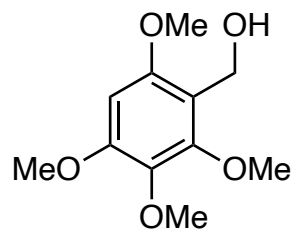


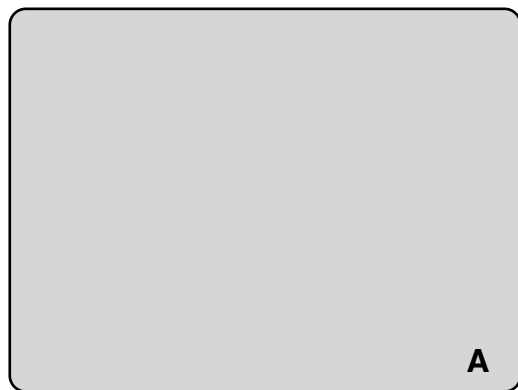
Total Synthesis of Epicolactone

Kravina, A. G.; Carreira, E. M.

Angew. Chem. Int. Ed. **2018**, 57, 13159-13162.

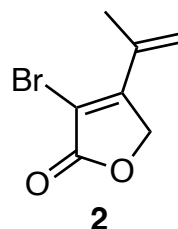
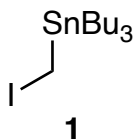


↓ 1-4

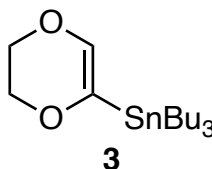


↓ 5-11

- 1) *t*-BuOK, DMF, 60 °C, then **1**
- 2) Pd(PPh₃)₂Cl₂, **2**, dioxane, 85 °C
- 3) CAN, MeCN/H₂O, 25 °C
- 4) 465 nm LED, PhH, 25 °C

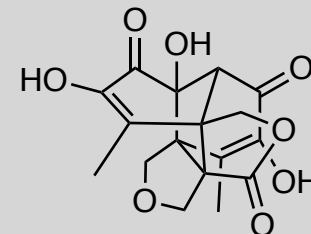


- 5) OsO₄, NMO, CH₂Cl₂, 0 to 25 °C, then Pb(OAc)₄, CH₂Cl₂, 0 °C
- 6) BF₃·2HOAc, CH₂Cl₂, 40 °C
- 7) PhOC(S)Cl, Et₃N, DMAP, CH₂Cl₂, 25 °C
- 8) AIBN, Bu₃SnH, PhMe, 80 °C
- 9) LDA, substrate, then PhNTf₂, THF/HMPA, -78 °C
- 10) Pd(PPh₃)₂Cl₂, **3**, dioxane, 85 °C
- 11) TFA, CH₂Cl₂, 25 °C



4) Redraw like natural product

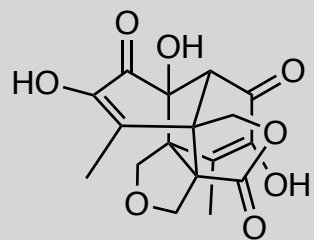
- 6) Hint: *Ring expansion*
- 7, 8) Name of reaction?
- 11) Hint: *Cyclization*



Epicolactone

B

↓ 12-17



Epicolactone

- 12) $\text{ClSiMe}_2\text{CH}_2\text{Cl}$, Et_3N , DMAP, CH_2Cl_2 , 25 °C
- 13) NaI , butanone, 80 °C
- 14) Sml_2 , THF, -78 to 25 °C, *then* aq. HCl
- 15) TBHP, DBU, DCE, 25 °C, *then* HCl , BuOH, 110 °C
- 16) NaI , butanone, 80 °C
- 17) Zn , EtOH/AcOH , 55 °C

- 13) Name of reaction?
- 14) Hint: *Multiple transformations, start with Barbier coupling*
- 15) Hint: *Loss of vinyl peak*