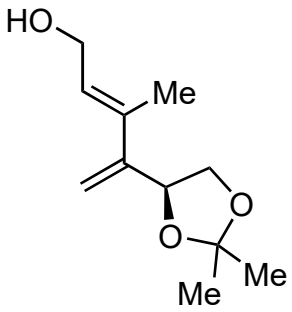
Total Synthesis of Farnesin

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) hν (254-366 nm), CH_2Cl_2

1) Name of the reaction?

6) Structure of IBX
7) Name of the reaction?

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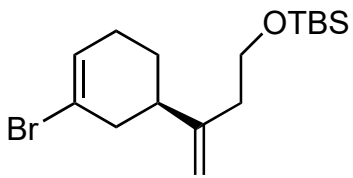

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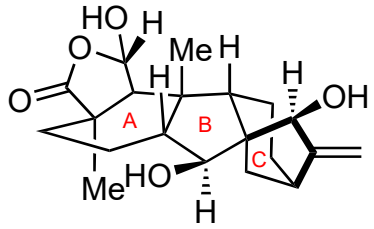
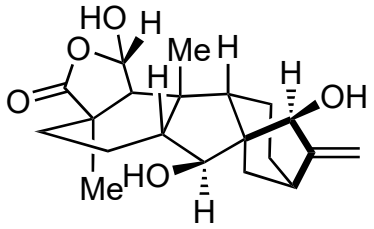


Farnesin

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) $Al(OiPr)_3$, *i*-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*-BuOH, H_2O, IBX, DMSO
21)HBr, MeOH



Farnesin

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