

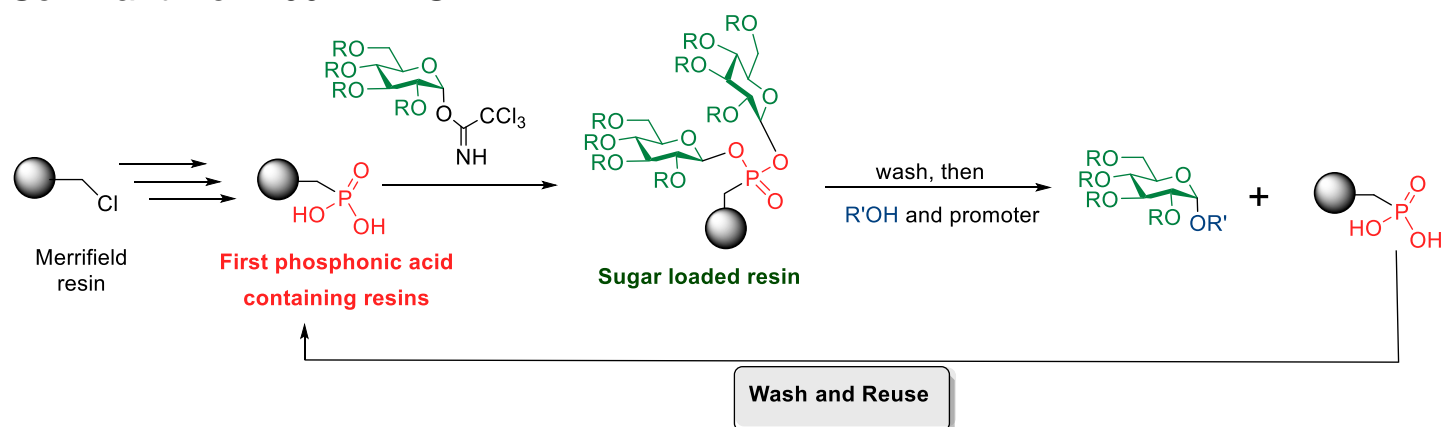
Development of Solid Supported Glycosyl Donors for the Glycosylation of Natural Products

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Glycosylated natural products have a diverse array of biological activity which make them an attractive class of molecules for medicinal and biochemists. Synthesis of these types of molecules have been limited due to the need to control both the stereoselectivity of the glycosidic linkage and the regioselectivity when the aglycone has multiple alcohols. Solid phase oligosaccharide synthesis has emerged as an impressive tool to create large polysaccharides in an efficient and stereoselective manner. Solid phase synthesis has also been adapted to flow and automation, which ultimately makes the glycosylation procedure easier for general scientists. We have developed solid supported phosphonic acid resins, that can be loaded with carbohydrates, and used as glycosyl donors for the glycosylation of natural products. We have demonstrated this method with on a wide range of natural product classes with high yield and selectivity. Additionally, these phosphonic acid derived glycosyl donors can be modified while bound to solid support. The protecting groups attached can be removed and replaced, and the oligosaccharide chain can be elongated while bound to solid support. This method can be adapted to a continuous sequence to perform sequential glycosylations on polyols. Ultimately, we will adapt our methodology toward the synthesis of polyglycosylated natural products in flow.