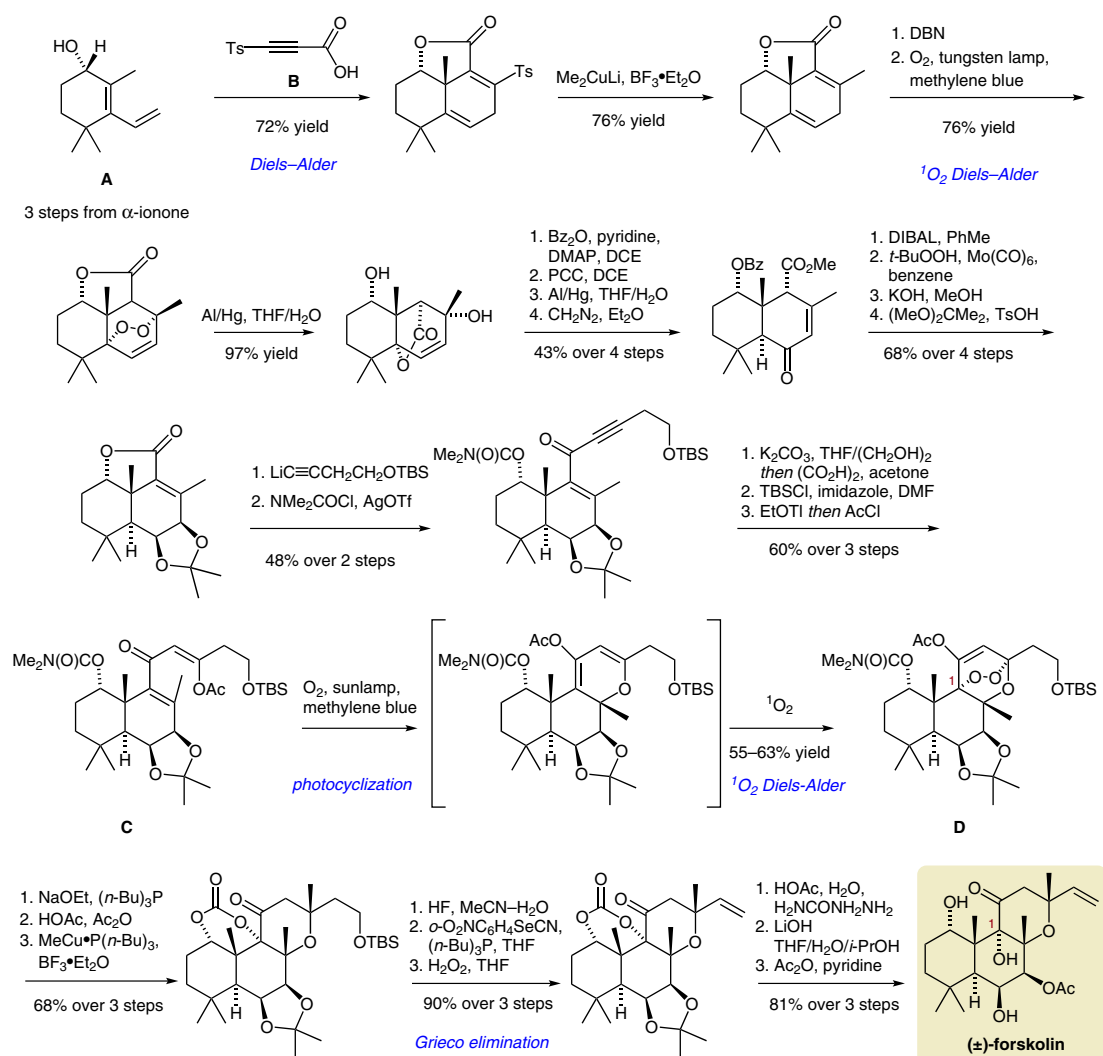


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Total Synthesis of (±)-Forskolin

J. Am. Chem. Soc. **1988**, *110*, 3672–3673, DOI: 10.1021/ja00219a059.

The First Total Synthesis of (±)-Forskolin



Significance: Forskolin is a diterpenoid isolated from *Coleus barbatus* that raises cyclic AMP (cAMP) levels by activating the adenylyl cyclase enzyme, which, in turn, converts ATP into cAMP. cAMP is an important second messenger molecule for signal transduction and forskolin is a vital tool to investigate the role of cAMP in various cellular processes. In 1988, Corey and co-workers reported the first total synthesis of forskolin.

Comment: The opening step of the total synthesis was a Diels–Alder reaction of hydroxy diene **A** with acetylenic acid **B**. The key step of the synthesis is the photocyclization of **C** followed by a singlet oxygen Diels–Alder reaction leading to **D**. This elegant transformation allowed for the stereoselective formation of the C-ring of forskolin and for the introduction of the C1 hydroxy group in the correct geometry.

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