

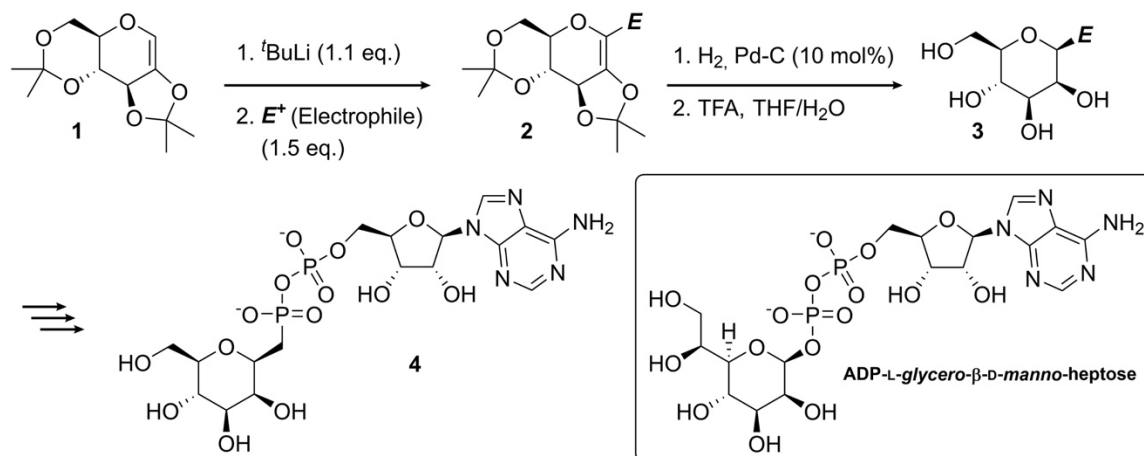
Synthesis of β -D-mannopyranosyl derivatives from a novel 2,3;4,6-Di-O-isopropylidene-D-glucal

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Carbohydrates, as the electrophilic species in glycosylation reactions, are usually limited by the variability of aglycones that can be introduced into the sugar moiety.¹ Therefore, glycols (1,2-unsaturated derivatives of carbohydrates) were designed to enable α -metalation of their vinyl ether functionality.² However, the application of these C-1 metalated glycols is complicated by the subsequent stereoselective hydroxylation of C-2 resulting in a fully hydroxylated glycosyl derivative.³⁻⁵ To avoid this step of oxidation, synthesis⁶⁻⁷ and C-1 metalation of 2,3;4,6-di-O-isopropylidene-D-glucal (**1**), as an innovative protected 2-hydroxyglycol, have been optimized. We have proved that this C-1 lithiated intermediate can be efficiently used for the high-yield introduction of various electrophiles under relatively mild conditions. Furthermore, we have also shown that the obtained C-1 substituted protected 2-hydroxyglycols **2** can be easily transformed into the most challenging β -D-mannopyranosyl derivatives **3** with exclusive β -stereoselectivity. Using the approach mentioned above, the synthesis of ADP-L-glycero- β -D-manno-heptose analogue **4** as a potential inhibitor of bacterial heptosyltransferase was optimized.



Use of 2,3;4,6-di-O-isopropylidene-D-glucal (**1**).

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