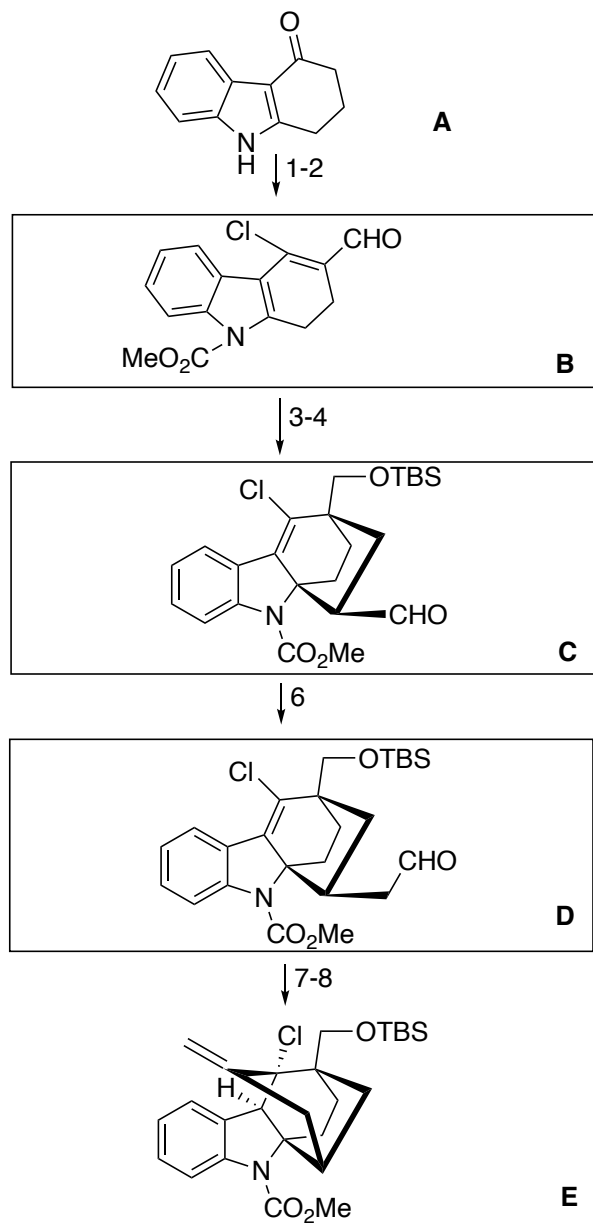


Synthesis Challenge 102

Divergent Total Synthesis of Four Kopsane Alkaloids: *N*-Carbomethoxy-10,22-dioxokopsane, Epikopsanol-10-lactam, 10,22-Dioxokopsane, and *N*-Methylkopsanone, B. Qin, Z. Lu, Y. Jia, *Angew. Chem. Int. Ed.* **2022**, ASAP, doi.org/10.1002/anie.202201712

17.03.2022



1) NaH, ClCO_2Me
2) POCl_3 , DMF

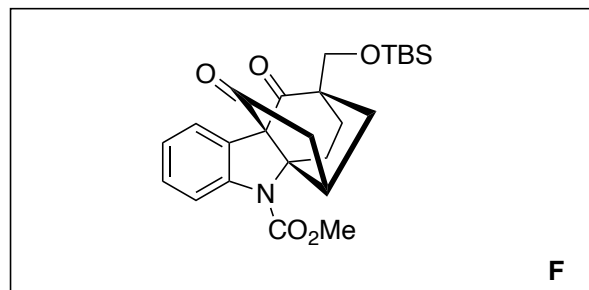
3) NaBH_4 , then TBSCl, imidazole
4) Acryl aldehyde, BHT, proton sponge, 130°C

5) NaHMDS, $\text{MeOCH}_2\text{PPh}_3\text{Cl}$
6) $\text{Hg}(\text{OAc})_2$, then KI

7) $t\text{BuOK}$, $\text{N}_2\text{CHPO}(\text{OMe})_2$, -78°C to rt
8) $n\text{Bu}_3\text{SnH}$, AIBN, benzene, reflux, then PPTS, CH_2Cl_2

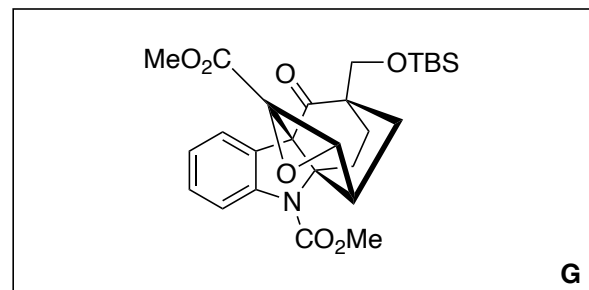
D!!!

↓ 9-11



E

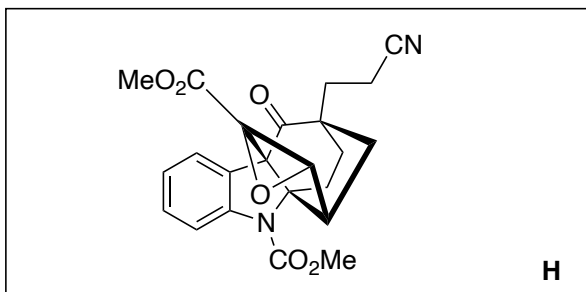
↓ 12-14



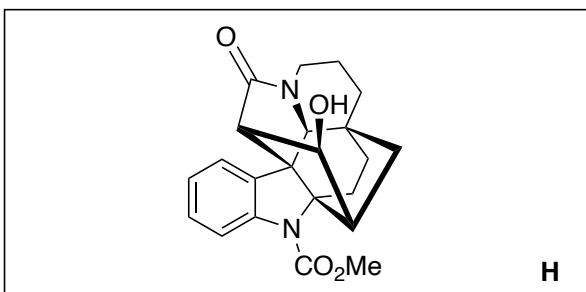
- 9) RuCl_3 , NaIO_4 , $\text{MeCN}/\text{H}_2\text{O}$
10) SmI_2 , THF
11) Dess-Martin-Periodinane, CH_2Cl_2

- 12) LiHMDS, Comins' reagent, -78°C to rt
13) $\text{Pd}(\text{PPh}_3)_4$, CO, Et_3N , THF/MeOH
14) NaOCl, pyridine

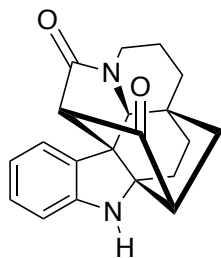
15-16
↓



17-18
↓



19-20
↓



15) HF*pyridine
16) Dess-Martin-Periodinane, CH₂Cl₂, then
Ph₃PChCN, then Pd/C, H₂

17) Zn, NH₄Cl, MeOH/H₂O, 45°C
18) Raney Ni, H₂ (4 atm), then Pd/C, H₂ (4 atm)

19) EtSLi, HMPA
20) 1-Cyclohexyl-3-(2-morpholino-ethyl)-
carbodiimide metho-*p*-toluenesulfonate,
DMSO