, Australia

Abstract: L-Hexoses are a family of exceptionally rare, prohibitively expensive, and synthetically challenging sugars with great biological significance. Requiring access to L-iduronic acid building blocks for the construction of glycosaminoglycan mimetics, we have recently developed the "fluorine-directing effect" to rapidly access these compounds with high efficiency. Our strategy, which entails the stereoselective C-5 epimerisation of D-hexose derivatives, has been optimised for the construction of L-IdoA1 and L-idose2 glycosyl donors. Its success has also been understood with the aid of density functional theory (DFT) calculations. Herein we describe the harnessing of this chemistry to carve out new synthetic routes to other rare L-hexoses. These include the commercially unavailable L-altruronic acid, a component of the capsular polysaccharides of the pathogens A. viridans var. homi and P. mirabilis O10, and L-guluronic acid, a key component of alginates which are polysaccharides of considerable industrial importance.

Host: **Francesco Peri**

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