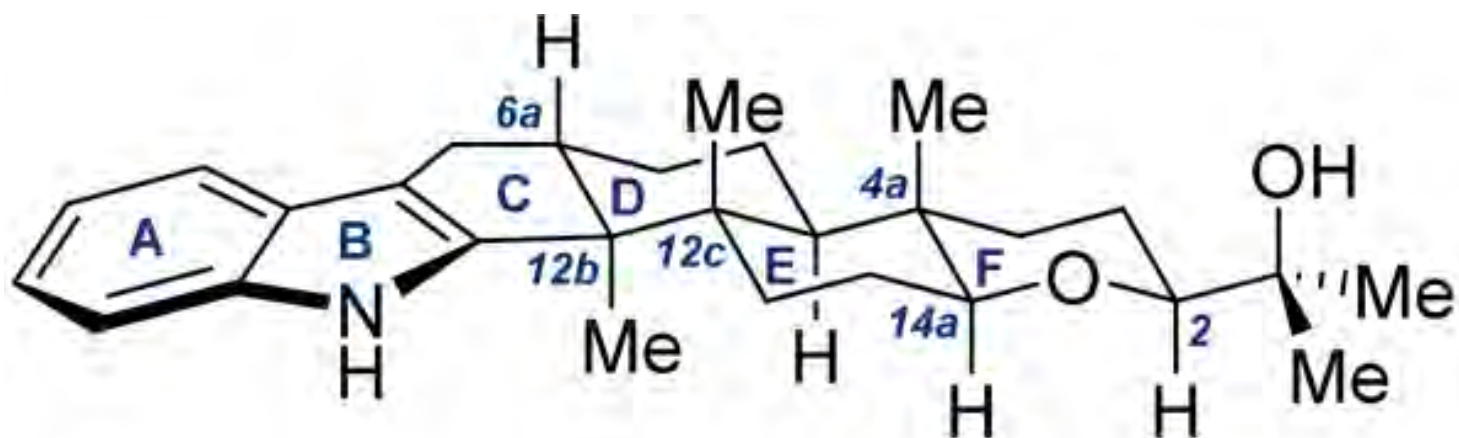


A Global and Local Desymmetrization Approach to the Synthesis of Steroidal Alkaloids: Stereocontrolled Total Synthesis of Paspaline

Robert J. Sharpe and Jeffrey S. Johnson



Presented by David Walls

CEM 852

17.2.2018

Importance

Indole diterpenoid first discovered in *Claviceps paspali* in the 1960's

Related compounds have use as potassium channel antagonists, glaucoma treatment, anti-MRSA action, and antifungal action

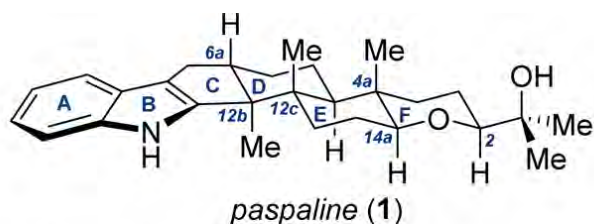


m. Soc. **2015**, *137*, 4968.

University of Georgia Plant Pathology , University of Georgia, Bugwood.org

Synthesis Challenges and Plan

3 all carbon quaternary centers, unique 2,6-cis-tetrahydropyranyl ring



C4a-C14a stereocenters

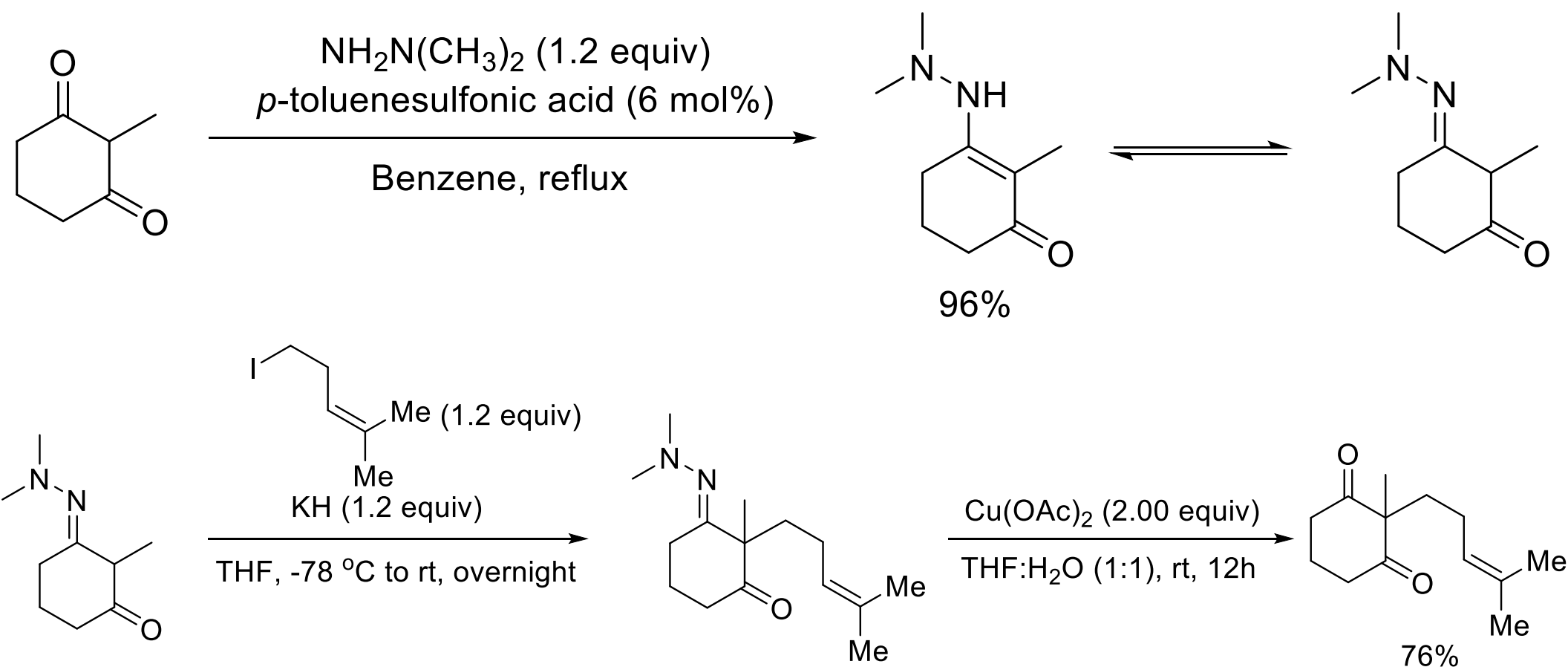


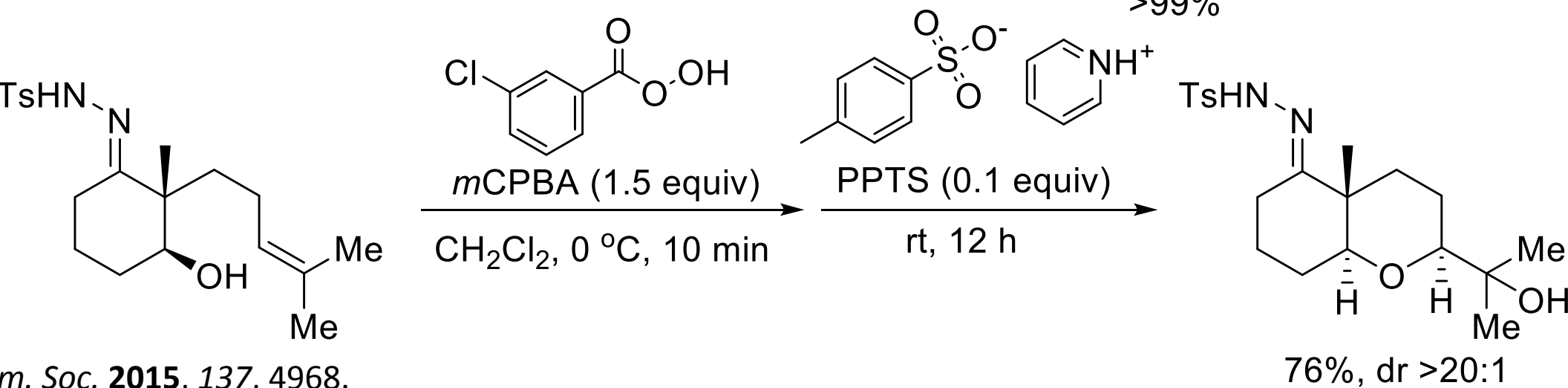
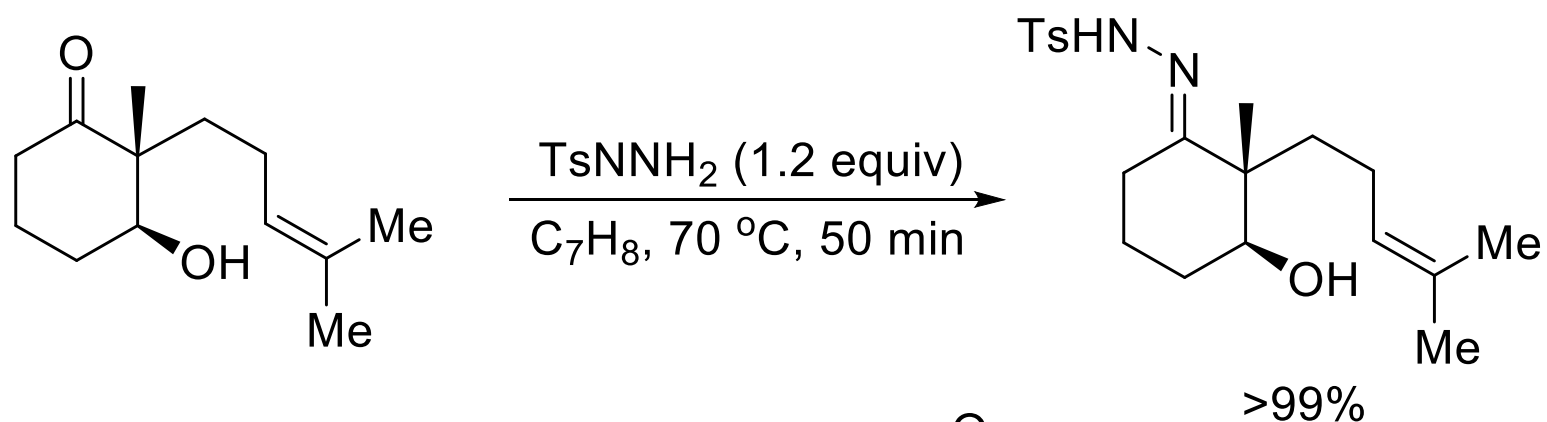
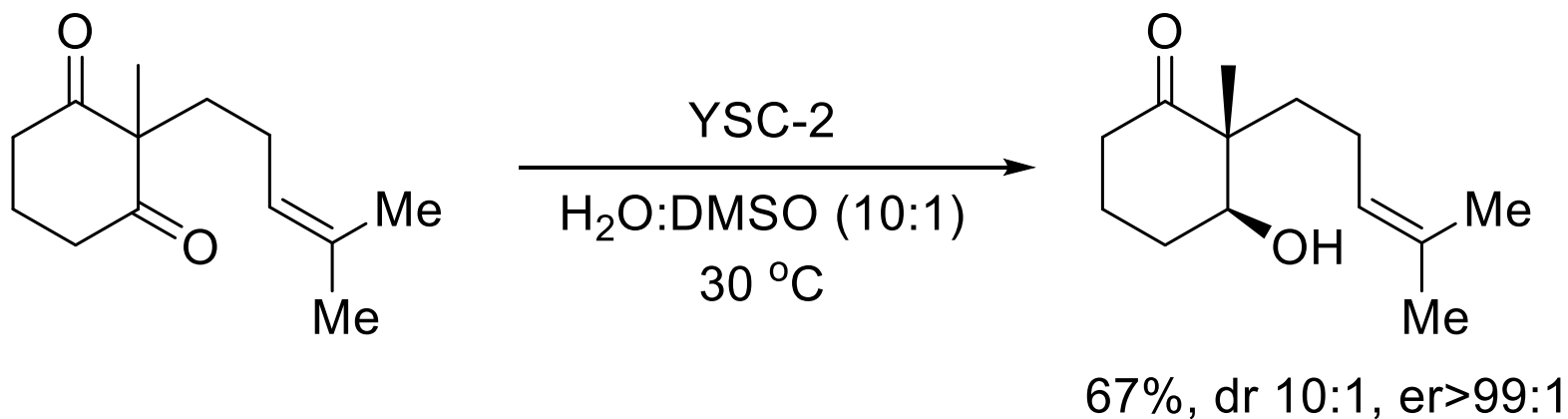
C12b quaternary center

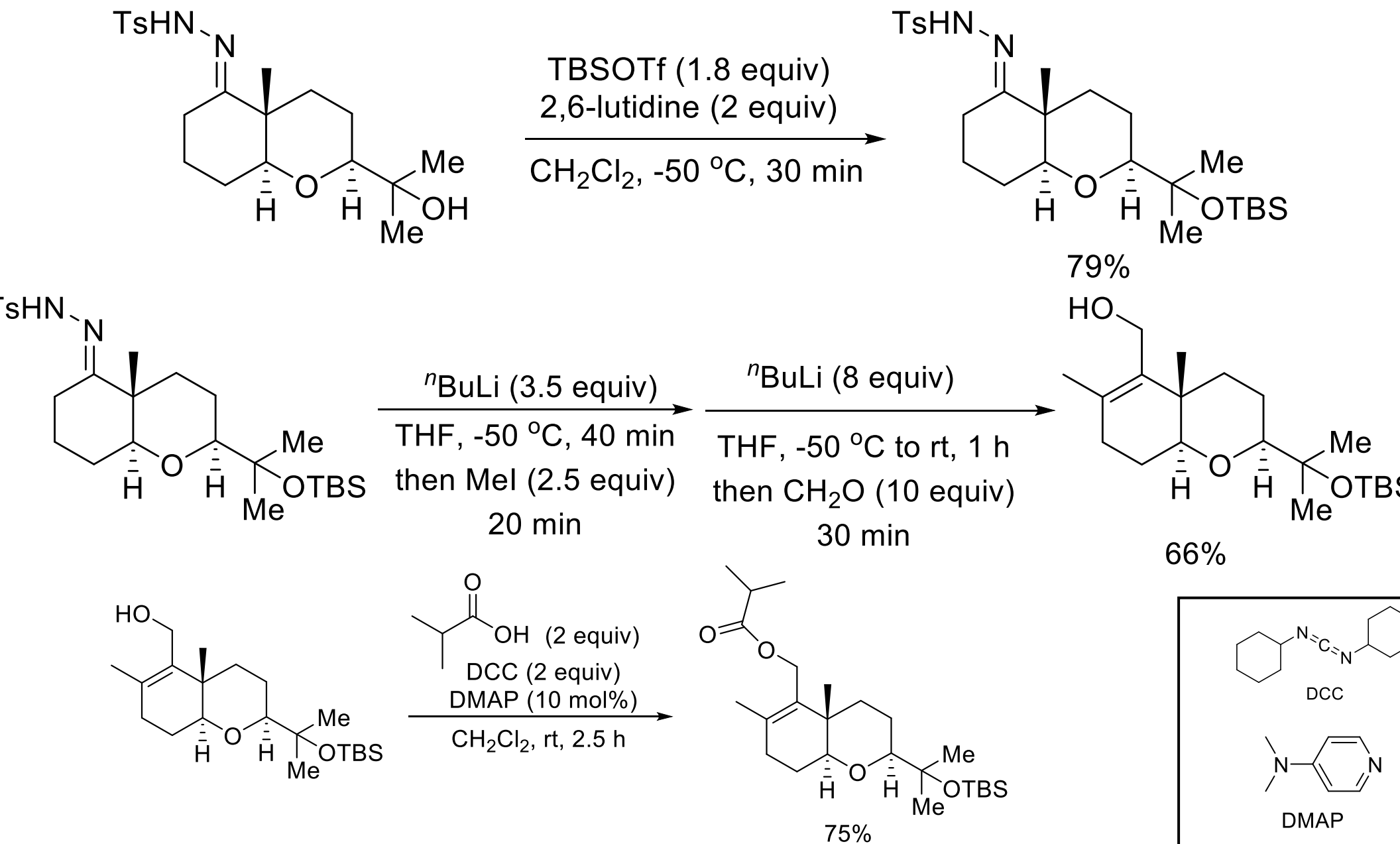


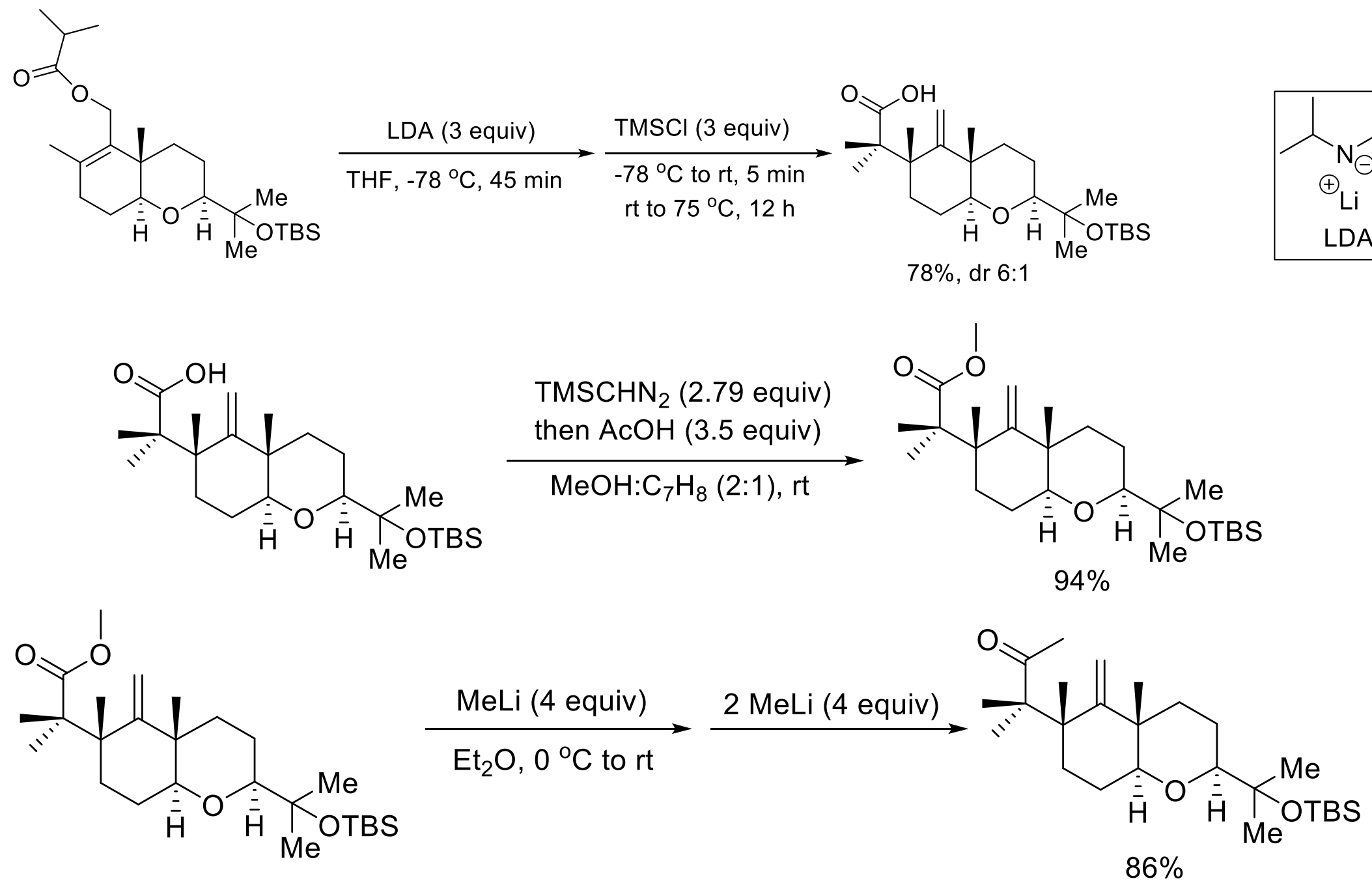
- Start with a diketone **2** to produce C4a and C14a stereocenters
- Later production of C12b quaternary center from dimethyl ketone **4**.

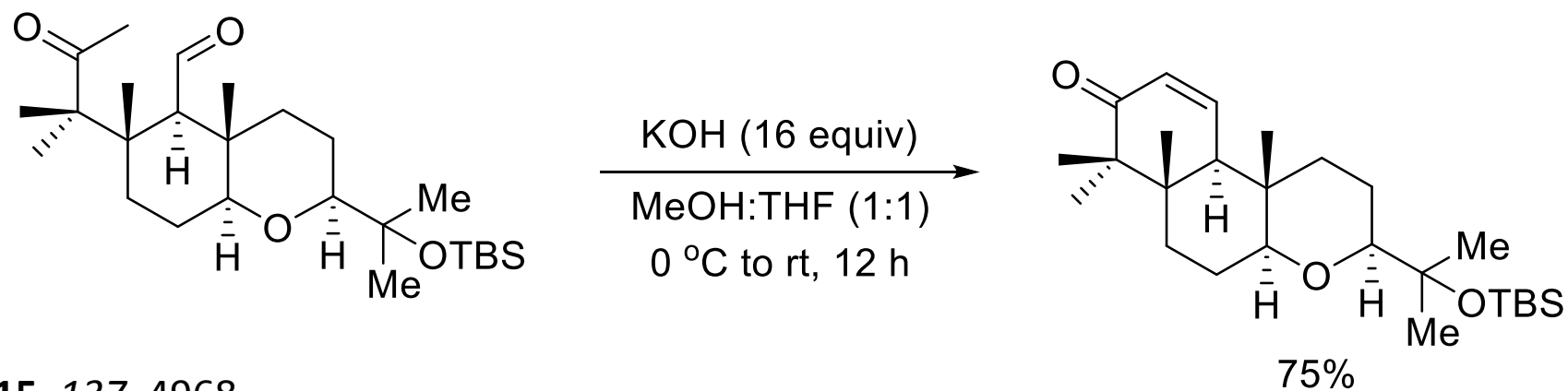
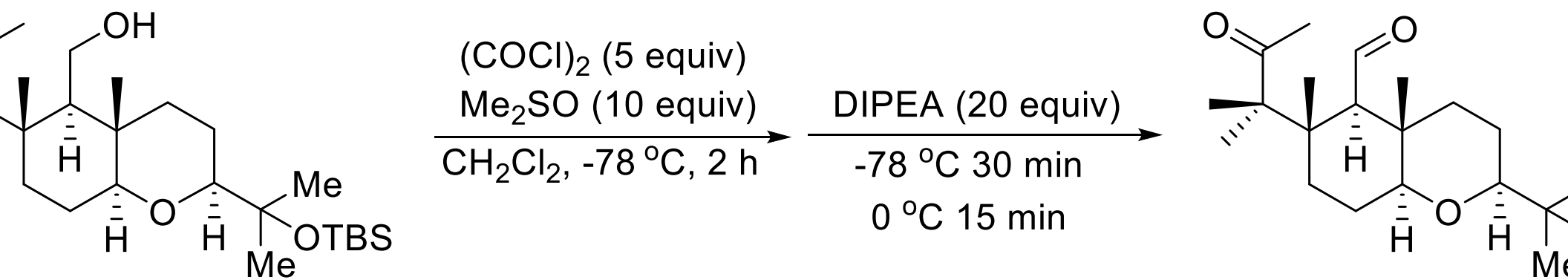
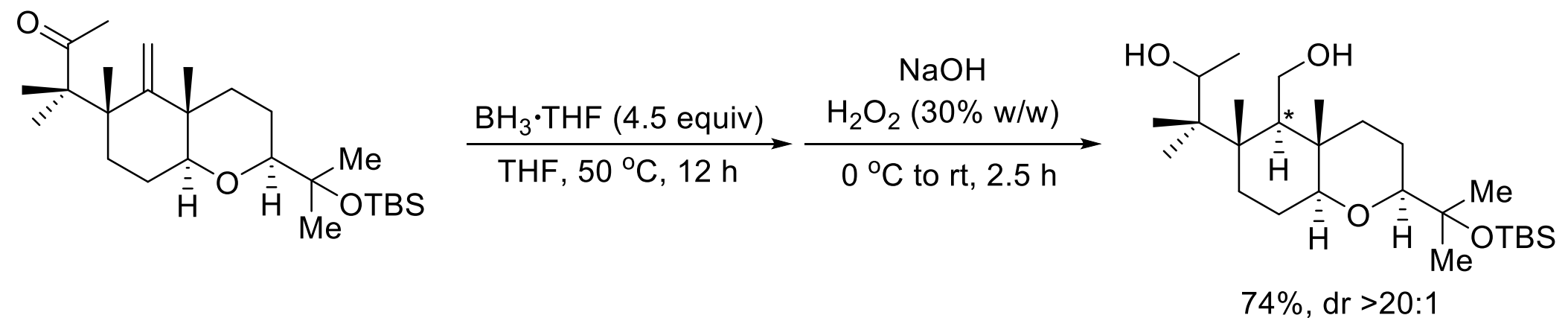
Formation of the Diketone

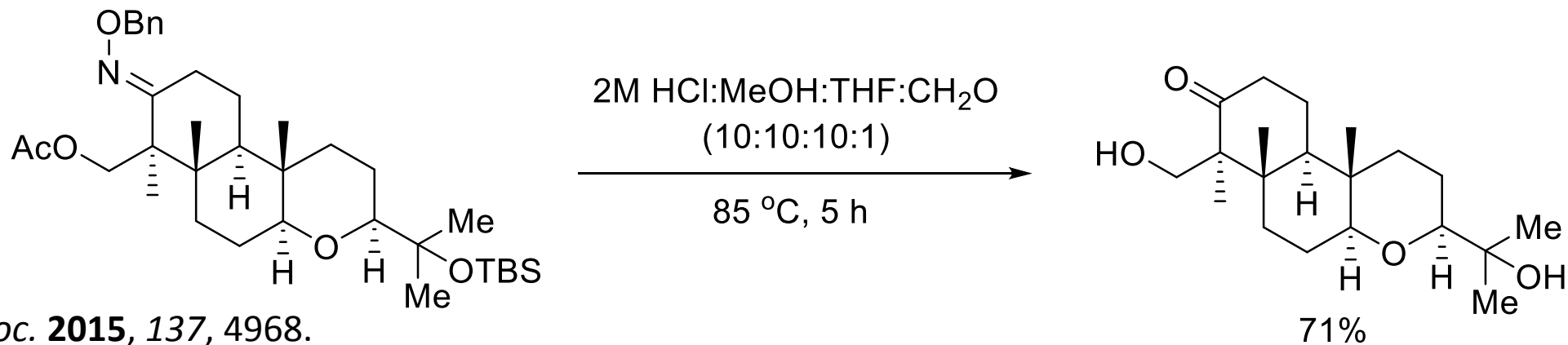
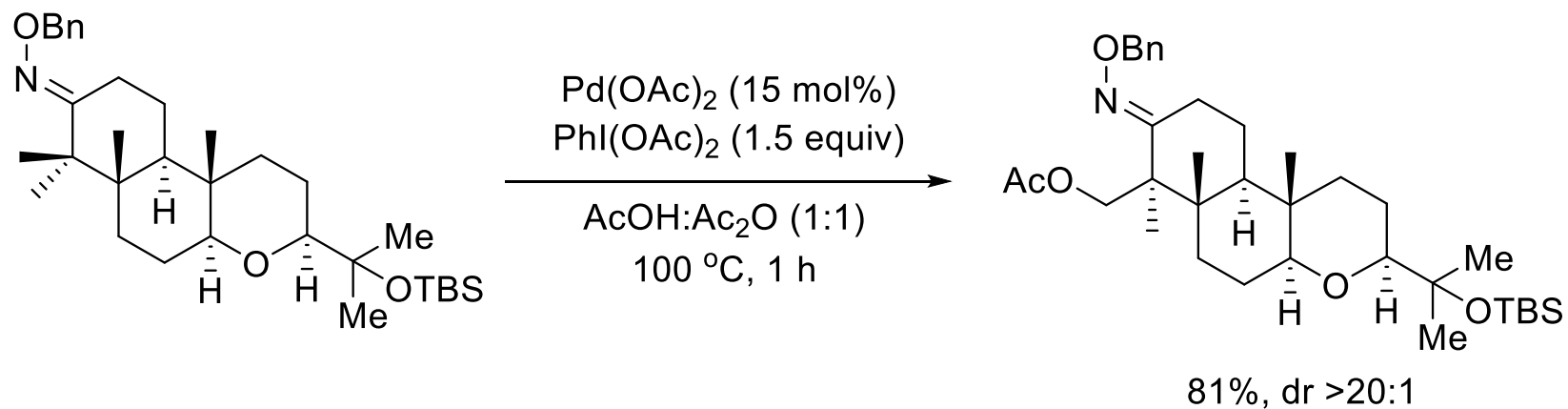
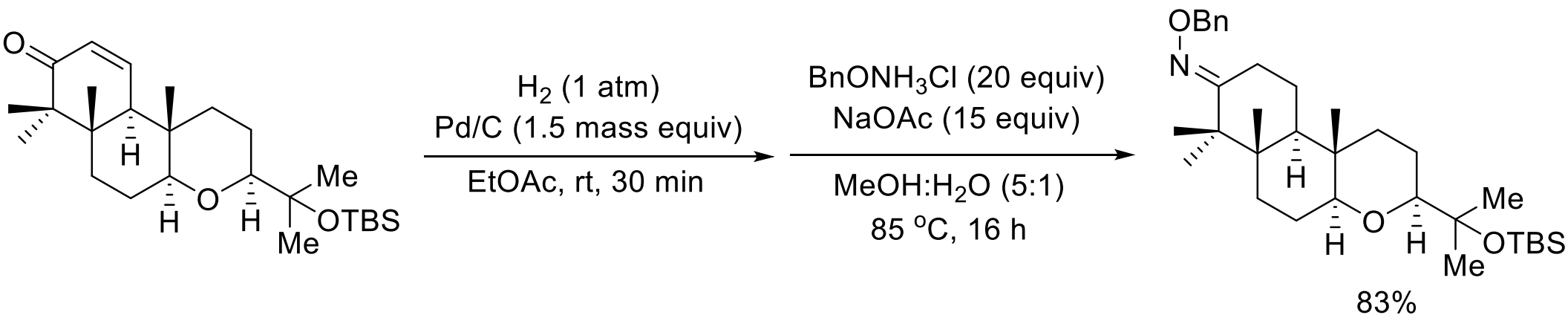


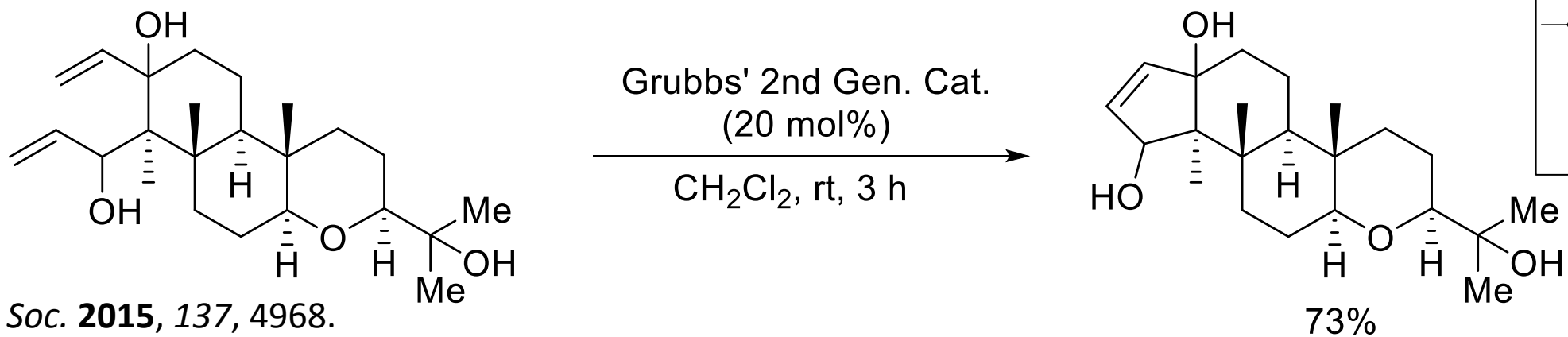
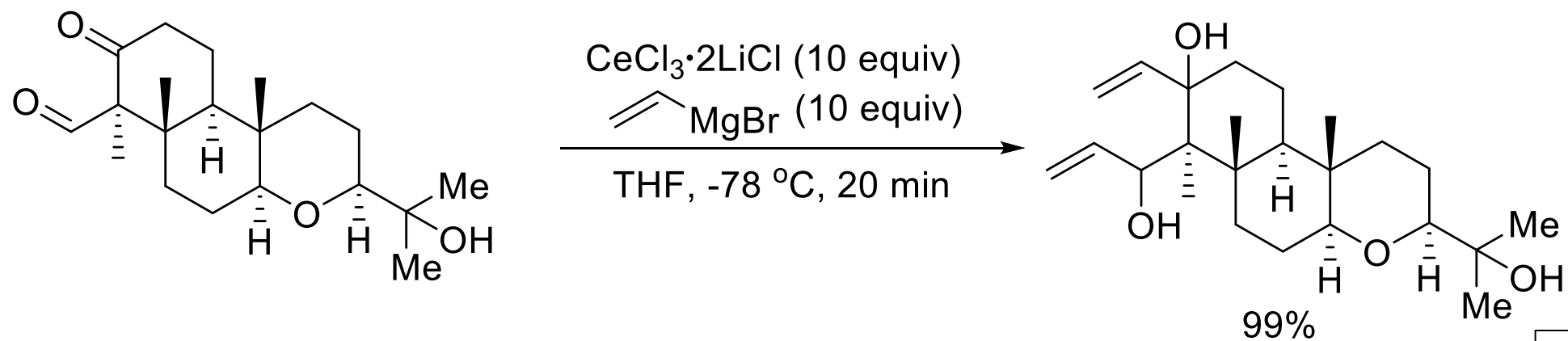
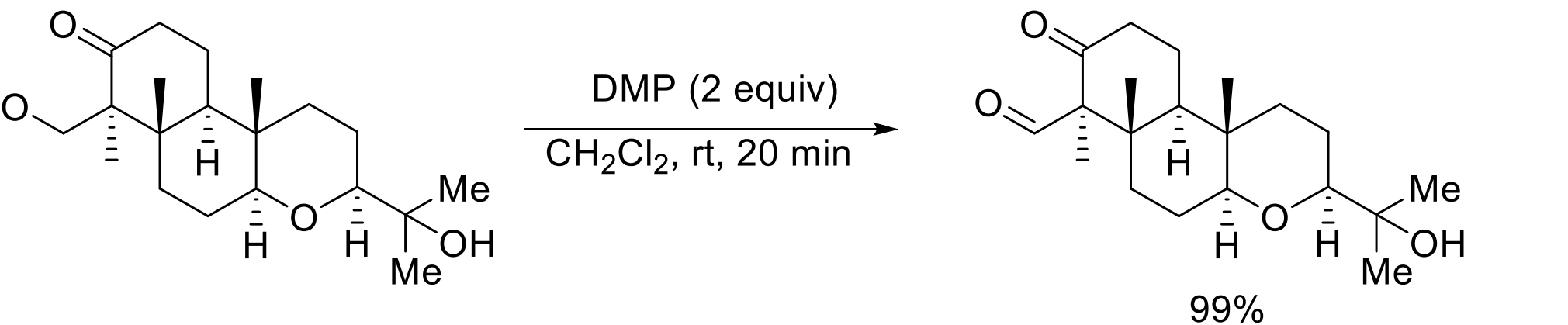




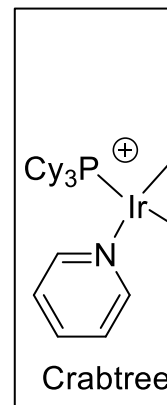
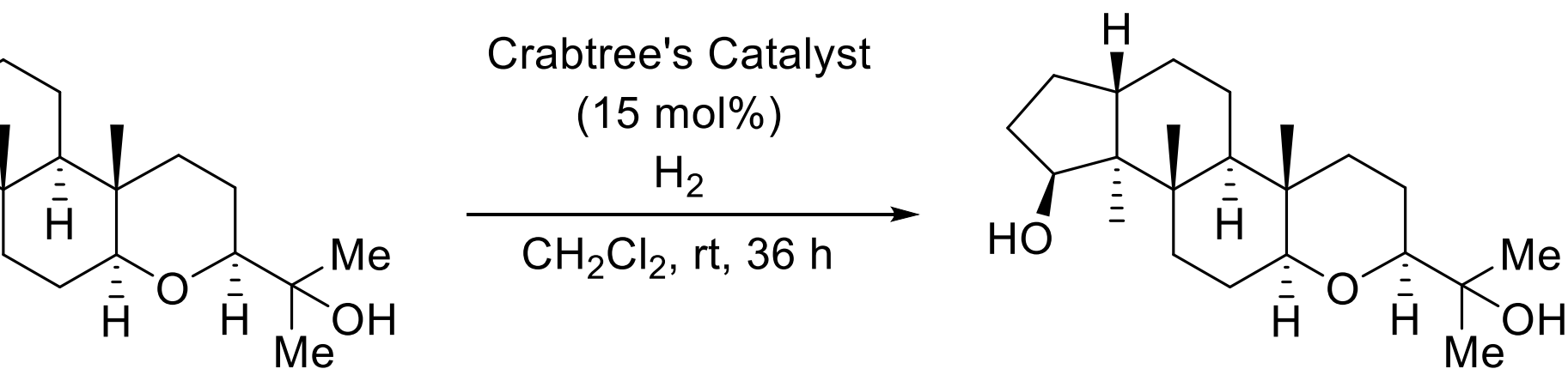
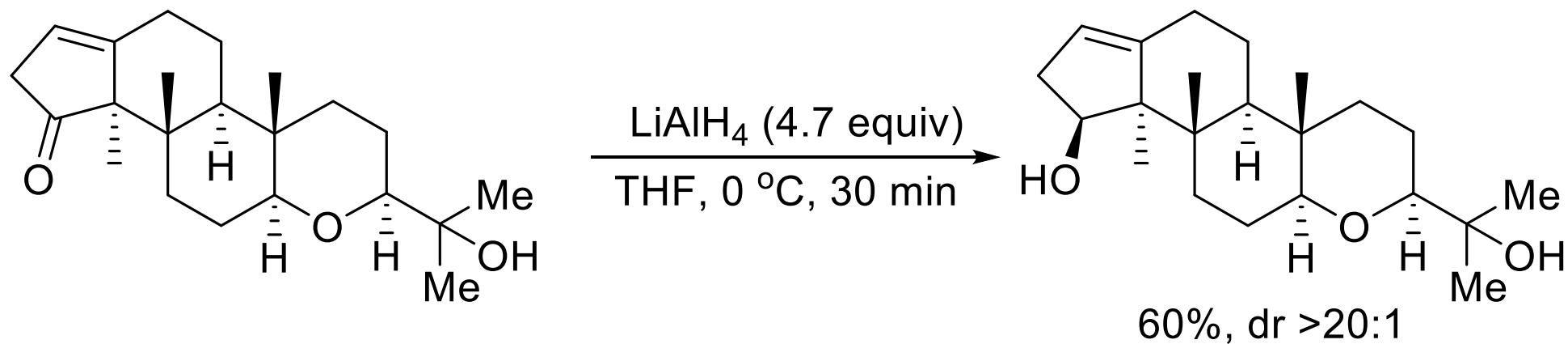
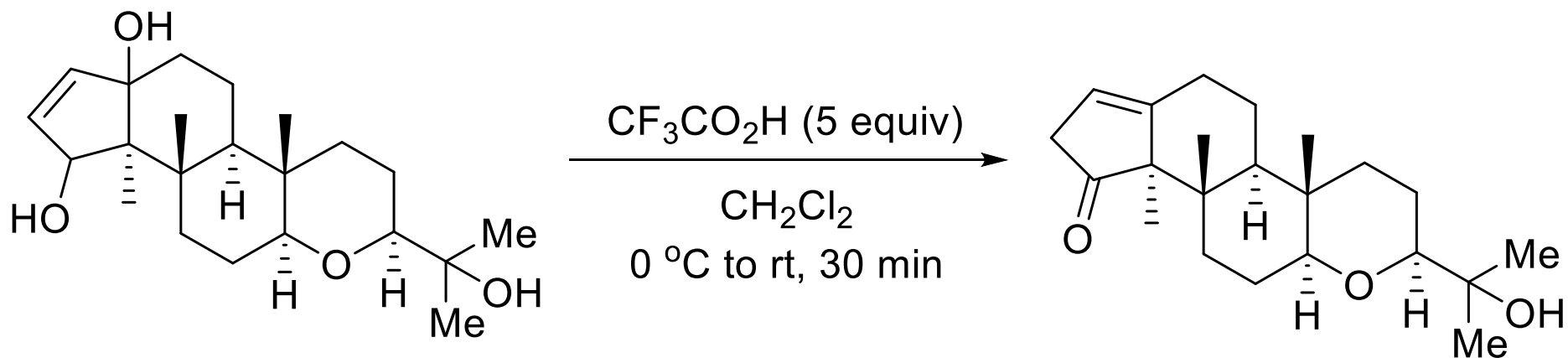


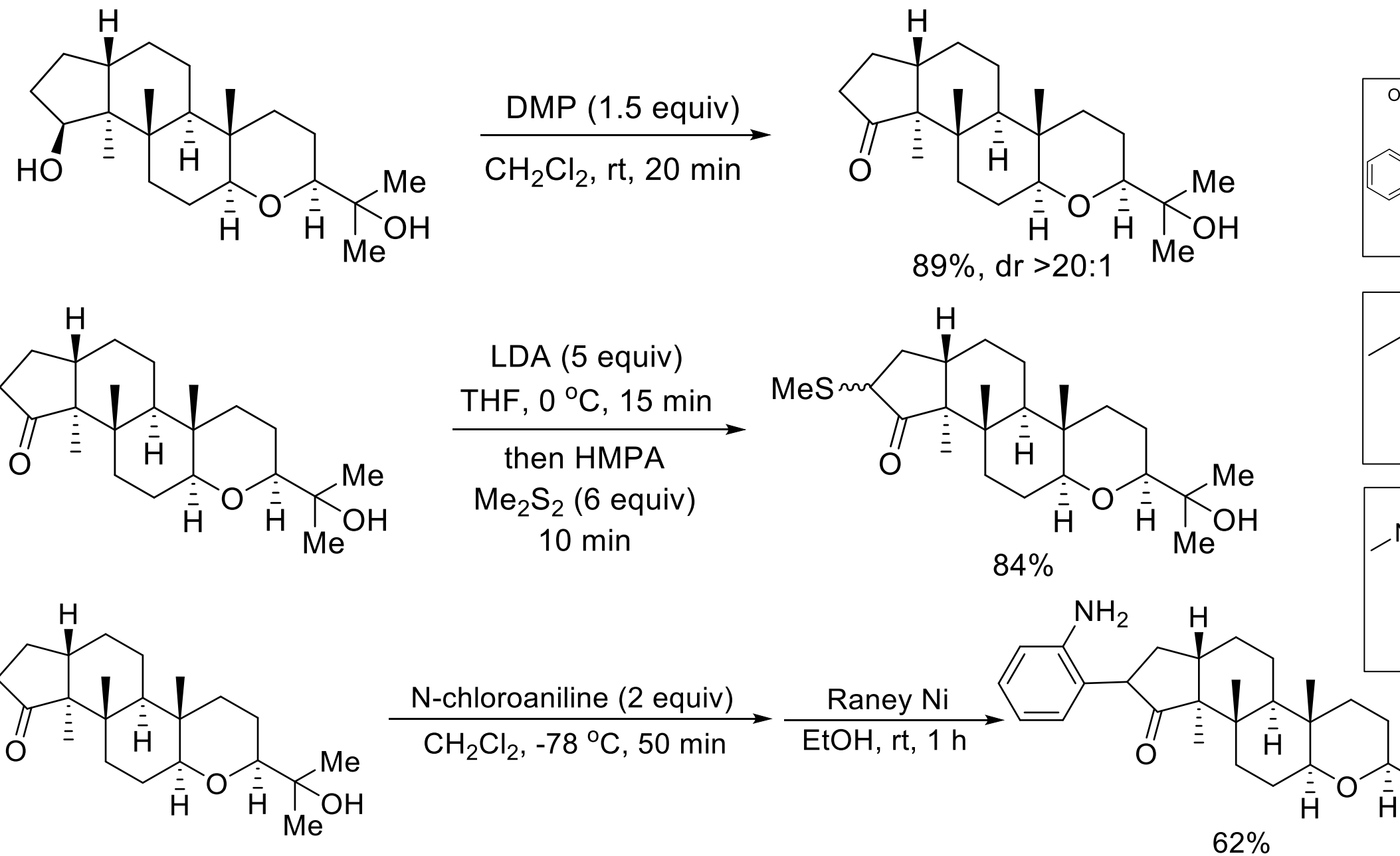


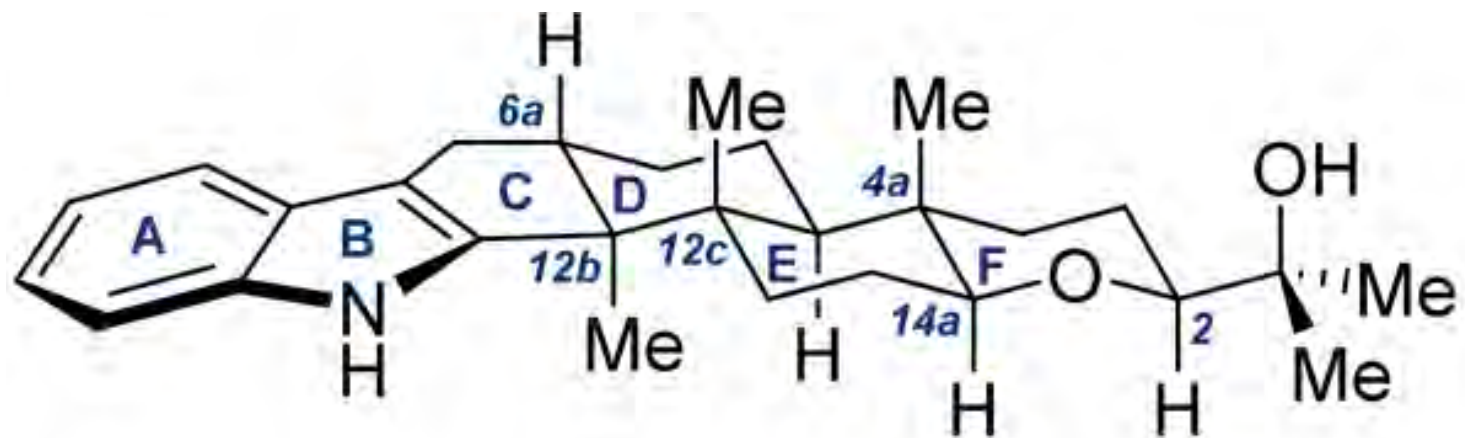
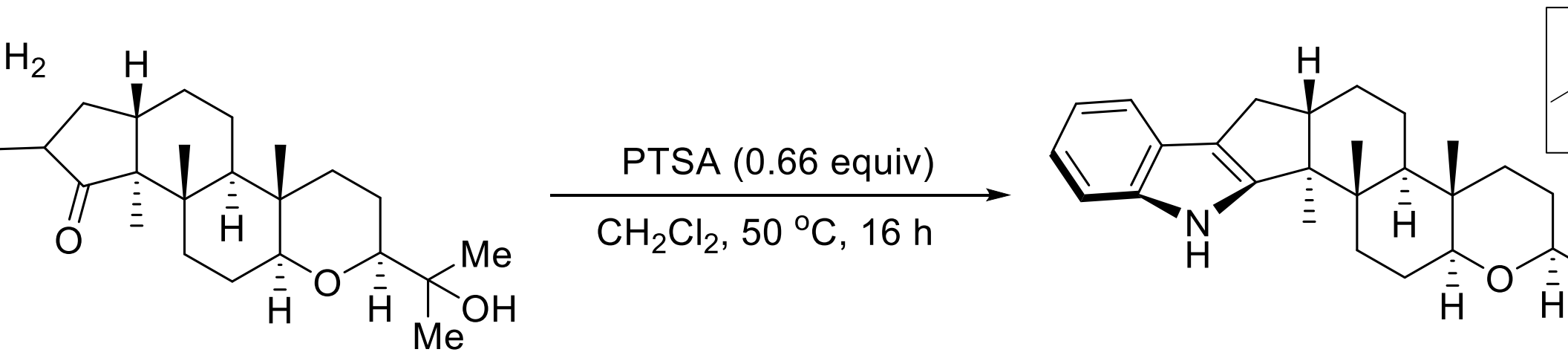




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Paspaline