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## Iterative One-Pot Oligosaccharide Synthesis

An oligosaccharide is a carbohydrate having three to six simple sugar units. The lack of general methods for the assembly of these molecules has hampered scientific advances in the field of glycobiology. Methodologies such as solution based one-pot synthesis and solid phase synthesis have been developed in the past decade to facilitate the synthesis of oligosaccharides. The one-pot strategy refers to methods in which several glycosylation steps are carried out in one reaction vessel without any purification of intermediates. The one-pot method is beneficial because intermediate purification can be an extremely tedious procedure. This approach does however require multiple activators and extensive protective group manipulation to adjust the reactivity. The other growing trend for oligosaccharide synthesis is solid phase synthesis. Solid phase synthesis eliminates the need for intermediate purification and possesses great potential for automation. Unfortunately, its development has been significantly hindered by the complexity of oligosaccharide assembly, the unpredictability of glycosylation reactions on polymer support, and the difficulty of tracking the reaction progress. Therefore, a synthesis process has been developed that combines the advantages of one-pot solution synthesis and solid phase synthesis and avoids their disadvantages.

The University of Toledo is seeking a company interested in utilizing this novel iterative one-pot glycosylation method for the efficient preparation of oligosaccharides in favorable yields without any intermediate purification.

### **Applications:**

1. Oligosaccharide synthesis

### **Advantages:**

1. Expedited preparation reduces the amount of time needed for building block preparation
2. Requires only a single glycosylation for all coupling steps
3. No protective group adjustments or intermediate purification
4. Simple monitoring of reaction progress
5. Only a single purification step
6. One-pot synthesis is independent of anomeric reactivities

**This invention is patent pending**

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