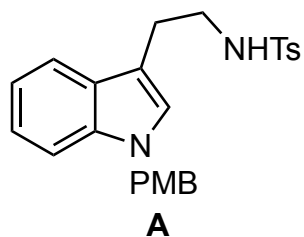
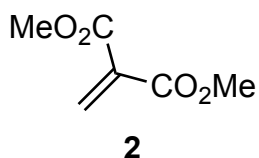
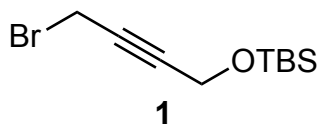


# Allenamide-Initiated Cascade [2+2+2] Annulation Enabling the Divergent Total Synthesis of (-)-Deoxoapodine, (-)-Kopsifoline D and (±)-Melotenine

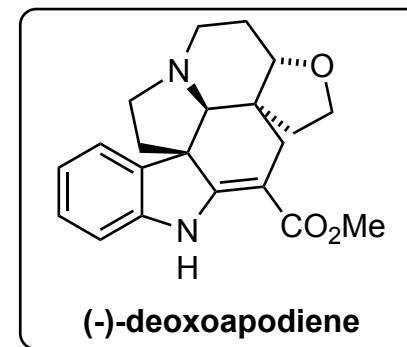
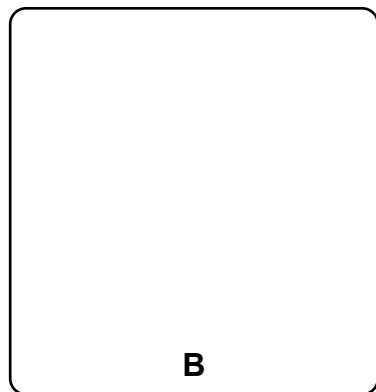
L.-P. Zhao, P.-J. Li, L. Wang, *Angew. Chem. Int. Ed.* **2022**, 61, e202207360.



- 1)  $K_2CO_3$ , **1**
- 2)  $KOt-Bu$  (0.2 equiv)
- 3)  $In(OTf)_3$ , **2**, 3 Å MS
- 4)  $LiCl$ ,  $H_2O$
- 5) *p*-toluenethiol, TFA
- 6) DDQ

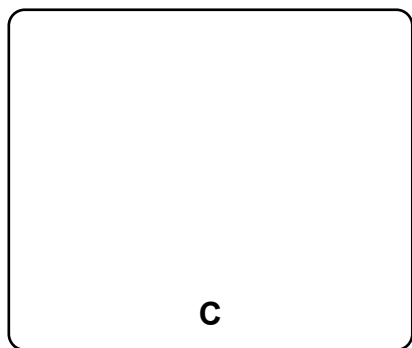


- 1) From which commercially available source stems the **A**?
- 3) Provide a mechanism! Hint: two rings form
- 4) Name of reaction?
- 5) Hint: two positions react

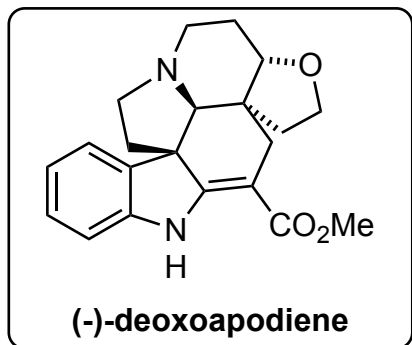


**B**

- 7)  $\text{CH}_3\text{C}(\text{OCH}_3)_3$ , hydroquinone, 200 °C  
8) Na, naphthalene  
9) allyl bromide, LiI  
10) Hg II  
11) DIBAL-H



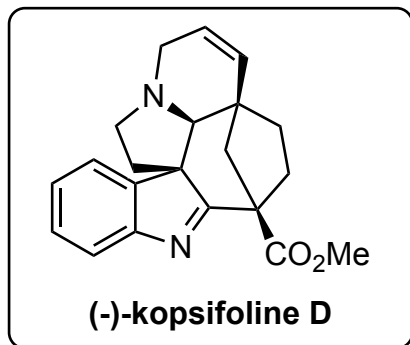
- 12)  $(p\text{-CF}_3\text{C}_6\text{H}_4)_3\text{PAuCl}$ , AgNTf<sub>2</sub>



- 7) Name of the reaction?  
10) Structure of catalyst  
12) Classify the cyclization according to the Baldwin rules

**C**

13) KO<sup>t</sup>-Bu, TsCl



**A**

14) CuTC, DMEDA, Cs<sub>2</sub>CO<sub>3</sub>, **3**  
15) In(NTf<sub>2</sub>)<sub>3</sub>, 2, 3 Å MS  
16) LiCl, H<sub>2</sub>O  
17) Pd/C, H<sub>2</sub>  
18) DDQ  
19) Na, naphthalene  
20) allyl bromide *then* TBAF  
21) PPh<sub>3</sub>, CBr<sub>4</sub>  
22) DBU  
23) HG II

