Automated monosaccharide building block synthesis and stereoselective glycosylations

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The first step in the chemical synthesis of oligosaccharides is the synthesis of monosaccharide building blocks with appropriate protecting groups. It typically involves multiple steps and chromatographic separations. Most chemists regard these as a necessary but uninteresting part of oligosaccharide synthesis. We contend humans should 'delegate' the effort involved to machines and focus on doing the interesting parts.[1] We will present our efforts to automate this process, removing the need for chromatography (with significant reduction of silica and solvent use). We have used Burke's TIDA-tags to enable facile access to building blocks.[2] The resulting building blocks have been applied in the synthesis of oligosaccharide targets.[3] In the second part of the talk we will present novel methods for alpha-glucosylation, and galactosylation that we have developed. The mechanism underpinning these highly selective glycosylations will be discussed.

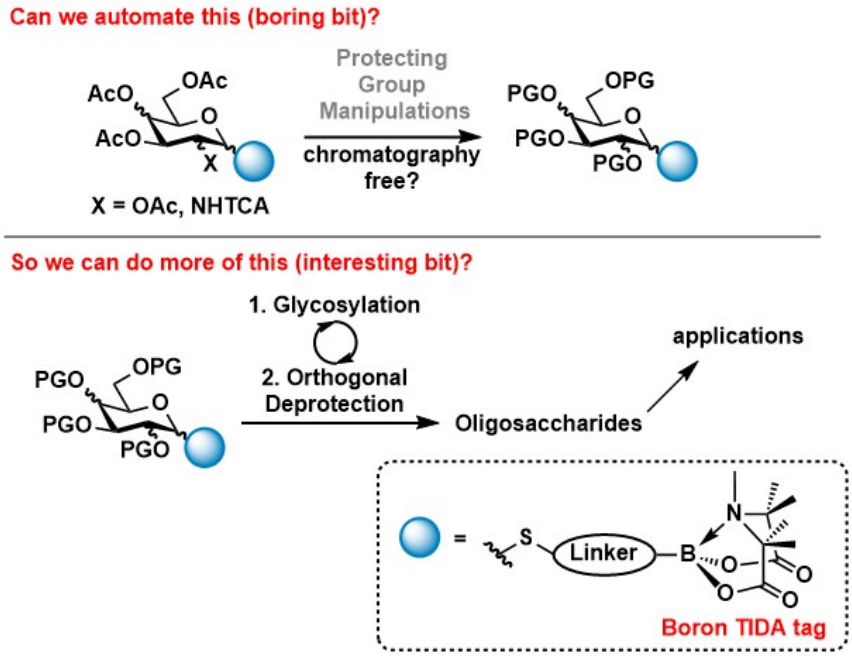

Figure 1: Proposal (part 1 of talk)

We thank SFI (CDA/15/3625) and IRC (GOIPG/2019/2747, GOIPG/2020/1129, GOIPD/2019/538) for funding.

Bibliographic references:

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