***Development of Novel C–C Coupling Reactions***

***from Amines and Acids***

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3rd Year Seminar

Medicinal Chemistry Program

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Current small molecule drug discovery often limits its focus to a subset of chemical space due to the current limitations of the medicinal chemists’ toolbox. Expanding this toolbox is crucial, as it can lead to access to new pocket of chemical space, improve synthetic efficiency in current chemical space, and ultimately result in the discovery of new drugs and therapies.

The Cernak Lab is dedicated to repurposing the most common coupling paradigm in drug discovery: the reaction between a carboxylic acid and an amine. Due to the vast availability of these feedstocks, repurposing this paradigm has the potential to become impactful additions for medicinal chemists.

We have developed novel methodologies by forming C-C bonds through Nickel-catalyzed reductive cross-coupling between amines and acids. The High-Throughput Experimentation (HTE) and Reaction Miniaturization techniques were used to rapidly screen conditions in parallel, thus accelerating the discovery process. During the presentation, we will provide details on the reactions discovered in HTE platform, as well as how these methodologies can be applied to late-stage diversification of drugs.