

# New Directions in the Asymmetric Hydroamination of Aminoallenes

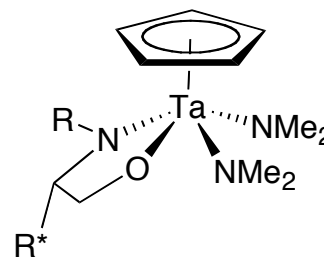
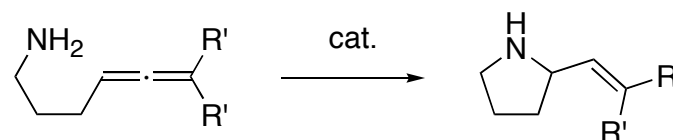
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**Background** Hydroamination is the addition of an amine across an olefin or alkyne. The Johnson Lab focuses on hydroamination involving aminoallenes. We hope to improve the enantioselectivity of the catalysis through intelligent ligand and pre-catalyst design.

## Previous work

- Titanium tetrakisdimethylamide precatalyst
- Chiral amino acid derived ligands
- Enantiomeric excess < 16%

**Results** During summer 2008, Tantalum cyclopentadiene precatalyst was prepared with chiral amino alcohol ligands. The proposed catalyst was used in the hydroamination of dimethyl aminoallene. At 135 °C, hydroamination reactions catalyzed by these compounds proceed more slowly, but with higher enantioselectivity than with previous Titanium catalysts. Preliminary results using chiral resolving  $^1\text{H}$  NMR spectroscopy give enantiomeric excesses up to 42%.



Proposed structure of a Ta catalyst

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