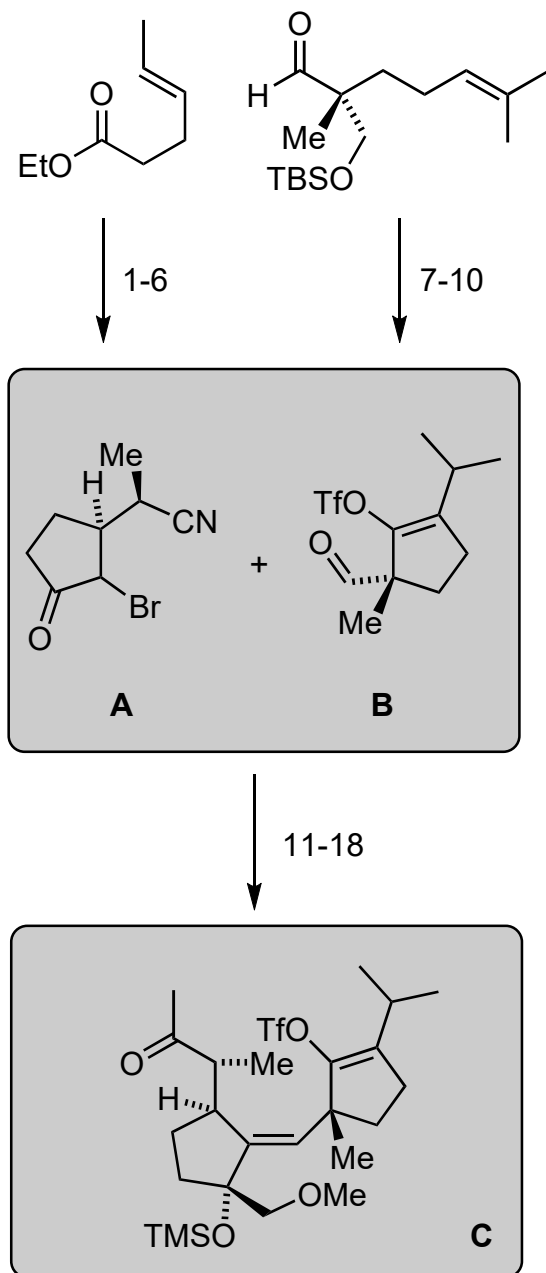


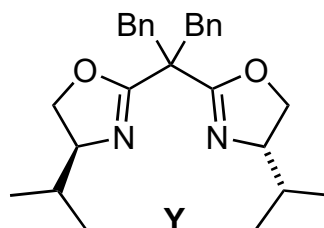
Enantioselective Total Synthesis of Cotylenin A

Uwamori, M.; Osada, R.; Sugiyama, R.; Nagatani, K.; Nakada, M.*

J. Am. Chem. Soc. **2020**, 142, 5556–5561.

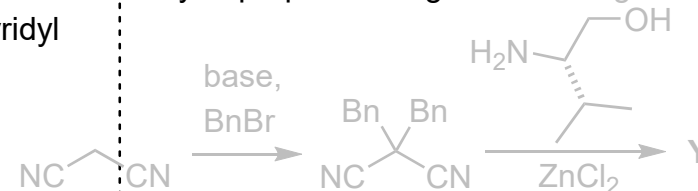


- 1) MeSO_2Mes , *n*-BuLi
- 2) TsN_3 , NEt_3
- 3) $\text{CuPF}_6(\text{MeCN})_4$, **Y**
- 4) NaCN
- 5) SmI_2 , $\text{CIP}(\text{O})(\text{OEt})_2$
- 6) NBS, THF/ H_2O
- 7) *tert*- $\text{C}_{12}\text{H}_{25}\text{SH}$, TBHP, CuCl, 2,2'-bipyridyl
- 8) PhNTf_2 , LDA
- 9) $\text{NEt}_3 \cdot 3\text{HF}$
- 10) DMP

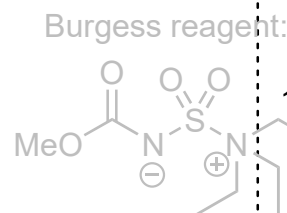


- 11) BEt_3 , Ph_3SnH
- 12) Burgess reagent
- 13) CH_2I_2 , Zn, ZrCl_4 , PbCl_2
- 14) $\text{K}_2\text{OsO}_4 \cdot 2\text{H}_2\text{O}$, NMO
- 15) Me_3OBF_4 , 2,6-*t*-Bu₂-4MePy then TMSCl, pyridine
- 16) DIBAL
- 17) MeMgBr
- 18) DMP

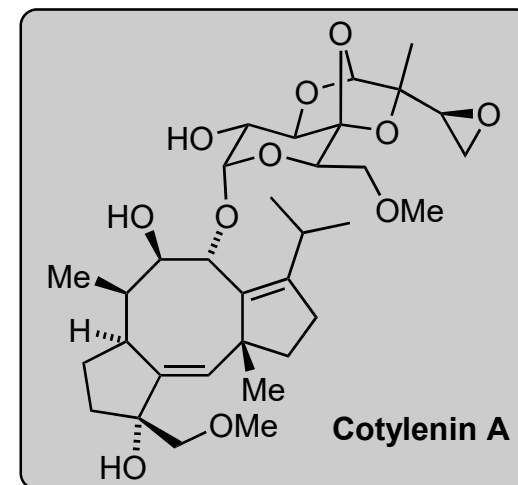
- 2) Name and mechanism of the reaction?
Regitz diazo transfer; mechanism below
- 3) Name of the ligand class? How would you prepare the ligand? BOX ligands



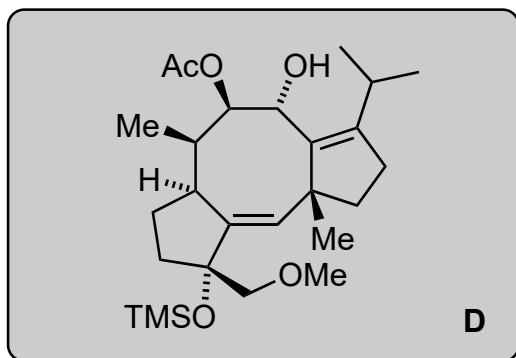
- 11) Name and mechanism of the reaction? Structure of Burgess reagent? Utimoto coupling; mechanism below



- 13) Name of the reaction? Possible alternatives? Takai–Lombardo olefination; e.g. Tebbe, Petasis, Wittig, Peterson, Nysted, Lebel olefination

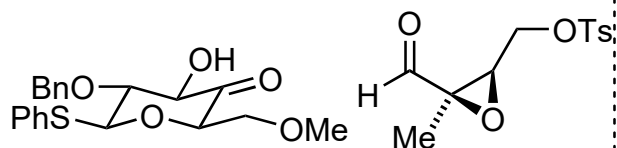
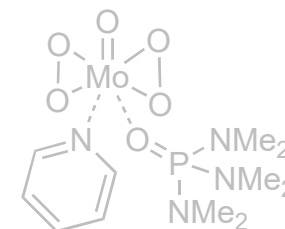


19-22

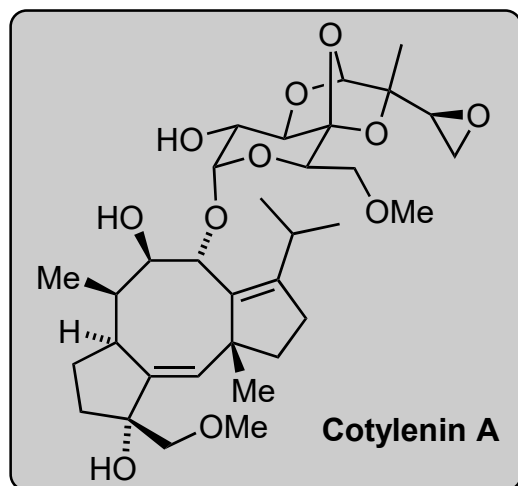


- 19) $\text{PdCl}_2(\text{PCy}_3)_2$, PhOK
 20) LHMDS, LiCl, MoOPH
 21) $\text{Me}_4\text{NBH}(\text{O}_2\text{C}i\text{-Pr})_3$
 22) Ac_2O , py

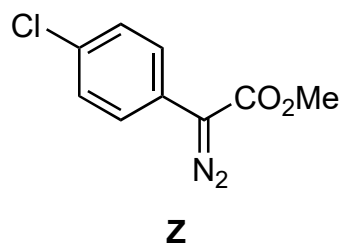
20) Structure of MoOPH?



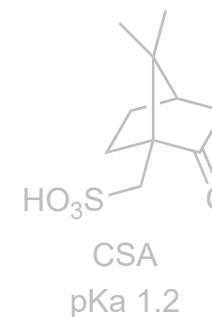
23-28



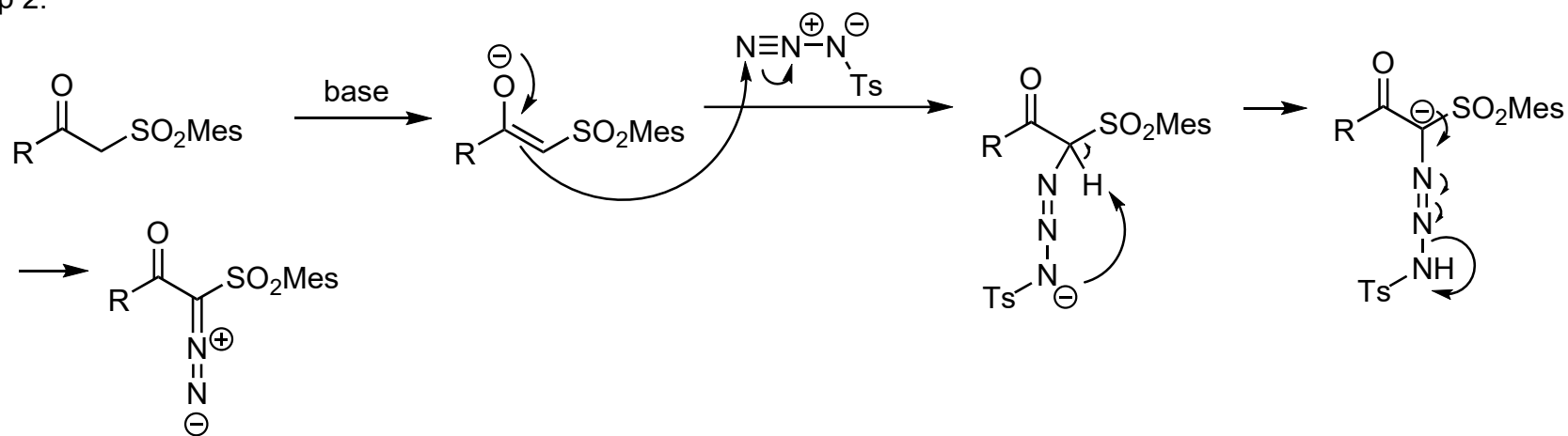
- 23) CSA
 24) NaH
 25) **Z**, $\text{Rh}_2(\text{oct})_4$, TfOH · DTBMP, **D**
 26) MeLi
 27) TBAF
 28) H_2 , Pd black



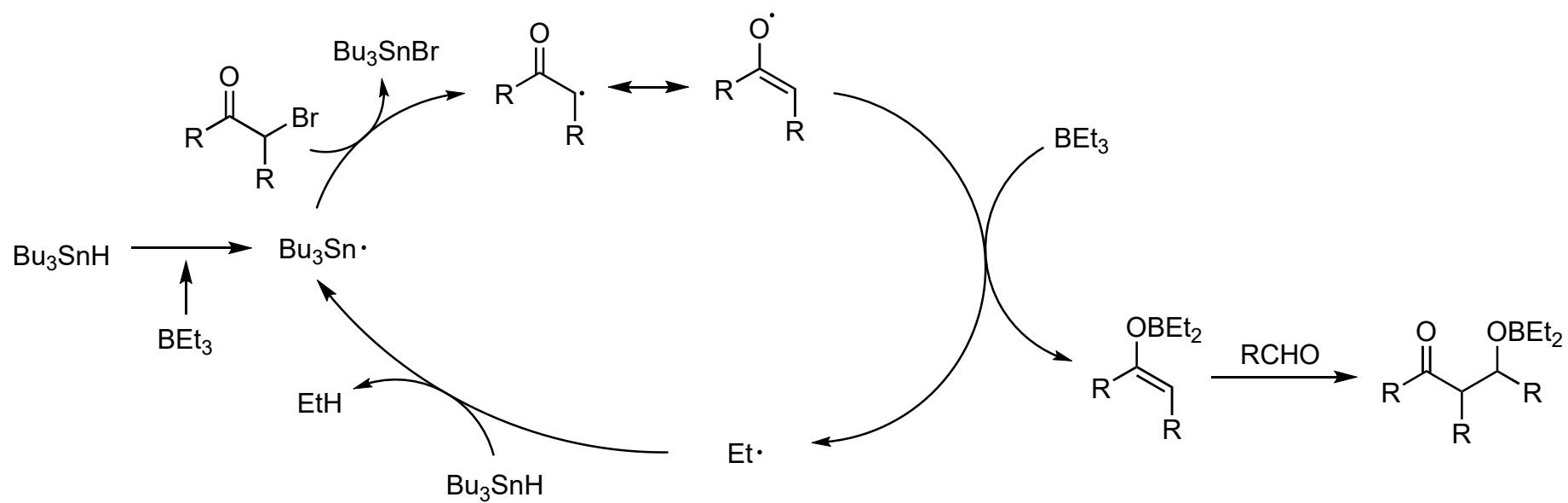
23) Mechanism? [see below](#)
 Structure and pKa of CSA?
 25) Mechanism? [see below](#)



step 2:

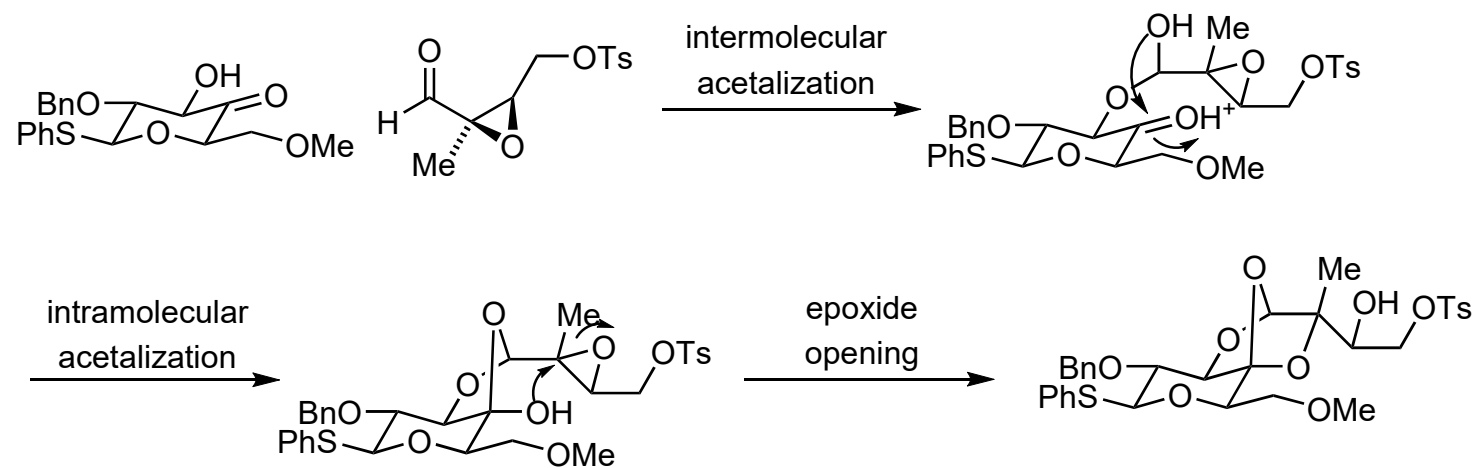


step 11:



Nozaki, K.; Oshima, K.; Utimoto, K. *Tetrahedron Lett.* **1988** , 29, 1041.

step 23:



step 25:

