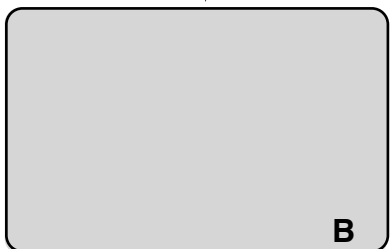
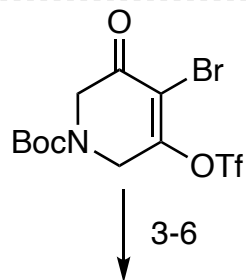
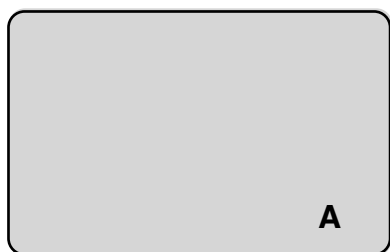
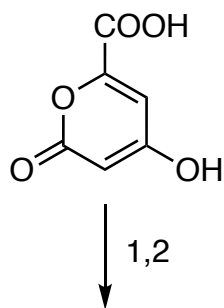


Total synthesis of lissodendoric acid **A** via stereospecific trapping of a strained cyclic allene

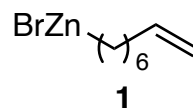
Ippoliti, F. M.; Adamson, N. J.; Wonilowicz, L. G.; Nasrallah, D. J.; Darzi, E. R.; Donaldson, J. S.; Garg, N.K.

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1) TsCl (excess), TEA, DCM then *t*-BuOH, 40 °C

2) **1**, PdCl₂(PPh₃)₂ (20 mol%), NMI, DMA

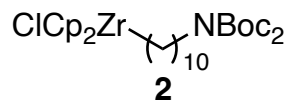


3) **2**, CuBr·SMe₂, THF, 40 °C

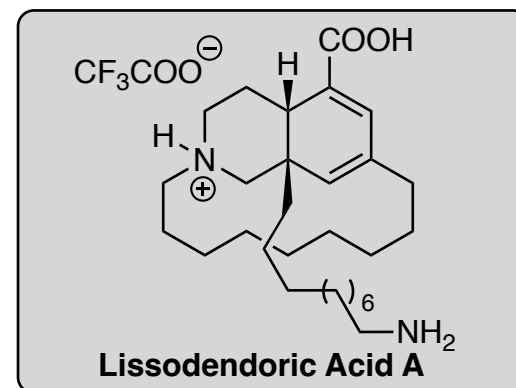
4) (*R*)-CBS cat. (20 mol%), BH₃·SMe₂, THF, 30 °C

5) EtOC(O)Cl, pyr., DCM

6) PhMe₂SiLi, CuCN, PPh₃, Et₂O/THF, -78 °C



2) What type of cross-coupling is this reaction?



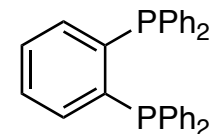
7-14



- 7) **A**, CsF, *n*-Bu₄NBr, MeCN, -20 °C
- 8) PDC, *t*-BuOOH, PhH
- 9) Cu(OAc)₂•H₂O, BDP (50 mol%), PMHS, *t*-BuOH, PhMe
- 10) MeCN, 80 °C *then* Cu(OTf)₂ (20 mol%), 40 °C
- 11) acryloyl chloride, TEA, DCM
- 12) Grubb's II (20 mol%), DCM, 40 °C
- 13) Rh(cod)(acac) (50 mol%), PhSiH₃, DCM, 40 °C
- 14) TFA, DCM, -78 °C to 23 °C

7) Rationalize the regiochemical outcome of this reaction.

9) Structure of BDP:



10) *Hint*: 3 eq. CO₂ are liberated throughout this two-part transformation.