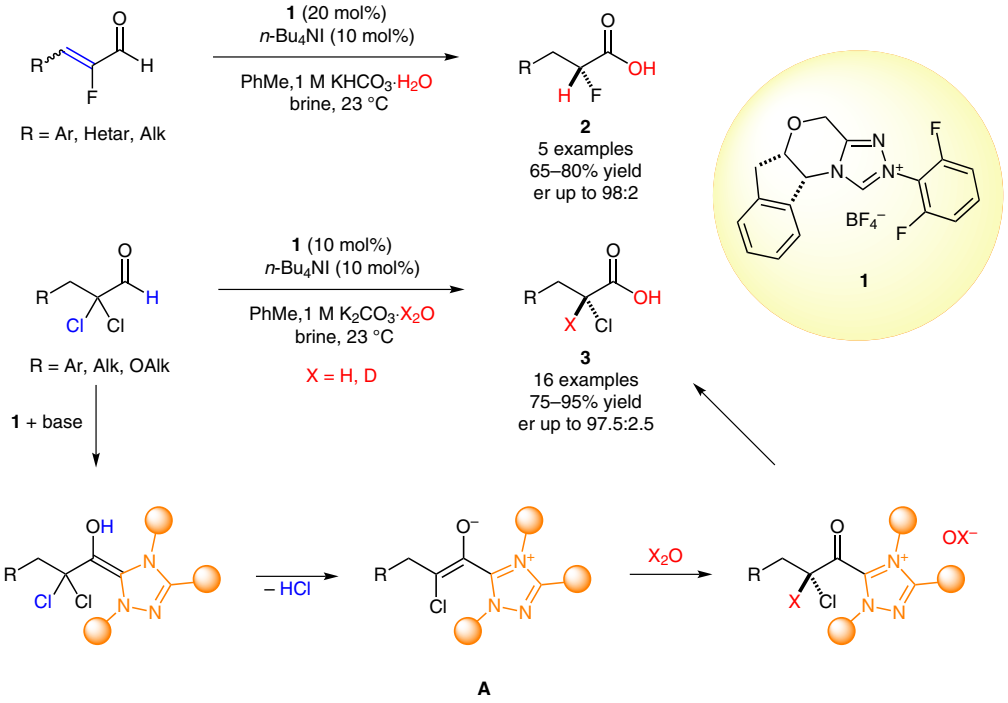
H. U. VORA, T. ROVIS* (COLORADO STATE UNIVERSITY, FORT COLLINS, USA)

N-Heterocyclic Carbene Catalyzed Asymmetric Hydration: Direct Synthesis of α-Protio and α-Deuterio α-Chloro and α-Fluoro Carboxylic Acids

J. Am. Chem. Soc. **2010**, *132*, 2860-2861.

Asymmetric Synthesis of α-Halo Carboxylic Acids from α,α-Dihalo Aldehydes



Significance: The enantioselective hydration of α,α-dichloro aldehydes and α-fluoro enals catalyzed by N-heterocyclic carbene **1** has been reported. α-Fluoro and α-chloro carboxylic acids **2** and **3** were obtained in good yields with high enantioselectivity. The developed reaction enables incorporation of an α-deuterium to give rise to enantioenriched α-deutero α-halo acids using D_2O as the deuterium source.

Comment: Enantioenriched α-halo carbonyls are valuable synthetic intermediates. Current approaches to these compounds rely on the asymmetric generation of α-halo aldehydes or esters. Rovis and colleagues previously demonstrated that chiral N-heterocyclic carbene catalyzes the enantioselective reaction of α,α-dichloro aldehydes and phenol leading to α-chloro aryl esters (N. T. Reynolds, T. Rovis *J. Am. Chem. Soc*. **2005**, *127*, 16406). This approach is based on the enantioselective protonation of catalytically generated chiral enolates **A**. Utilizing the same principle and employing water as the nucleophile instead of phenol enabled a direct approach to α-halo carboxylic acids.

SYNFACTS Contributors: Benjamin List, Ilija Ćorić
Synfacts 2010, 5, 0591-0591 Published online: 22.04.2010
DOI: 10.1055/s-0029-1219745; **Reg-No.:** B03110SF