Synthesis of α-Amino Acid Derivatives by Biomimetic Transamination

Significance: Shi and co-workers have developed a methodology to synthesize ω-amino acid derivatives 3 from ω-keto esters 2, catalyzed by cinchona alkaloid derivative 1. This is the first catalytic highly enantioselective synthesis of ω-amino acid derivatives 3 via biomimetic transamination. The proton of the ammonium ion in the transition state is delivered to the si-face of the substrate, affording the (R)-ω-amino ester as the major enantiomer.

Comment: Optically active ω-amino acids and their derivatives are an important class of molecules in biology and in organic synthesis. However, it remains a challenge to develop highly enantioselective syntheses of them to date. Here, a very efficient method for the synthesis of ω-amino acid derivatives via biomimetic transamination has been reported, which also illustrates the synthetic potential of organocatalytic biomimetic transamination.