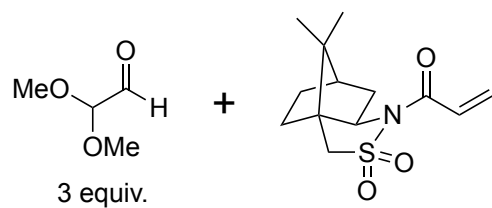


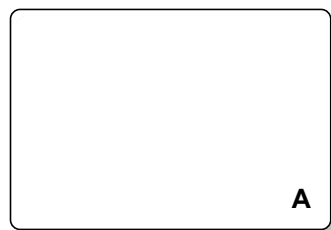
Component-based Synthesis of Trioxacarcin A

Jakub Švenda, Nicholas Hill, and Andrew G. Myers, *P. Natl. Acad. Sci. U.S.A.* **2011**, *108*, 6709–6714.

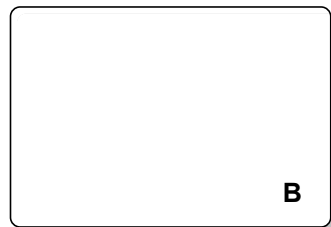
Thomas Magauer, Daniel J. Smaltz, and Andrew G. Myers, *Nat. Chem.* **2013**, *5*, 886–893.



1–4



5–8



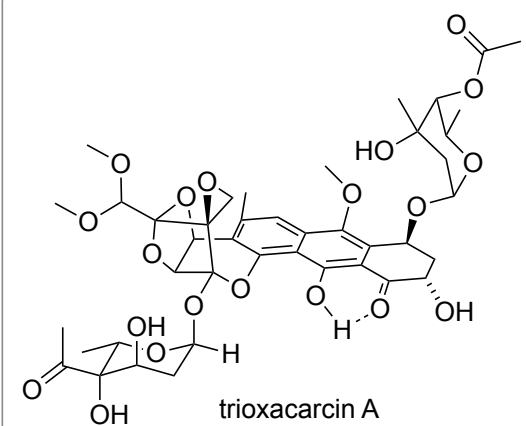
- 1) DABCO
- 2) Et₃N, MeOH
- 3) TBSOTf, DIPEA
- 4) *t*-BuOOH, *t*-BuOK

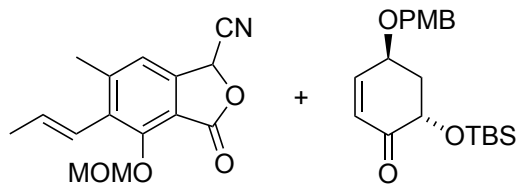
- 5) LiOH (aq)
- 6) ClCO₂*i*-Bu, Et₃N, then CH₂N₂
- 7) Et₃N • 3HF
- 8) DMP, aq. NaHCO₃

Name the reaction of step 1?

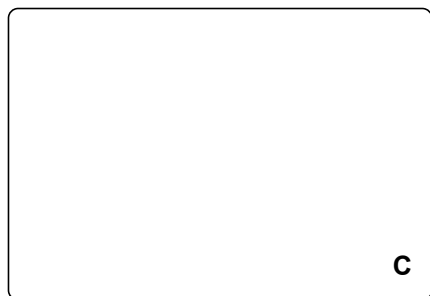
Hint: The (*S*)-enantiomer is obtained after step 2

Step 6: Why is it important to form the mixed anhydride as the activated species over an acid chloride?

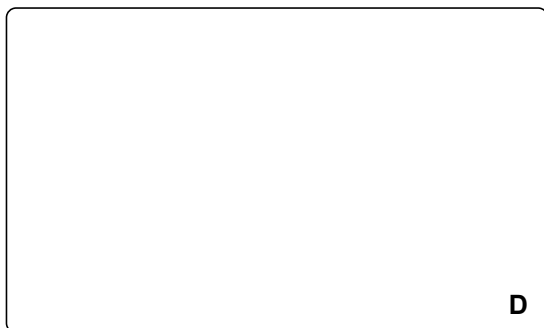




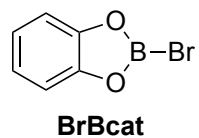
9–12



13, 14



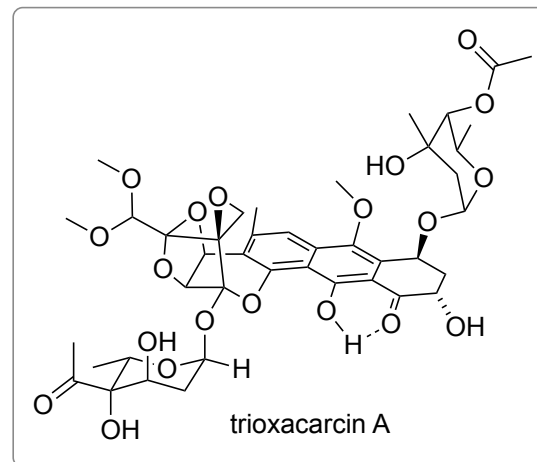
- 9) *t*-BuOLi (3 equiv.), then (MeO)₂SO₂
 10) K₂OsO₄, NaIO₄
 11) BrBcat
 12) *t*-Bu₂SiCl₂, Et₃N, HOBT



- 13) **B**, Rh₂(OAc)₄
 14) Et₃N • 3HF

Please provide a mechanism and the name reaction of step 9.

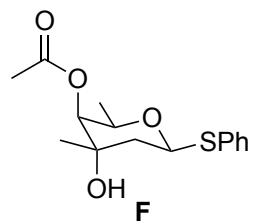
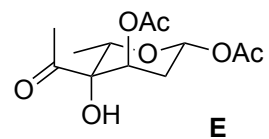
Please provide a mechanism for the key step happening in step 13.
 Hint: It involves a 1,3-dipolar cycloaddition reaction.



15-17



- 15) **E**, TMSNTf₂
- 16) DDQ
- 17) **F**, AgPF₆



18, 19

- 18) K₂CO₃, MeOH
- 19) Et₃N • 3HF

