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Carbohydrate-related enzymes as innovative biocatalytic tools

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Carbohydrates play an important part in a vast array of biological processes and therefore glycomimetics are currently becoming a powerful class of novel therapeutics. Amongst them, thioglycosides, in which a sulfur atom has replaced the glycosidic oxygen atom, are tolerated by most biological systems. Their major advantages rely in the fact that they adopt similar conformations than the corresponding *O*-glycosides and especially that they prove to be less sensitive to acid/base or enzyme-mediated hydrolysis. Besides the synthetic methodologies developed throughout the years by organic chemists, the presence of natural *S*-glycoconjugates was recently assessed and lead to the discovery of some glycosyltransferases involved in such rare biocatalytic processes. In parallel, the increases of knowledge on the mechanism and the structure of glycoside hydrolases have conducted to the development of original catalysts with greatly improved synthetic properties for thioglycosidic linkages. However biocatalyzed procedures of thioglycosylation still represent an emerging area. Herein, we will discuss our recent findings in this tremendous field.

Biography

Richard Daniellou, Internationally recognized expert in Glycosciences, received a BSc in Biochemistry and a PhD (2003) in Organic Chemistry from Paris XI. After two years as a postdoctoral researcher at the University of Saskatchewan (Canada), he was offered an Assistant Professor position at the ENSC of Rennes (France). In 2010 he was promoted Full Professor of Biochemistry at ICOA (France) in 2011. His main interest for carbohydrate-active enzymes as biocatalysts for chemo-enzymatic synthesis of glycoconjugates led him to the creation of the research group named Enzymology and Glycobiology. He is currently co-author of 62 publications and 3 patents.

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