**OBJECTIVE**

To develop palladium-catalyzed cascade coupling reactions involving aryl bromides and N-tosylhydrazones to assemble η^3^-allyl ligands by the use of intermolecular trapping with nitrogen nucleophiles. Ultimately leading to the generation of 2-(aminomethyl)indenones with newly formed sp^3^ chiral centers.

**ABSTRACT**

The overachieving goal of this research project is to develop a novel, precise, and powerful method for the construction of carbon-carbon bonds. In particular, our research focuses on using palladium metal as catalyst in a multi-component coupling transformation. Palladium-catalyzed cross-coupling reactions are some of the most powerful methods for the formation of C-C bonds. Our current project will expand the scope of the current field of palladium-catalyzed coupling reactions by allowing for the insertion of single sp^3^ carbon units. We believe we can achieve a palladium-catalyzed coupling involving N-tosylhydrazones (single carbon units) with easily synthesized aryl halide substrates. We would like to investigate the reaction conditions necessary for high yields of the desired products. We also plan on conducting the reaction with varying substrates to determine the functional group tolerance of the transformation.