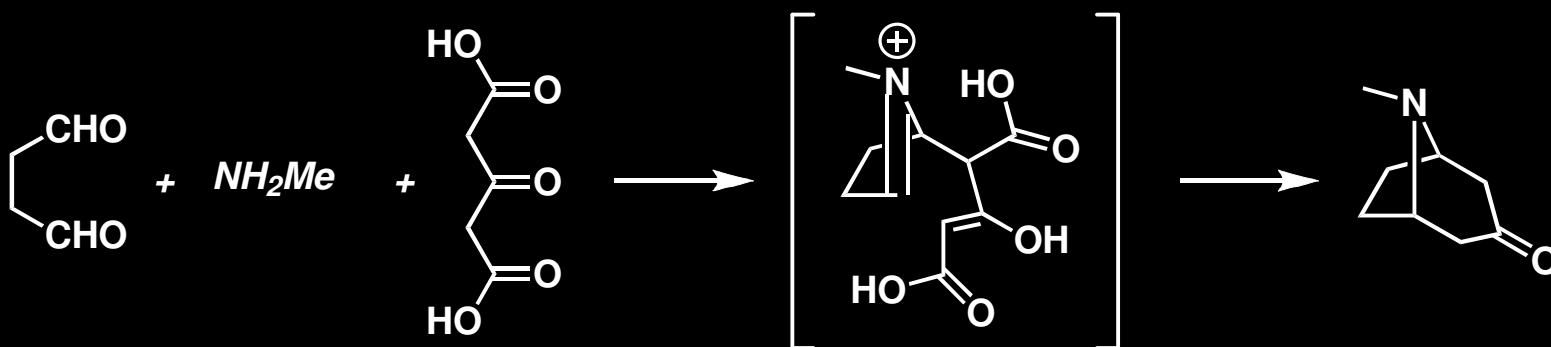

The Mannich Reaction

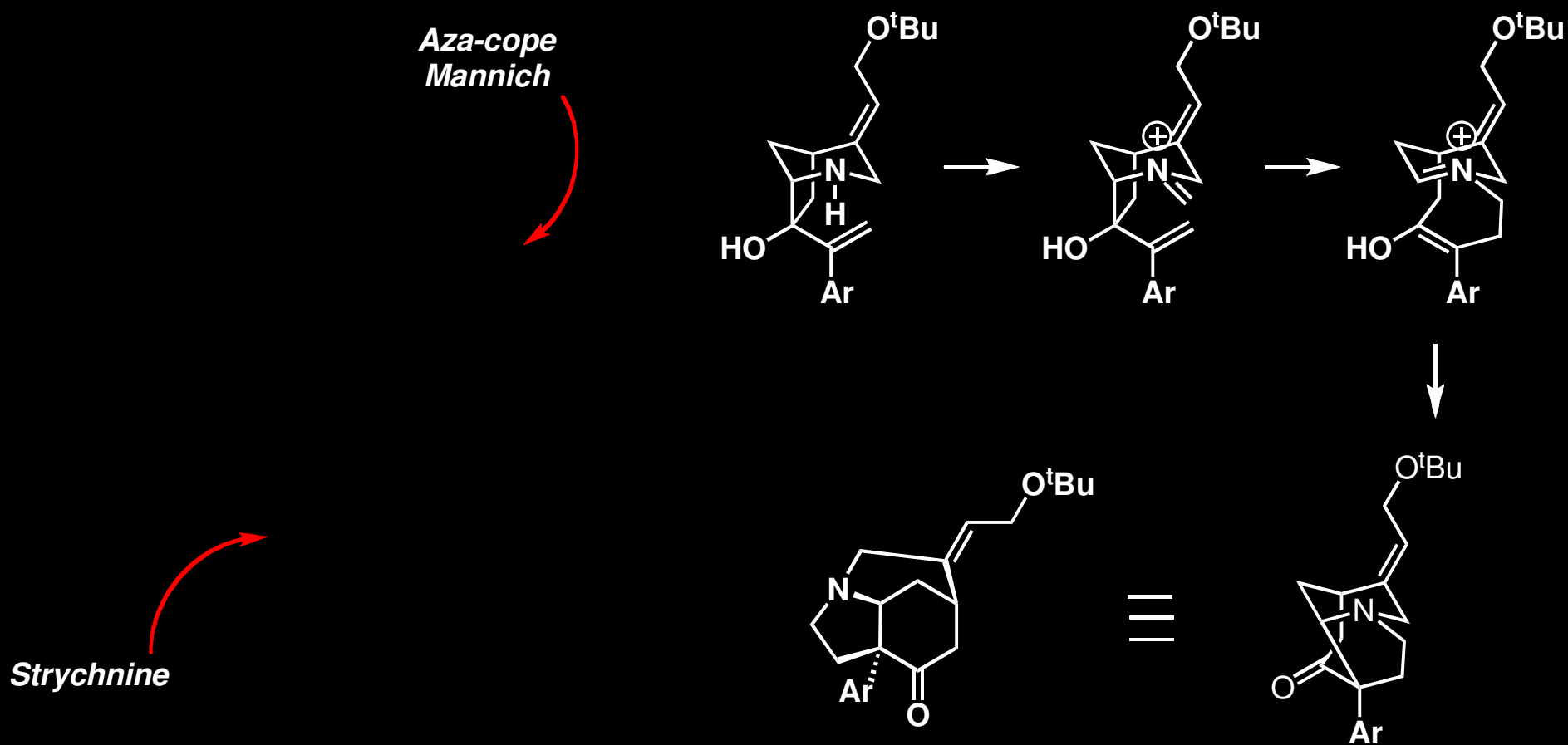
Wespe

27. June 2008

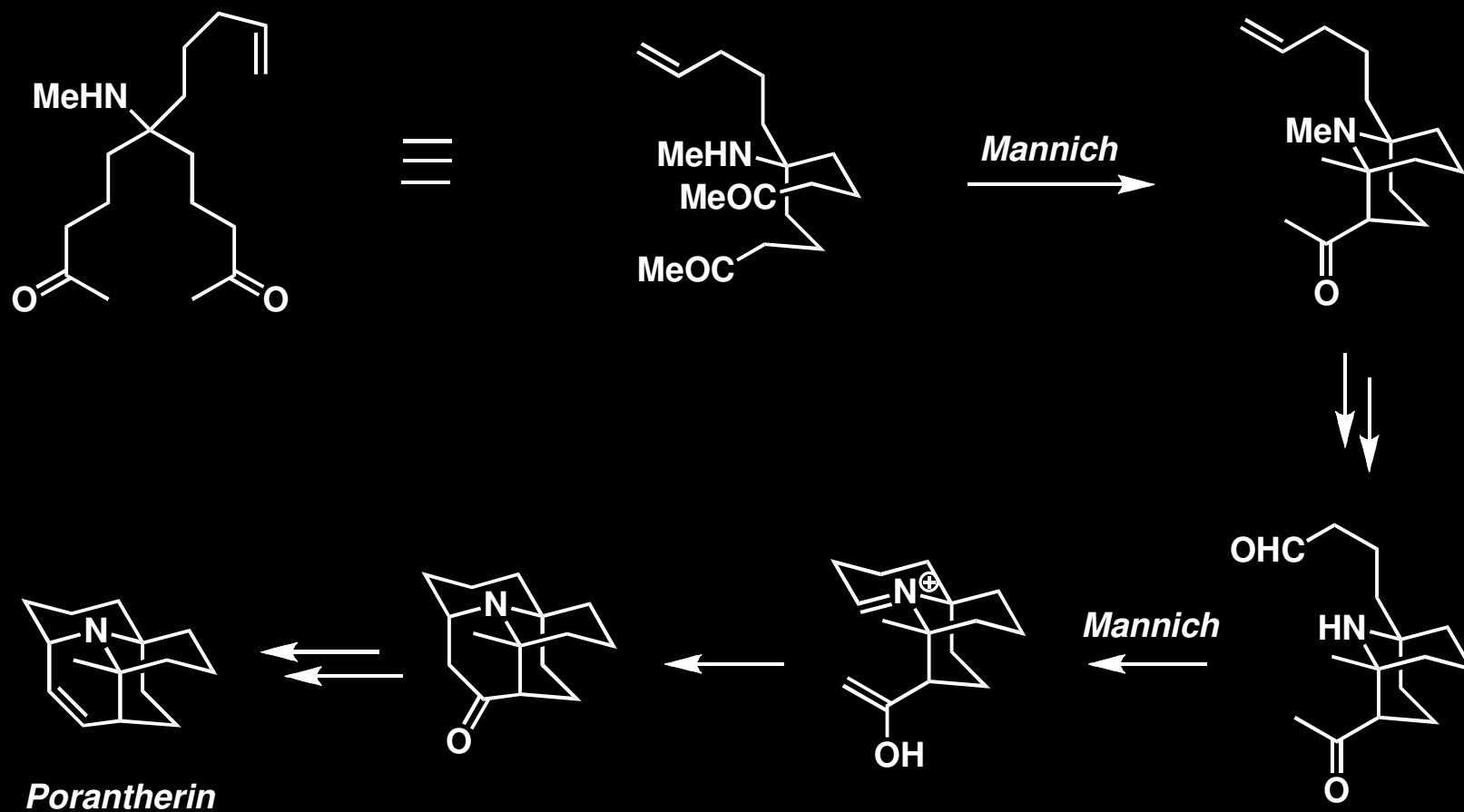


Instructive Examples

Instructive Examples

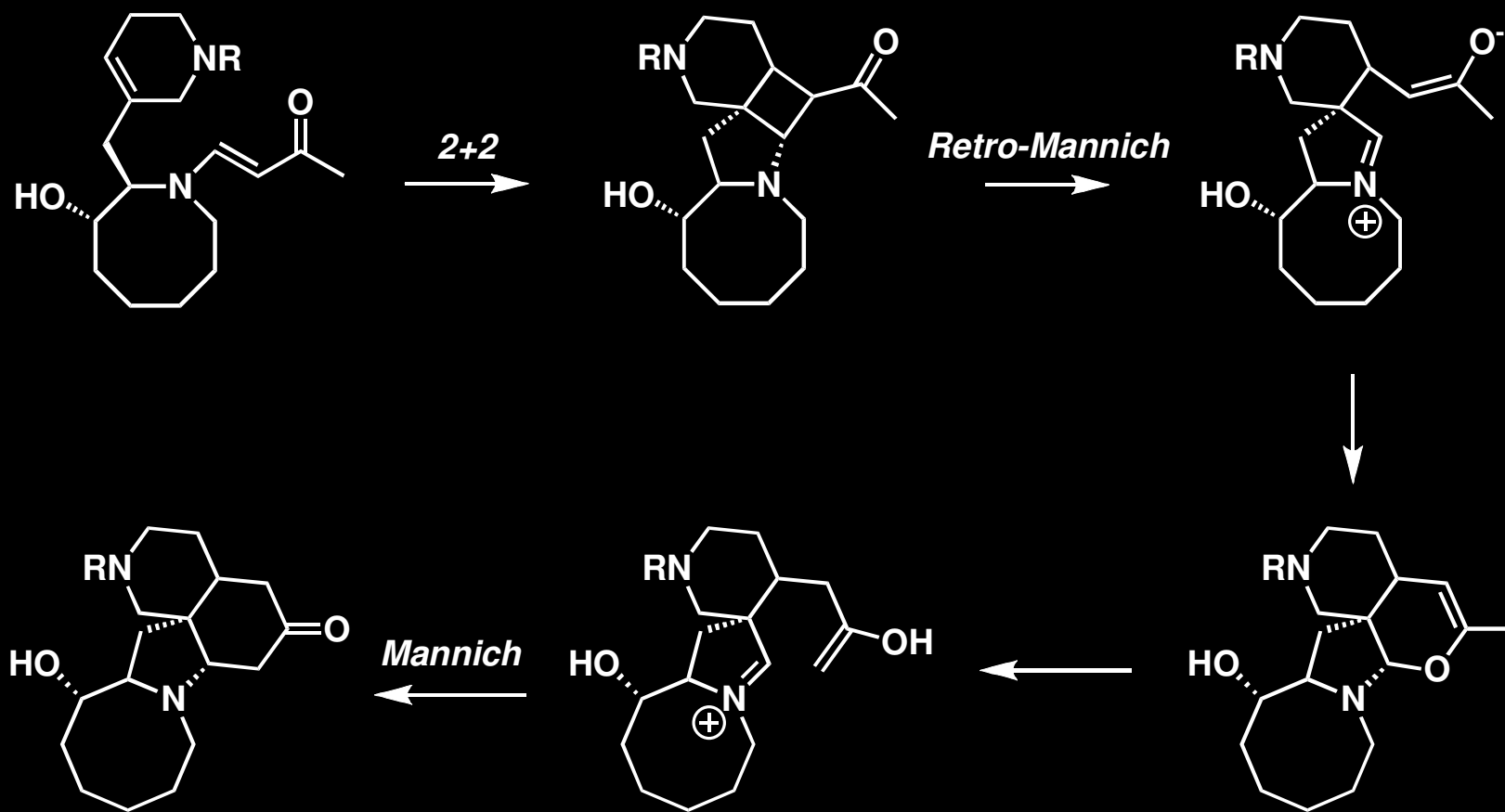


Instructive Examples



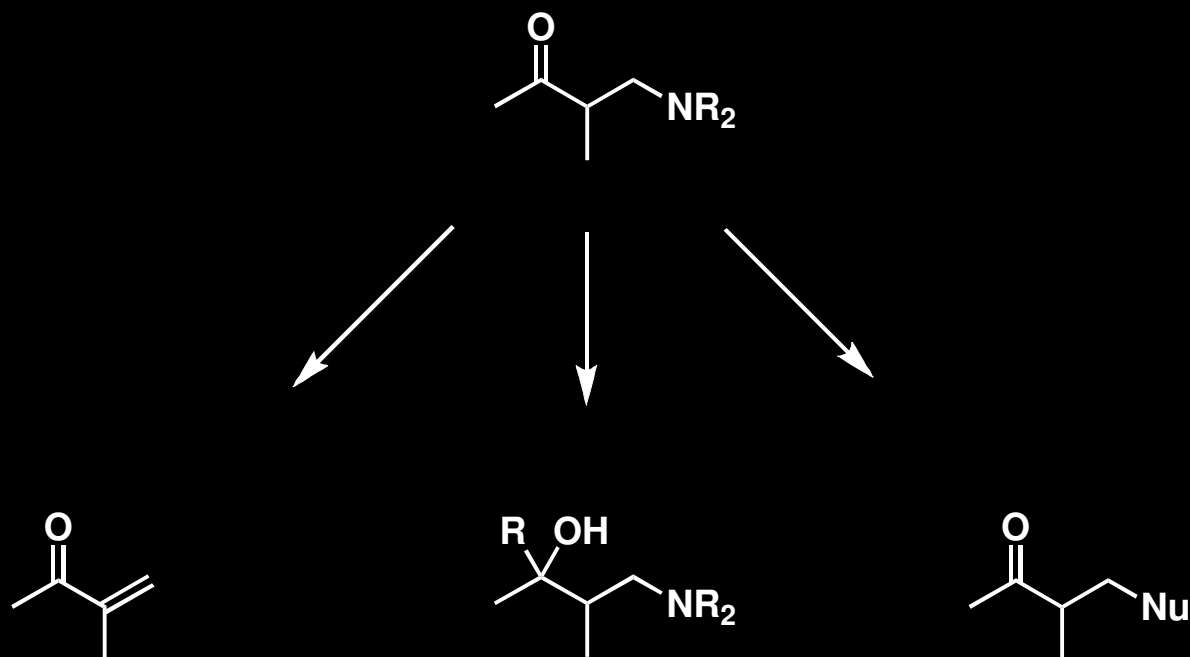
Corey, E. J.; Balanson, R. D. *J. Am. Chem. Soc.* 1974, 96, 6516.

Instructive Examples



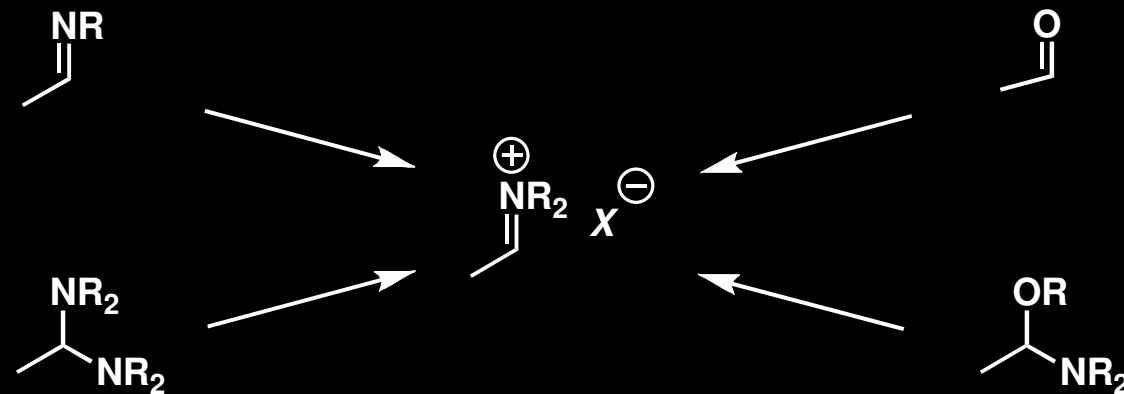
Winkler, J. D.; Siegel, M. G.; Stelmach, J. E.; *Tetrahedron Letters*. 1993, 34, 6509.

Mannich Base Derivatives



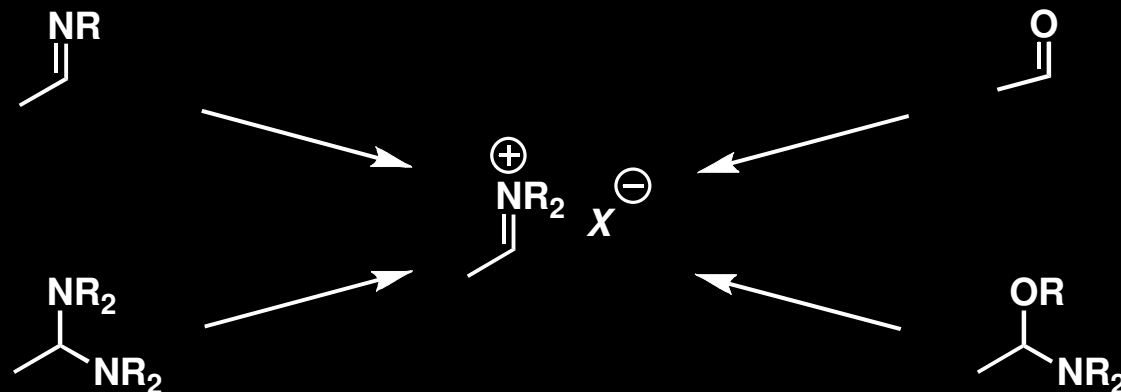
Common Electrophiles

Iminium Salts

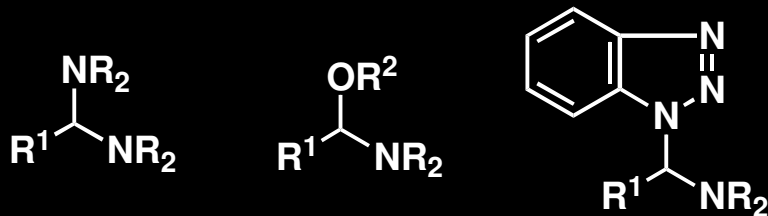


Common Electrophiles

Iminium Salts



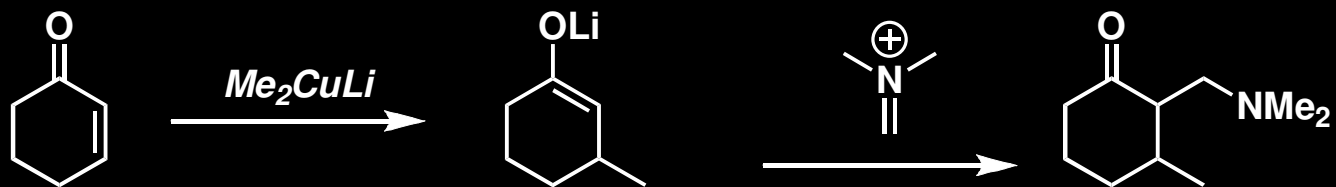
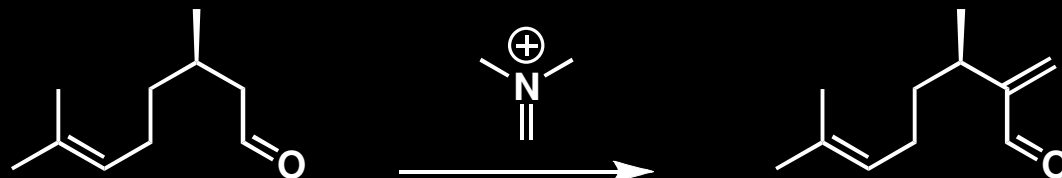
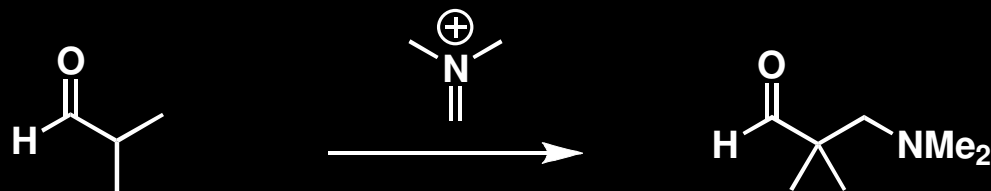
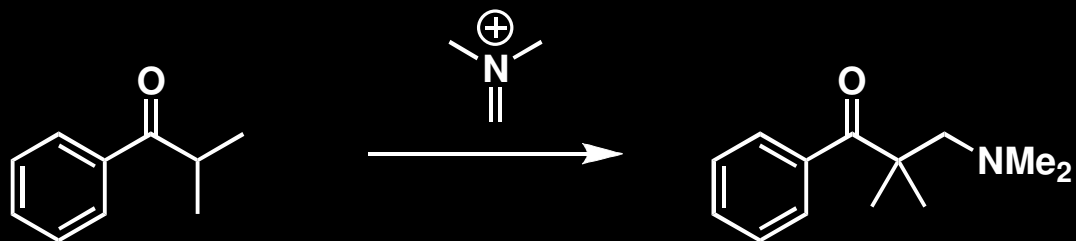
Aminals and N,O Acetals



Imines

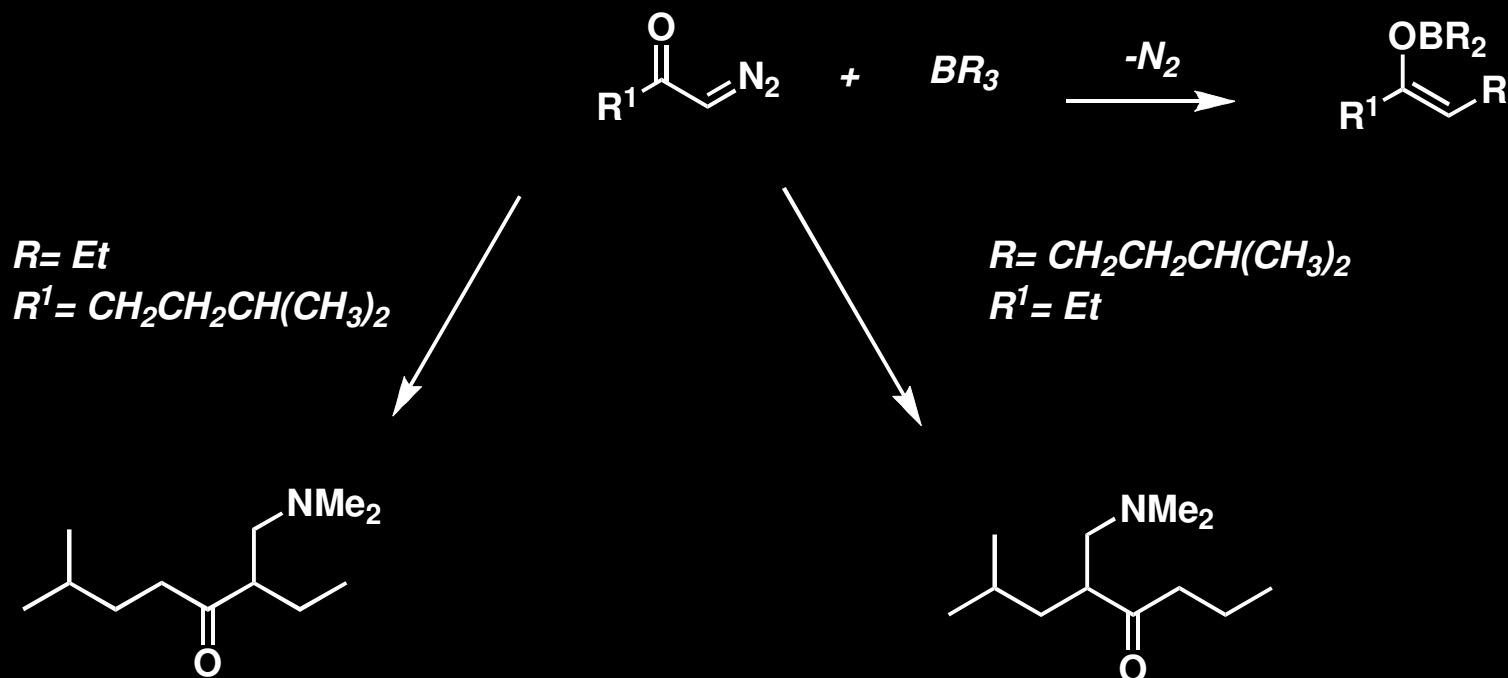


Carbonyl Compounds and Enolates



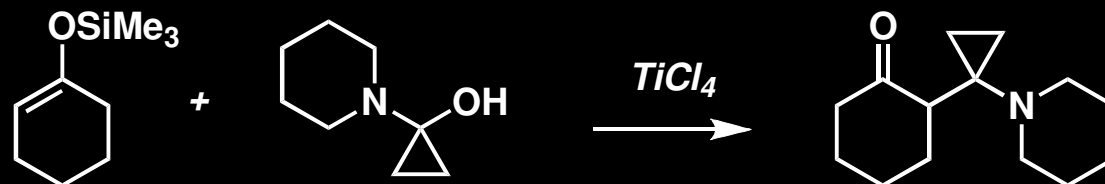
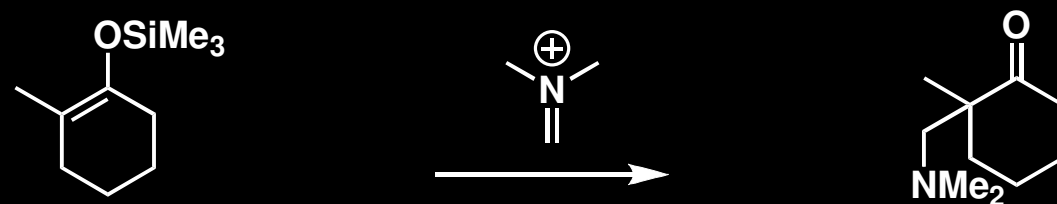
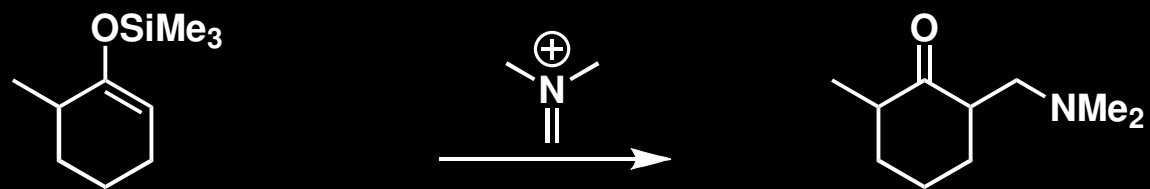
Boron Enol Ethers

Allow for regioselective synthesis of β -amino ketones with otherwise indistinguishable α -positions

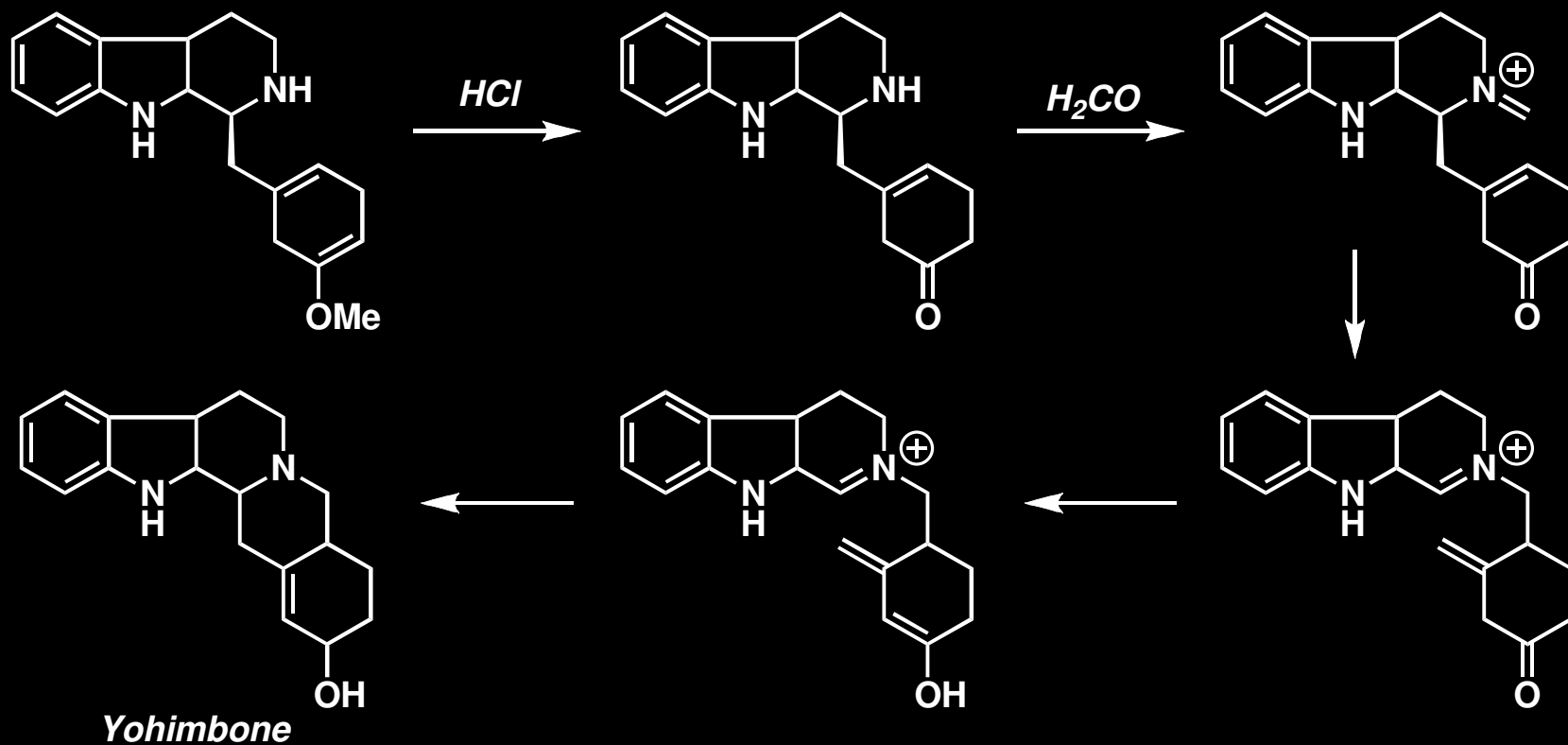


Silyl Enol Ethers

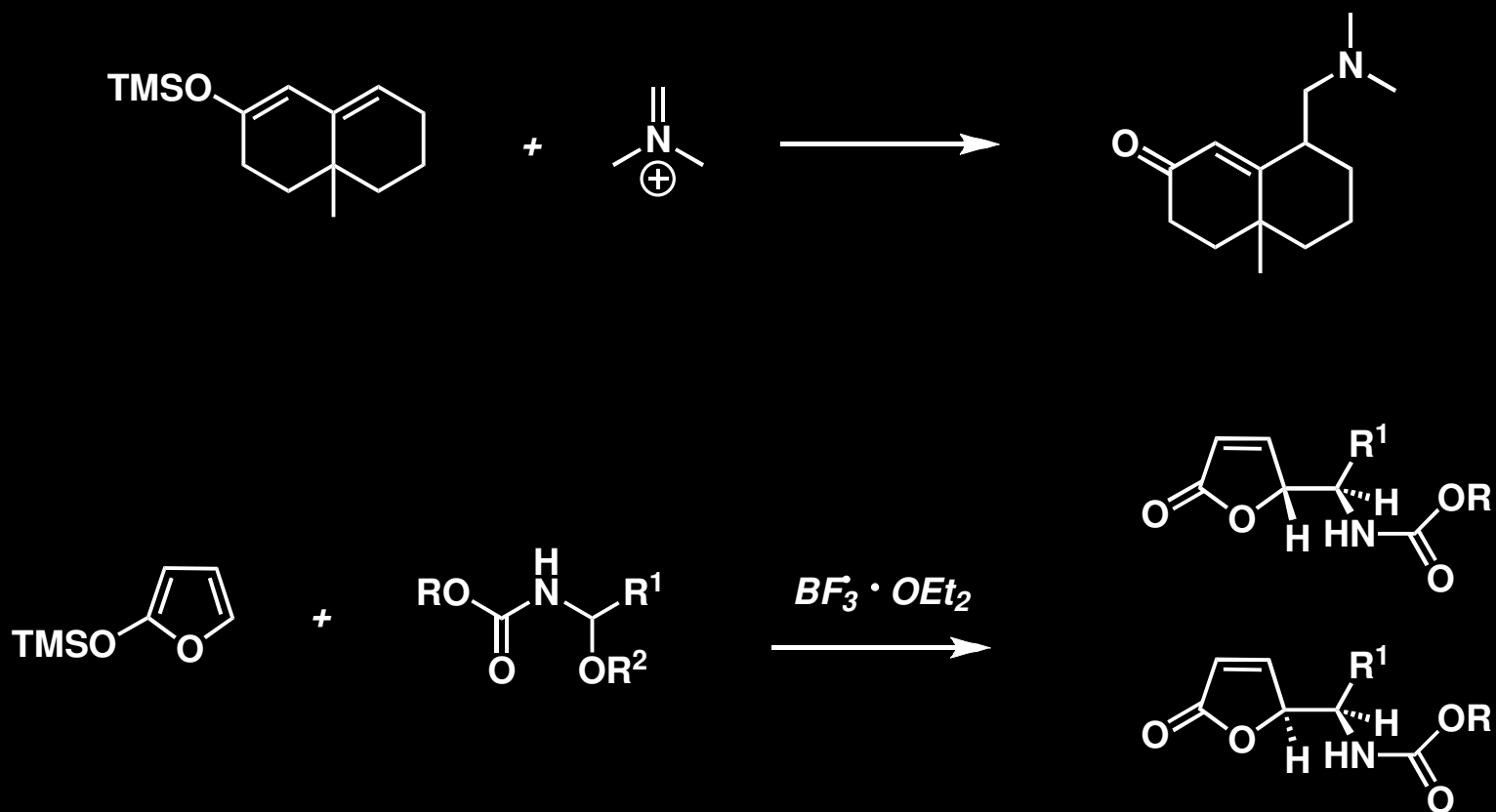
Very good nucleophiles, good control of regioselectivity



Vinylogous Mannich Reactions



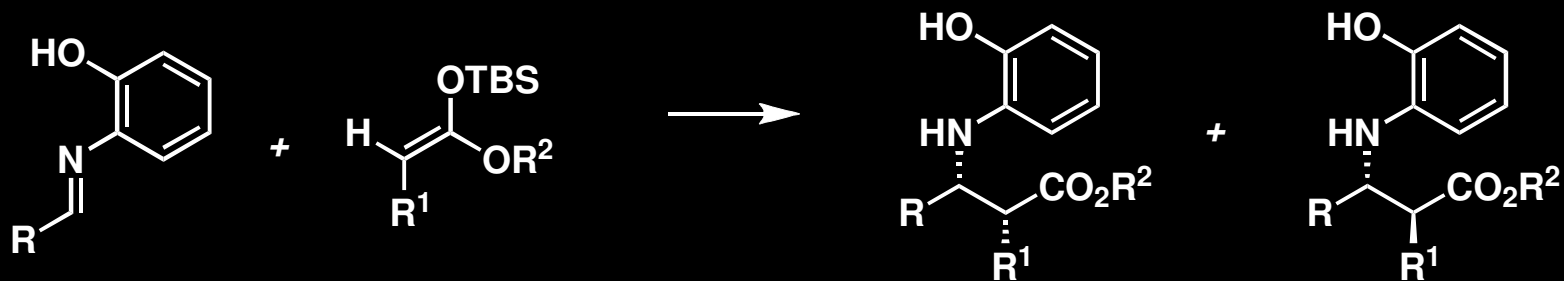
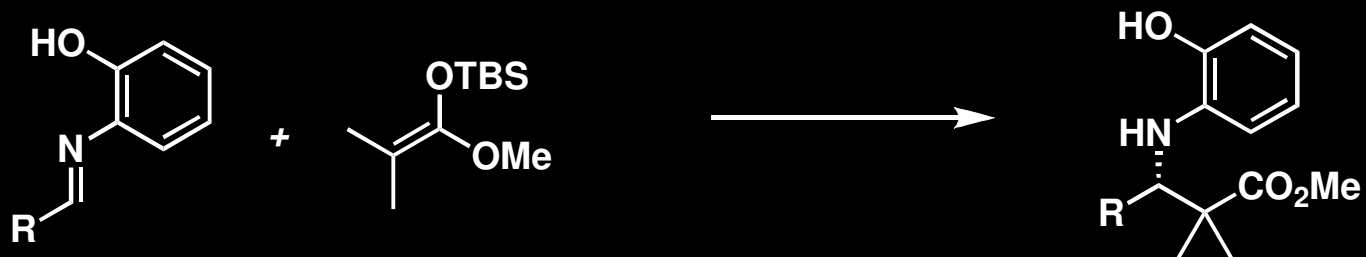
Vinylogous Mannich Reactions



Danishefsky, S.; Prisbylla, M.; Lipisko, B. *Tetrahedron Letters*. **1980**, 21, 805.
Harding, K. E.; Coleman, M. T.; Liu, L. T. *Tetrahedron Letters*. **1991**, 32, 3795.

Enantioselective Mannich Reactions

Use of Chiral Bronsted Acids based on BINOL



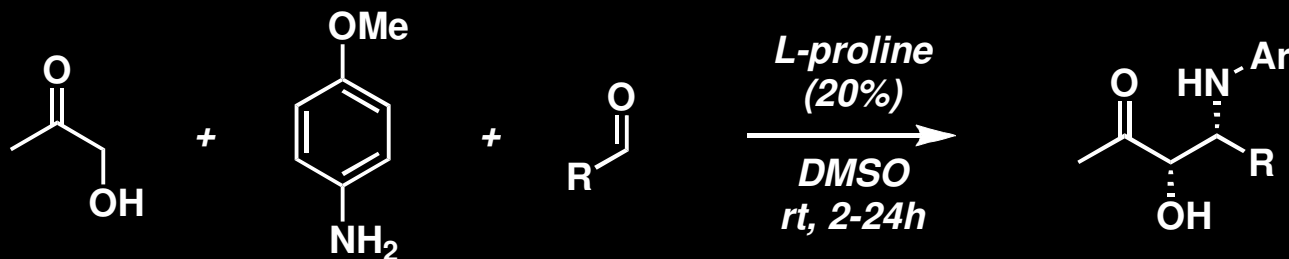
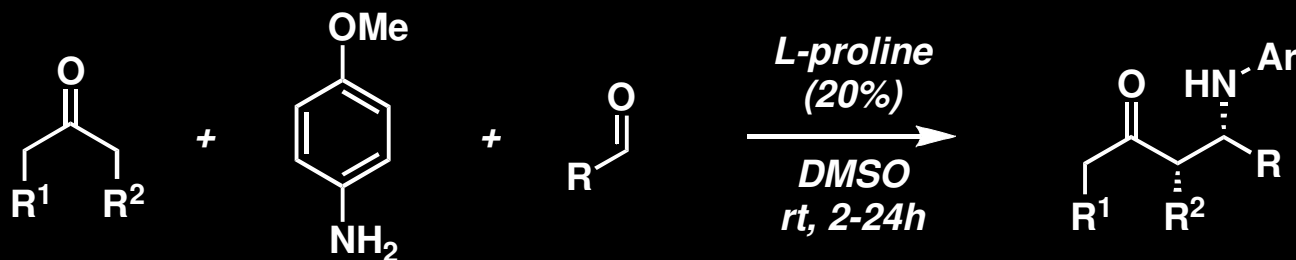
R = Aromatic

*R*¹ = Me, Benzyl

*R*² = Et, Me

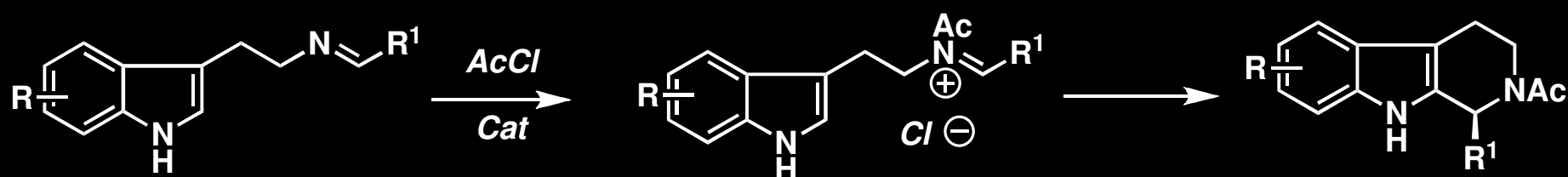
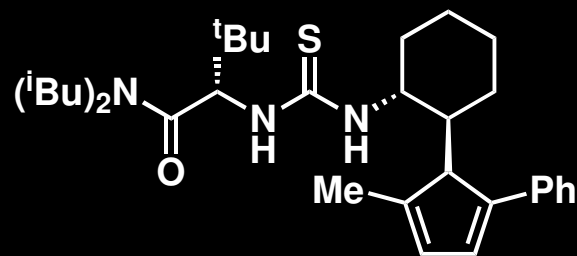
Enantioselective Mannich Reactions

Use of L-proline as an organocatalyst



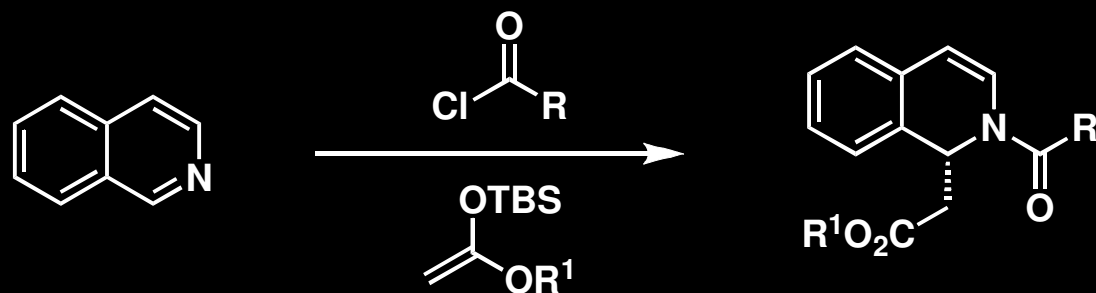
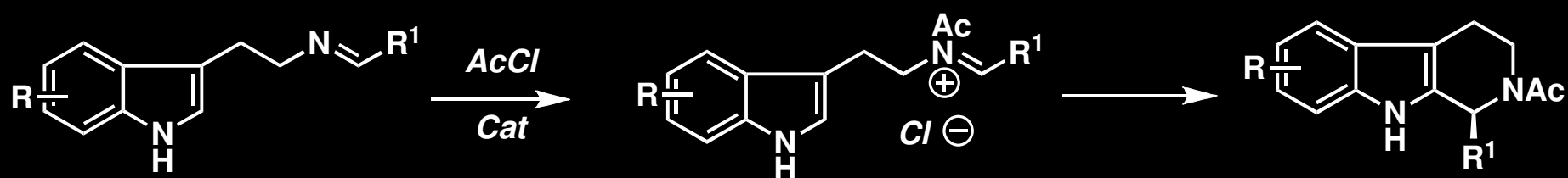
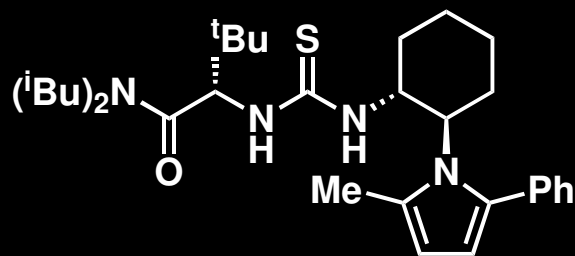
Enantioselective Mannich Reactions

Use of Jacobsen's Catalyst



Enantioselective Mannich Reactions

Use of Jacobsen's Catalyst



Taylor, M. S.; Tokunaga, N.; Jacobsen, E. N. *Angewandte Chemie International Edition*. 2005, 44, 6700.