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COPPER CATALYZED ASYMMETRIC FORMATION OF ENANTIOENRICHED β-CF_3 ESTER AND NITRILE DERIVATIVES[1]

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Due to its unique properties, the fluorine atom is nowadays widely used in medicinal chemistry.[2] That is why the synthesis of fluorinated moieties has become a considerable challenge. In particular, the trifluoromethyl group is one of the most common in drug structures. Although the construction of non-stereogenic C-CF_3 has been extensively studied,[3] catalytic asymmetric methodologies for the synthesis of chiral -CF_3 centers at a distant position from a carbonyl group remain underdeveloped, with for instance catalytic asymmetric hydrogenations or the use of chiral N-heterocyclic carbene catalysts.[4] Consequently, we focused our work on the enantioselective reduction of β-CF_3 ester and nitrile derivatives by forming in-situ a chiral copper-hydride complex. This smooth methodology leads to the desired products with good yields and excellent selectivity.

References
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