PhD proposal in organic synthesis

**PhD project title:** Synthesis of iminosugar-sugar disaccharides as new glycosidases inhibitors

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GlycoBio&Chemistry Team, [http://www.icoa.fr/en/content/glycobiochemistry](http://www.icoa.fr/en/content/glycobiochemistry)

**Project:**  
Iminosugars are glycomimetics in which the endocyclic oxygen is replaced by a nitrogen atom, which makes these molecules particularly interesting compounds, as they are good inhibitors of carbohydrate processing enzymes, such as glycosidases and glycosyltransferases. In order to improve the selectivity for the targeted enzymes, it would be interesting to synthesize disaccharide mimics containing an iminosugar unit and a sugar unit linked by a glycosidic bond. As the resulting hemiaminal function is unstable, such compounds cannot be isolated. **This project aims at designing and synthesizing iminosugar-sugar disaccharides, in which the nitrogen atom will be deactivated in order to stabilize the pseudo-glycosidic bond while retaining the inhibitory activity towards glycosidases.** These enzymes, which catalyze the hydrolysis of glycosidic linkages, are involved in a large number of biological processes, such as carbohydrate metabolism, glycoprotein maturation... They represent important targets for the development of new therapeutic or cosmetic agents. Depending on the biological targets, iminosugars bearing appropriate protecting groups will be synthesized and glycosylated with different sugars in order to generate several families of disaccharides, which will be tested first on a panel of commercial glycosidases to evaluate their selectivities, then on glycosidases of therapeutic or cosmetic interest.

**Funding:** Centre Val de Loire region

**PhD start date:** October 1, 2020

**Candidate profile:**  
The candidate must be a chemist with an M2 or MSc in organic chemistry with a solid practical and theoretical knowledge in organic synthesis. Experience in glycochemistry would be appreciated. Application should include a CV, a motivation letter, M1, M2 or MSc grades (if available) as well as a recommendation letter (M1, M2 or MSc internship supervisor).

**Deadline for application:** March 5, 2020