Total Synthesis of (+)-Peganumine A

**Significance:** (+)-Peganumine A, isolated from the seeds of *Peganum harmala* L., is a dimeric tetrahydro-β-carboline alkaloid displaying significant selective cytotoxic activity against HL-60 cells (IC\(_{50}\) = 5.8 μM). The first enantioselective synthesis by Zhu and co-workers relies on an early Liebeskind–Srogl cross-coupling and a thiourea-catalyzed Pictet–Spengler reaction to form the unprecedented octacyclic scaffold.

**Comment:** Liebeskind–Srogl cross-coupling of stannane \( B \) and thioester \( C \) provided \( N \)-formamide \( E \) in 95% yield. After dehydration, a three-center-two-component Passerini reaction followed by oxidation furnished tetracycle \( H \). The synthesis was completed by an enantioselective Pictet–Spengler reaction of \( H \) and 6-methoxytryptamine (\(A\)) to give (+)-PEGANUMINE A in a total of 7 steps and 33% overall yield.