Total Synthesis of the Euphorbia Diterpenoid Pepluacetal

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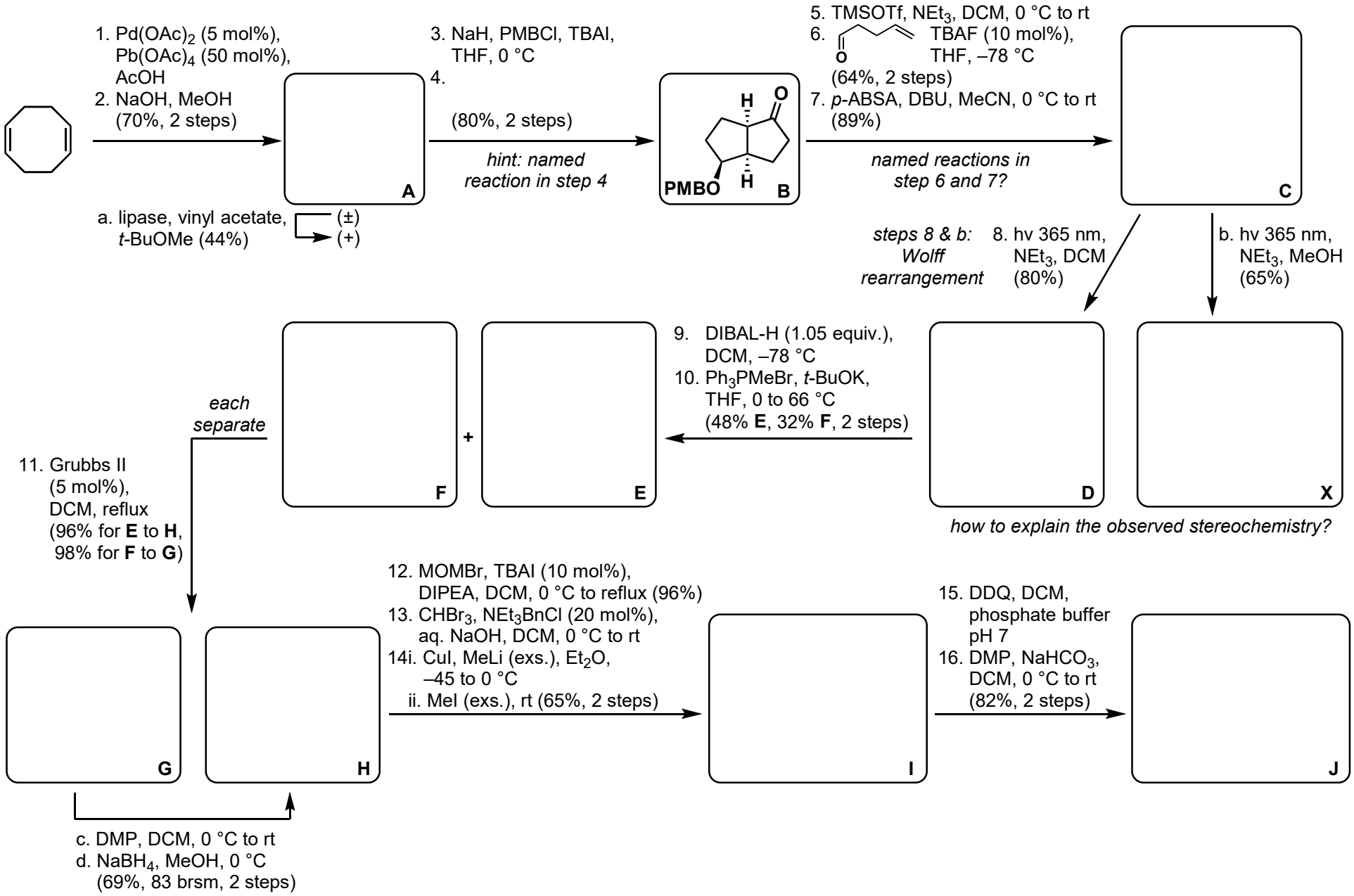


J

17. $MOMPPh_3Cl$, *t*-BuOK, THF, 0 °C to rt
18. Cl_3CCOOH, DCM, 0 °C to rt (96%, 2 steps)
19. MeI, *t*-BuOK, THF, –40 °C (78%)

hint: protection group stays in step 18

→ **K**

20. $NaClO_2$, NaH_2PO_4, 2-methyl-2-butene, THF, H_2O, *t*-BuOH, 0 °C
21i. Ghosez's reagent, DCM, 0 °C to rt
ii. $TMSCHN_2$, MeCN (73%, 2 steps)
22. $Rh_2(OAc)_4$ (3 mol%), DCM (90%)

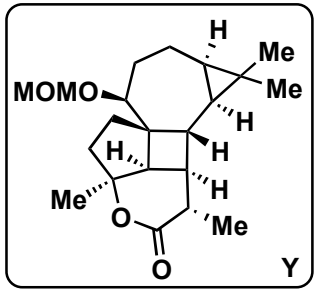
named reaction in step 20?

→ **L**

e. ?, $NaHCO_3$, DCM
f. LiHMDS, MeI, THF, –78 °C (68%, 2 steps)

hint: named reaction in steps e & 23

→ **Y**



23. ? (same as in e.), $NaHCO_3$, DCM
24. LiHMDS, Eschenmoser's salt, THF, –45 °C
25. mCPBA, DCM (75%, 3 steps)

→ **M**

explain the different stereochemical outcome between **Y** *and the intermediate after step 26*

26. Pd/C (50 mol%), H_2 (94%)
27. H_2SO_4 (5 wt%), MeOH, 80 °C (69%)

hint: 3 things happen in step 27

→ **N**

28. DIBAL-H (2.5 equiv.), DCM, –78 °C
29. DMP (4 equiv.), $NaHCO_3$, DCM, 0 °C to rt (75%, 2 steps)
30. NH_4Cl (20 mol%), MeOH, 50 °C (75%)

→ **O**

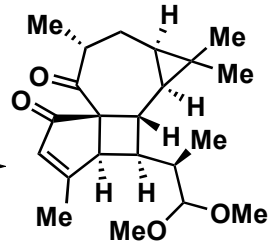
31. LiHMDS, MeI, THF, –78 °C (96%)
32i. LDA, THF, –78 °C
ii. AcOH (exs.) (67%)

hint: equilibration in step 32

→ **P**

33. CrO_3 (exs.), 3,5-dimethyl-pyrazole (exs.), DCM, 0 °C (64%)

→



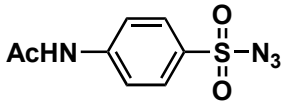
pepluacetal

g. TFA, H_2O, DCM (57%)

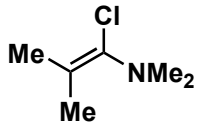
h. amberlyst 15, MeOH, 50 °C (97%)

→ **Q**

"presumed natural product"



p-ABSA (4-acetamidobenzene-sulfonyl azide)



Ghosez's reagent