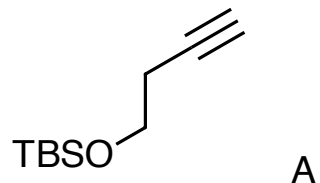


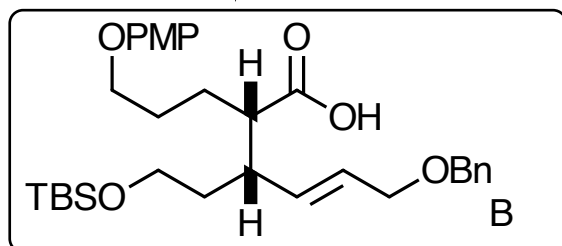
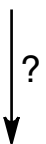
Synthesis Challenge # 34

AG Wegner

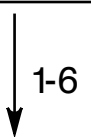
13.05.2015



A



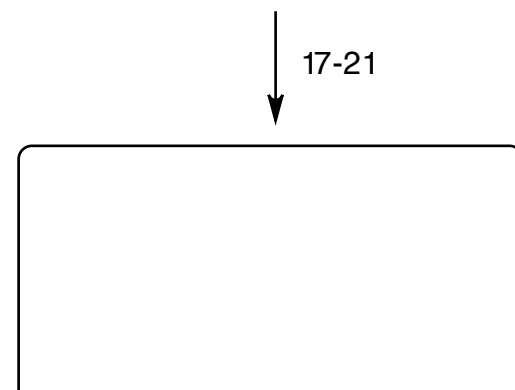
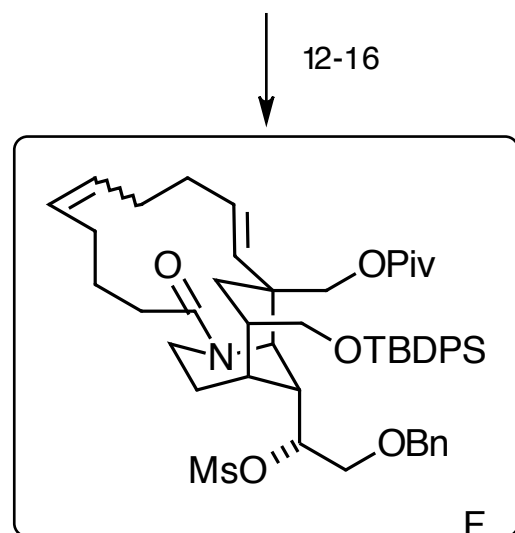
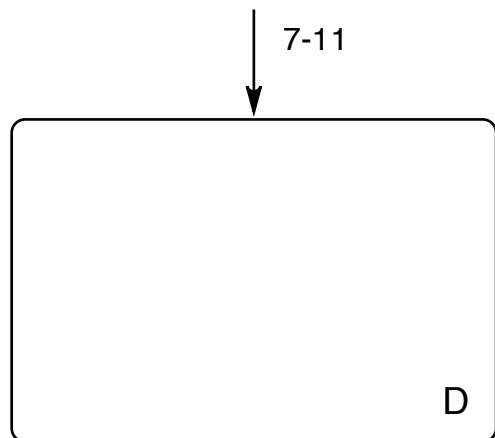
B



- 1) ClCO₂Et, Et₃N, THF, 0 °C ;
NaBH₄, H₂O, 0 °C to RT
- 2) TBDPSCl, imidazole, DMF, RT;
TFA, 10
- 3) BocNHOBoc, DEAD, Ph₃P,
toluene, RT;
- 4) CAN, NaHCO₃, MeCN-H₂O, 0°C
- 5) (COCl)₂, DMSO, CH₂Cl₂, -78°C;
Et₃N, 0°C
- 6) H₂C=NMe₂⁺I⁻, iPr₂NEt,
CH₂Cl₂, reflux; MeI, RT

Please design an asymmetric synthesis of B starting from A.

Please, provide a detailed mechanism for step 5 & 6.

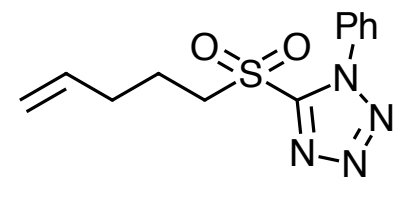


- 7) TFA, CH₂Cl₂, 40°C; pyridine, 40°C
- 8) 9-BBN, THF, RT;
aq. NaOH, aq. H₂O₂, RT
- 9) (COCl)₂, DMSO, CH₂Cl₂, -78 °C;
Et₃N, 0 °C
- 10) aq. HCHO, K₂CO₃, 1,4-dioxane, RT
- 11) toluene, 100°C;
PivCl, pyridine, DMAP, 100°C

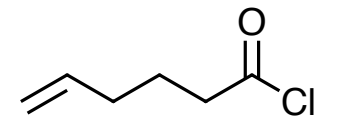
- 12) I, LHMDS, THF, -78 to 0°C
- 13) Zn, AcOH-Et₂O (1:2), RT
- 14) II, aq. NaHCO₃, CH₂Cl₂, 0°C
- 15) MsCl, Me₂N(CH₂)₃NMe₂, CH₂Cl₂
- 16) Grubbs II, CH₂Cl₂, RT

- 17) TBAF, THF, RT; *t*BuOK
- 18) MsCl, *i*Pr₂NEt, CH₂Cl₂, 0°C;
TESOTf
- 19) NaN₃, DMSO, 90°C; TBAF, 60°C
- 20) PivCl, pyridine, DMAP, toluene,
100 °C
- 21) H₂ (1 atm), Pd(OH)₂/C,
AcOH/MeOH (1:10), RT

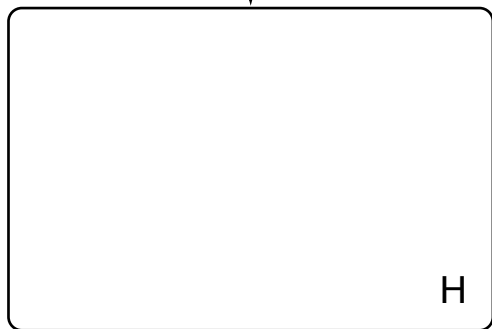
Please, provide a detailed mechanism for step 7.



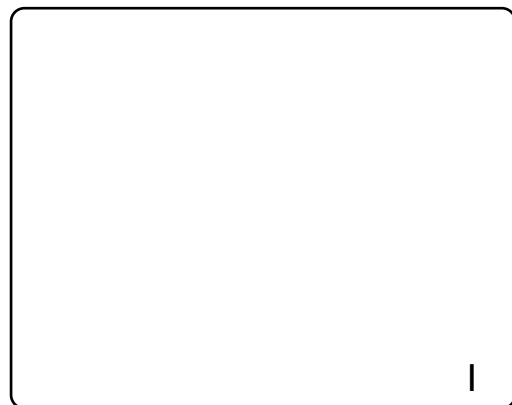
Please, provide a detailed mechanism for step 12.



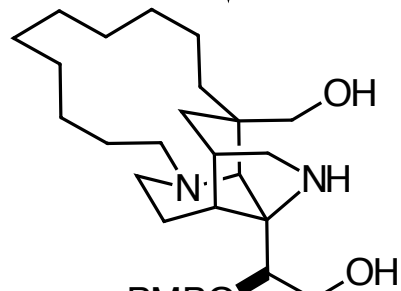
22-24



25-26



27-31



- 22) TsCl, aq. NaHCO₃, CH₂Cl₂, RT
23) TIPSOTf, *i*Pr₂NEt, CH₂Cl₂, 0°C
24) III, I₂, Cs₂CO₃, CH₂Cl₂, RT

- 25) TBAF, THF, RT
26) lithium naphthalenide, THF, -78 °C

- 27) AcOH, 50 °C
28) TFAA, pyridine, THF, 0 °C ;
aq. NaHCO₃, RT
29) PMBOC(=NH)CCl₃, TfOH, CH₂Cl₂
30) LiBH₄, MeOH, THF, 50°C
31) LiAlH₄, AlCl₃, Et₂O/THF (14:1)

