PP-1

The Use of Reagent Control in Stereoselective Glycosylation Reactions

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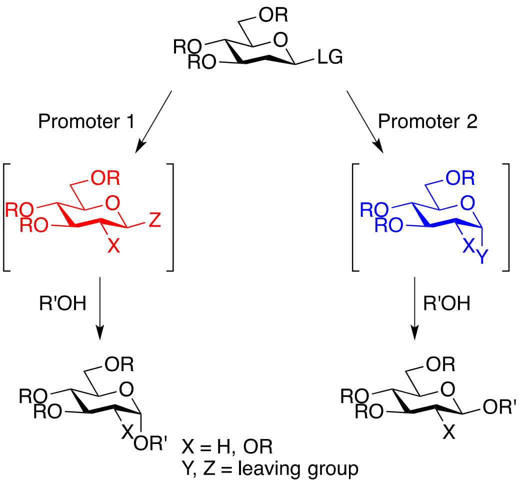
Our understanding of carbohydrate function is still very limited, in large part due to the difficulties associated with producing homogeneous material for study. Of the different methods for producing homogeneous carbohydrates, chemical synthesis remains the major avenue for the production of pure material.[1] One of the biggest challenges associated with carbohydrate synthesis lies in controlling the stereochemical outcome of the glycosylation reactions used to assemble the monosaccharides together. Chemical glycosylation reactions typically rely on the intrinsic stereochemical information in the coupling partners to control selectivity (substrate control).[2] A consequence of this is that extensive modification of the coupling partners is necessary to obtain stereoselective reactions, especially with so-called difficult linkages.[3] To address this we have developed glycosylation reactions where the promoter exerts absolute control over the stereochemical outcome of the reaction (reagent control). Using this approach we have found that it is possible to obtain either anomer of a particular glycosidic linkage from the same coupling partners simply by changing the promoter. Recent developments in the scope of this approach, mechanistic considerations, and application to synthesis will be discussed.

References



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