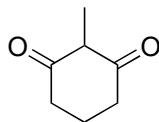
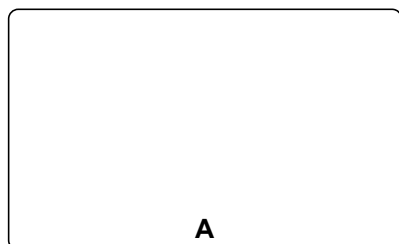


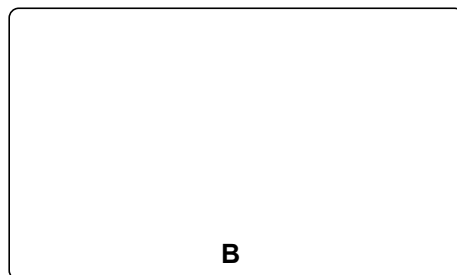
Total Synthesis of Shearinines D and G: A Convergent Approach to Indole Diterpenoids
 N. Hauser, M. A. Imhof, S. S. Eichenberger, T. Kündig, E. M. Carreira, *Angew. Chem. Int. Ed.* **2022**, *61*, e202112838.



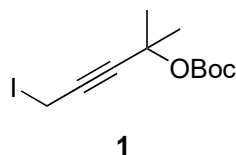
1-4



5-12

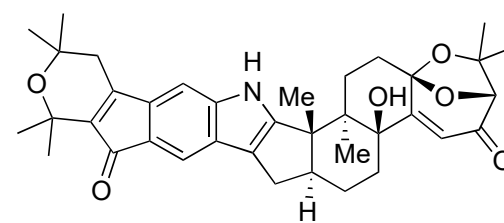


- 1) methylvinyl ketone, L-proline
- 2) ethylene glycol, *p*-TsOH
- 3) Li, *t*-BuOH, NH₃, *then* TMSCl, NEt₃
- 4) MeLi, HMPA, **1**



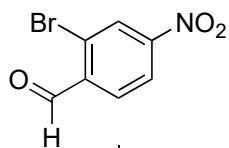
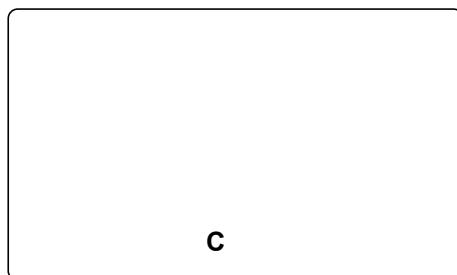
- 5) aq. HCl
- 6) PPh₃AuCl, AgOTf, *p*-TsOH
- 7) LHMDS, ethyl bromoacetate
- 8) DBU
- 9) MePPh₃Br, KO^tBu
- 10) LiOH, H₂O
- 11) MeLi
- 12) LHMDS, 2,2,2-Trifluoroethyl trifluoroacetate

- 8) Epimerization
- 9) Name of the reaction?

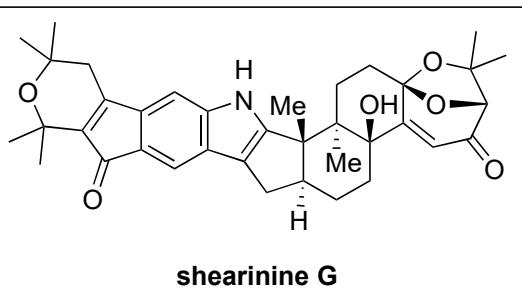


shearinine G

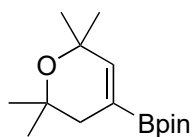
13-18



19-28



- 13) NEt_3 , *p*-ABSA
- 14) $\text{Rh}_2(\text{OAc})_4$
- 15) sodium naphthalenide, *then* Comin's reagent
- 16) OsO_4 , $(\text{DHQ})_2\text{PHAL}$
- 17) *p*-TsOH
- 18) SeO_2



2

- 19) **2**, $\text{Pd}(\text{PPh}_3)_4$, K_2CO_3
- 20) TMSOTf
- 21) DMP
- 22) SnCl_2
- 23) Boc_2O , guanidinium chloride
- 24) NBS, AcOH
- 25) $\text{Pd}(\text{PPh}_3)_4$, Me_6Sn_2
- 26) **C**, $\text{Pd}(\text{PPh}_3)_4$, LiCl, CuCl
- 27) $\text{Pd}(\text{TFA})_2$, NaOAc
- 28) silica gel, 90 °C

16) Name of the reaction?

18) Name of the reaction?

19) Name of the reaction?

20) Name of the reaction?

26) Name of the reaction?

28) Hint: Deprotection