Copper Hydride Catalyzed Synthesis of 2,3-Disubstituted Indolines

Significance: The \( \text{L}^*\text{CuH} \)-catalyzed diastereo- and enantioselective synthesis of 2,3-disubstituted cis-indolines proceeds under mild conditions and tolerates bulky functional groups, including heterocycles, olefins, or substituted aromatic rings. A methyl substituent at the C-4 position of the indoline ring results in lower reactivity.

Comment: The yield of the reaction is significantly dependent on the choice of alcohol. \( \text{t-BuOD} \) is superior to \( \text{t-BuOH} \), as it reduced the amount of byproduct by slowing the protonolysis of \( \text{B} \). Interestingly, the reaction is highly cis-diastereoselective. Addition of triphenylphosphine as a secondary ligand significantly improves the catalyst turnover.