

Efficient Enantioselective Syntheses of (+)-Dalesconol A and B

Guoqing Zhao, Guangqing Xu, Chao Qian, and Wenjun Tang *J. Am. Chem. Soc.* 2017, 139, 3360–3363

Dalesconol A and B:

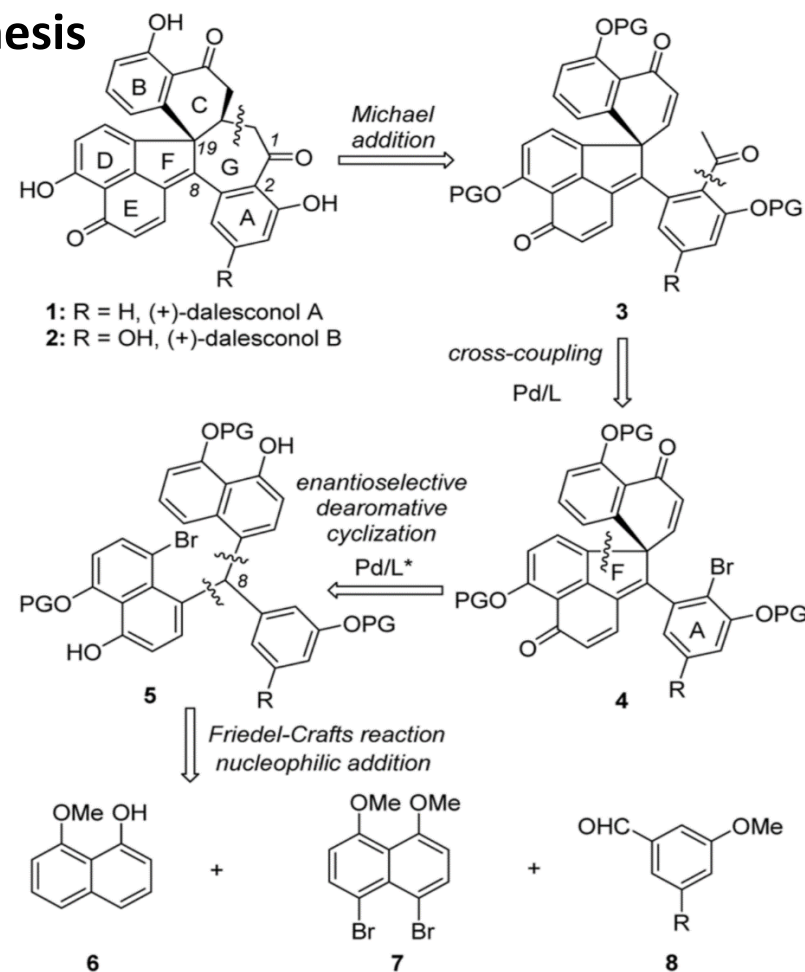
Polyketides that exhibit strong immunosuppressive activities. Isolated by Tan and co-workers in 2008 from mantis-associated fungus

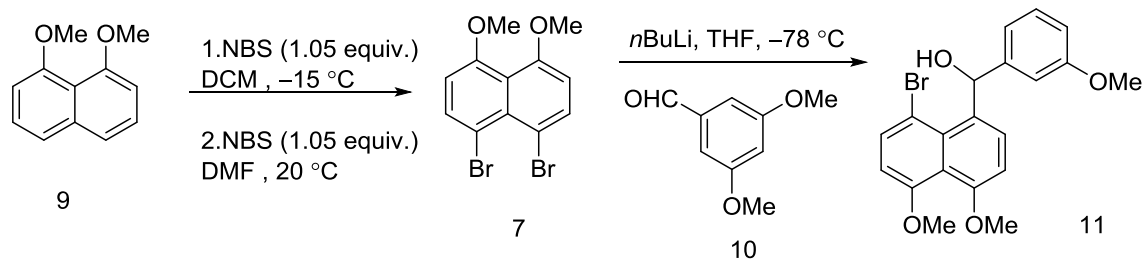
Highly dense carbon skeleton containing seven fused rings of various sizes and two stereogenic centers including one sterically congested quaternary center

The only total syntheses of racemic dalesconol A and B were accomplished by Snyder and co-workers through a sequence of 15 linear steps and 25 overall steps.

This paper: The concise and first enantioselective syntheses of (+)-dalesconol B through 11 linear steps and 10% overall yield.

Retrosynthesis

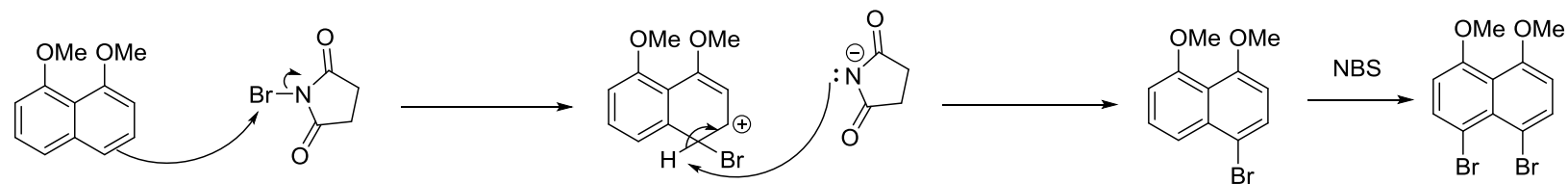




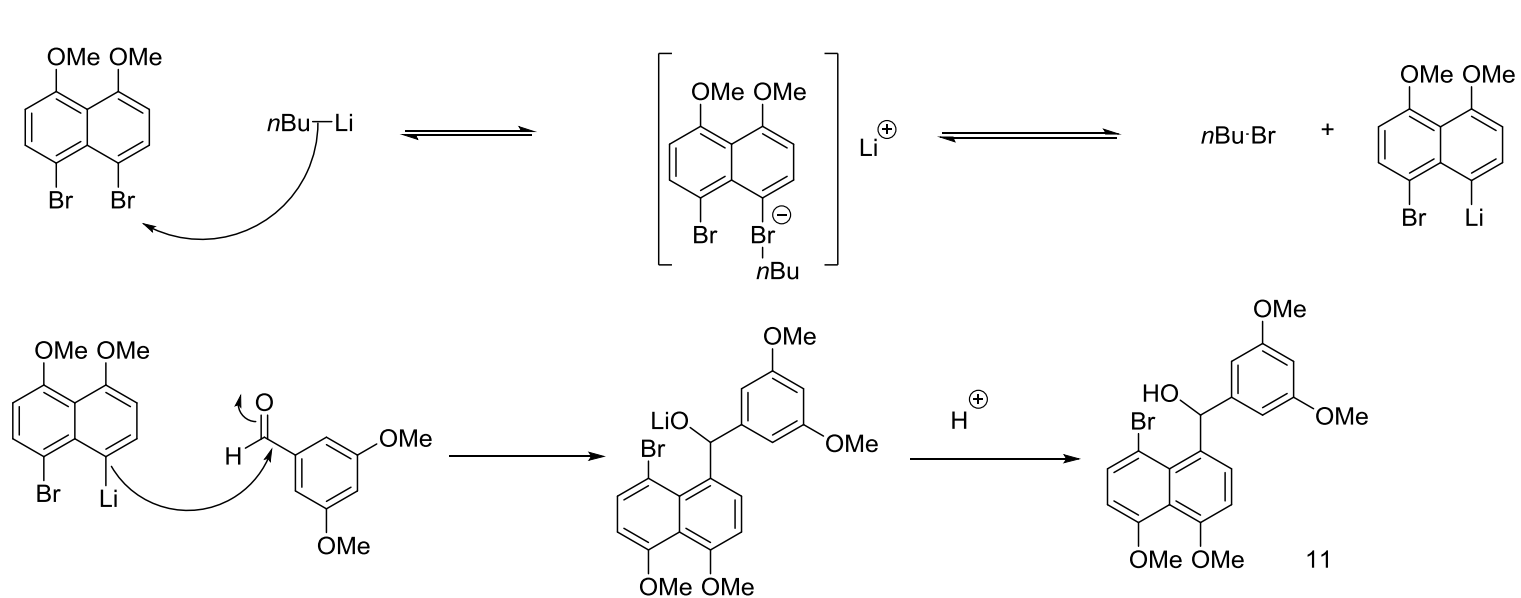
Forward synthesis of Dalesconol B

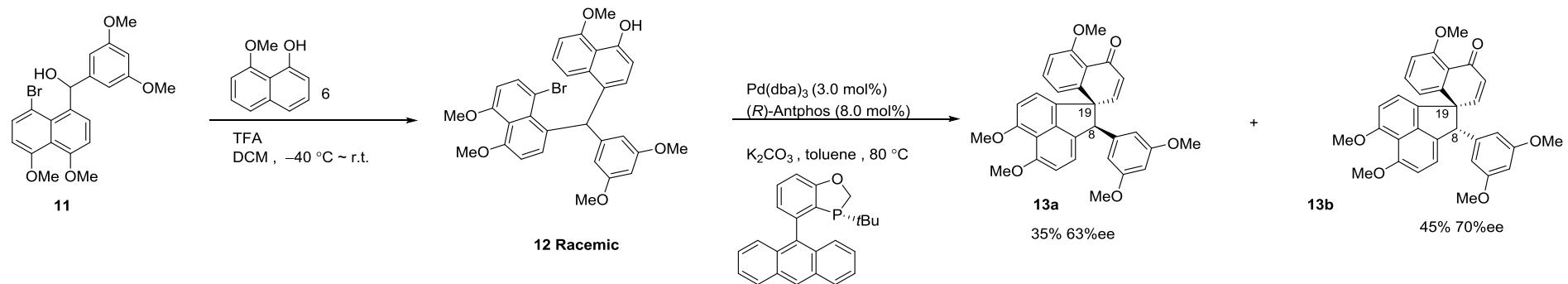
Mechanism:

1. Aromatic Halogenation



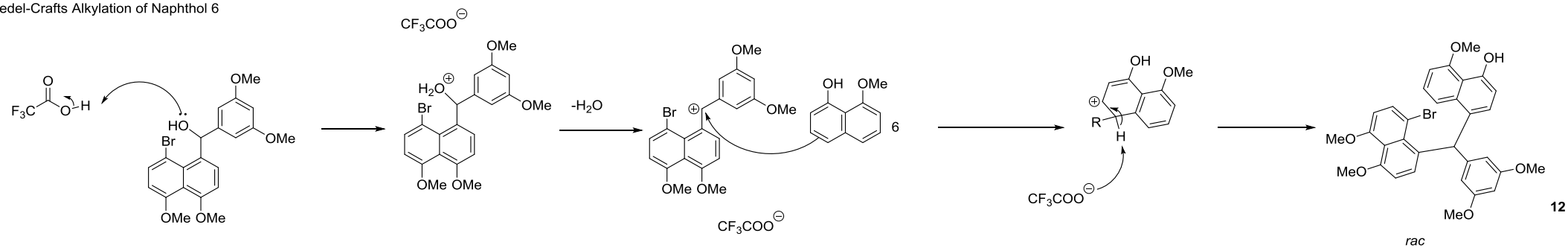
2. Lithium-Bromide Exchange and Nucleophilic Addition



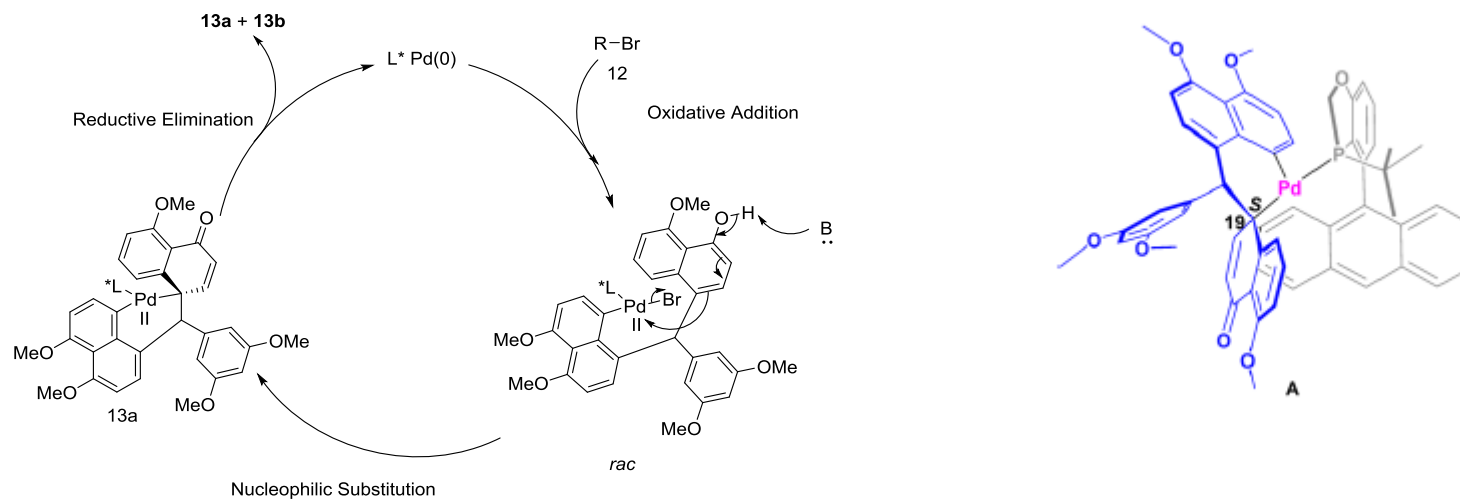


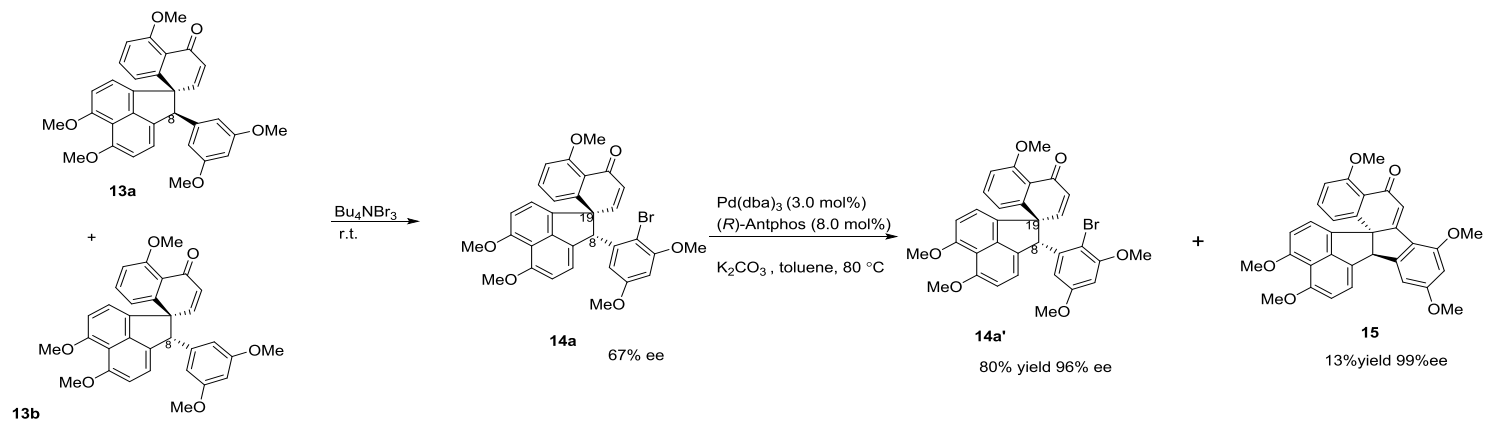
Mechanism:

1. Friedel-Crafts Alkylation of Naphthol 6

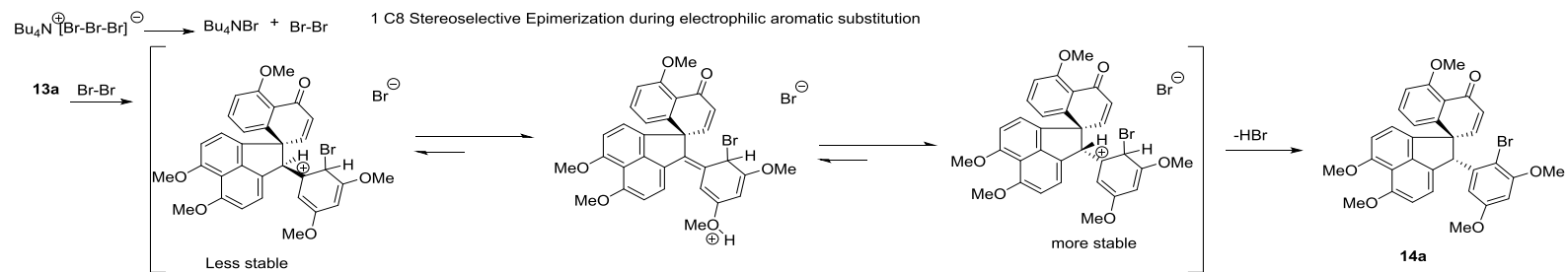


2. Pd-catalyzed Intramolecular Dearomative Cyclization

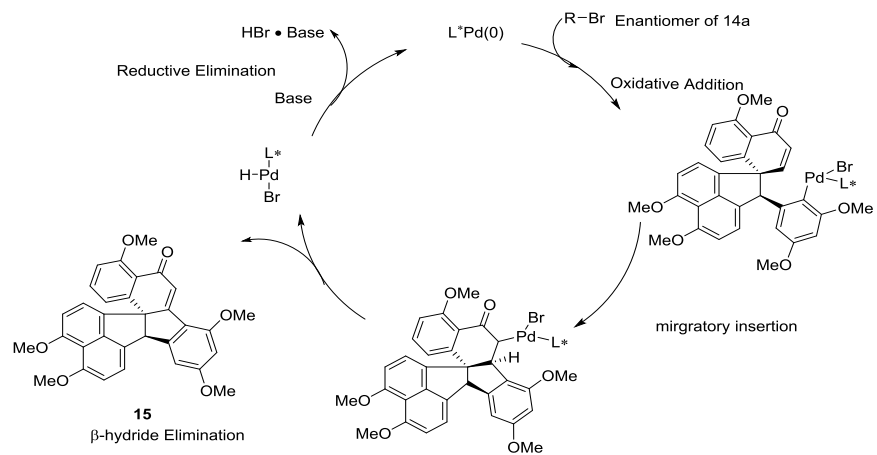




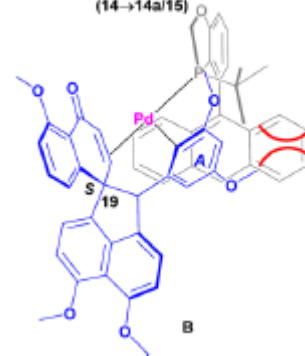
Mechanism:

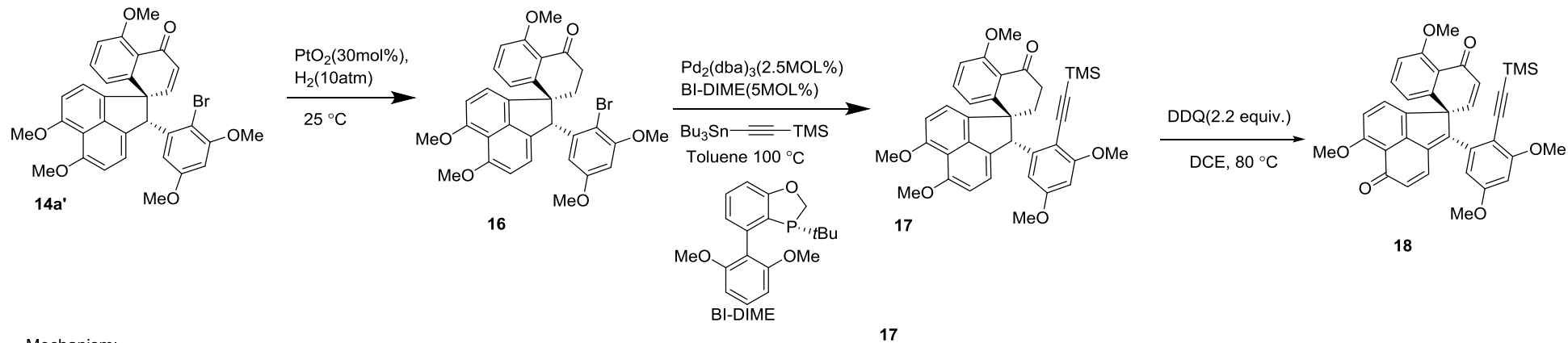


2 Kinetic Resolution through Heck type Cyclization



(b) kinetic resolution by Heck cyclization (**14** \rightarrow **14a'**/**15**)

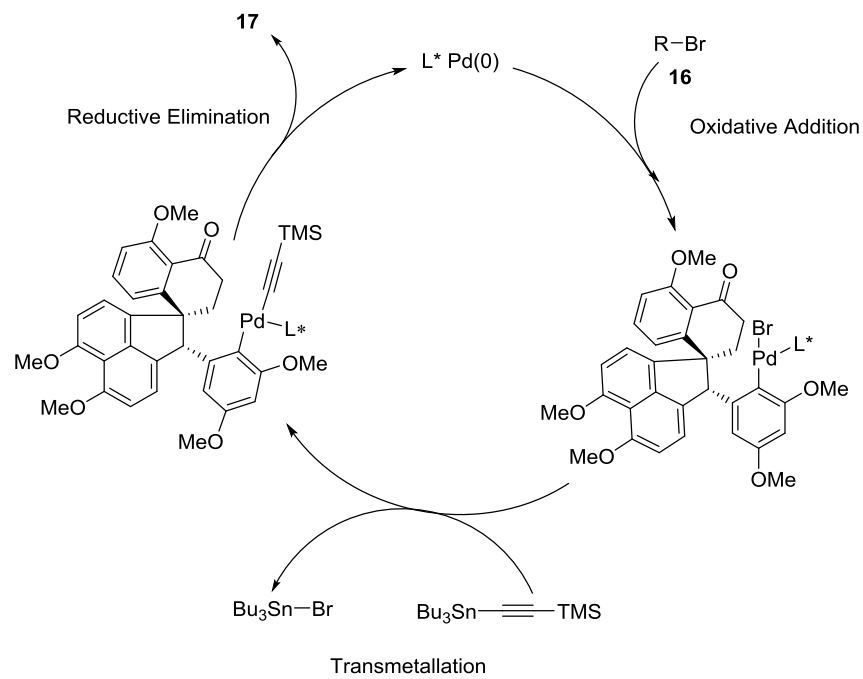




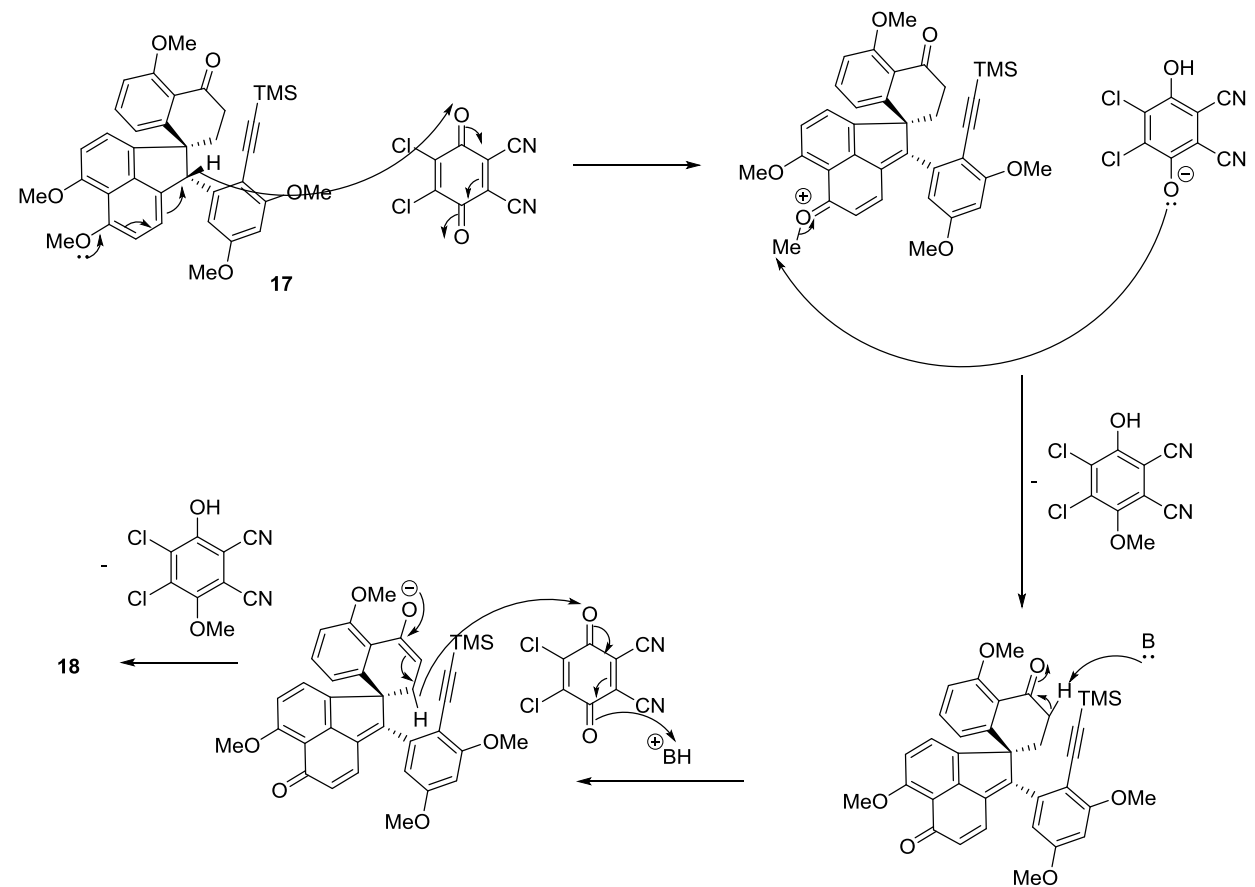
Mechanism:

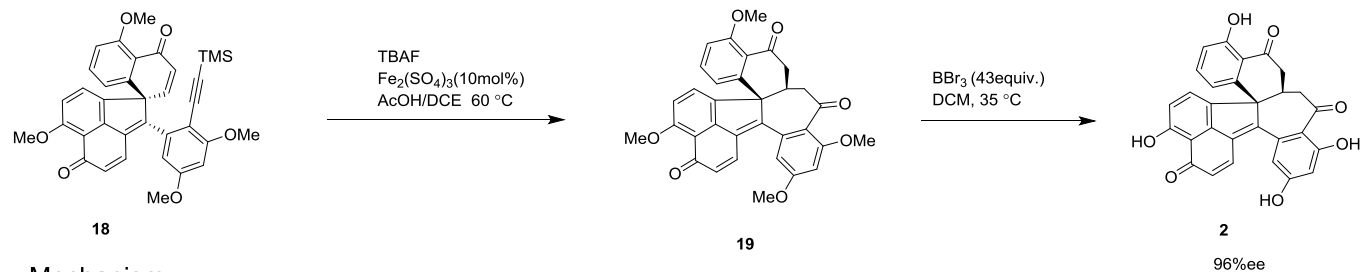
1 PtO₂(Adam's Catalyst) hydrogenation:

2 Stille Cross-Coupling:



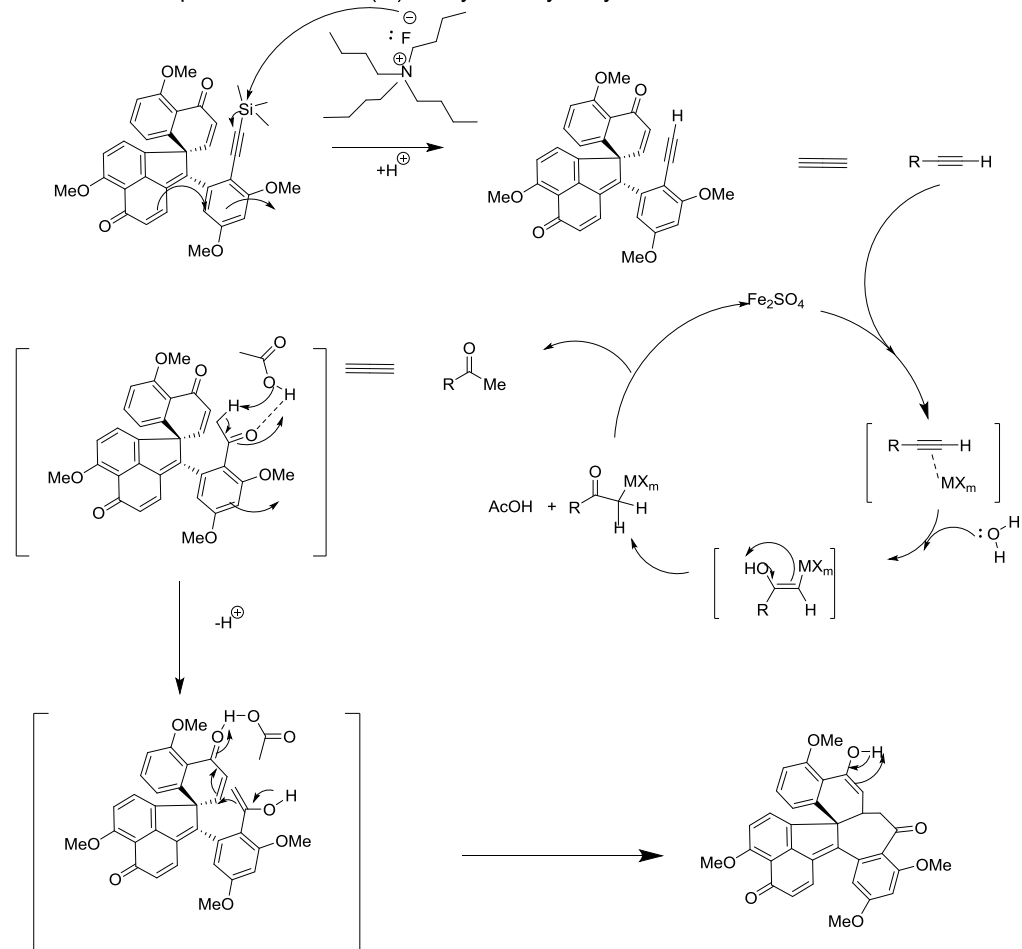
DDQ Oxidation



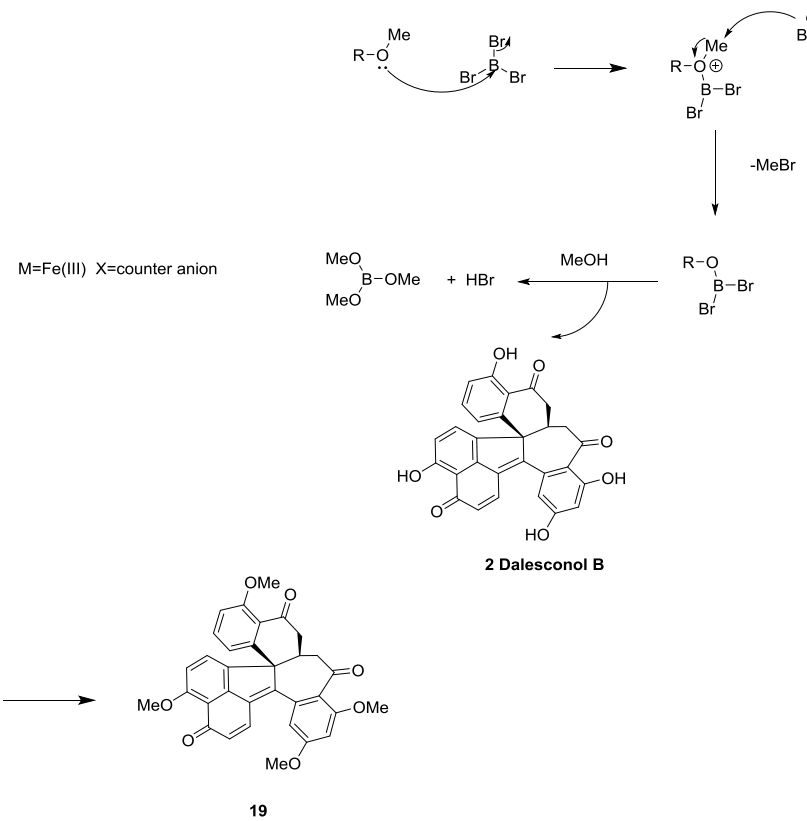


Mechanism:

1 TMS Deprotection-----Iron(III) catalyzed alkyne hydration-----Michael Addition:



2 Global Demethylation:



2 Global Demethylation:

Forward synthesis of Dalesconol A

