A New Twist on Quinazolinaps – A Study of the Asymmetric Suzuki Reaction for the Preparation of Axially Chiral P,N-Ligands

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The synthesis of axially chiral P,N- ligands, such as Quinazolinap, involves the synthesis of the ligand as a racemate through a non-stereoselective Suzuki-Miyaura coupling, followed by its resolution using a stoichiometric amount of a chiral palladacycle salt.[1,2] The use of this salt is prohibitively expensive, especially to prepare these ligands on a multigram scale. Recent advancements in the asymmetric Suzuki-Miyaura reaction have inspired its application in the asymmetric synthesis of these ligands through atroposelective coupling. Furthermore, work in the asymmetric Suzuki-Miyaura reaction using heterocyclic coupling partners to date is particularly limited.[3]

This project aims to establish the methodology for the asymmetric Suzuki-Miyaura coupling in the atroposelective preparation of Quinazolinap precursors. This work details the preparation of three novel pinacol boronate ester coupling partners and the preliminary studies of their application in the asymmetric Suzuki-Miyaura reaction.

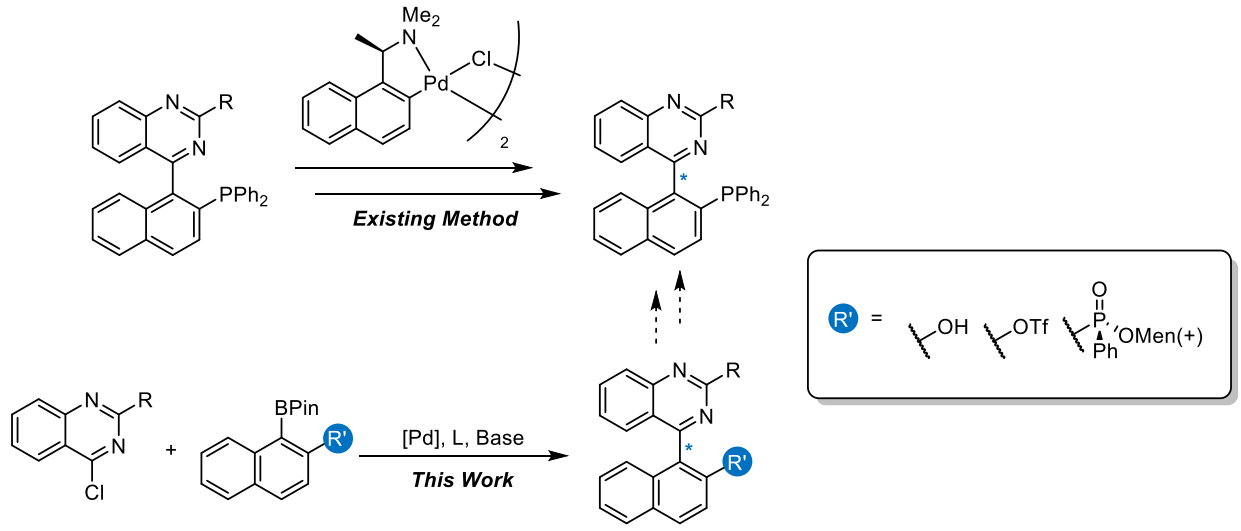

Figure 1. Project overview

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2. Connolly, D. J.; Lacey, P. M.; McCarthy, M.; Saunders, C. P.; Carroll, A.-M.; Goddard, R.; Guiry, P. J. *J. Org. Chem.* **2004**, 69 (20), 6572-6589.
3. Hedouin, G.; Hazra, S.; Gallou, F.; Handa, S. *ACS Catal*. **2022**, 12 (9).