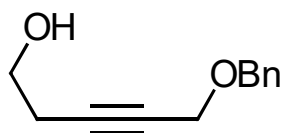


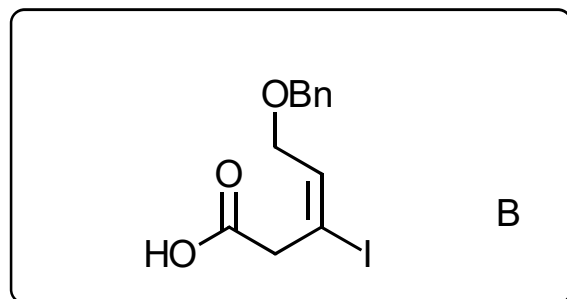
Synthesis Challenge #57

"Total synthesis of malagashanine: a chloroquine potentiating indole alkaloid with unusual stereochemistry"

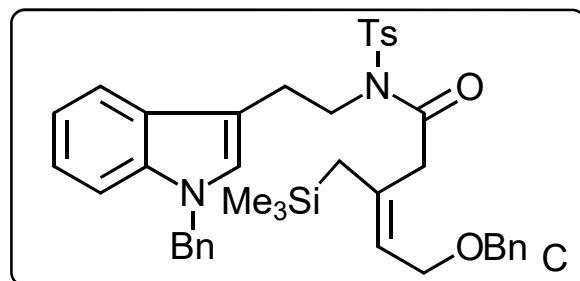
A. Kong, D. E. Mancheno, N. Boudet, R. Delgado, E. S. Andreansky, S. B. Blakey, *Chem. Sci.*, **2017**, 8, 697



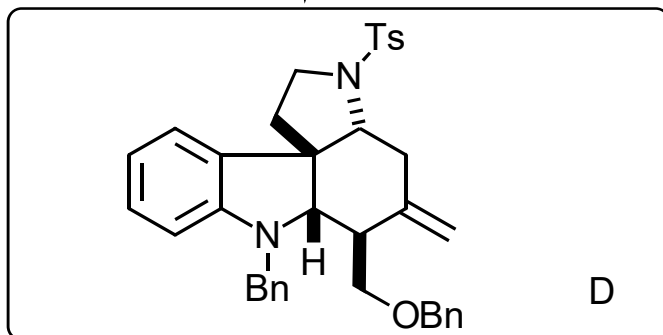
A



B



C

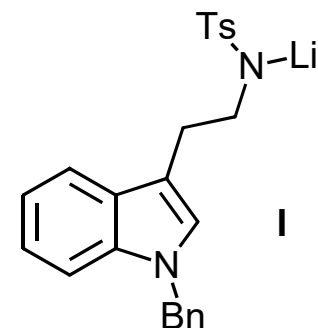


D

- 1) Cp_2ZrHCl , DCM, -15°C to 0°C
then NIS, THF, 0°C
- 2) DMP, DCM
- 3) NaClO_2 , NaH_2PO_4 , 2-Me-2-butene,
 $t\text{-BuOH/DCM/H}_2\text{O}$

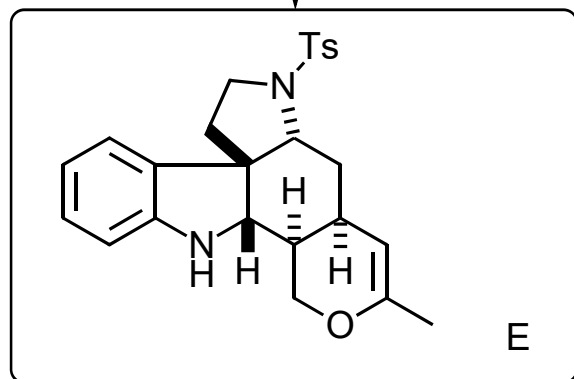
- 4) $\text{TMSCH}_2\text{MgCl}$, ZnBr_2 , cat
 $\text{PdCl}_2(\text{CH}_3\text{CN})_2$, THF/DMF, 0°C
- 5) PivCl, NMM, THF, 0°C
- 6) I, DMPU, THF, -78°C

- 7) DIBALH, DCM, -78°C ,
then TMSimid, imid
- 8) $\text{BF}_3 \cdot \text{OEt}_2$, DCM, 0°C

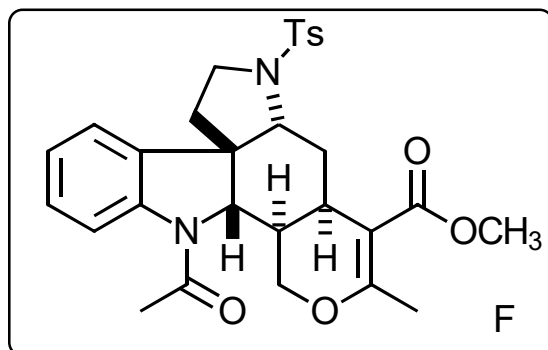


I

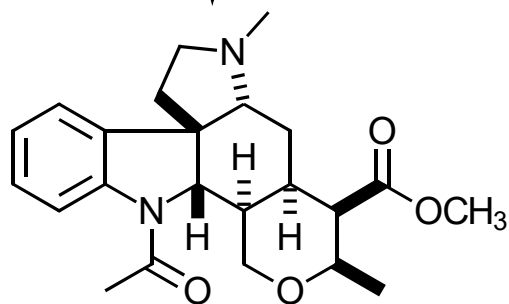
9-13



14-17



18-20



- 9) 9-BBN, THF, 0°C
- 10) Et₂Zn, Et₂O:hexanes
- 11) CuCN*2LiCl, -78°C, THF then AcCl
- 12) Pd/C, H₂, EtOAc
- 13) PTSA, 4Å MS, toluene, 110°C

- 14) AcCl, DMAP, THF
- 15) (CF₃CO)₂O, Pyridine, DCM
- 16) KOH, benzene/H₂O
- 17) TMSCHN₂, MeOH

- 18) Na, Naphthalene, DME
- 19) Formaldehyde, Formic acid H₂/Pd/C
- 20) Raney Nickel, MeOH, H₂ (110 bar)