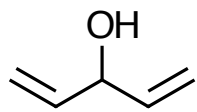


Synthesis Challenge # 30

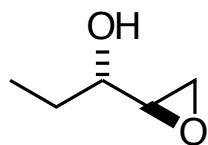
AG Wegner

L. Hoffmeister, T. Fukuda, G. Pototschnig, A. Fürstner, *Chem. Eur. J.* **2015**, *21*, 4529 – 4533

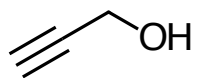


A

1-3



B



C

4-5

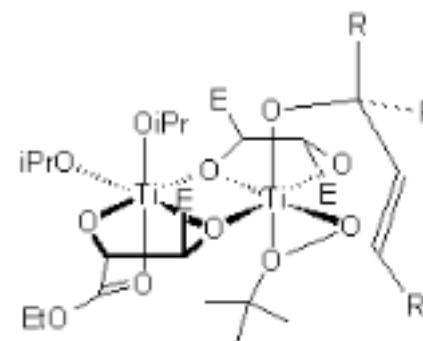


D

- 1) $\text{Ti}(\text{OiPr})_4$ (cat), (+)-diisopropyl tartrate (cat), cumene hydroperoxide, CH_2Cl_2 , MS 4 Å
- 2) TBSCl, imidazole, DMF
- 3) H_2 (1atm), Pd/C(cat), EtOAc

- 4) ethylvinyl ether, pTsOH·H₂O (cat),
- 5) a) EtMgBr, THF, 45 °C ; b) CuCl (5 mol %), propargyl bromide, 60 °C

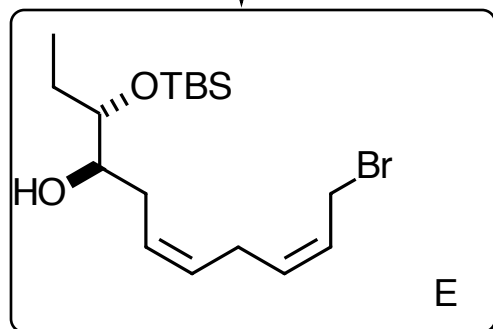
Please give a transition state for step 1).



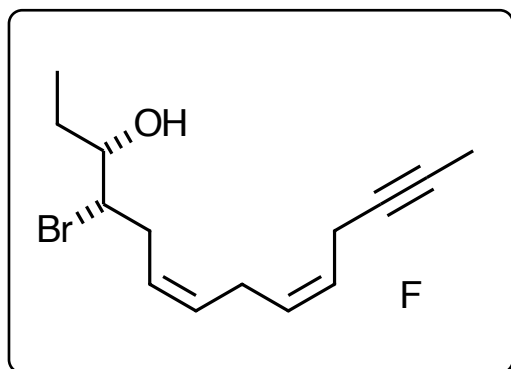
E = COOEt

B + D

6-9

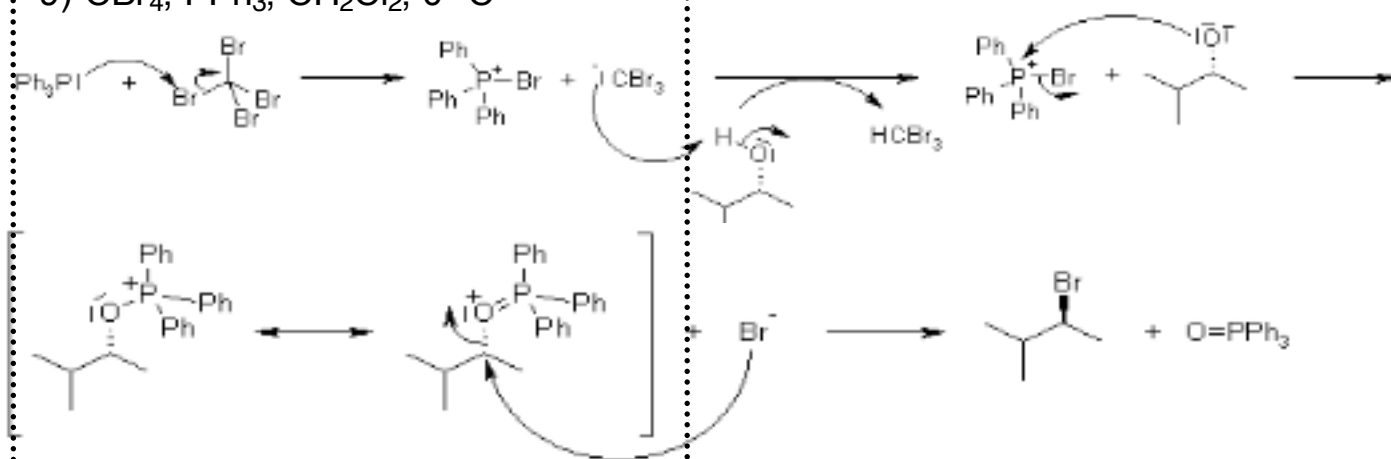


10-12

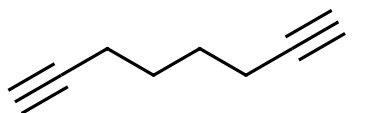


- 6) a) D, nBuLi, THF, $-78\text{ }^{\circ}\text{C}$
- b) $\text{BF}_3 \cdot \text{Et}_2\text{O}$, then B, $-78\text{ }^{\circ}\text{C}$
- 7) PPTS, MeOH, $30\text{ }^{\circ}\text{C}$
- 8) H_2 (1 atm), Ni (25 mol %), EtOH
- 9) CBr_4 , PPh_3 , CH_2Cl_2 , $0\text{ }^{\circ}\text{C}$

Please, provide a detailed mechanism for step 9).

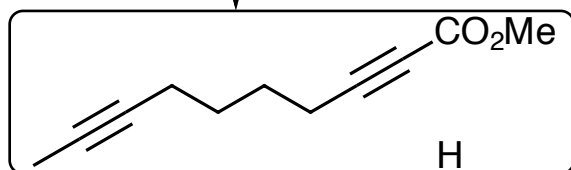


- 10) propynylmagnesium bromide, CuI (50 mol %), THF, $-15\text{ }^{\circ}\text{C}$ - $-10\text{ }^{\circ}\text{C}$
- 11) CBr_4 , PPh_3 , toluene, $65\text{ }^{\circ}\text{C}$
- 12) $\text{HF} \cdot \text{pyridine}$, THF, $0\text{ }^{\circ}\text{C}$



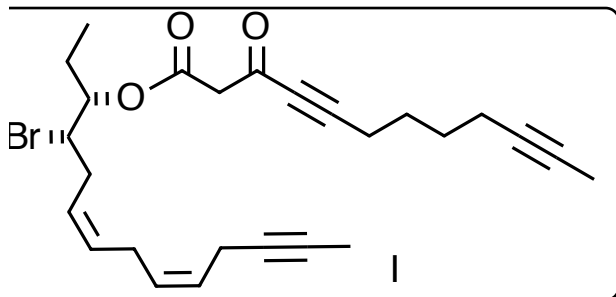
G

13-15



H

16-18



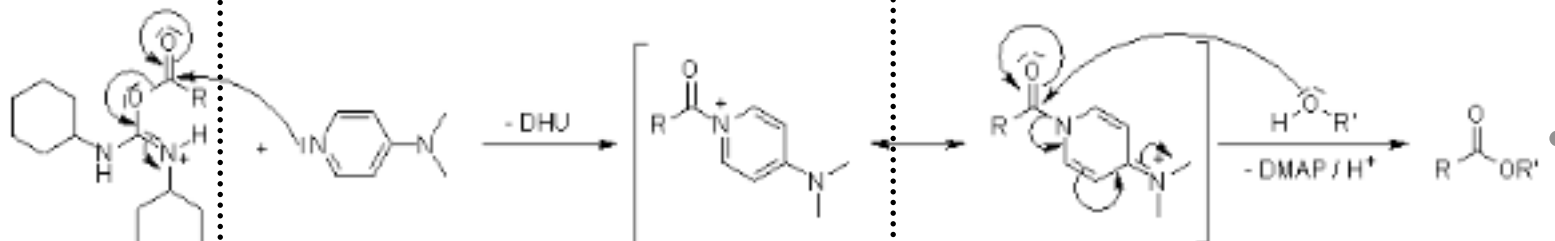
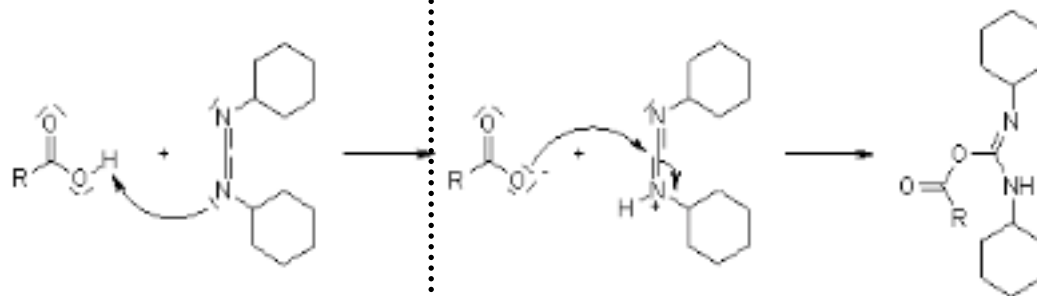
I

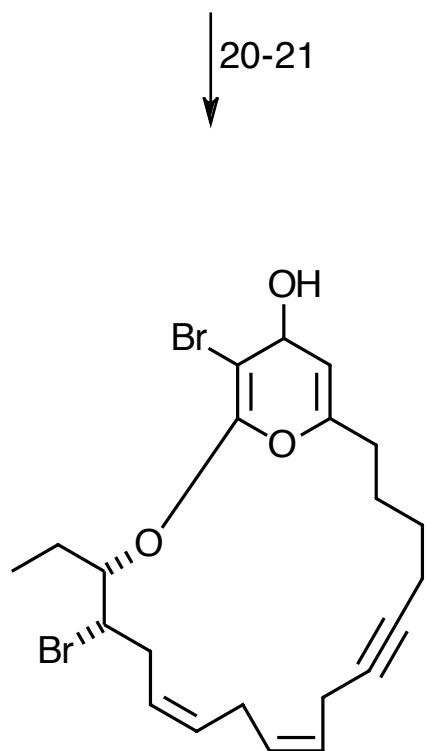
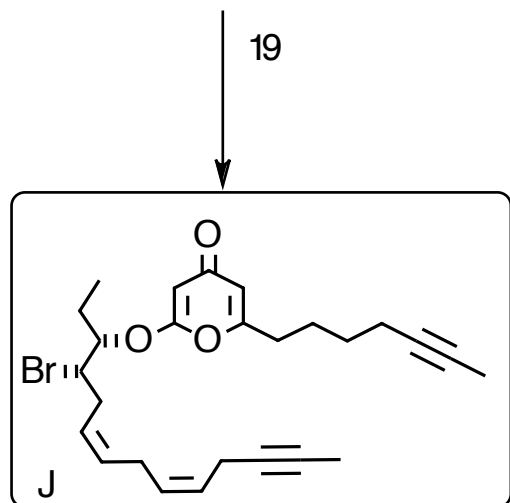
13) LiHMDS, THF, $-78\text{ }^{\circ}\text{C}$, then
 TMSCl, $-78\text{ }^{\circ}\text{C}$ to RT
 14) nBuLi, THF, $-78\text{ }^{\circ}\text{C}$, then
 MeI, $-78\text{ }^{\circ}\text{C}$ to RT
 15) MeLi, THF, $-78\text{ }^{\circ}\text{C}$, then
 ClC(O)OMe, -78 to $0\text{ }^{\circ}\text{C}$

16) tBuOAc, LDA, $-78\text{ }^{\circ}\text{C}$, then H
 17) TFA, CH_2Cl_2
 18) F, DCC, DMAP (cat), CH_2Cl_2 , $0\text{ }^{\circ}\text{C}$

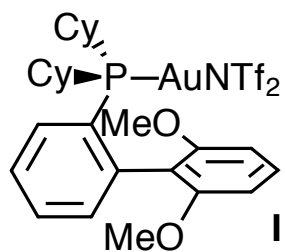
Please, provide a detailed mechanism
 for sequence 18).

Steglich esterification



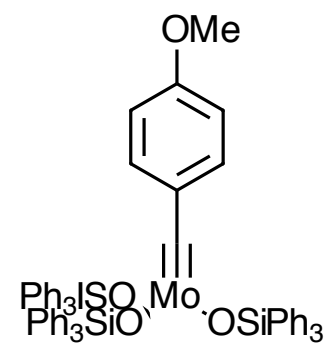
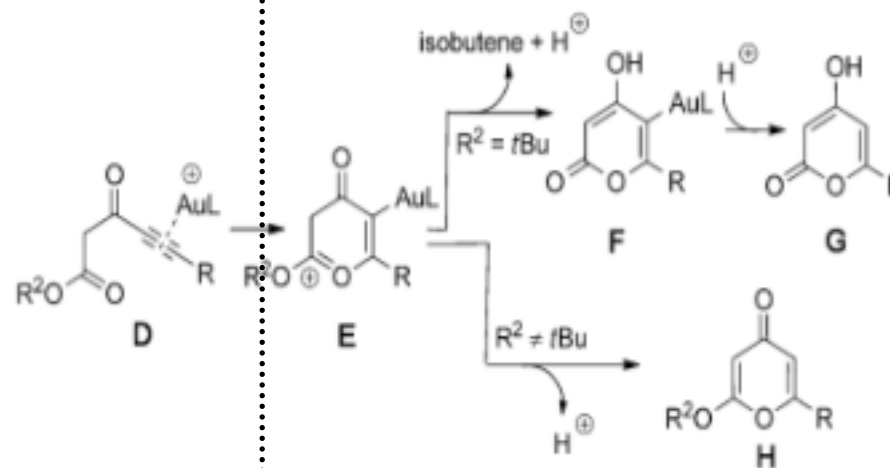


19) **I** (3 mol%), MeCN/HOAc (4:1)



20) **II** (5 mol%), MS 5 A, toluene
21) NBS, THF

Please provide a mechanism for step 19.



Katz-mechanism

Please provide a mechanism for step 20

