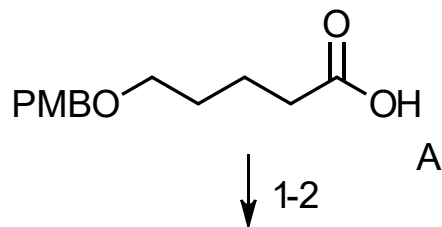


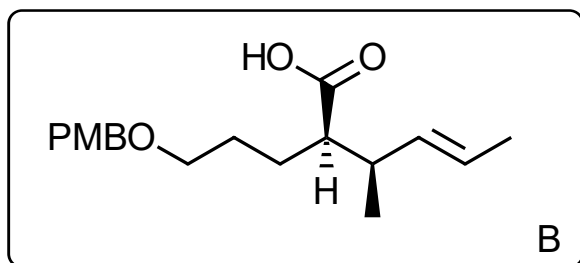
Synthesis Challenge # 67

Total Synthesis of (+)-Rubriflordilactone A

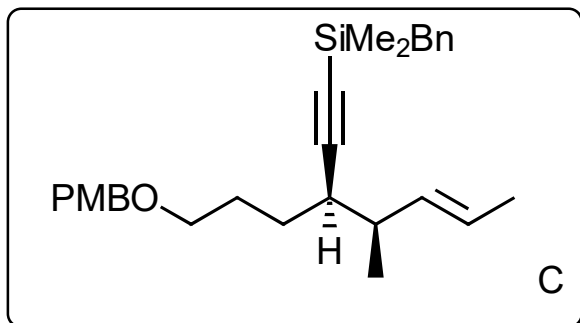
S. S. Goh, G. Chaubet, B. Gockel, M.-C. A. Cordonnier, H. Baars, A. W. Phillips, E. A. Anderson,
Angew. Chem. Int. Ed. **2015**, *54*, 12618.



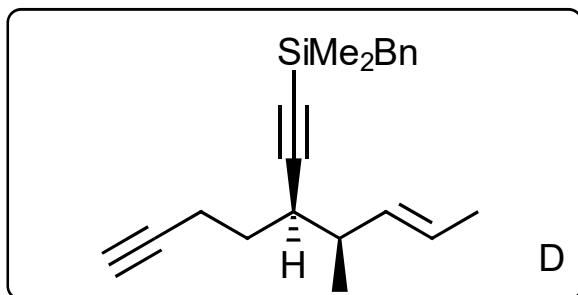
↓ 1-2



↓ 3-7



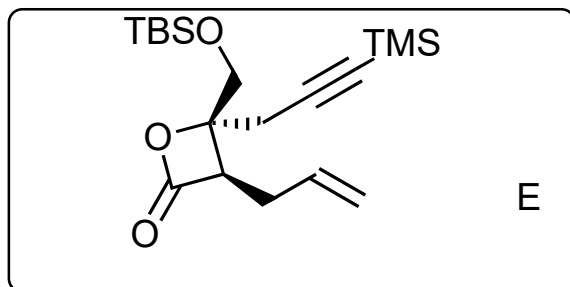
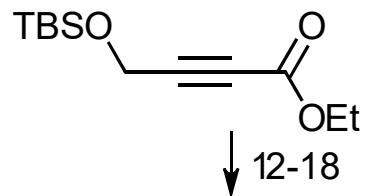
↓ 8-11



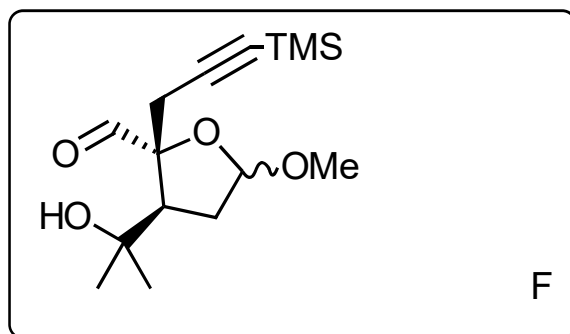
1) (*S,E*)-pent-3-en-2-ol, EDC·HCl,
Et₃N, DMAP, THF, RT, 16 h,
2) LiHMDS, Et₃N/toluene (3:1),
-78 °C to RT

3) TMSCHN₂, toluene/MeOH (5:1), RT
4) DIBALH, CH₂Cl₂, -78°C to -30°C
5) DMP, NaHCO₃, CH₂Cl₂, 0°C to RT
6) [Ph₃PCH₂I]⁺I⁻, NaHMDS, THF,
-78°C-RT; then NaHMDS, -78°C - RT
7) LiHMDS, THF, -78°C, 30 min;
then BnMe₂SiCl, -78°C - RT, 3 h,

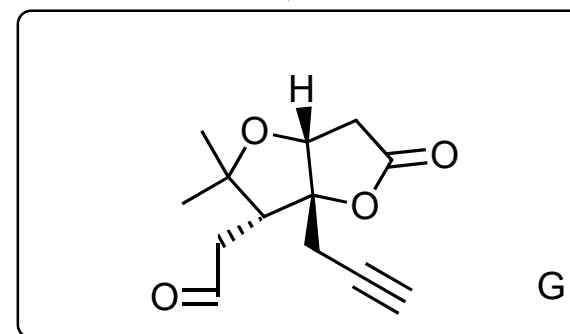
8) DDQ, CH₂Cl₂/H₂O (4:1), RT,
9) DMP, NaHCO₃, CH₂Cl₂, 0°C - RT
10) CBr₄, PPh₃, CH₂Cl₂, -30°C - 0°C,
11) *n*BuLi, THF, -78°C to RT



↓ 19-22



↓ 23-25

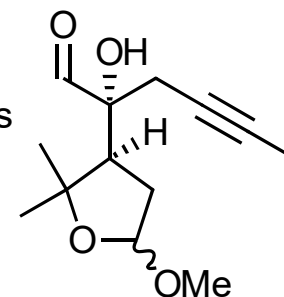


- 12) $\text{TMSCCCH}_2\text{MgBr}$, $\text{CuBr}\cdot\text{SMe}_2$,
- 13) DIBALH , CH_2Cl_2 , -78°C to RT
- 14) $\text{Ti}(\text{OiPr})_4$, D-(-)-diethyl tartrate, $t\text{BuOOH}$, 4 Å MS, CH_2Cl_2 , -20°C
- 15) AllylMgBr , THF, 0°C ,
- 16) $\text{SO}_3\cdot\text{py}$, DMSO, $i\text{Pr}_2\text{EtN}$, CH_2Cl_2
- 17) NaO_2Cl , NaH_2PO_4 , 2-methylbut-2-ene, $t\text{BuOH}/\text{H}_2\text{O}$ (3:1), RT
- 18) BOPCl , py, MeCN, RT, 3 h,

- 19) MeMgBr , THF, -5°C to RT,
- 20) OsO_4 , NaIO_4 , 2,6-lutidine, dioxane/ H_2O (4.6:1), RT, 2 h,
- 21) camphorsulfonic acid, MeOH, RT,
- 22) $\text{SO}_3\cdot\text{py}$, DMSO, $i\text{Pr}_2\text{EtN}$

- 23) $(\text{PhO})_2\text{POCH}_2\text{CO}_2\text{Et}$, KHMDS , THF,
- 24) TFA, CH_2Cl_2 , 0°C
- 25) K_2CO_3 , MeOH, RT

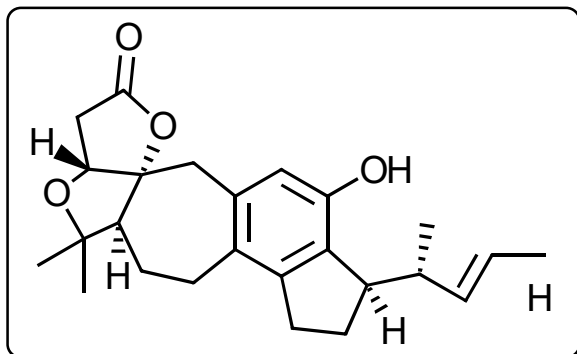
two products
ratio 1.9:1



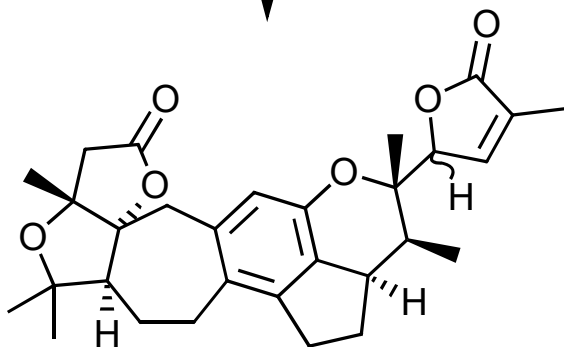
D



26-29



30-33



26) nBuLi, -78°C; then add G, -78°C to -10°C
27) [CpCo(CO)₂] (20 mol%), PPh₃ (40 mol%), PhCl, MW (300 W), 150°C
28) TBAF, THF, RT, 30 min; then H₂O₂, KHCO₃, MeOH
29) Et₃SiH, ZnCl₂, CH₂Cl₂, RT

30) OsO₄ (2 mol%), NMO, acetone/H₂O (3:1)
31) NaIO₄/SiO₂, CH₂Cl₂, RT, 15 min
32) ZnCl₂, SOCl₂, CDCl₃
33) I, ZnCl₂, CH₂Cl₂

