Synthesis Challenge # 56

Total Syntheses of Aflavazole and 14-Hydroxyaflavinine

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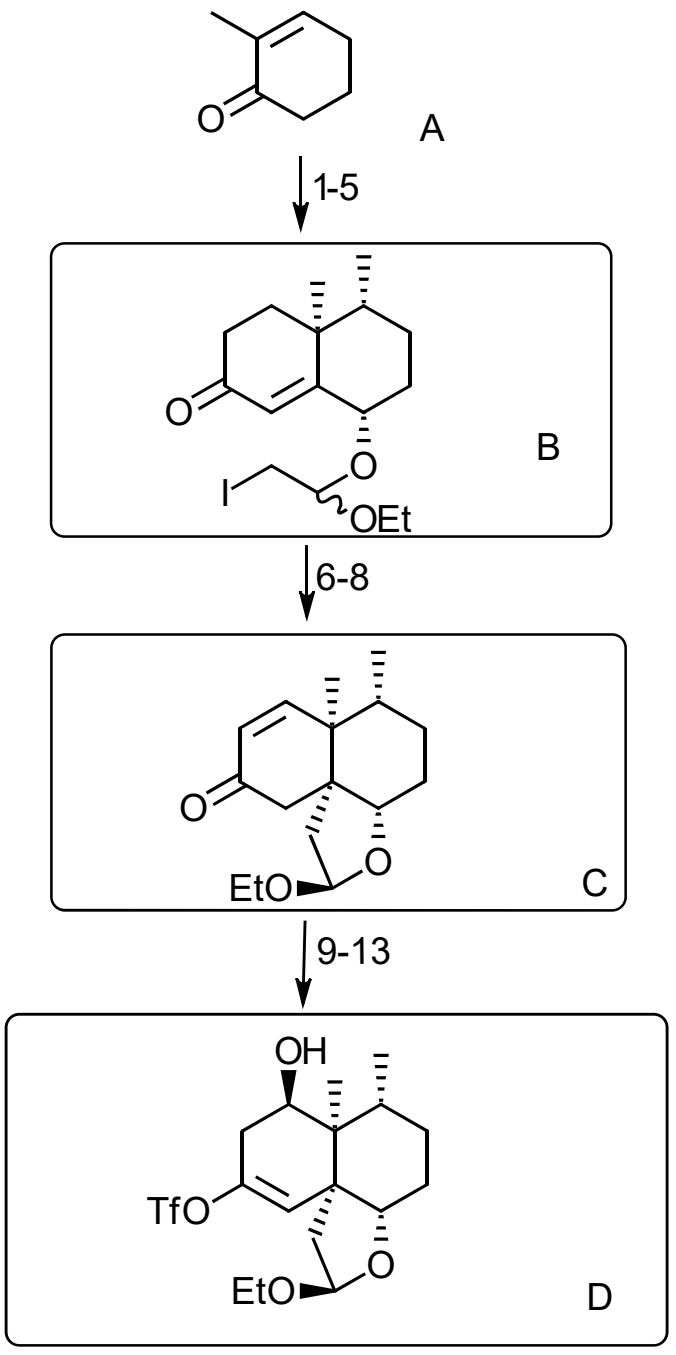
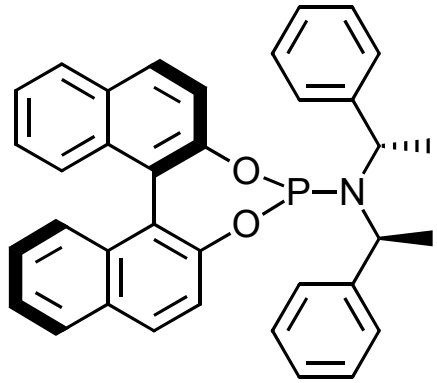
01.12.2016



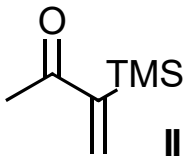
1) Me_3Al, CuTC, **I**; MeLi, HMPA, **II**
2) NaOMe
3) $HC(OMe)_3$, MsOH
4) Oxone®
5) Ethylvinylether, NIS

6) TMSOTf, Et_3N
7) IBX, MPO
8) Zn, CuI; MsOH, EtOH

9) CuCl, **III**, NaOtBu, B_2pin_2,
10) LiHMDS, $PhNTf_2$
11) $NaBO_3$
12) DMP
13) DIBAL-H

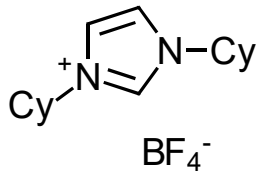


I



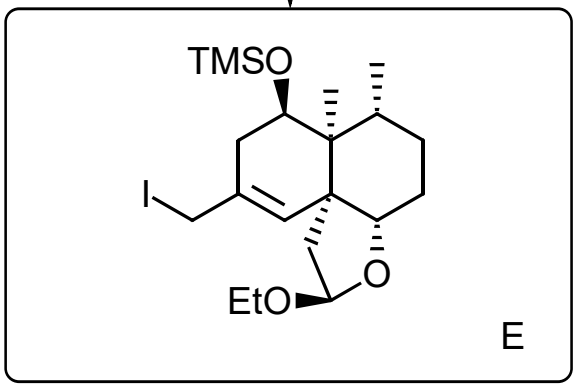
II Stork-Ganem reagent

Step 8: Luche cyclization

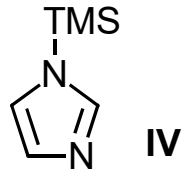


III

14-17

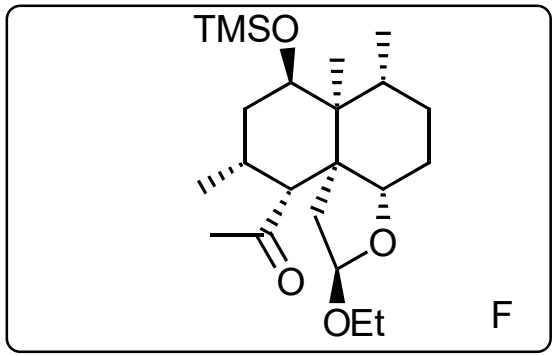


14) **IV**
15) $Pd(PPh_3)_4$, CO, MeOH, Et_3N
16) DIBAL-H
17) PPh_3, I_2, imidazole



IV

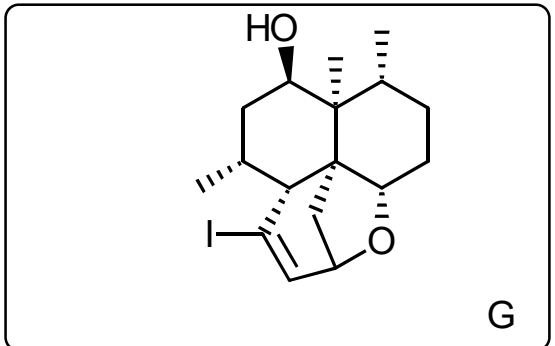
18-20



18) acetaldehyde, $CrCl_2$, LiI, 4Å MS, 2,6-lutidine
19) $NaBH_4$, $NiCl_2$
20) TPAP, NMO

Step 18: Nozaki-Hiyama reaction

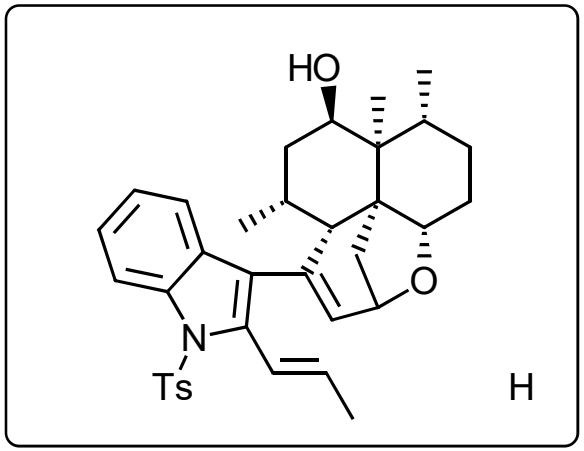
21-22



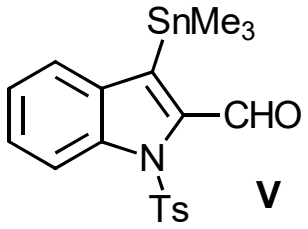
21) NaHMDS, $PhNTf_2$; TBAF
22) AlI_3

Step 22: Prins cyclization

23-24

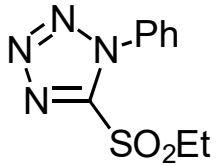


23) $Pd(PPh_3)_4$, CuTC, **V**
24) LiHMDS, **VI**



V

Step 23: Stille-Migata coupling



VI

Step 24: Julia-Kociensky ole-fination

25) toluene, 90ºC; then DDQ
26) $TiCl_4$, Et_3SiH
27) Mg, MeOH

25-27

27) MNBA, DMAP, Et_3N, CH_2Cl_2
28) $Pd_2(dba)_3$, LiCl, DMF
29) TBAF, AcOH, THF

MNBA = 2-Methyl-6-nitrobenzoic anhydride