X. YANG, Z. XIE, Y. LI, Y. ZHANG* (LANZhou UNIVERSITY, P. R. OF CHINA)
Enantioselective Aerobic Oxidative Cross-Dehydrogenative Coupling of Glycine Derivatives with Ketones and Aldehydes via Cooperative Photoredox Catalysis and Organocatalysis
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Synthesis of Amino Acid Derivatives from Glycine Derivatives and Ketones/Aldehydes

**Significance:** It is important to modify natural amino acids to give nonnatural amino acids because the latter are indispensable in medicinal chemistry. The authors have developed a photoredox enamine-catalyzed cross-dehydrogenative coupling reaction to synthesize nonnatural amino acid derivatives from glycine derivatives and ketones or aldehydes.

**Comment:** With the assistance of cooperative photoredox catalysis and organocatalysis, various nonnatural α-alkyl-α-amino acid derivatives were synthesized from glycine derivatives and ketones or aldehydes. The yields of the reactions were moderate to good and the diastereo- and enantioselectivities were excellent.

\[
\text{PMP}^+\text{NR}^3\text{OR}^3 (1.0\text{ equiv}) + \text{Ru(bpy)}_2^+\text{Cl}_2\text{H}_2\text{O} (2\text{ mol%}) \rightarrow \text{H}^\text{N}^\text{A} (20\text{ mol%}) \rightarrow \text{MeCN, r.t., air} \rightarrow \text{5 W blue LEDs}
\]

81% yield, dr = 98:2, 97% ee
79% yield, dr = 98:2, 97% ee
76% yield, dr = 99:1, 96% ee
76% yield, dr = 98:2, 97% ee

56% yield, dr = 89:11, 85% ee
84% yield, dr = 97:3, 96% ee
80% yield, dr = 93:7, 94% ee
78% yield, dr = 88:12, 94% ee

81% yield, dr = 92:8, 91% ee
60% yield, dr = 92:8, 95% ee
70% yield, dr = 93:7, 95% ee
58% yield, dr = 77:23, 94% ee

*3.0 equiv aldehyde and 10 mol% A were used.*