Enantioselective Rhodium-Catalyzed Allylation of 2-Pyridones

Significance: Enantioenriched N-substituted 2-pyridones are an important class of biologically active molecules. Their synthesis has been described starting from chiral electrophiles (Y.-Q. Fang et al. J. Am. Chem. Soc. 2010, 132, 15525) and chiral amines (Y. Yu et al. J. Nat. Prod. 2013, 76, 2226). The authors report a chiral allylation strategy beginning from 2-pyridones and allenes.

Comment: Almost all substrates preferred N-allylation over O-allylation, except the 5-iodopyridone substrate. A 1:1 mixture of N/O-allylated products was observed in this case. Substitution on the allene component was also tolerated, including a tertiary alcohol. A decrease in N/O selectivity was observed for the substrate with a phthalamido group.

Proposed catalytic cycle: