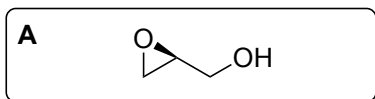
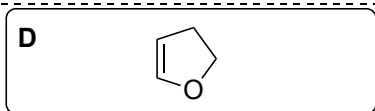
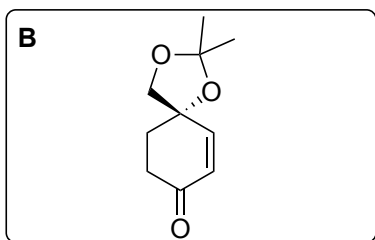


Synthesis of (-)-Fumagillin

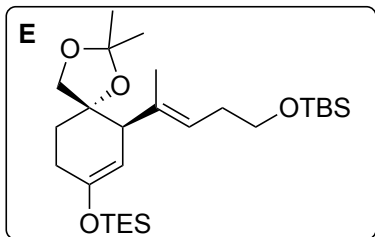
Douglas F. Taber,* Thomas E. Christos, Arnold L. Rheingold, and Ilia A. Guzei
 J. Am. Chem. Soc. 1999, 121, 5589–5590.



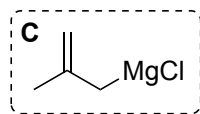
4 steps



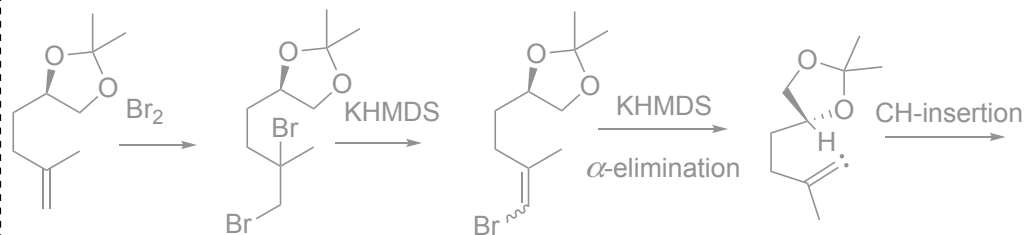
3 steps



- 1) **C**
- 2) 2,2-dimethoxypropane, *p*-TsOH
- 3) Br₂, KHMDS
- 4) Sudan III Red, O₃, then PPh₃, then KOH

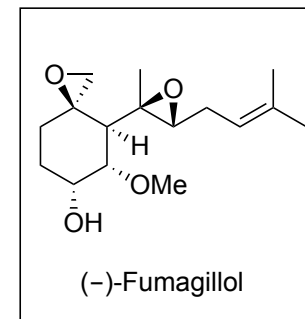
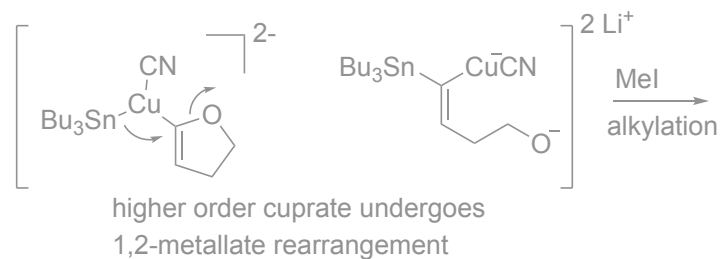


Step 3: Mechanism?



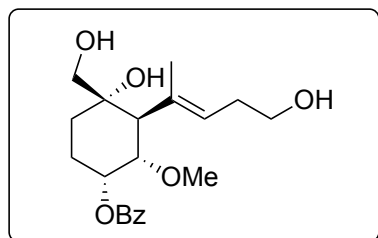
- 5) *t*-BuLi then Bu₃SnLi, CuCN then MeI
- 6) TBSCl, imidazole
- 7) *n*-BuLi, CuCN, then **B** then TESCl, NEt₃

Step 5: Mechanism?

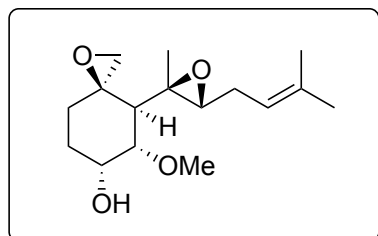


E

6 steps

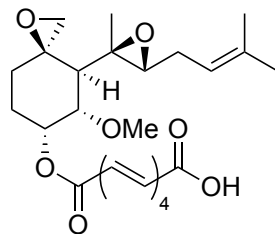


6 steps



(-)-Fumagillol

1 step



(-)-Fumagillin

- 8) *m*-CPBA, hexane
- 9) TBAF, NH₄Cl
- 10) Ag₂O, MeI
- 11) L-selectride
- 12) BzCl, pyr
- 13) DOWEX-50, MeOH

- 14) NaIO₄, CH₂Cl₂/H₂O
- 15) [(Me)₃S=O]I, NaH
- 16) *m*-CPBA, NaHCO₃
- 17) DMP
- 18) *i*-PrPPh₃I, *n*-BuLi
- 19) K₂CO₃, MeOH

Step 8: Name?

Rubottom Oxidation

Step 9: role of NH₄Cl?

For buffering TBAF, to get selective deprotection of TES group

Step 15: Name? Corey-Chaykovsky epoxidation

Step 16: Name? Prileschajew epoxidation