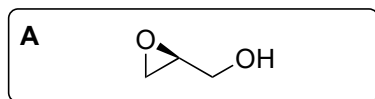


# Synthesis of (-)-Fumagillin

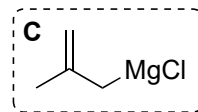
Douglass F. Taber,\* Thomas E. Christos, Arnold L. Rheingold, and Ilia A. Guzei  
J. Am. Chem. Soc. 1999, 121, 5589–5590.



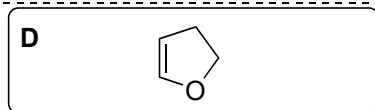
4 steps



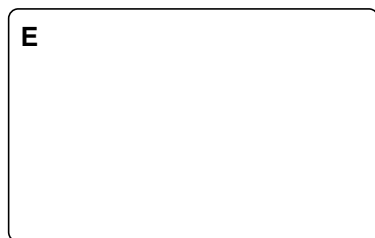
- 1) **C**
- 2) 2,2-dimethoxypropane, *p*TsOH
- 3) Br<sub>2</sub>, KHMDS
- 4) Sudan III Red, O<sub>3</sub>, then PPh<sub>3</sub>, then KOH



Step 3: Mechanism?

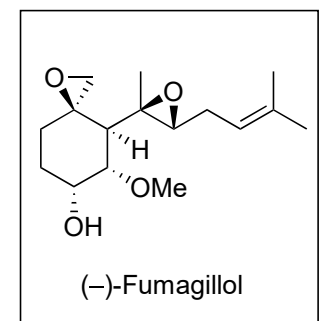


3 steps



- 5) *t*BuLi then Bu<sub>3</sub>SnLi, CuCN then MeI
- 6) TBSCl, imidazol
- 7) *n*BuLi, CuCN, then **B** then TESCl, NEt<sub>3</sub>

Step 5: Mechanism?

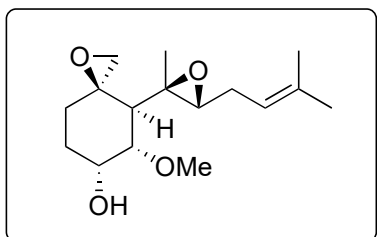


**E**

6 steps

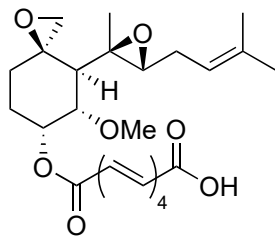


6 steps



(-)-Fumagillol

1 step



(-)-Fumagillin

- 8) *m*CPBA, hexane
- 9) TBAF, NH<sub>4</sub>Cl
- 10) Ag<sub>2</sub>O, MeI
- 11) L-selectride
- 12) BzCl, pyr
- 13) DOWEX-50, MeOH

- 14) NaIO<sub>4</sub>, CH<sub>2</sub>Cl<sub>2</sub>/H<sub>2</sub>O
- 15) [(Me)<sub>3</sub>S=O]I, NaH
- 16) *m*CPBA, NaHCO<sub>3</sub>
- 17) DMP
- 18) *i*PrPPh<sub>3</sub>l, *n*BuLi
- 19) K<sub>2</sub>CO<sub>3</sub>, MeOH

Step 8: Name?

Step 9: Role of NH<sub>4</sub>Cl?

Step 15: Name?

Step 16: Name?