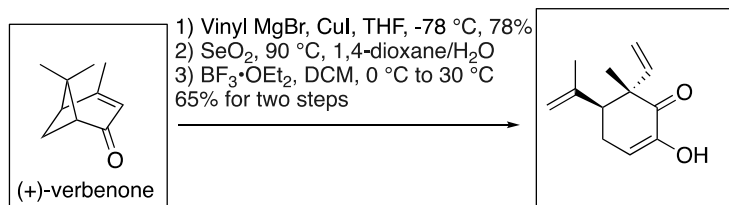
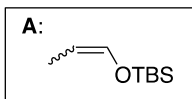
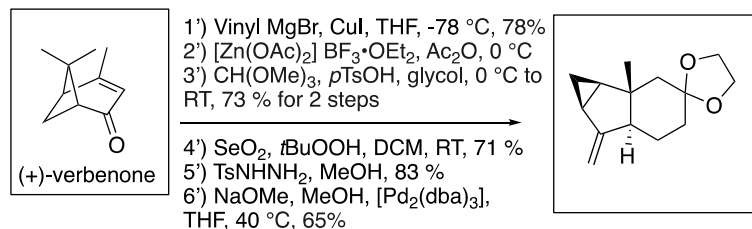
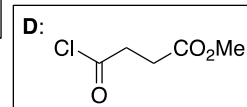
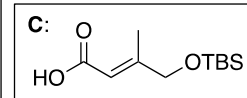
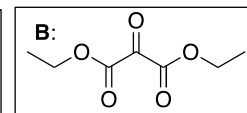
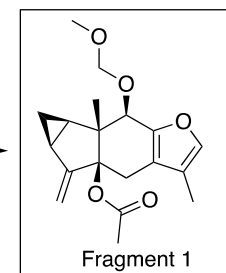


E117: Synthesis Of Lindenane Sesquiterpenoid Dimers (e.g. Chlorajaponilide C)^[1,2] And Synthesis Of (–)-Morphine^[3]

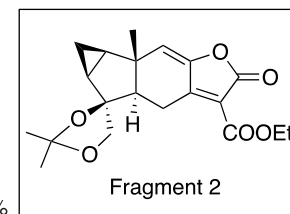


4) CAN, **A**, ACN/PhH = 4/1, then Amberlyst-15, PhMe, reflux, 68% for two steps
 5) SeO₂, 1,4-dioxane/H₂O, 90 °C, 70%
 6) TsNHNH₂, MeOH, reflux, 80 °C
 7) MeONa, MeOH, Rh₂(OAc)₄, DMF, 50 °C, 63% for 2 steps

8) SeO₂, 1,4-dioxane, 50 °C, then NaIO₄, H₂O, 65 °C, 83 %
 9) *p*-TsOH·H₂O, Ac₂O, 30 °C, 76 %
 10) NaBH₄, EtOH/*i*PrOH, 3:1 dr, 87 %
 11) *i*Pr₂NEt, MOMCl, DCM, 70 °C, 82 %



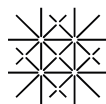
7) O₃, -78 °C, DCM/MeOH, 87%
 8) vinyl Li, - 10 °C, THF, 61 %
 9) O₃, -78 °C, DCM/MeOH, NaBH₄
 10) PPTS, Me₂C(OMe)₂, DCM, 30 °C
 11) *p*-TsOH·H₂O, acetone, 0 °C, 91% for 3 steps
 12) **B**, LHMDS, ZnCl₂, THF, -78 °C, 94 %
 13) *p*-TsOH·H₂O, Ac₂O, 0 °C to 30 °C, 60 %
 14) DBU, LiBr, THF, - 40 °C, 59 %

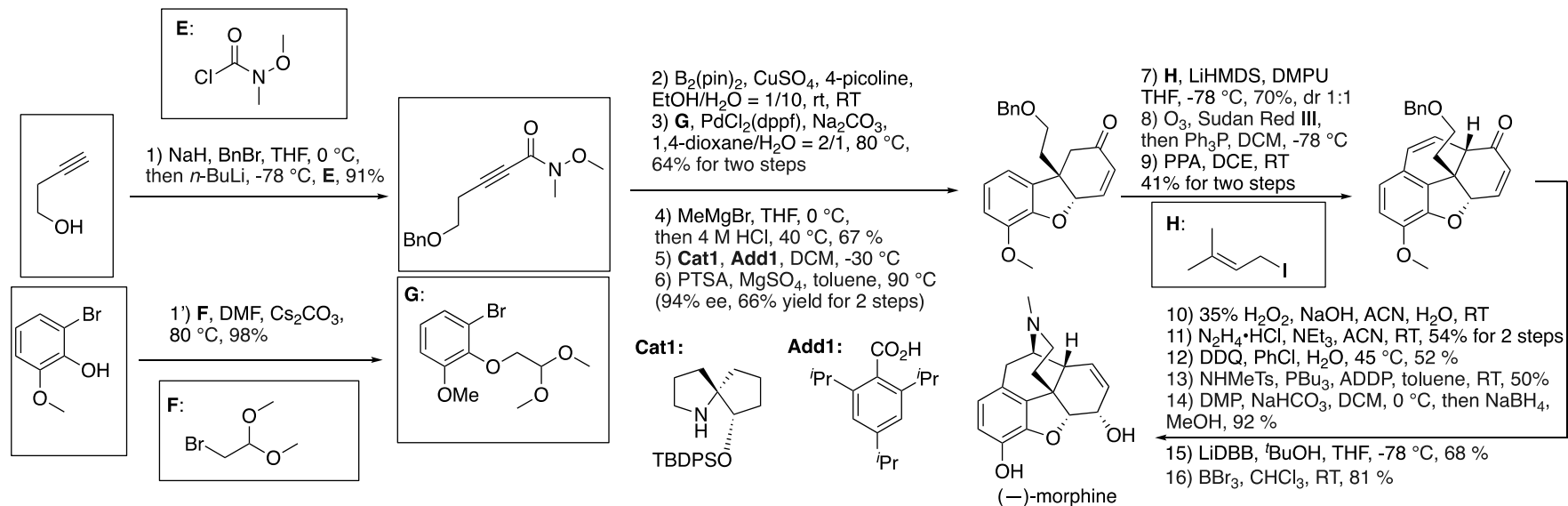
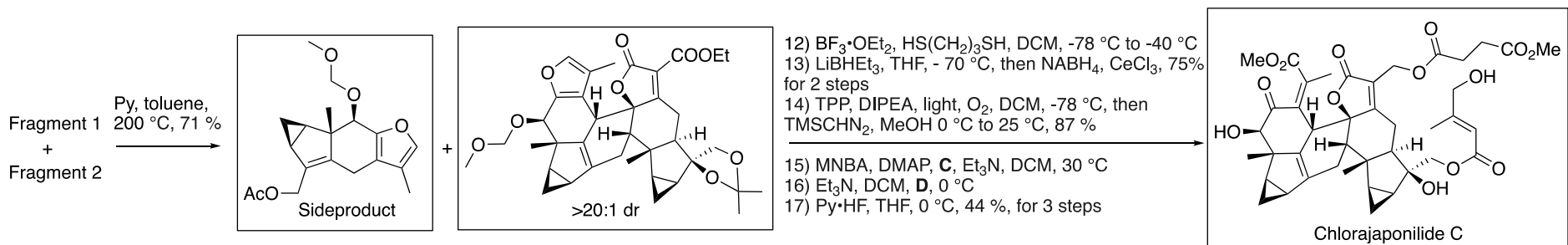


^[1] B. Du, Z. Huang, X. Wang, T. Chen, G. Shen, S. Fu, B. Liu, *Nat. Commun.* **2019**, *10*, 1892.

^[2] B. Du, C. Yuan, T. Yu, L. Yang, Y. Yang, B. Liu, S. Qin, *Chem. Eur. J.* **2014**, *20*, 2613.

^[3] Q. Zhang, F. Zhang, C. Zhang, S. Liu, J. Tian, S. Wang, X. Zhang, Y. Tu, *Nat. Commun.* **2019**, *10*, 2507.





[1] B. Du, Z. Huang, X. Wang, T. Chen, G. Shen, S. Fu, B. Liu, *Nat. Commun.* **2019**, *10*, 1892.

[2] B. Du, C. Yuan, T. Yu, L. Yang, Y. Yang, B. Liu, S. Qin, *Chem. Eur. J.* **2014**, *20*, 2613.

[3] Q. Zhang, F. Zhang, C. Zhang, S. Liu, J. Tian, S. Wang, X. Zhang, Y. Tu, *Nat. Commun.* **2019**, *10*, 2507.

