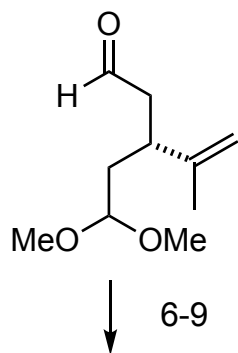
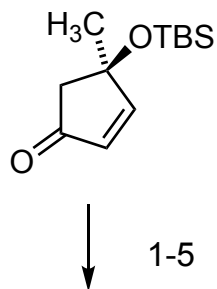


### The Total Synthesis of (-)-Scabrolide A

Hafeman, N. J.; Loskot, S. A.; Reimann, C. E.; Pritchett, B. P.; Virgil, S. C.; Stoltz, B. M.

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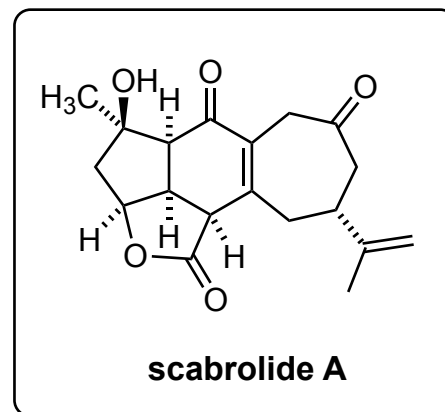
- 1) vinylMgBr, CuBr•DMS, TMSCl, HMPA/THF, -78 °C
- 2) LiTMP, TESCl, THF, -78 °C
- 3) DDQ, HMDS, PhMe, 23 °C
- 4) NaBH<sub>4</sub>, CeCl<sub>3</sub>•7H<sub>2</sub>O, MeOH, -78 °C
- 5) TBAF, THF, 60 °C

- 6) Br<sub>2</sub>CHPPh<sub>3</sub>Br, *t*-BuOK, THF, 0 to 23 °C
- 7) *n*-BuLi, THF, -78 °C then TMSCl then HCl, H<sub>2</sub>O/THF/dioxane, 23 °C
- 8) CBr<sub>4</sub>, PPh<sub>3</sub>, CH<sub>2</sub>Cl<sub>2</sub>, 0 °C
- 9) *n*-BuLi, THF, -78 °C then CO<sub>2</sub>, -78 °C to 23 °C then TBAF, 23 °C

1) How would you prepare the starting material in two steps?

4) Name reaction

6) Name reaction of sequence 6-7

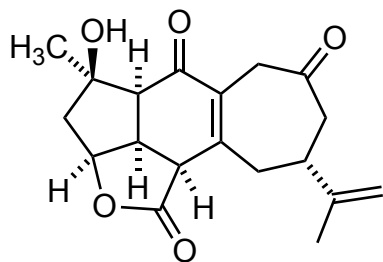


**A + B**

10-14



15-21



**scabrolide A**

- 10) DIC, DMAP, CH<sub>2</sub>Cl<sub>2</sub>, 0 °C
- 11) xylenes, 140 °C
- 12) VO(acac)<sub>2</sub>, TBHP, CH<sub>2</sub>Cl<sub>2</sub>/PhMe, 23 °C
- 13) Cp<sub>2</sub>TiCl<sub>2</sub>, Mn, collidine•HCl, THF, 23 °C
- 14) IBX, MeCN, 50 °C

- 15) *m*-CPBA, CH<sub>2</sub>Cl<sub>2</sub>, 0 to 23 °C
- 16) Ph(CH<sub>3</sub>)<sub>2</sub>SiH, [RuCp\*(MeCN)<sub>3</sub>]PF<sub>6</sub>, CH<sub>2</sub>Cl<sub>2</sub>, 0 °C
- 17) *hν* (350nm), PhH, 23 °C
- 18) Cp<sub>2</sub>TiCl<sub>2</sub>, Mn, collidine•HCl, THF, 23 °C
- 19) Hg(OAc)<sub>2</sub>, AcOOH/AcOH, 23 °C
- 20) *o*-NO<sub>2</sub>PhSeCN, *n*-Bu<sub>3</sub>P, THF, 23 °C  
*then* H<sub>2</sub>O<sub>2</sub>, 0 to 23 °C
- 21) CuI, NIS, PhMe, 90 °C

11) Name reaction

14) *hint: accompanied olefin migration*

16) *hint: α-selective*

17) *hint: two rings are formed*

19) Name reaction

20) Name reaction

21) Propose a mechanism