Synthesis of α-Amino Acid Derivatives by Biomimetic Transamination

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Organocatalytic Asymmetric Biomimetic Transamination: From α-Keto Esters to Optically Active α-Amino Acid Derivatives


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**Significance:** Shi and co-workers have developed a methodology to synthesize α-amino acid derivatives **3** from α-keto esters **2**, catalyzed by cinchona alkaloid derivative **1**. This is the first catalytic highly enantioselective synthesis of α-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)-α-amino ester as the major enantiomer.

**Comment:** Optically active α-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 α-amino acid derivatives via biomimetic transamination has been reported, which also illustrates the synthetic potential of organocatalytic biomimetic transamination.