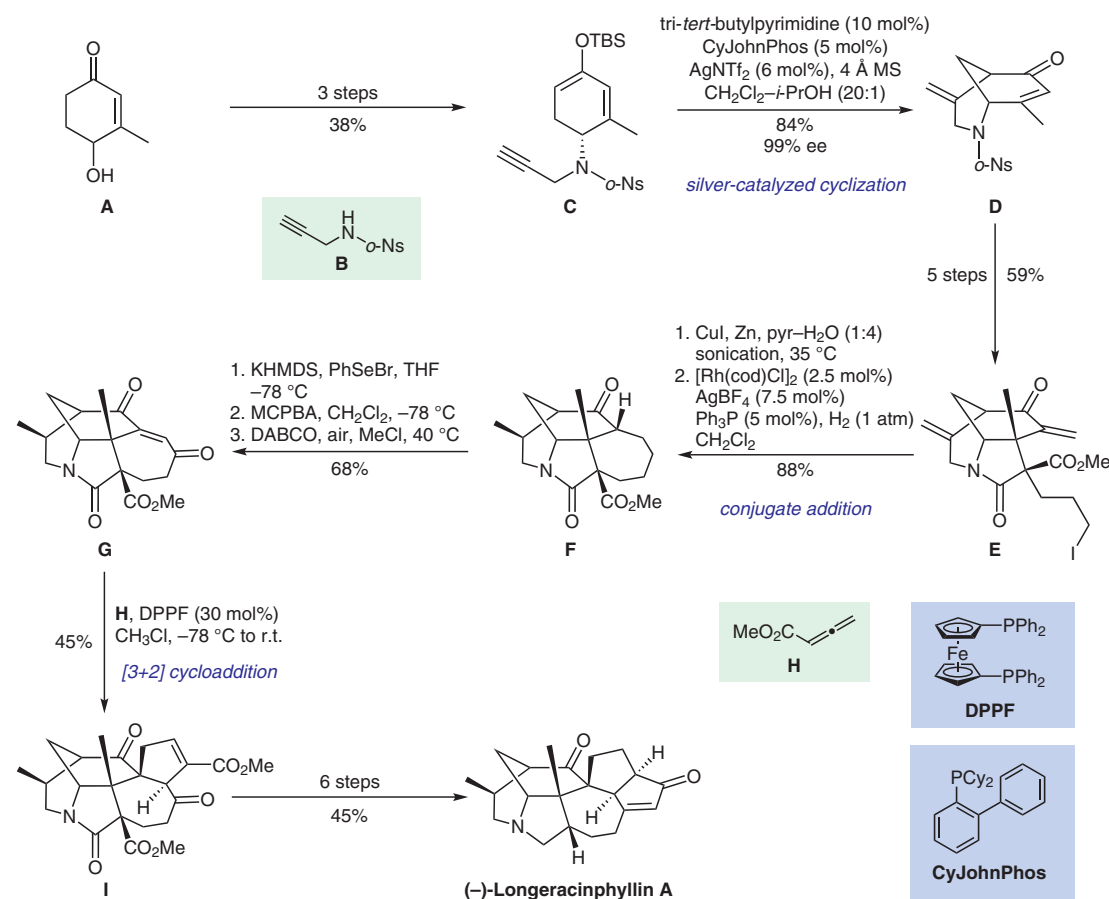


Synthesis of (-)-Longeracinyphyllin A



Significance: Alkaloid natural products isolated from leaves and roots of the *Daphniphyllum* genus of plants are widely used in Chinese herbal medicine. The first and asymmetric total synthesis of (-)-longeracinyphyllin A, a member of this structurally complex family of natural products, was accomplished by Li and co-workers. The significance of the approach chosen by the authors lies in the rapid construction of intermediate **D** and assembly of structurally advanced tetracycle **F** in large quantities. This enables elegant completion of the highly challenging target by [3+2] cycloaddition in just 21 synthetic steps.

Comment: Borrowing from their previously established route for a related natural product (*Nat. Chem.* **2013**, *5*, 679), the authors gained expedient entry to the core of the target from abundant precursor **C** by silver-catalyzed 6-*exo*-dig cyclization, intramolecular conjugate addition, and asymmetric olefin hydrogenation. Acquisition of enone **G** proved crucial as this electron-deficient substrate was found to undergo diphosphine-promoted [3+2] cycloaddition with allenoate **H**, while other olefins would not react. The pentacyclic lactam **I** was carried on forward to render (-)-longeracinyphyllin A.