# Synthesis of Glycosidase Substrates Containing Self-Immolative Linkers

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*Oral Presentation Abstract:*

Glycosidases are enzymes responsible for the hydrolysis of glycosidic bonds in carbohydrates. The vital role they play in various biological processes makes them an important area of research. This project focuses on the synthesis of specific substrates that may be used to analyze the activity of glycosidases. Previous research in this area has used substrates composed of sugar molecules bonded to a fluorophore indicator to analyze enzyme activity. However, these substrates sometimes lack the selectivity required to discern between different enzymes that act on similar carbohydrates.

Our method will preferentially measure the activity of specific glycosidases by using self-immolative linker molecules to achieve selectivity. The self-immolative linkers will act as a bridge between the sugar and fluorophore, but will spontaneously disintegrate following the hydrolysis of the bond to the sugar. sThis will release the fluorophore and allow for the enzyme's activity to be measured. Introducing the linkers allows for greater variation in the interactions between the enzyme and substrate. These interactions include, but are not limited to, steric effects, hydrogen bonding, and van der Waals contacts. It is hoped that the linkers will interact differently with the various glycosidases and provide the desired selectivity. A library of compounds with various linkers has been synthesized using two different sugars, glucose and galactose. The progress on the creation of the sugar-linker library will be reported.

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