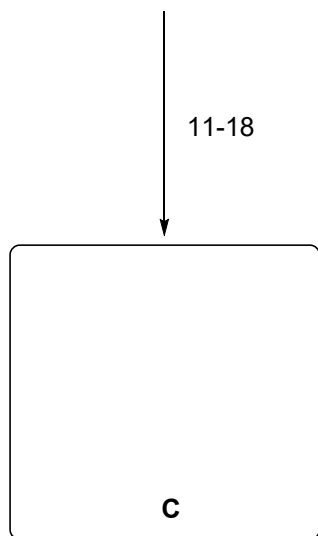
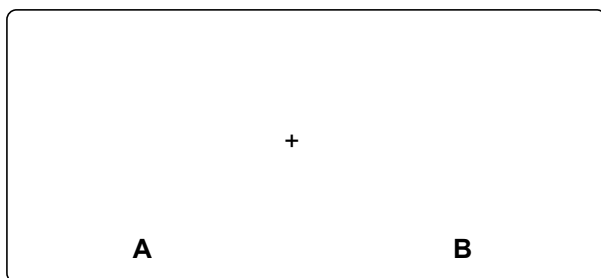
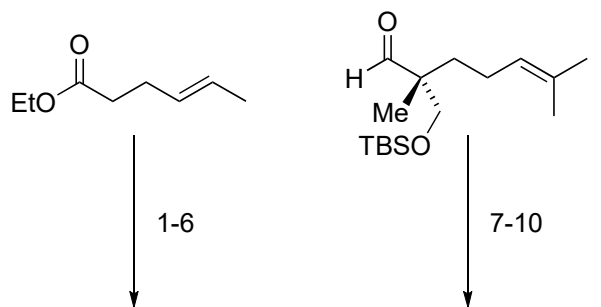
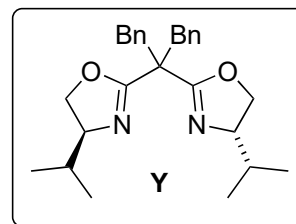


Enantioselective Total Synthesis of Cotylenin A

M. Uwamori, R. Osada, R. Sugiyama, K. Nagatani, M. Nakada* *J. Am. Chem. Soc.* **2020**, *142*, 5556–5561.



- 1) MeSO₂Mes, *n*-BuLi
- 2) TsN₃, NEt₃
- 3) CuPF₆(MeCN)₄, **Y**
- 4) NaCN
- 5) SmI₂, CIP(O)(OEt)₂
- 6) NBS, THF/H₂O
- 7) *tert*-C₁₂H₂₅SH, TBHP, CuCl, 2,2'-bipyridyl
- 8) PhNTf₂, LDA
- 9) NEt₃ · 3HF
- 10) DMP



- 11) BEt₃, Ph₃SnH
- 12) Burgess reagent
- 13) CH₂I₂, Zn, ZrCl₄, PbCl₂
- 14) K₂OsO₄ · 2H₂O, NMO
- 15) Me₃OBF₄, 2,6-*t*-Bu₂-4MePy, *then* TMSCl, pyridine
- 16) DIBAL
- 17) MeMgBr
- 18) DMP

step 2: Name and mechanism of the reaction?

step 3: Name of the ligand class?

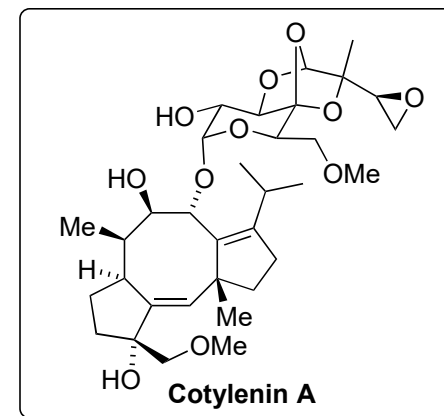
How would you prepare the ligand?

step 7: How would you prepare the starting material from geraniol?

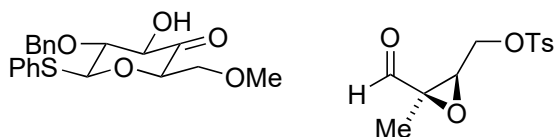
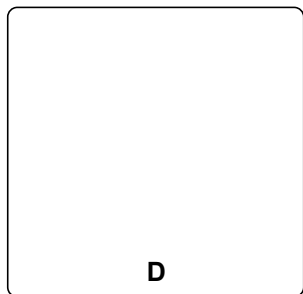
step 11: Name and mechanism of the reaction?

Structure of Burgess reagent?

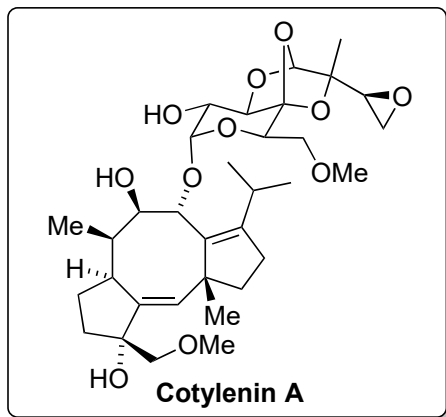
step 13: Name of the reaction? Possible alternatives?



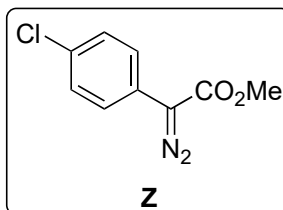
↓
19-22



↓
23-28



- 19) $\text{PdCl}_2(\text{PCy}_3)_2$, PhOK
- 20) LHMDS, LiCl, MoOPH
- 21) $\text{Me}_4\text{NBH}(\text{O}_2\text{C}i\text{-Pr})_3$
- 22) Ac_2O , py



- 23) CSA
- 24) NaH
- 25) **Z**, $\text{Rh}_2(\text{oct})_4$, TfOH · DTBMP, **D**
- 26) MeLi
- 27) TBAF
- 28) H_2 , Pd black

Structure of MoOPH?

step 23: Mechanism?
Structure and pKa of CSA?
step 25: Mechanism?