Regiodivergent Rh-Catalysis: Enantioselective Hydroacylation of 2-Azetines

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Abstract text: In this article, we report a regio- and enantioselective Rh-catalyzed hydroacylation of 2-azetines. The choice of bisphosphine ligand dictates whether formation of a chiral 2-acylazetidine or an achiral 3-acylazetidine isomer is formed. Electron rich Josiphos ligands yield the 2-acylazetidines selectively and with high enantioselectivity. Biaryl bisphosphine ligands, such as dppe, afford the achiral 3-acylazetidine isomer selectively. This study pioneers the use of enecarbamates as viable coupling partners in hydroacylation. A wide range of salicylaldehyde derivatives are well tolerated as coupling partners under both optimized conditions. Additionally, Isotope labeling experiments in conjunction with kinetic and DFT analysis help to shed light on the divergent rhodium reactivity. Future studies will focus on expanding the scope of enecarbamate hydroacylations.

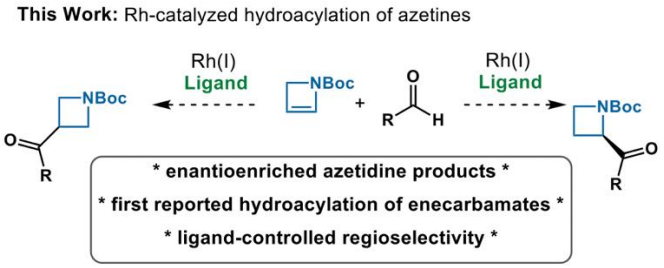

Figure 1: Azetine hydroacylation proposal.