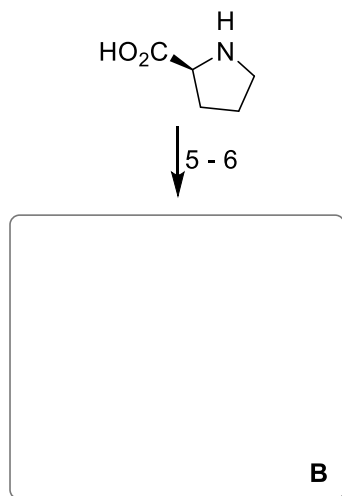
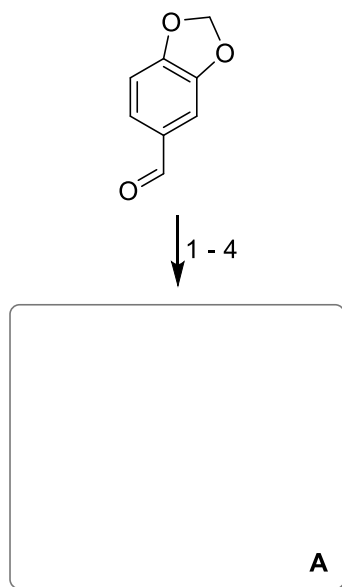
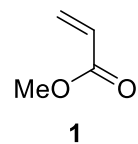


Collective Asymmetric Total Synthesis of C-11 Oxygenated *Cephalotaxus* Alkaloids

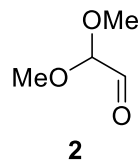
Kim, J. H.; Jeon, H.; Park, C.; Park, S.; Kim, S. *Angew. Chem. Int. Ed.* **2021**, *60*, 12060-12065.



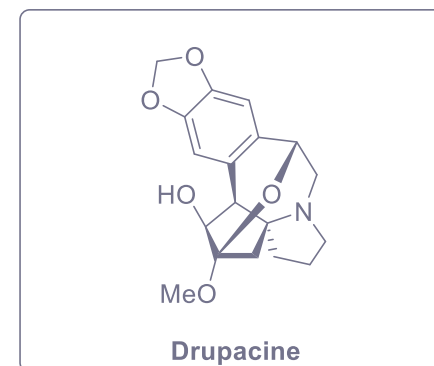
- 1) **1**, NaH, MeOH, THF *then* NaOH (aq)
- 2) ClCO₂Et, Et₃N, THF
- 3) NaBH₄, MeOH
- 4) PBr₃, Et₂O



- 5) **2**, NaCNBH₃, H₂O, CH₂Cl₂
- 6) BF₃•OEt₂, MeCN

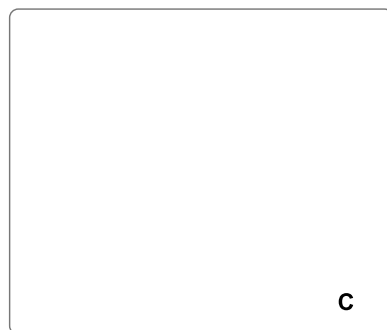


Common names of starting materials used to generate **A** and **B**?

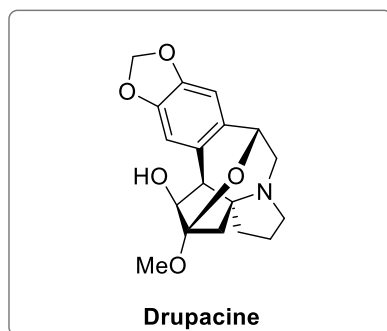


A + B

↓
7 - 12



↓
13 - 17



- 7) MeCN
- 8) DBU, CH₂Cl₂
- 9) MsOH, CH₂Cl₂
- 10) NBS, 1,4-dioxane, H₂O
- 11) O₃, CH₂Cl₂ *then* Me₂S
- 12) KOtBu, THF *then* Me₂SO₄

Step 8: Name? Show structure of DBU and transition state.

Step 12: Name of the reaction?

- 13) H₂, PtO₂, EtOH
- 14) K₂CO₃, MeOH
- 15) NaBH₄, MeOH
- 16) LiAlH₄, THF
- 17) HCl, H₂O, THF