

**Principal Investigator: Stacey Brenner-Moyer**

Title: Organocatalytic Enantioselective Sigmatropic Rearrangements to Probe Divergent Reactivity of Reactive Intermediates

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Divergent reactivity is a phenomenon that occurs when reacting molecules can follow two competing reaction pathways, each leading to different products. This reactivity can be both an advantage and disadvantage in the synthesis of organic molecules. If the factors dictating the reaction pathways are well understood, divergent reactivity can be deliberately manipulated and harnessed to advantage. When this fundamental understanding is lacking, however, this dual reactivity diminishes synthetic utility. In this project, with the support from the Chemical Catalysis Program of the Chemistry Division of the National Science Foundation, Professor Brenner-Moyer is investigating the influence of catalysts on divergent reactivity. Catalysts are substances that increase the rates of chemical reactions but are themselves not consumed, and are of enormous importance in fundamental and industrial chemistry. This knowledge gained from this research ultimately enables improved control of reaction outcomes, permitting direct access to useful chemicals. Professor Brenner-Moyer and her group are especially interested in new strategies to synthesize alkaloids, which are a broad class of naturally occurring compounds that exhibit a range of biological activities.