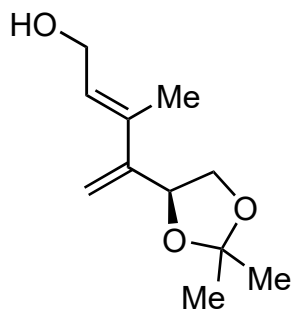


Total Synthesis of Farnesin

Y. Que, H. Shao, H. He, S. Gao, *Angew. Chem. Int. Ed.* **2020**, *59*, 7444–7449.

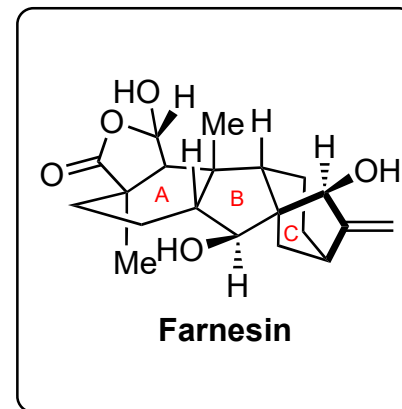
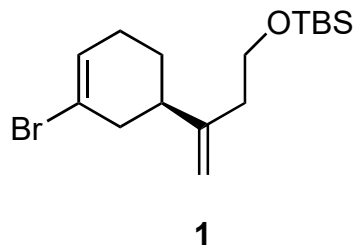
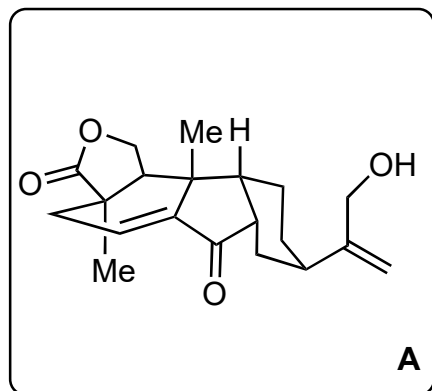


- 1) **Methyl acrylate**, (R)-octahydrobinol, Me_2Zn (0.2 equiv), MeMgBr (0.2 equiv), CH_2Cl_2
- 2) LDA, HMPA, MeI, THF
- 3) HCl (aq), THF
- 4) NaIO_4 , THF/ H_2O
- 5) *t*-BuLi, **1**, then **starting material**, Et_2O
- 6) IBX, DMSO
- 7) $h\nu$ (254-366 nm), CH_2Cl_2

1) Name of the reaction?

6) Structure of IBX

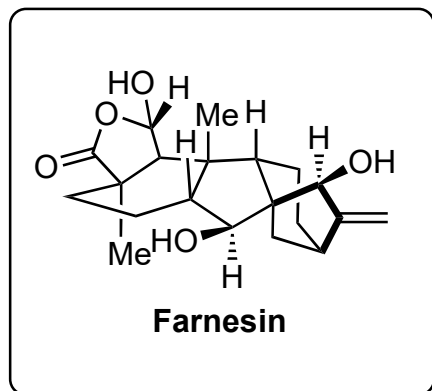
7) Name of the reaction?



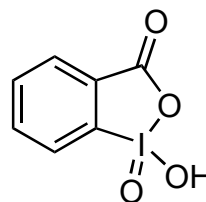
- 8) HCl, EtOH
- 9) SmI_2 , THF
- 10) DMP, CH_2Cl_2
- 11) MeONa, MeOH
- 12) DMP, CH_2Cl_2
- 13) BBr_3 , CH_2Cl_2
- 14) MsCl, Et_3N , CH_2Cl_2 then DBU, THF
- 15) $\text{Al}(\text{O}i\text{Pr})_3$, $i\text{-PrOH}$, acetone
- 16) MOMBr, DIPEA, CH_2Cl_2
- 17) DMP, CH_2Cl_2
- 18) NaBH_4 , CeCl_3 , EtOH, THF
- 19) MOMBr, DIPEA, CH_2Cl_2
- 20) KOH, $t\text{-BuOH}$, H_2O , IBX, DMSO
- 21) HBr, MeOH

14) Classify the reaction
 15) Name of the reaction? *Hint: 17) 18) are transformations on the B-Ring*

17) Name three alternative reagents each proceeding via a different mechanism/key intermediate



- 1) Diels-Alder
- 7) Nazarov/Excited-State-Nazarov
- 14) E1cB
- 15) Meerwein-Pondorf-Verley reduction; If a oxidation is desired Oppenauer oxidation
- 17) a) Swern/Corey-Kim/Parikh-Doering/Albright-Goldman via alkoxyulfonium ion
 - b) Jones/PCC via chromate esters
 - c) Ley oxidation perruthenate (10.1039/c7sc04260d)
 - d) TEMPO N-Oxoammonium salt



IBX