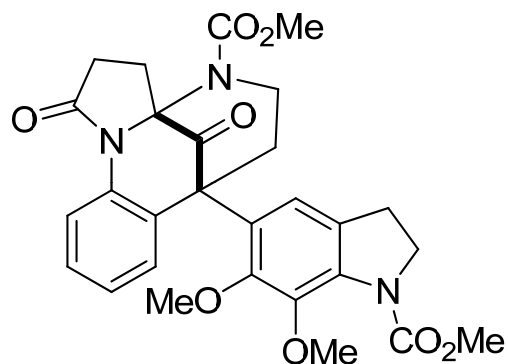
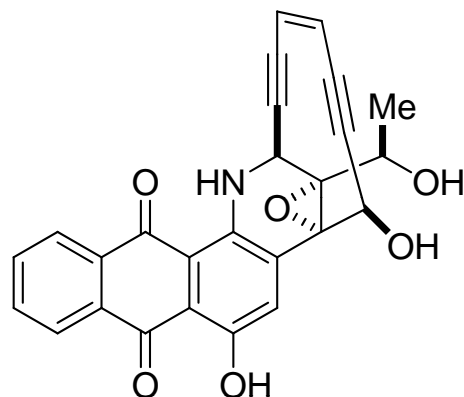


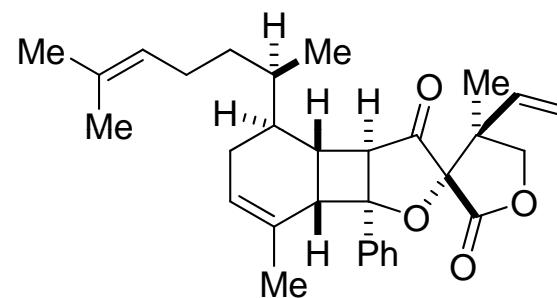
Recent Highlights from the Nicolaou Laboratory



Truncated Haplophytine



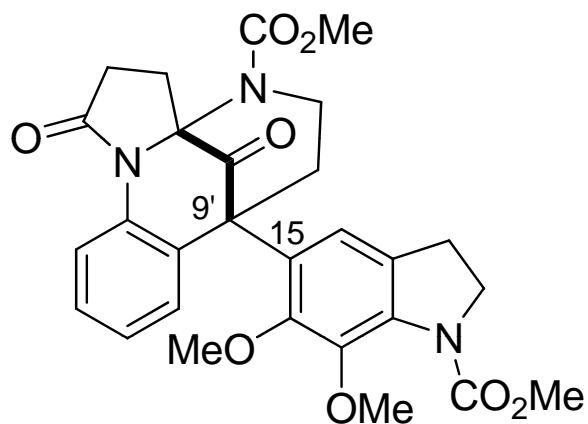
Uncialamycin



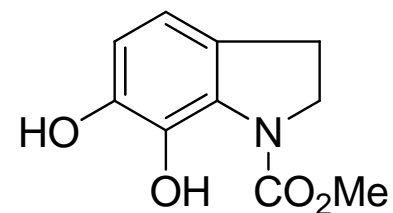
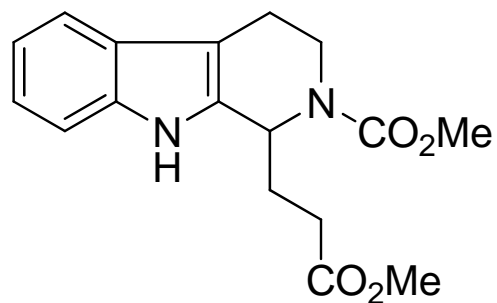
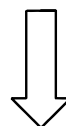
Biyouyanagin A

Christina S. Stauffer
February 27, 2008

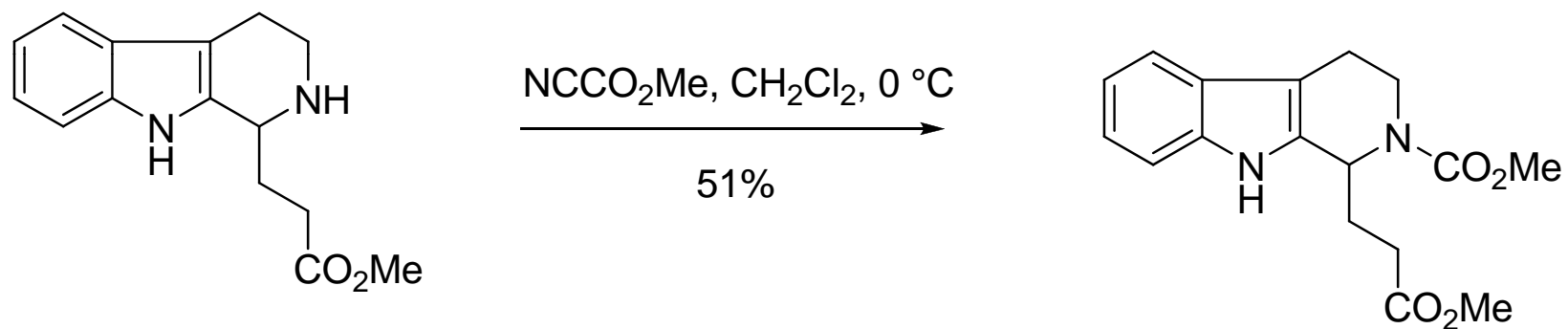
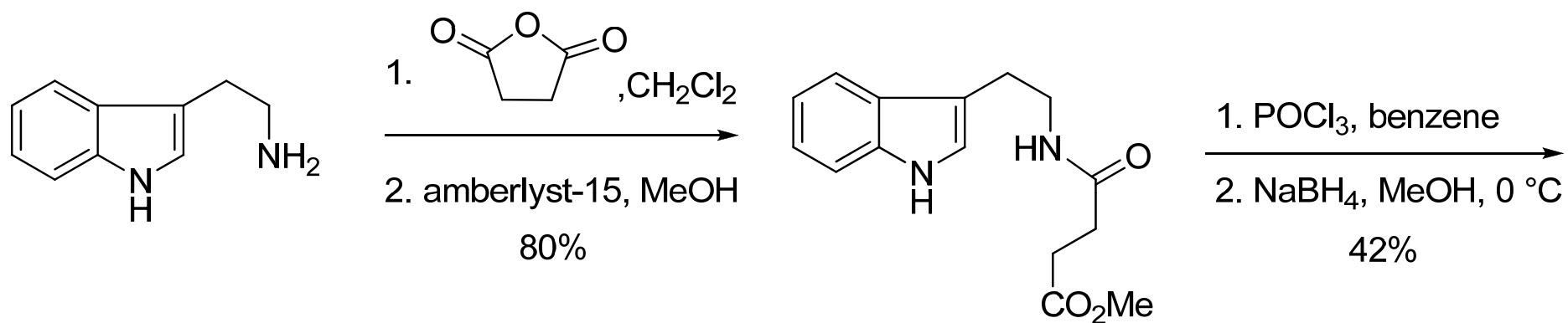
Retrosynthesis of the “Left Domain” of Haplophytin



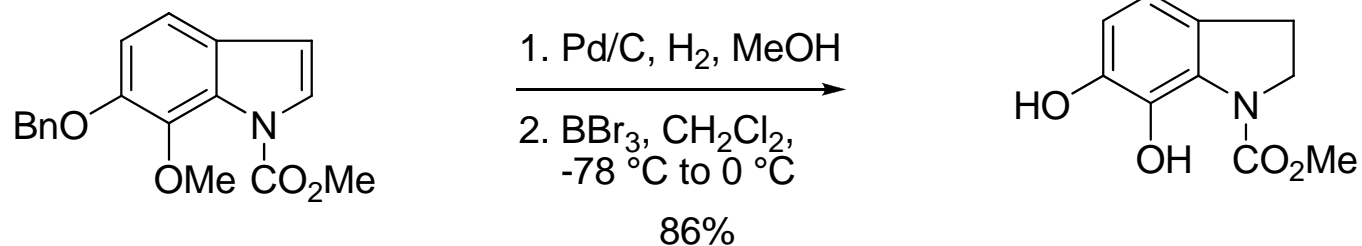
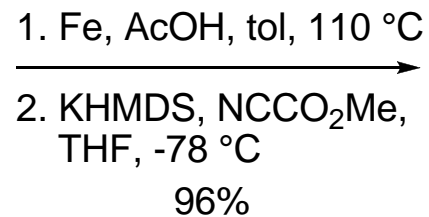
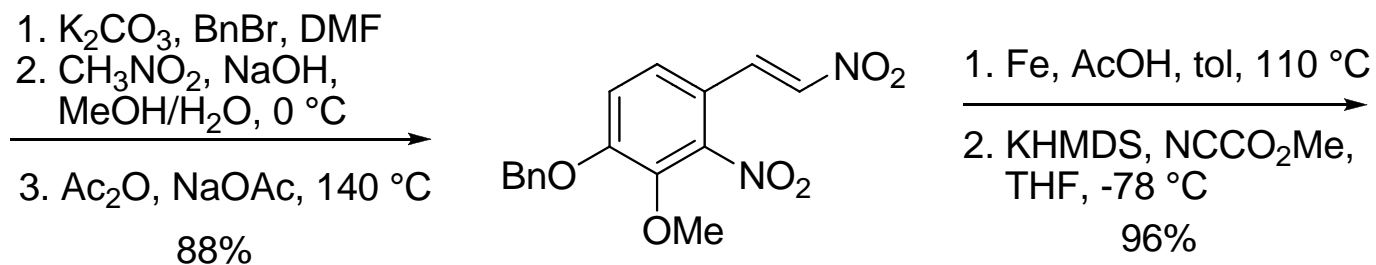
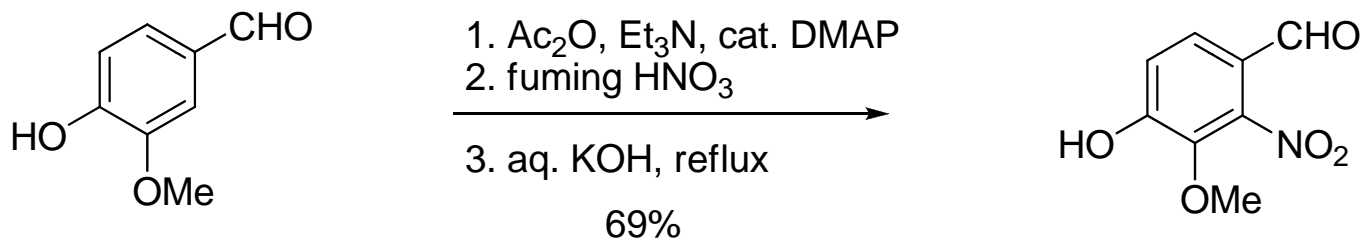
Truncated haplophytin



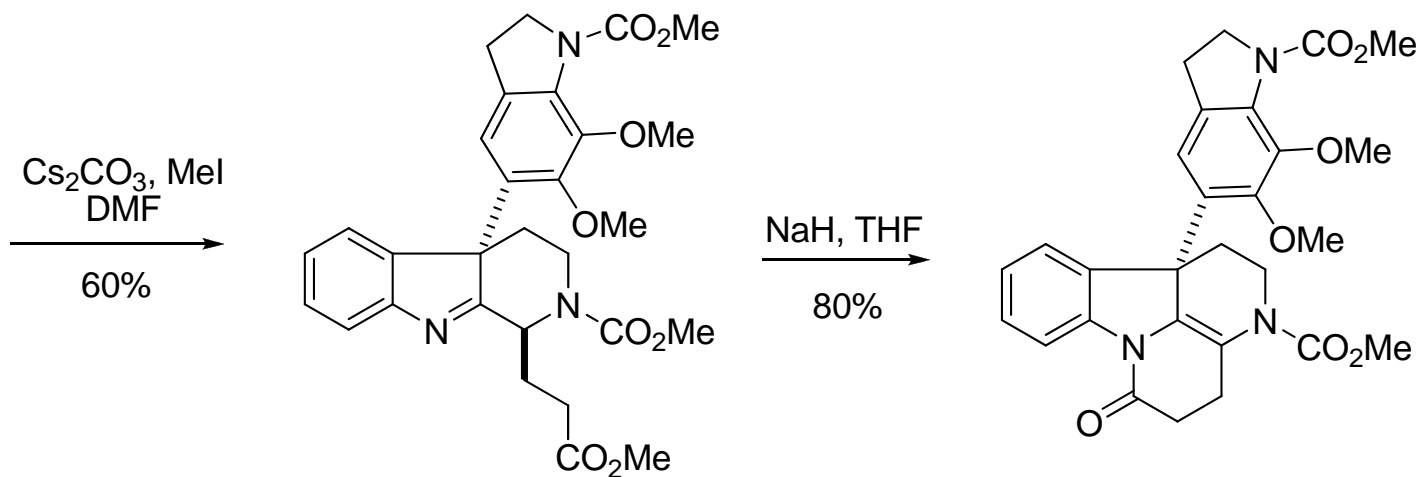
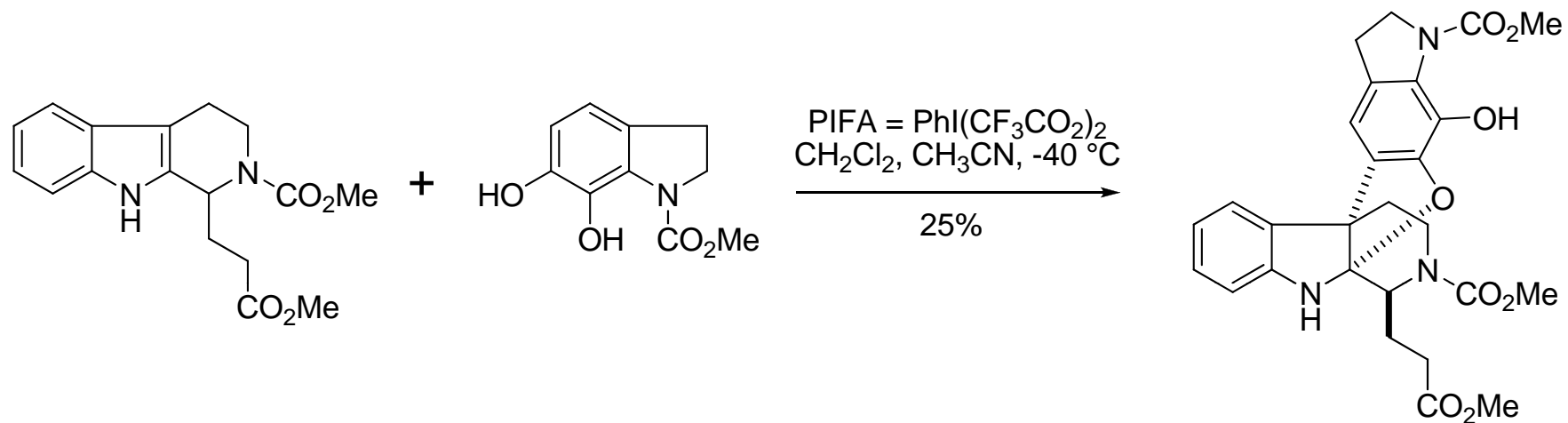
Synthesis of indole fragment



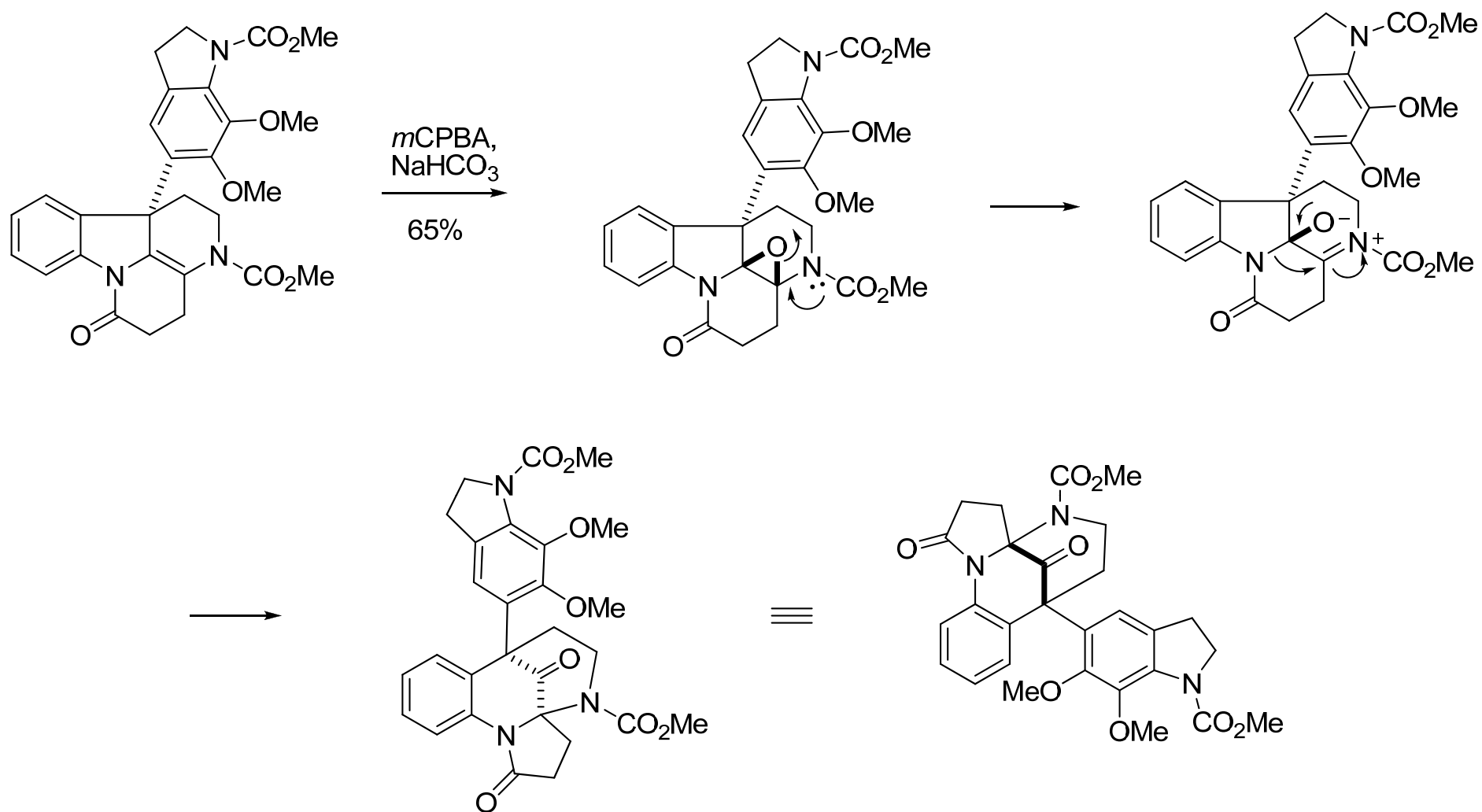
Synthesis of the indoline fragment



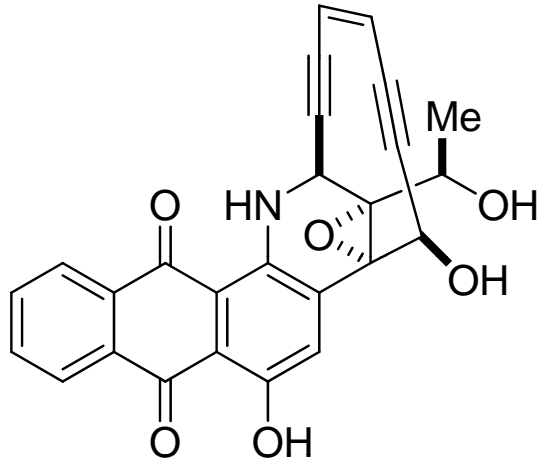
Coupling of indole and indoline fragments



Completion of the construction of the “left domain” of haplophytin



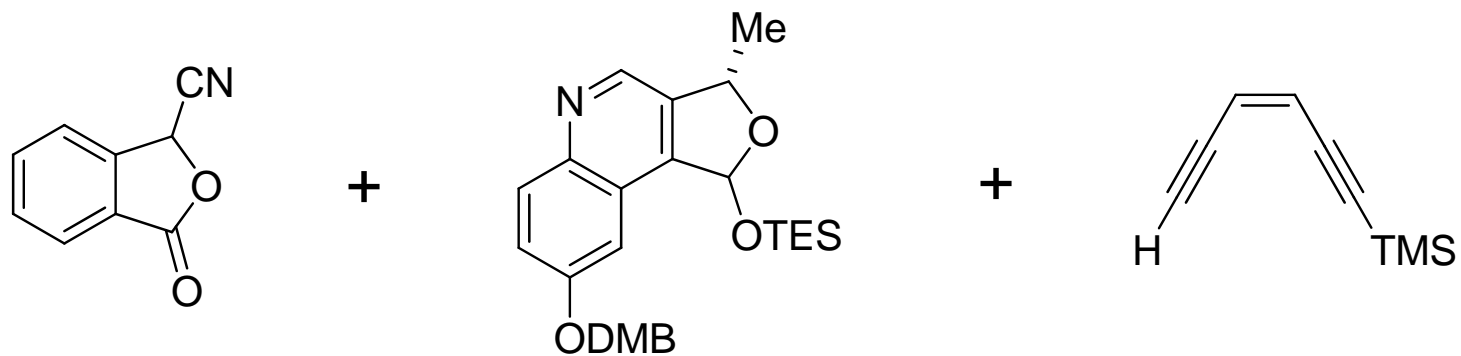
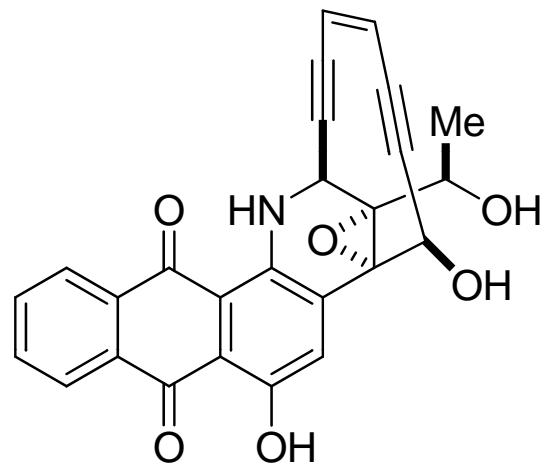
Uncialamycin



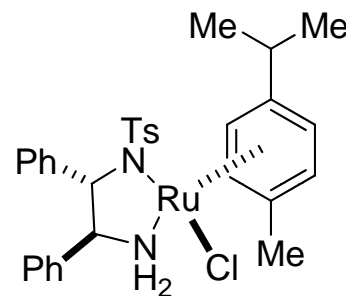
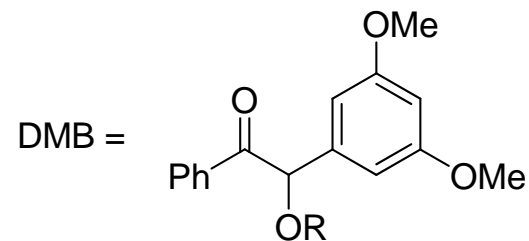
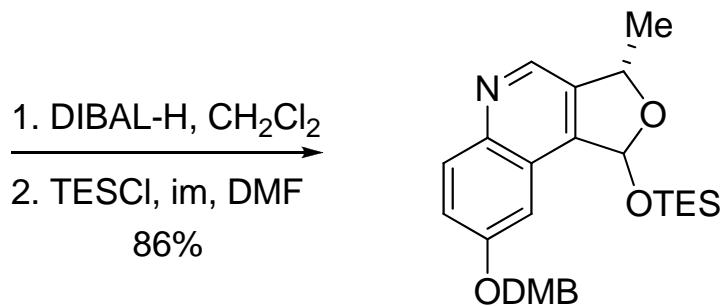
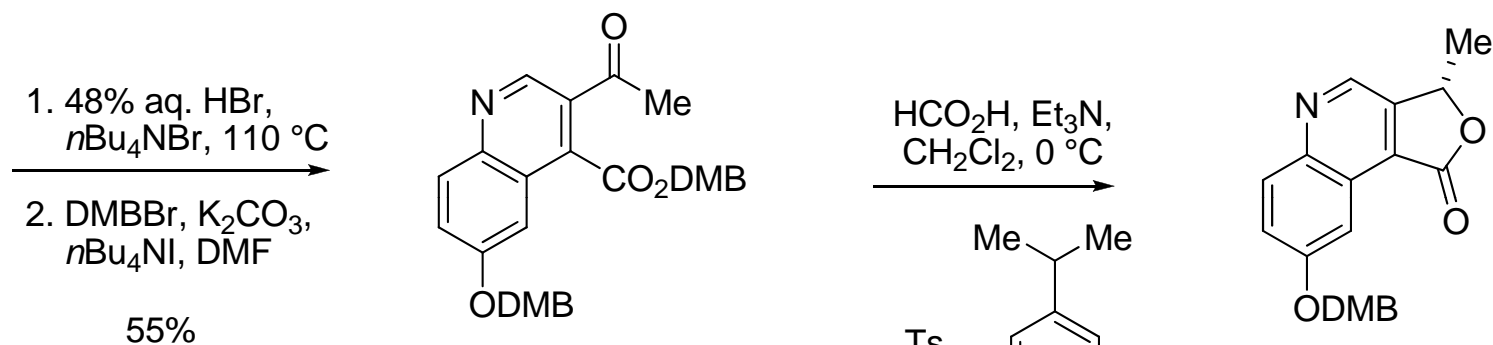
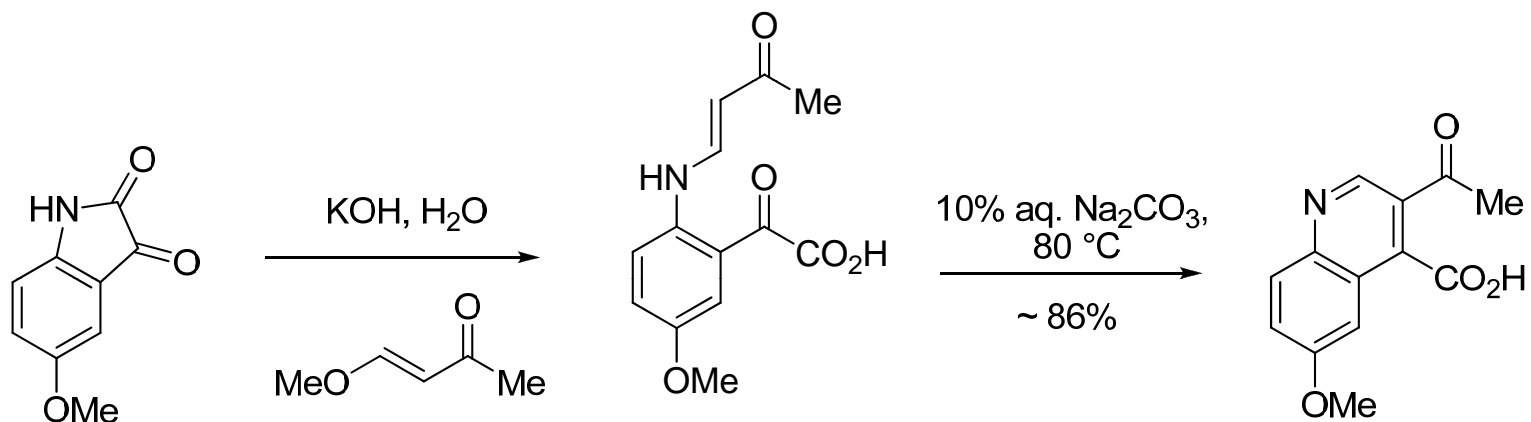
Cladonia uncialis

- A recently discovered enediyne antibiotic isolated in 2005 by Anderson from the surface of the lichen, *Cladonia uncialis*.
- The scarcity of uncialamycin (300 μg) limited structural elucidation (C26 hydroxyl group was unassigned).
- Potent biological activity demonstrated against *S. aureus*, *E. coli*, and *B. cepacia*.

Nicolaou's retrosynthesis of unciamycin

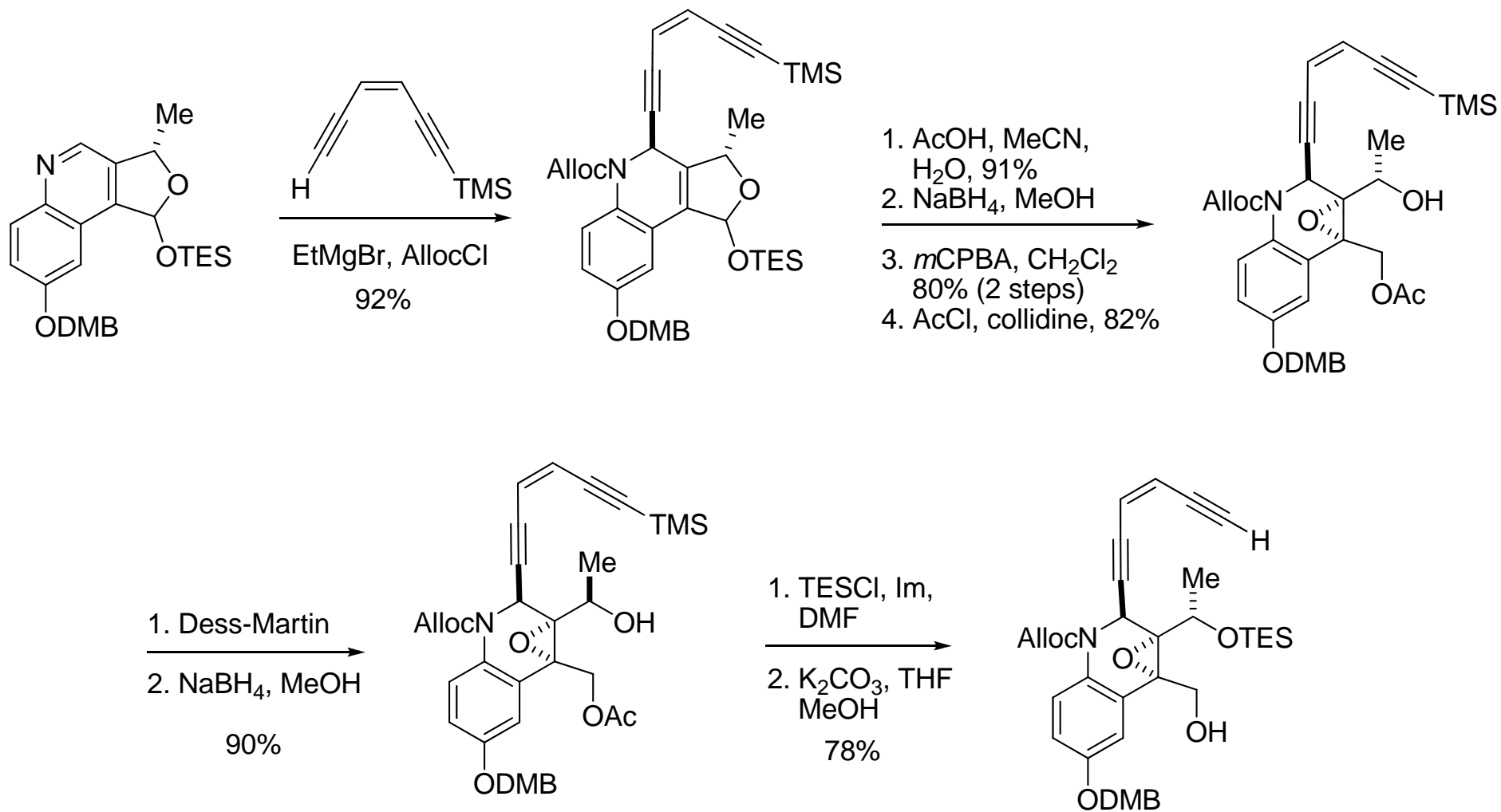


Synthesis of the substituted quinoline system

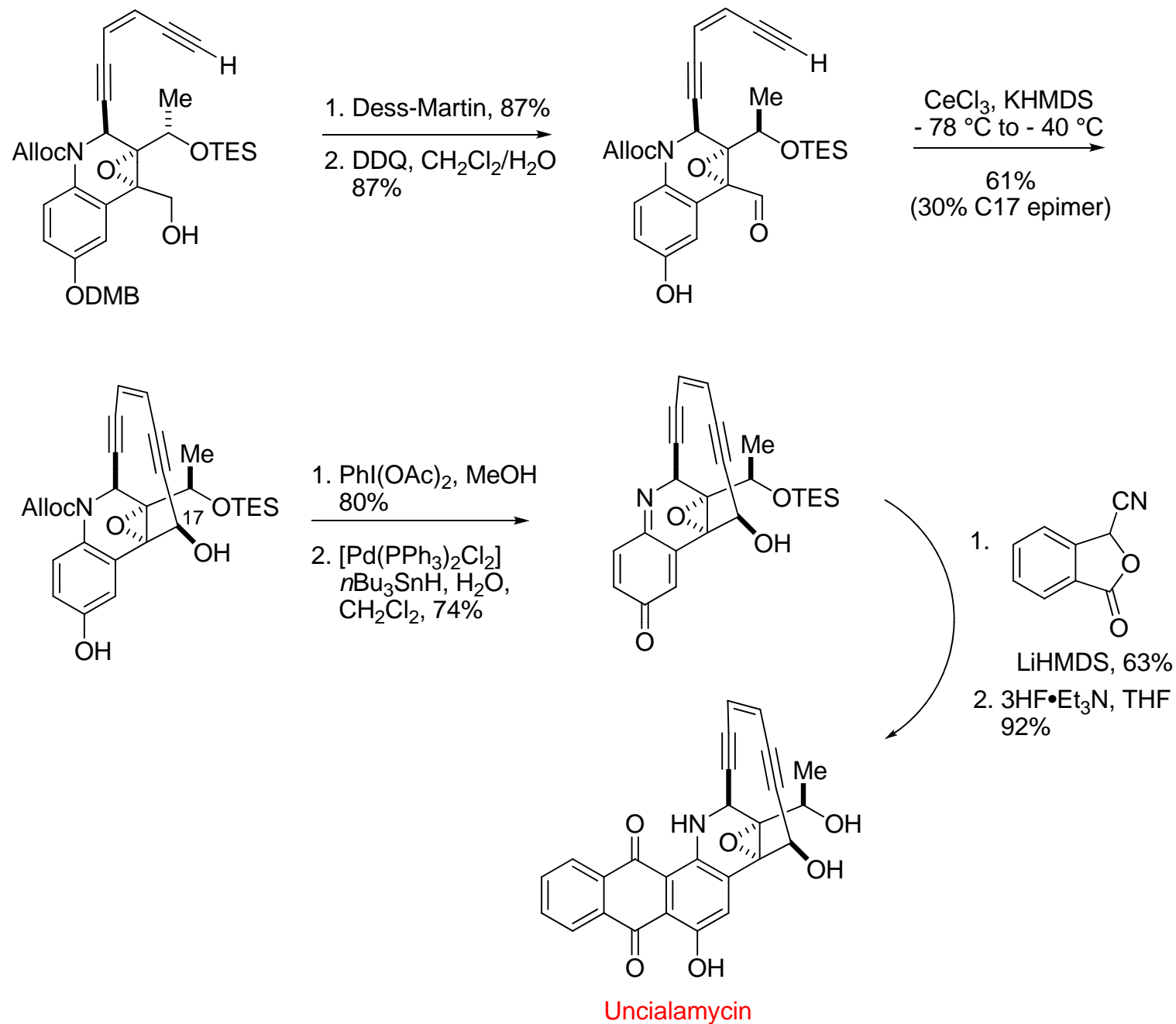


95%, 98% ee

Introduction of the enediyne functionality

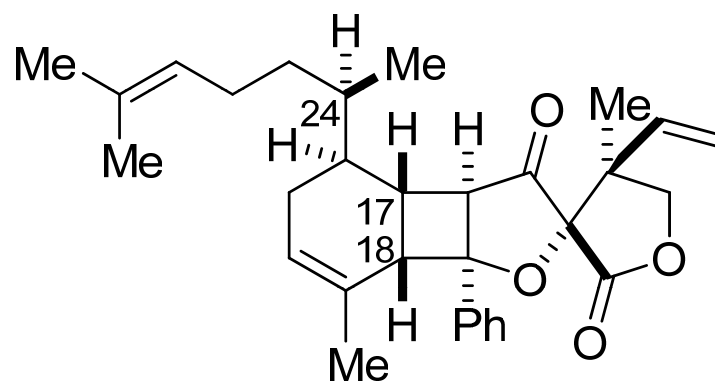


Intramolecular acetylide addition to form the enediyne ring system



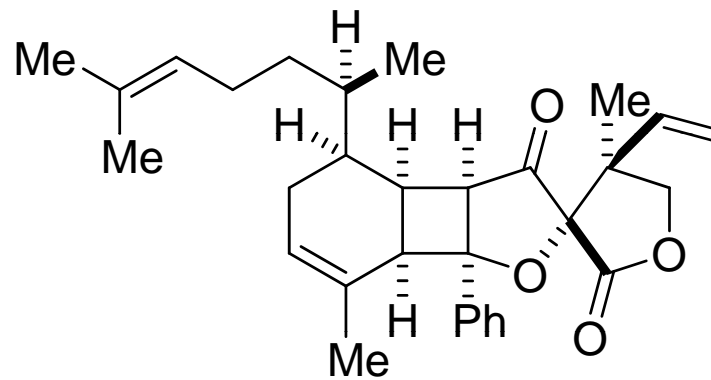
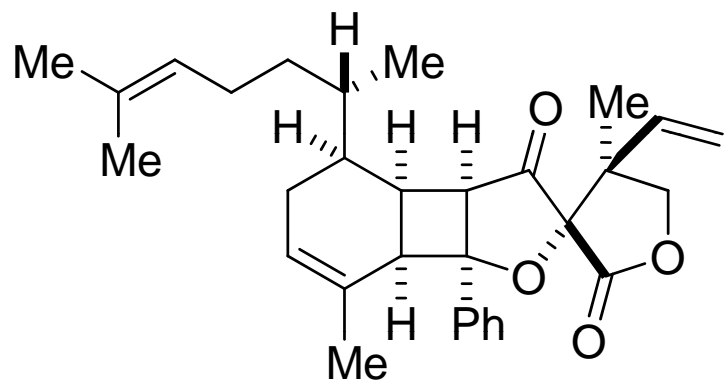
Synthesis of Biyouyanagin A

(*H. chinense* L. var. *salicifolium*)

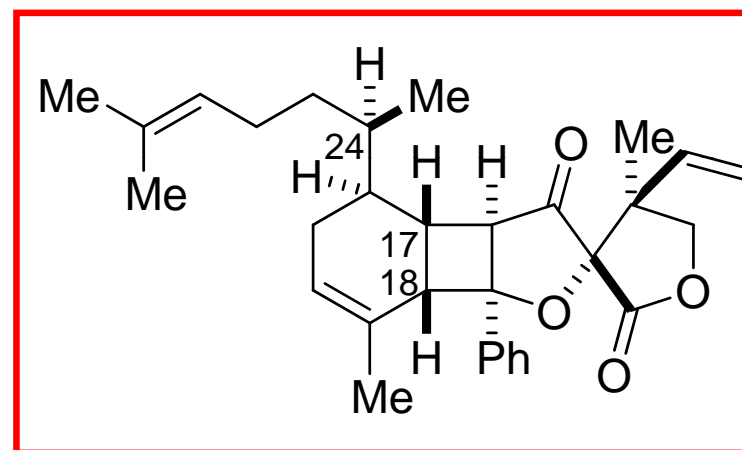
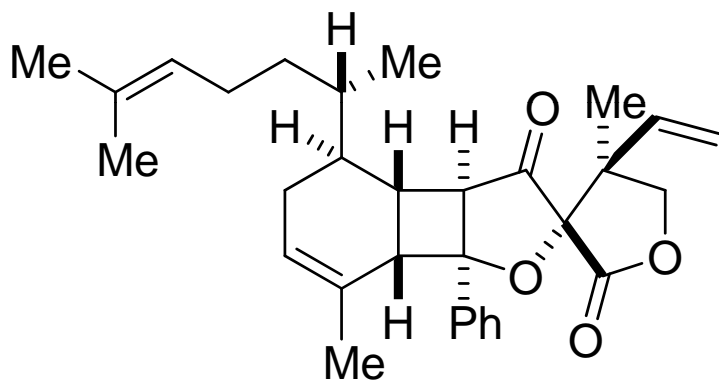


- Isolated from the leaves of a *Hypericum* species in 2005.
- Traditionally used as folk remedy for female disorders.
- Shows significant activity against HIV and lipopolysaccharide-induced cytokine production.
- Stereochemistry at C24, C17, C18 needs to be elucidated.

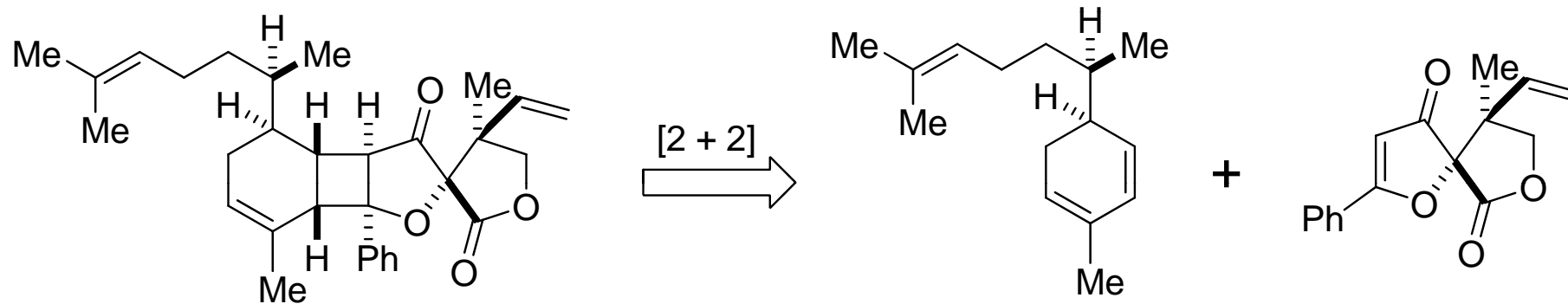
Structural assignment of biyouyanagin A



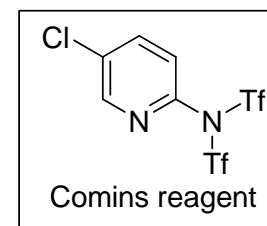
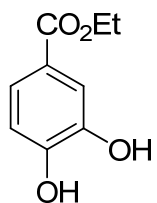
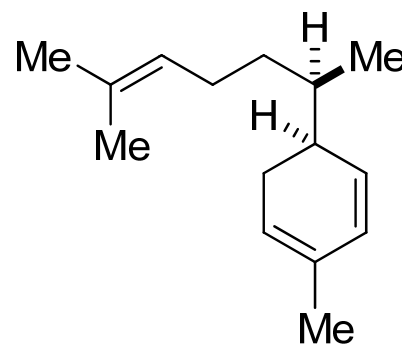
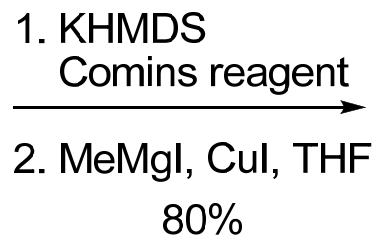
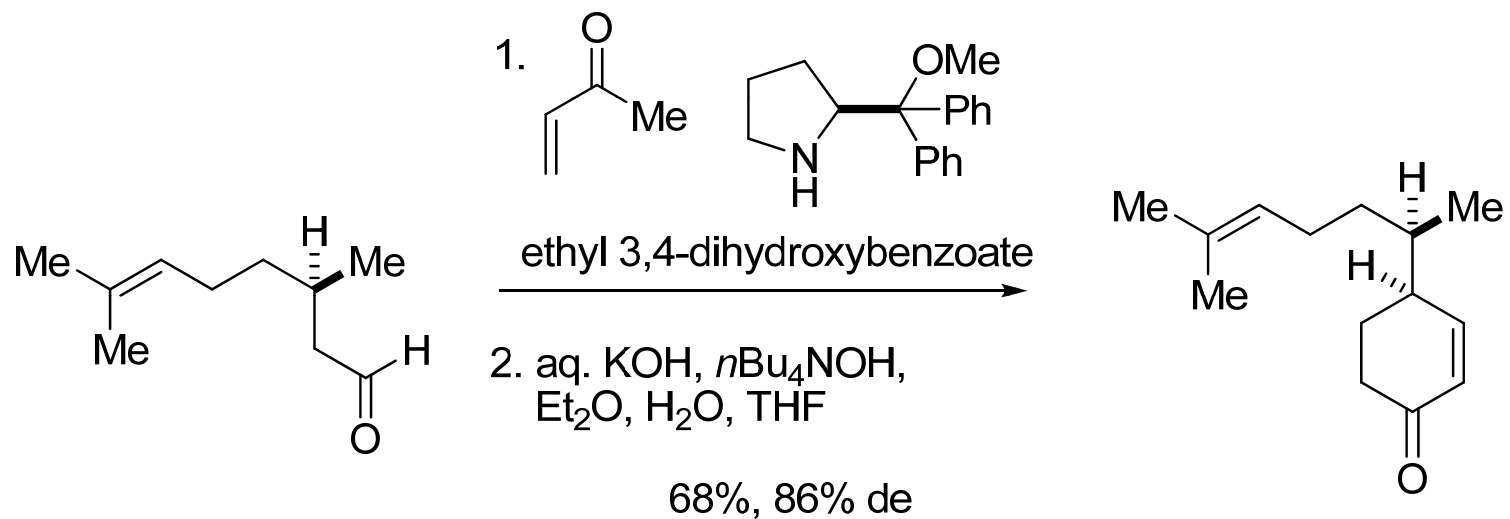
Originally proposed possible structures



Biyouyanagin A retrosynthesis



Synthesis of the terpene-derived diene



[2+2] Photocycloaddition

