Abstract. The genus *Flindersia* produces bis-indole alkaloids that have demonstrated antimalarial activity. At least one of these natural products is toxic to *Plasmodia falciparum* via a novel mechanism of action. Work toward the biomimetic and enantioselective total synthesis of these alkaloids has led to discoveries in these natural products’ biosynthesis as well as methods for stereoselective catalysis to generate chiral heterocycles. Specifically, acidic conditions that provide both stereocontrol and control over structural isomer formation have been defined for the biomimetic synthesis of the alkaloids. To facilitate enantioselective synthesis of the compounds, an enantioselective organocatalytic addition of boron-based nucleophiles to β-heterocycle appended enones was developed. This transformation has proven general for the synthesis of alpha-chiral heterocycles.

Another line of research targets the synthesis of biologically-active bridged polycyclic terpenoid natural products via a carbene-initiated cascade sequence. A terminal C-H bond insertion allows for the controlled formation of a variety of bridged ring geometries. This strategy allows for the rapid synthesis of the target molecules' cores.

Thursday, October 3, 2013
5:00 PM
Cram Conference Room - 3440 Mol Sci
*Refreshments served at 4:30 PM*

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