Fluorinated Carbohydrate Probes for Chemical Biology

Omar Boutureira

Departament de Química Analítica i Química Orgànica, Universitat Rovira i Virgili, C/ Marcel·lí Domingo s/n, 43007 Tarragona, Spain and Department of Chemistry, University of Oxford, Chemistry Research Laboratory, 12 Mansfield Road, Oxford OX1 3TA, UK; e-mail: <u>omar.boutureira@urv.cat</u>

Chemical Glycobiology has experienced an impressive growth in the last decade as a result of the discovery of the role of carbohydrates in relevant recognition processes, yet the use of fluorinated glycoconjugates to study such events is still in its infancy. Selective incorporation of fluorine into biomolecules allows simultaneous modulation of their electronic, lipophilic and steric parameters, all of which can influence their biological function. Moreover, this element has been widely employed as structural, functional and mechanistic probe for the study of biological processes by several cutting-edge non-invasive molecular imaging techniques such as ¹⁹F-MRI and ¹⁸F-PET.

In this abstract we present a survey of synthetic methods developed to access novel fluorinated carbohydrates probes and their application as (a) selective, carbohydrate reporters for disease diagnosis^[1] and (b) reagents in complementary chemical siteselective protein modification protocols that provide a unique opportunity to introduce a fluorine atom at a single designated amino acid residue and allow the preparation of well-defined synthetic fluorinated glycoproteins and importantly [¹⁸F]-radiolabelled glycoproteins.^[2,3]

References

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