

## **Michal Szostak Laboratory**

The goal of this project is to develop a new family of amide bond cross-coupling reactions using transition metals catalysis. The key research question to be addressed involves the discovery of new amide bond precursors that participate in the cross-coupling manifold as well as identification of new catalytic systems based on palladium and N-heterocyclic carbene ligands. The student will receive extensive training in organic synthesis, catalysis and organometallic chemistry. The student will gain expertise in small and large-scale synthesis, inert gas techniques, design, optimization and validation of reaction conditions, analysis techniques, mechanistic and kinetic studies, and X-ray crystallography.

The PI is fully committed to training of undergraduate students. To date, 17 undergraduates have received training by the PI. Typically, an undergraduate student is assigned a senior graduate student mentor, who supervises the undergraduate student on daily basis. The PI meets with each undergraduate student, including the Beckman Scholar, on weekly basis to discuss progress in the lab. Undergraduate students attend weekly group meetings and present their results on bi-weekly basis. This schedule is further adjusted during the summer period, when the PI meets with each student twice a week, and students present their results on weekly basis

The PI encourages the students to become independent scholars in organic synthesis. This is accomplished through independent identification of relevant research problems in the area of study, independent literature search, independent analysis of literature and research results. The students present their results during the group meetings and are typically involved in contributing to writing research reviews, which further expands their understanding of state-of-the-art research in the area