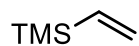
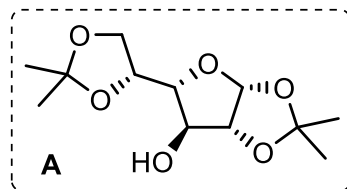


Total Synthesis and Anti-Cancer Activity of All Known Communesin Alkaloids and Related Derivatives

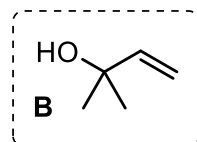
Matthew M. Pompeo, Jaime H. Cheah, and Mohammad Movassaghi
J. Am. Chem. Soc. **2019**, *141*, 14411–14420.



- 1) AIBN, tBuSH, Δ
- 2) NaIO₄, MeOH
- 3) sulfuryl chloride, Et₂O
- 4) **A**, DIPEA, PhMe, CH₂Cl₂
- 5) LiHMDS, THF
then silica gel, MeOH



- 6) 4-bromo-1-methylisatin, Ti(OEt)₄, CH₂Cl₂
- 7) allylmagnesium bromide, MgBr₂, CH₂Cl₂
- 8) O₃, MeOH, then NaBH₄
- 9) *o*-NsNHCbz, DIAD, PPh₃, THF, then PhSH, Cs₂CO₃
- 10) **B**, Pd(OAc)₂, Ag₂CO₃, DMF-H₂O

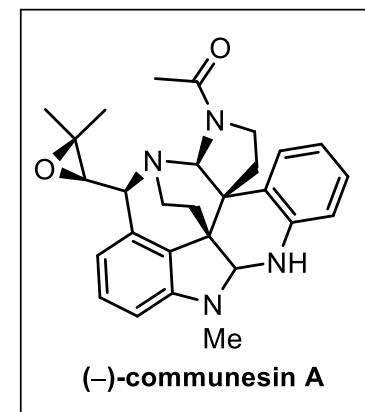


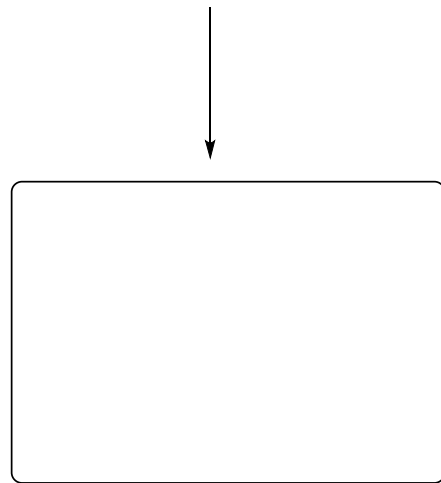
Step 3: Let's discuss the mechanism!

Step 4: What is **A** derived from?

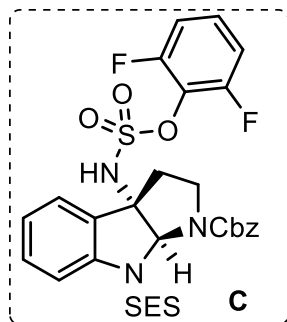
Step 8: What is reduced by NaBH₄?

Step 9 & 10: Name the Reactions

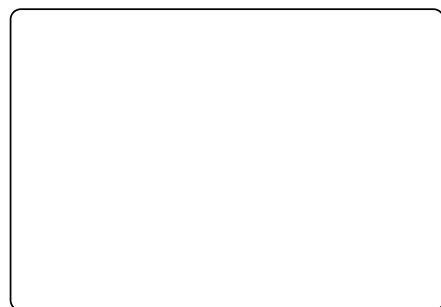
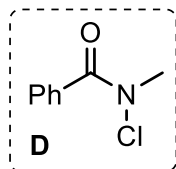




- 11) $\text{Ca}(\text{OTf})_2$, MeCN
- 12) 1,1,1-trifluoroacetone, H_2O_2 , K_2CO_3 , EDTA, MeCN- H_2O
- 13) TASF, H_2O , DMF
- 14) **C**, DMAP, THF



- 15) LiBH_4 , MeOH, THF
- 16) TMS-CN, H_2O , HFIP
- 17) **D**, PS-BEMP, MeOH
- 18) $h\nu$ (350 nm)



- 19) $\text{Pd}(\text{OH})_2/\text{C}$, H_2 , EtOH
- 20) $t\text{BuOLi}$, EtOH
- 21) PPTS, Ac_2O , EtOH
- 22) TASF, DMF

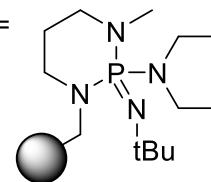
↓

(-)-communesin A

Step 13: Structure of TASF?

Step 14: What Protecting Group is SES? Advantages?

Step 17: PS-BEMP =



What compound class does BEMP belong to and what properties is this class known for?

Step 18: Mechanism?

Step 19: Name of Reagent? Principal Mechanism?

Step 20: Mechanism?

