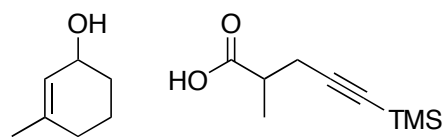
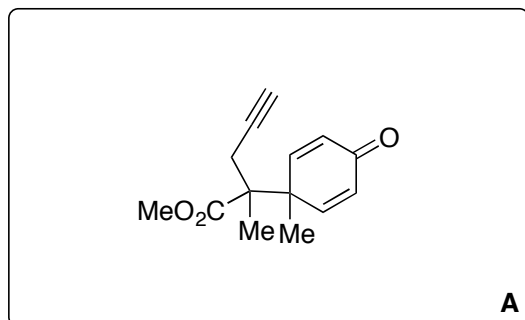


Divergent Total Synthesis of Indoxamycins A, C, and F

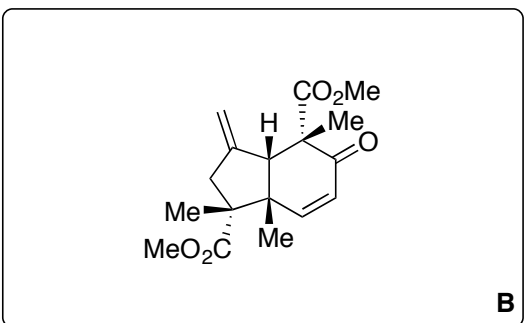
C. He, C. Zhu, Z. Dai, C. Tseng and H. Ding
Angew. Chem. Int. Ed. **2013**, 52, 13256–13260



1-5



6-8



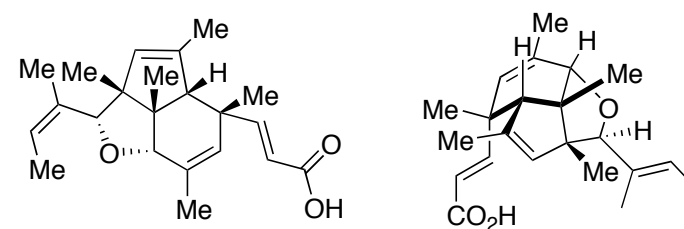
- 1) EDC·HCl, 4-DMAP
- 2) KHMDS, TMSCl, Et₃N -78 °C → 70 °C then TMSCHN₂ (d.r. 1.5:1)
- 3) CrO₃, 3,5-DMP
- 4) DDQ
- 5) K₂CO₃, MeOH

- 6) Pd₂(dba)₃, P(*o*-tol)₃, Et₃SiH, AcOH -78 °C
- 7) LiHMDS, Mander's reagent, -78 °C
- 8) NaH, MeI

- 2) Provide the name of this reaction.

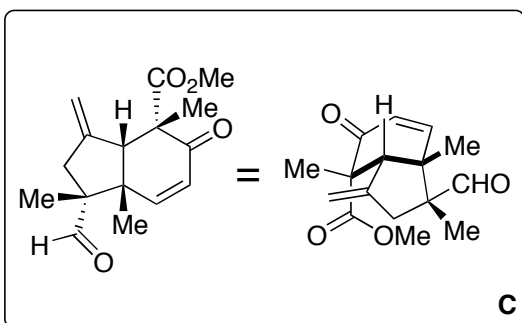
Ireland Claisen Rearrangement

Reference for methylation of carboxylic acid:
Angew. Chem. Int. Ed. **2007**, 46, 7075–7077

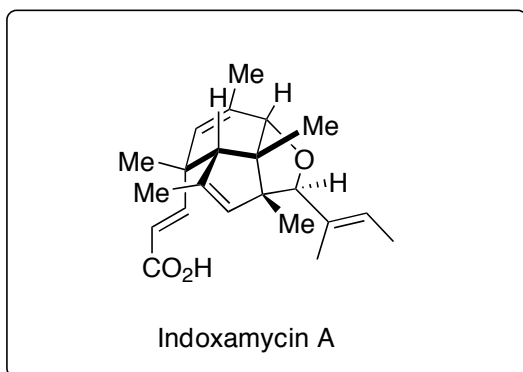


Indoxamycin A

9-10

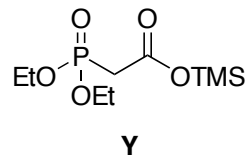
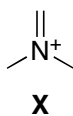


11-16



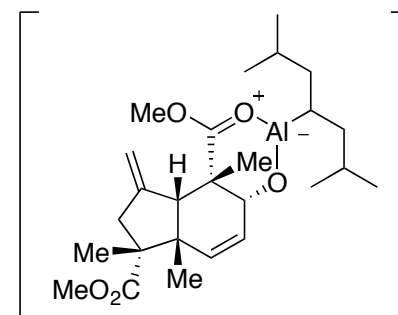
- 9) DIBAL, -78 °C
10) DMP

- 11) (E)-2-butenyl-2-magnesium bromide, -78 °C
then **X**
12) *p*-TsOH^y H₂O
13) PhNTf₂, L-Selectride
14) Pd(OAc)₂, PPh₃, NEt₃, HCO₂H,
15) DIBAL
16) **Y**, *n*BuLi



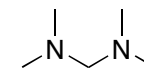
- 9) Explain the regioselectivity of this reaction

The reaction likely proceeds through the following chelated transition state.



- 11) Provide a mechanism for this reaction

Hint:



is formed as a byproduct.

Angew. Chem. Int. Ed. **2013**, 52, 13256

- 16) What is the name of this reaction?

Horner Wadsworth Emmons
Olefination

