

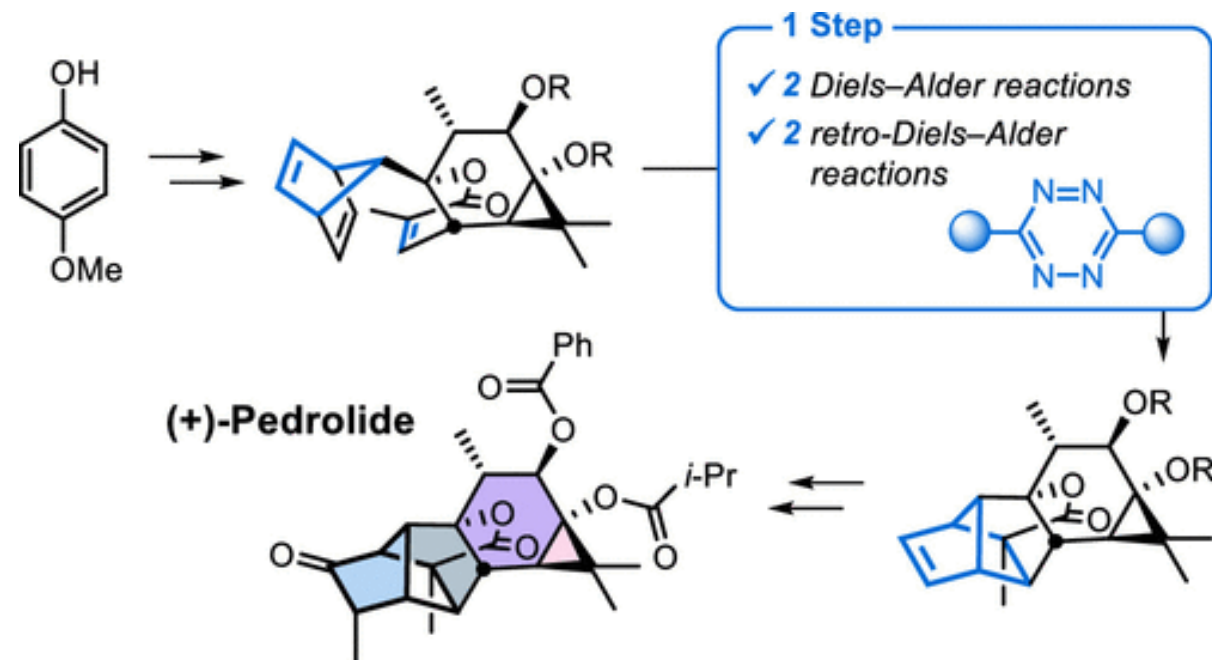
Total synthesis presentation



Changhang Dai
Liu Group Meeting
Jun 21st, 2023

Enantioselective Total Synthesis of (+)-Pedrolide

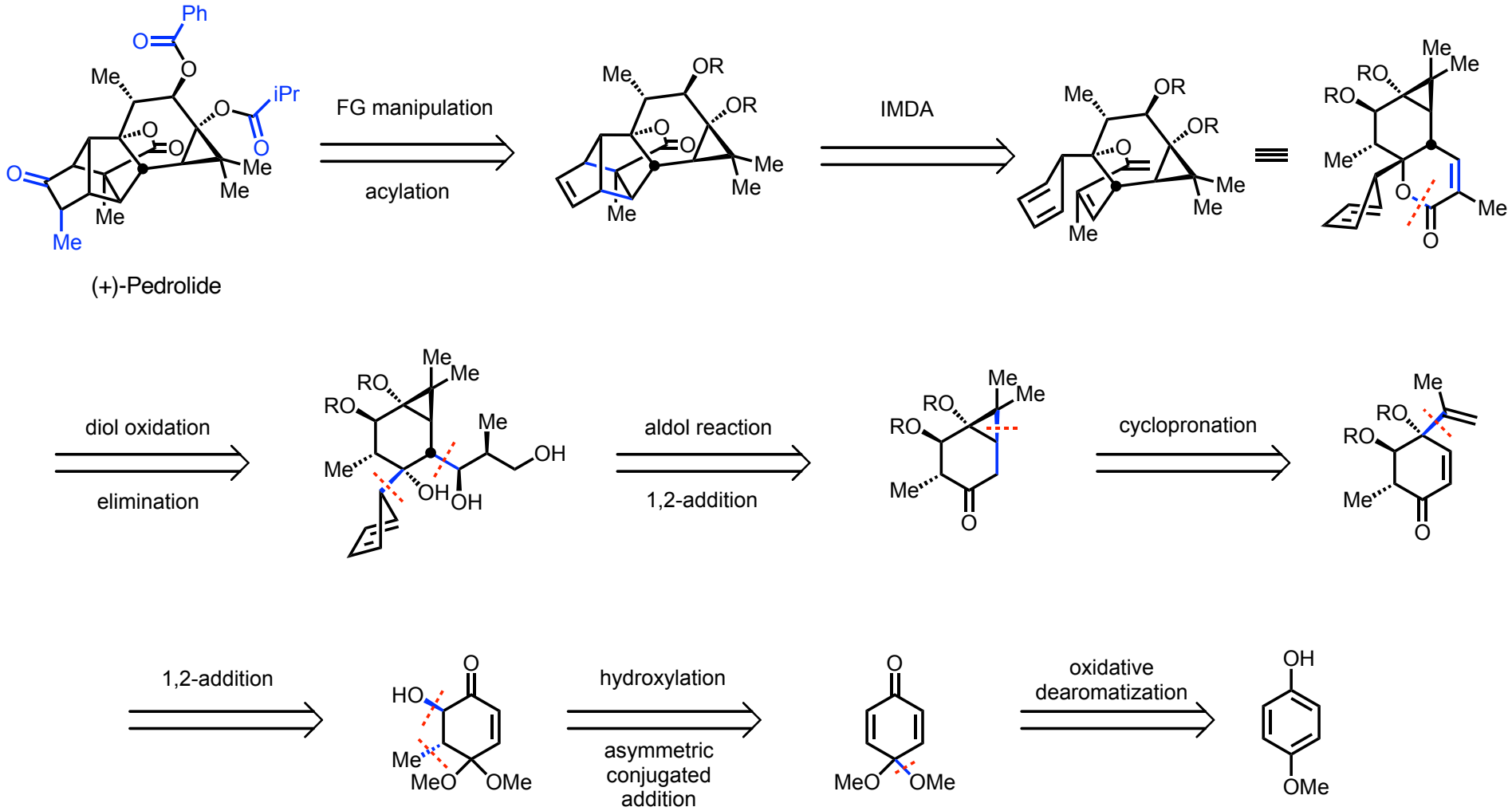
Marlene Fadel and Erick M. Carreira*

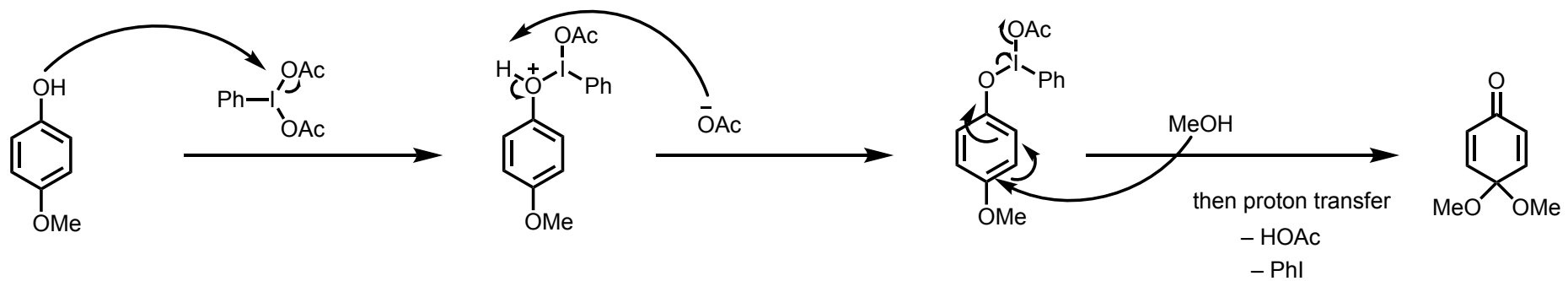
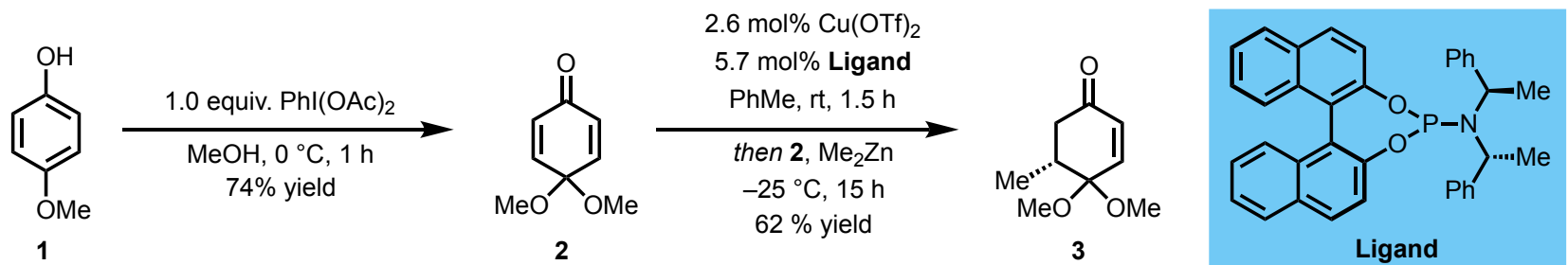


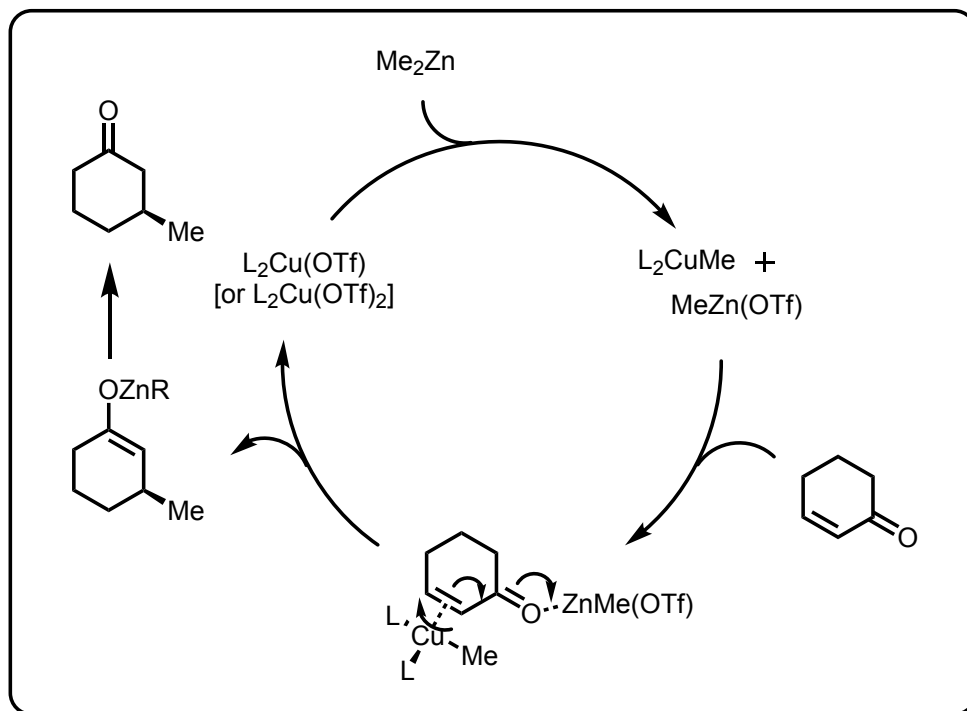
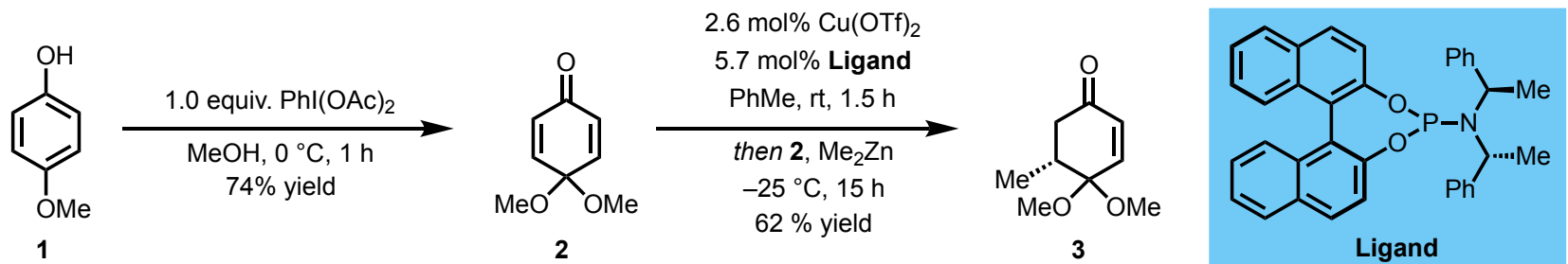
- Isolated in 2021 from *Euphorbia pedroi* by Ferreira and co-workers
- Biosynthetically derive from a tigliane precursor by proposal

- New scaffold: pedrolane
- 5–5–6–6–3-fused skeleton
- bicyclo[2.2.1]heptane
- 12 stereogenic centers

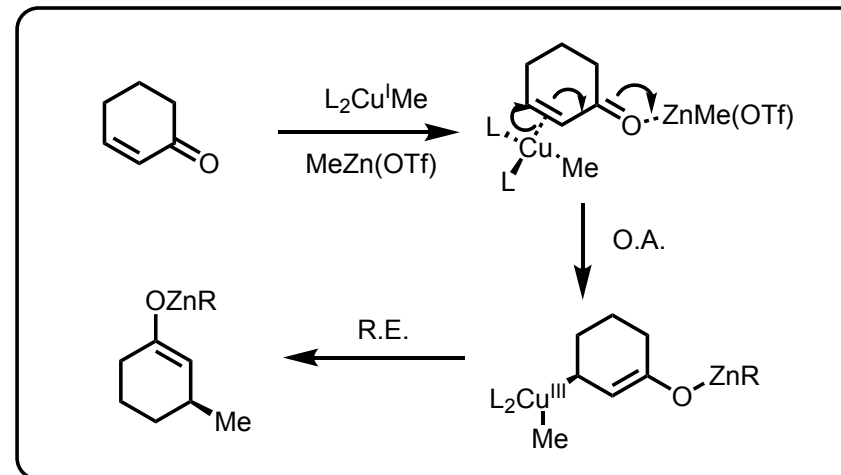
Retrosynthetic analysis



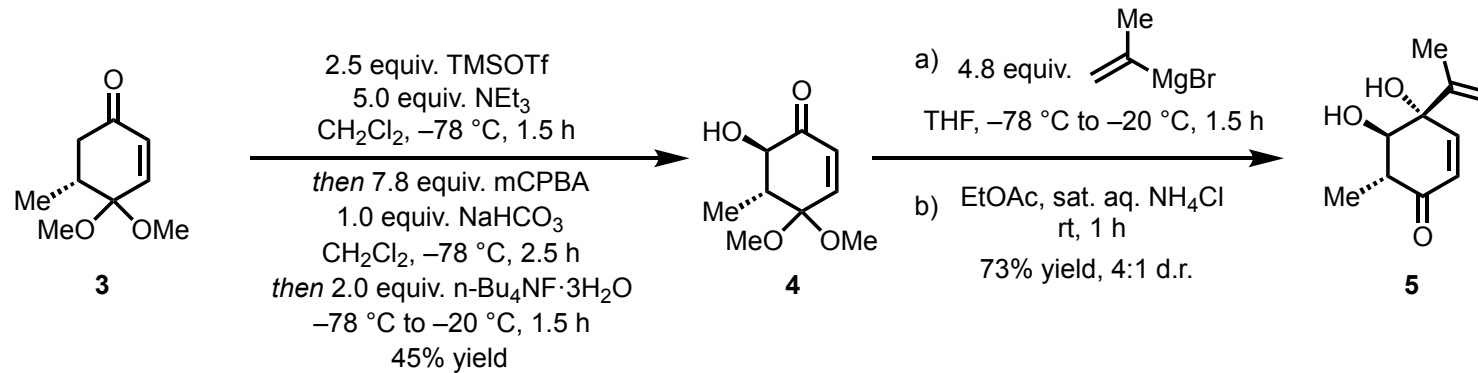




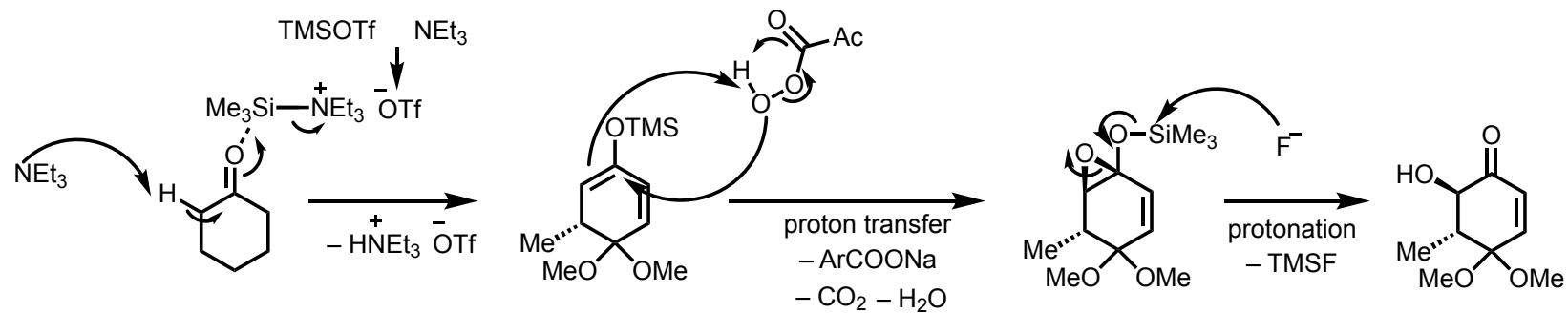
Angew. Chem. Int. Ed. **1997**, *36*, 2620–2623.



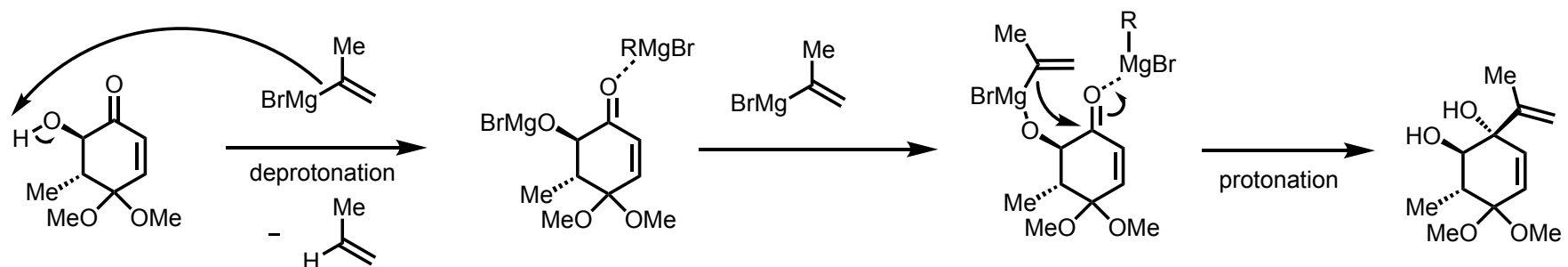
Angew. Chem. Int. Ed. **2000**, *39*, 3750–3771.

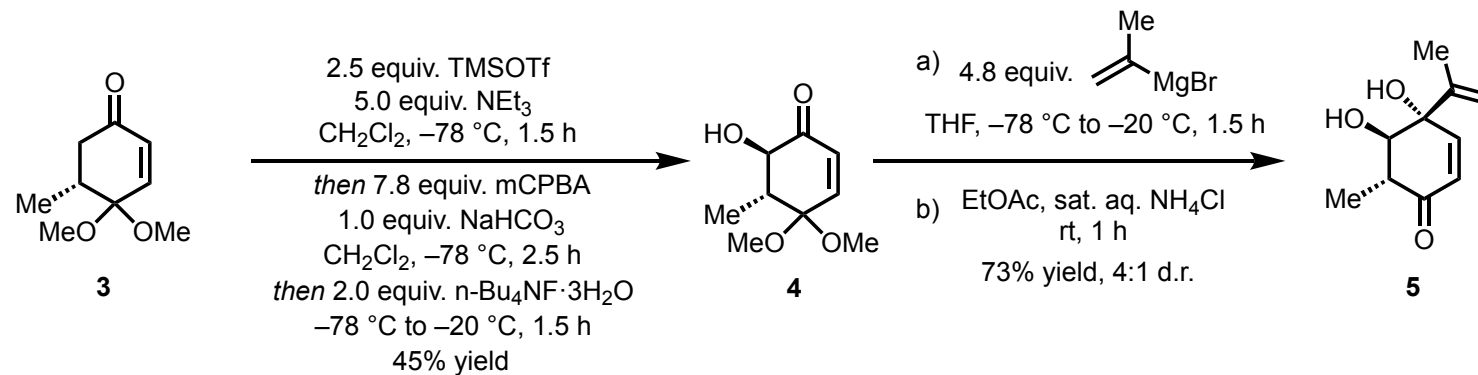


Rubottom reaction:

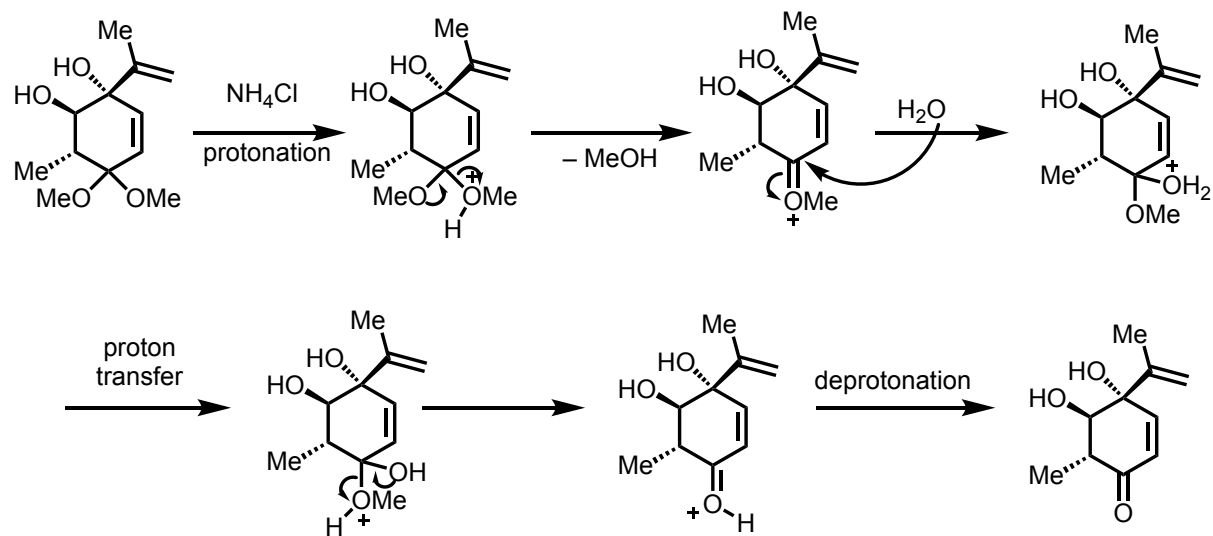


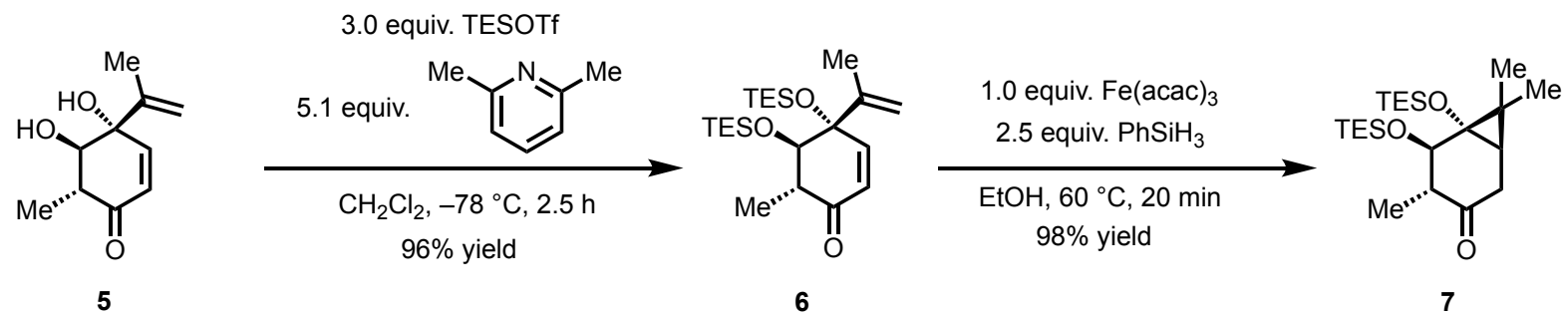
Grignard addition:



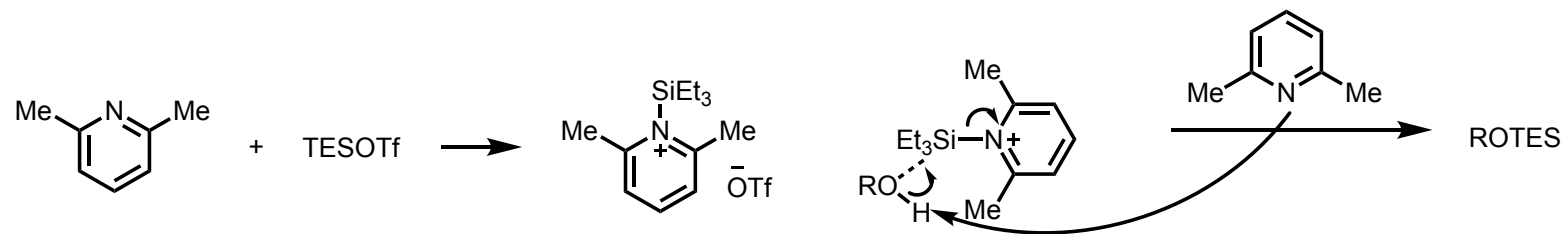


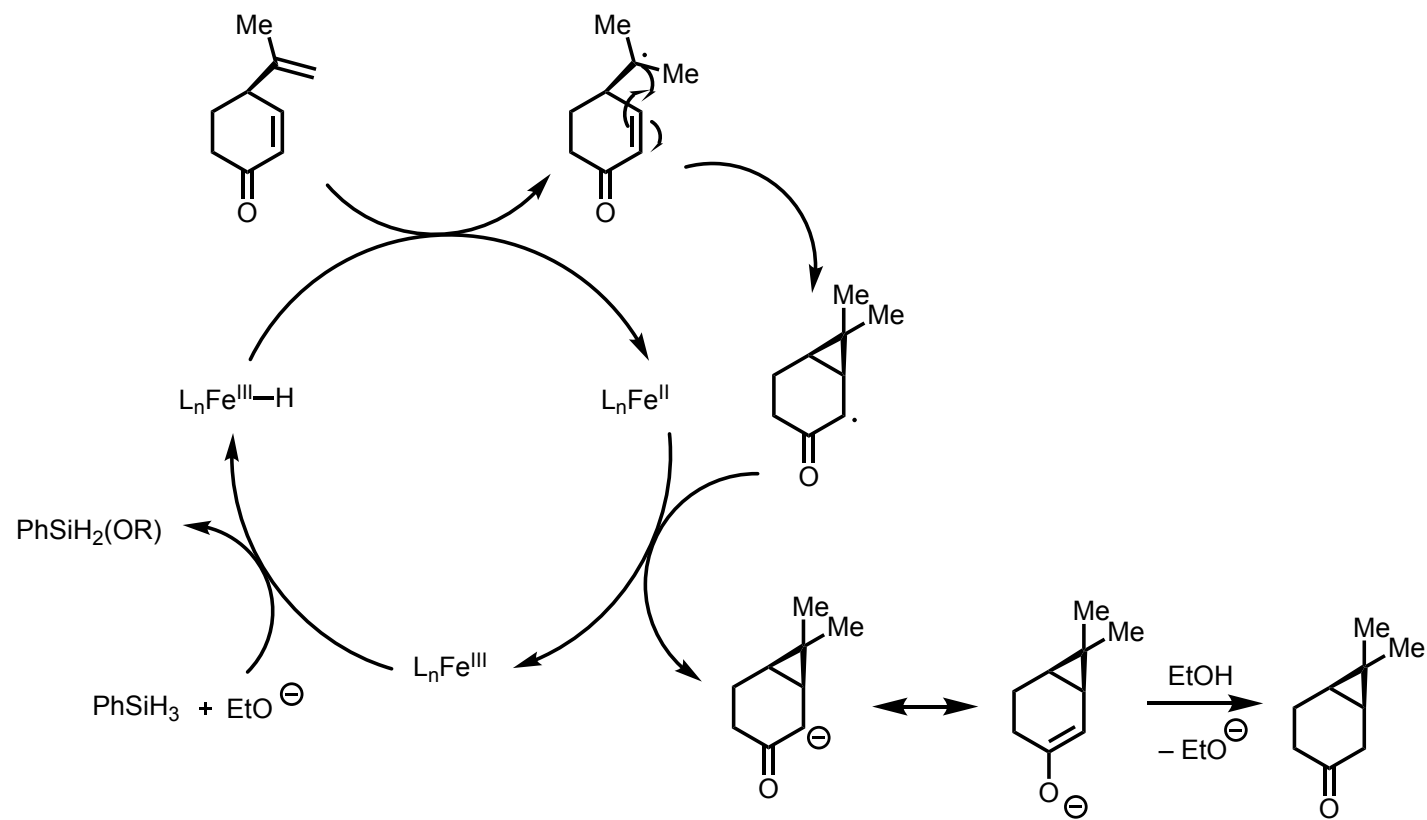
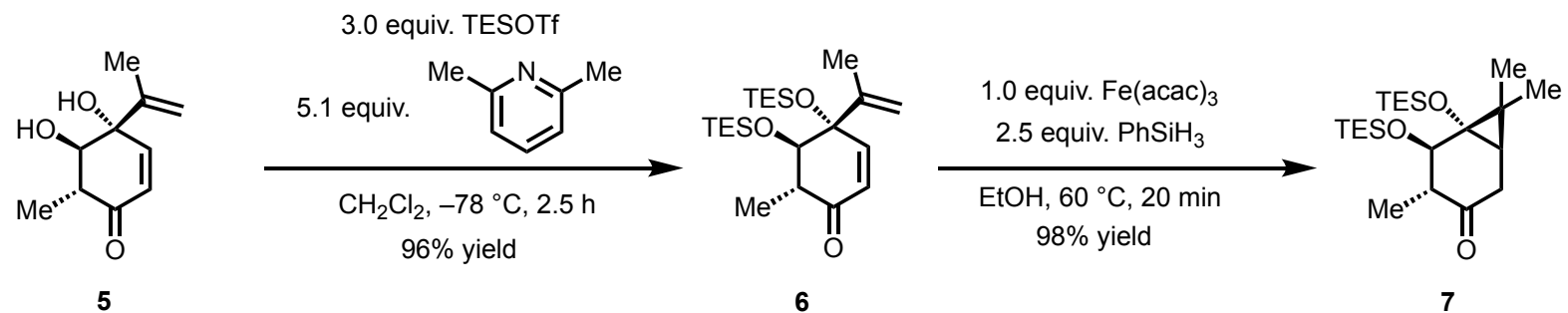
Acetal hydrolysis:

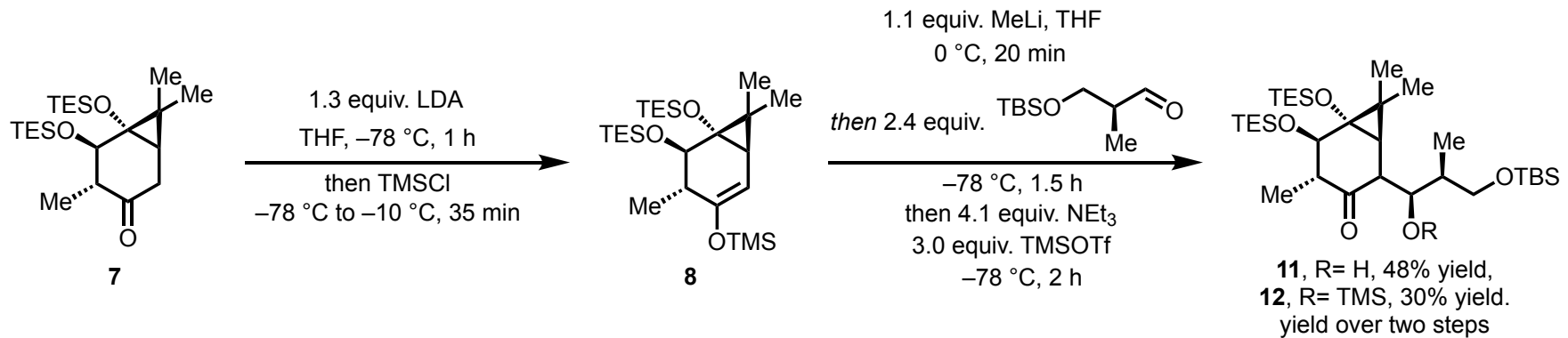




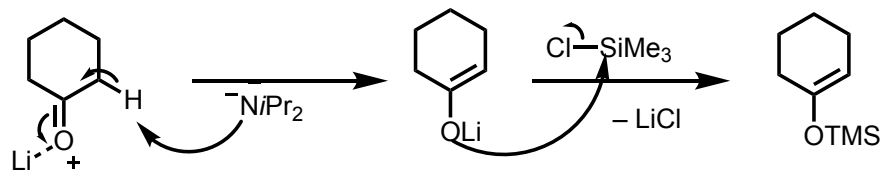
TES protection:



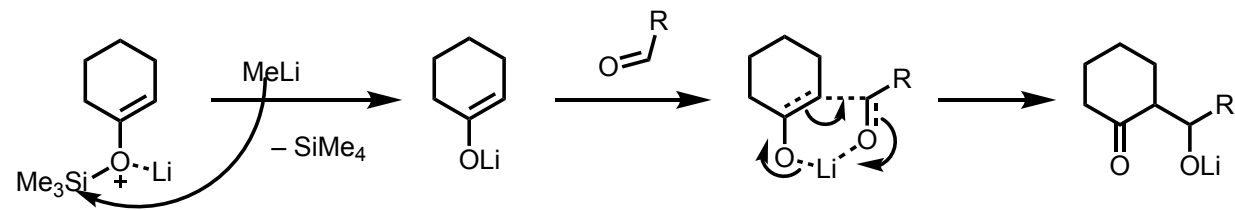


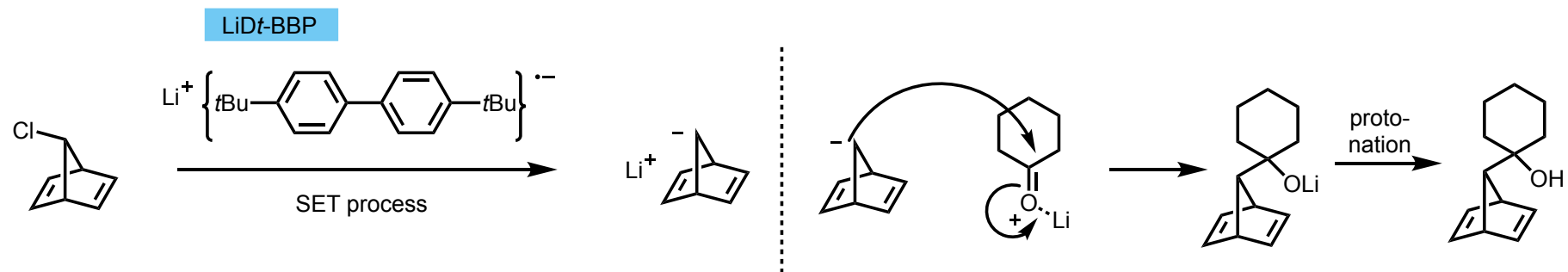
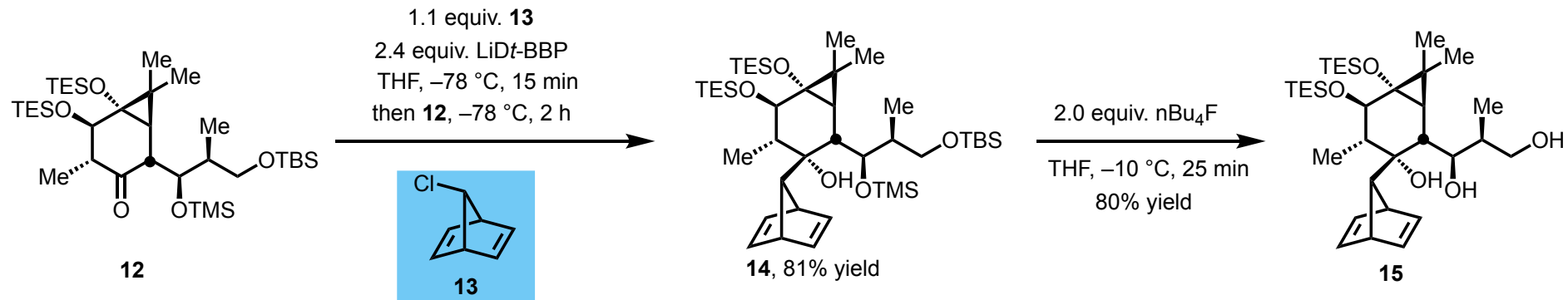


TMS protection:

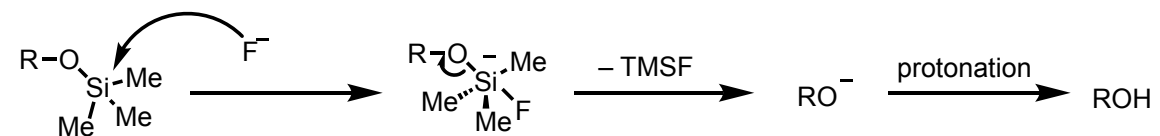


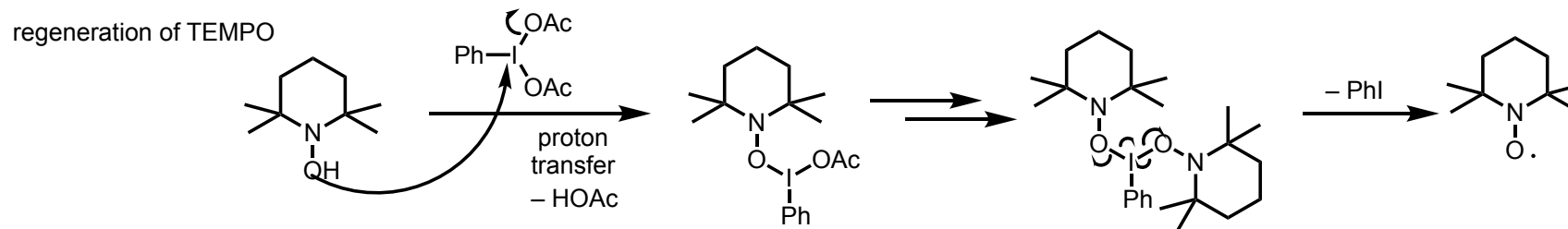
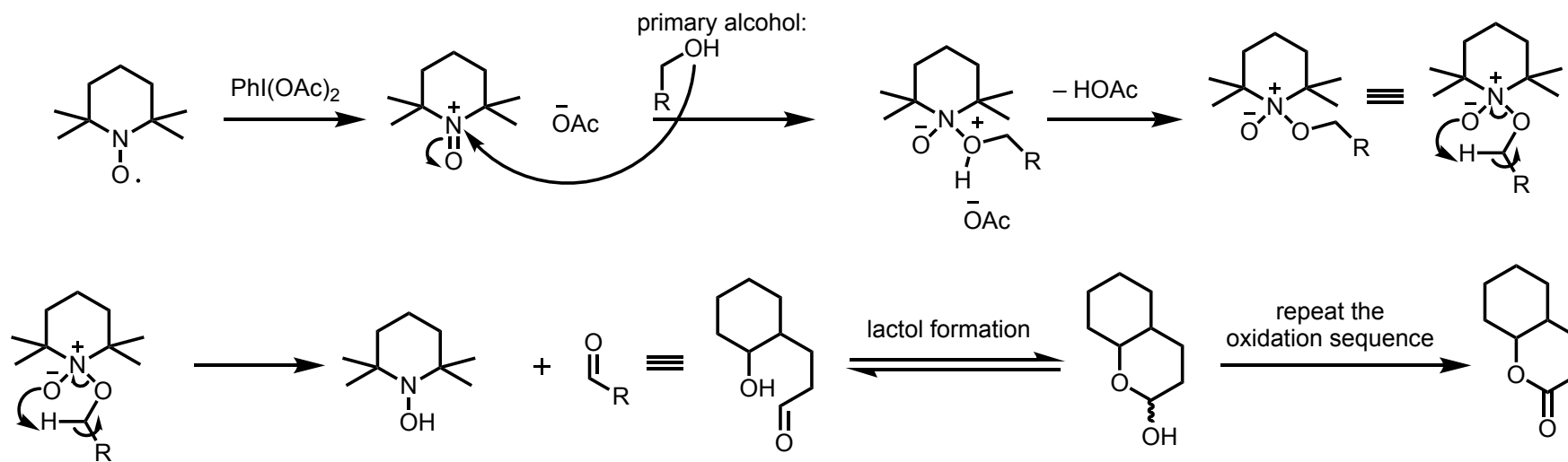
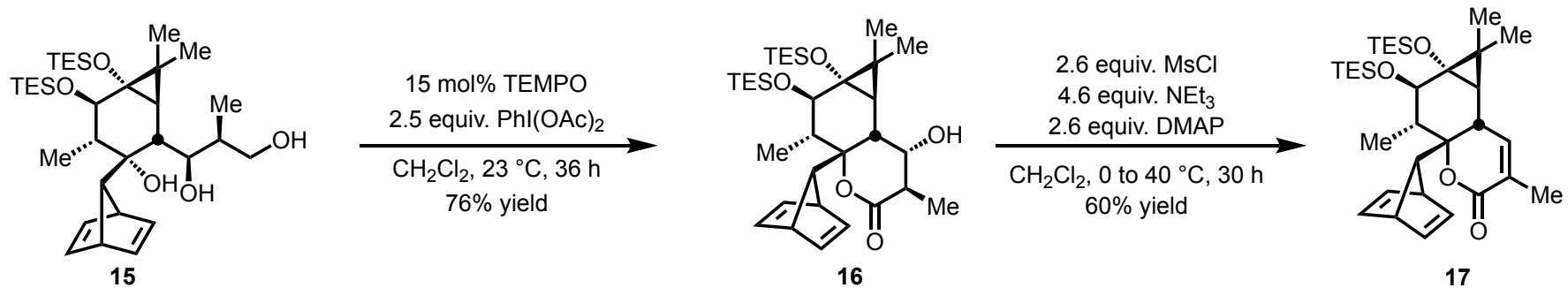
Aldol reaction:

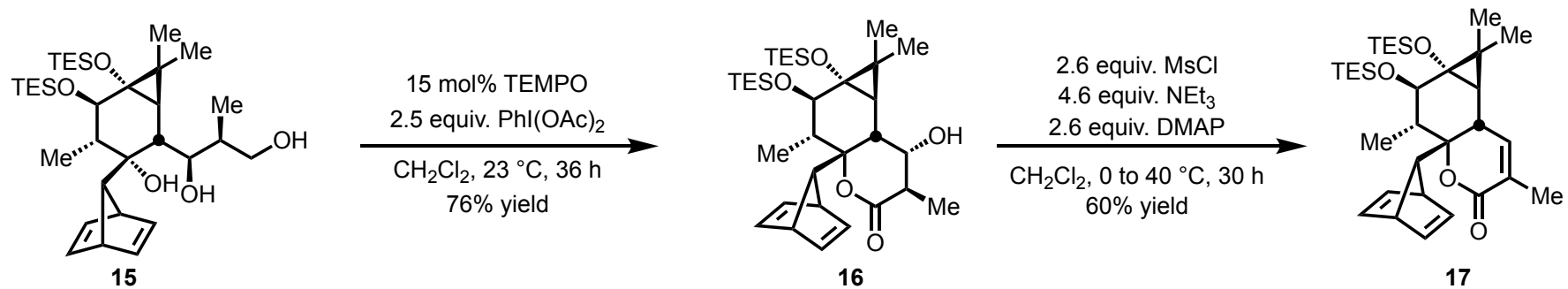




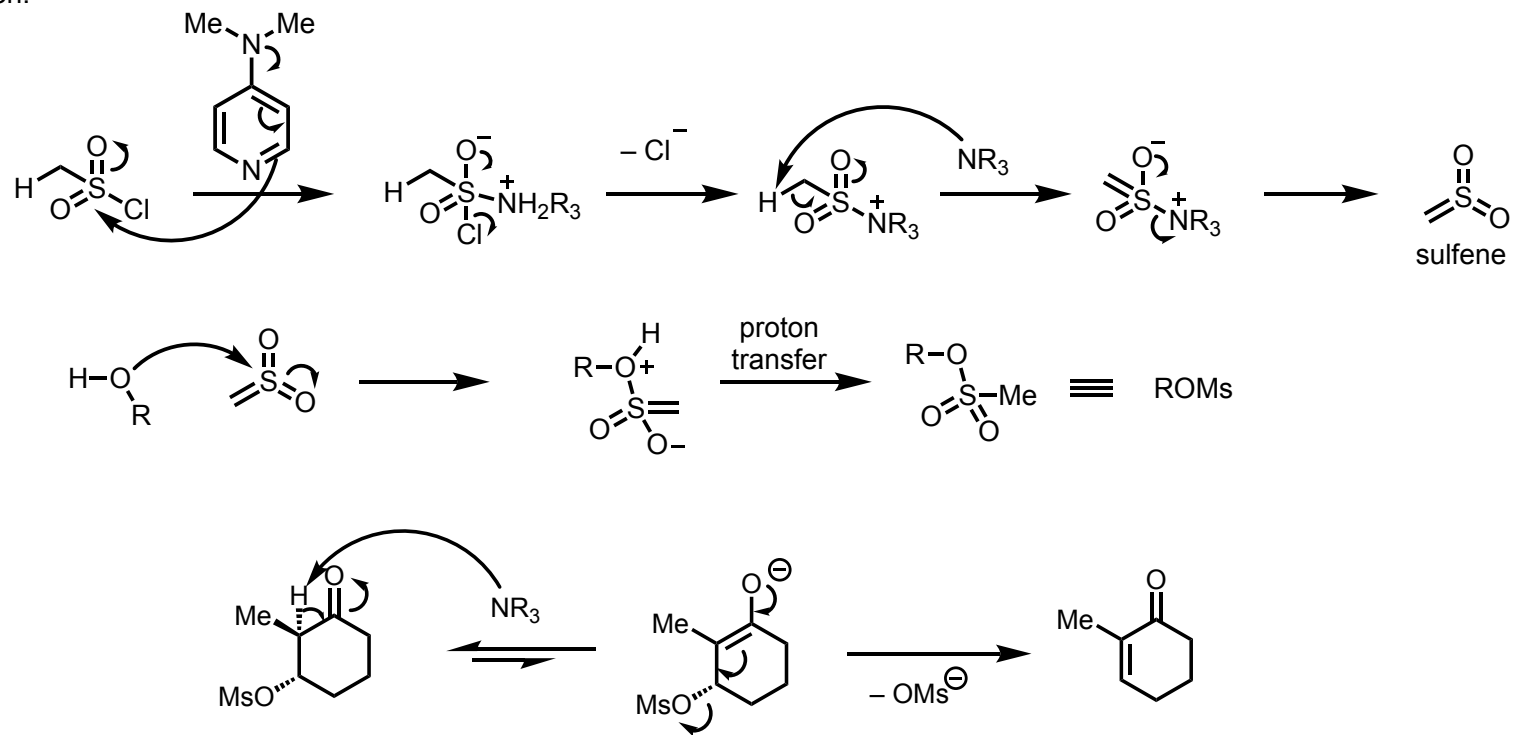
silyl group deprotection:

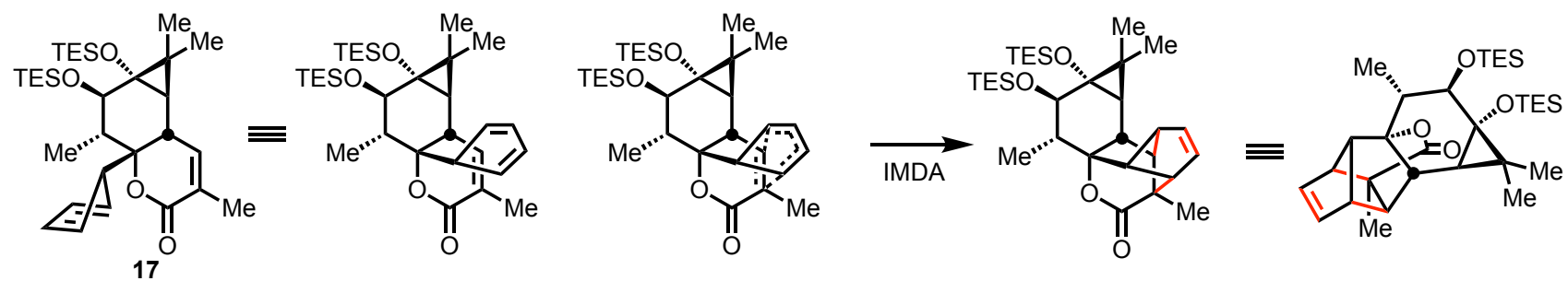
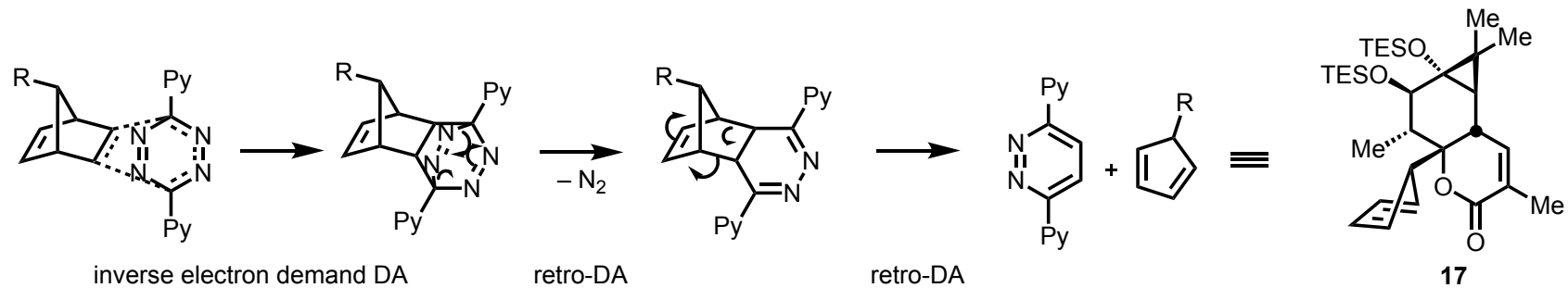
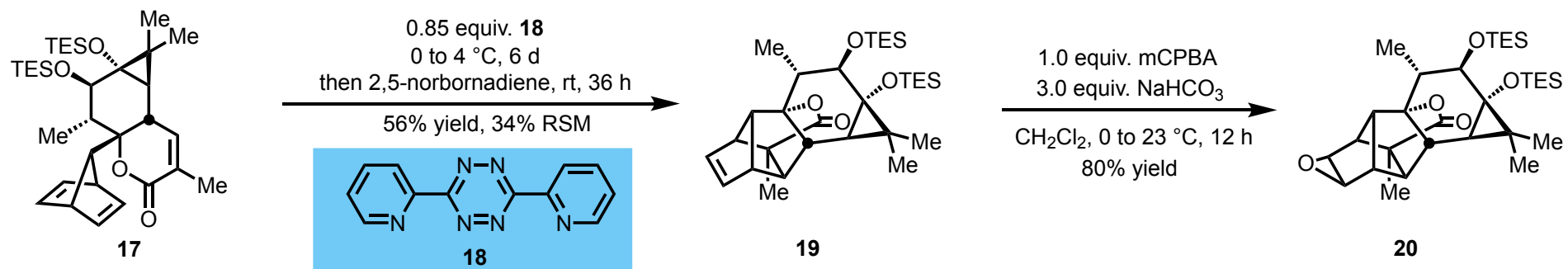




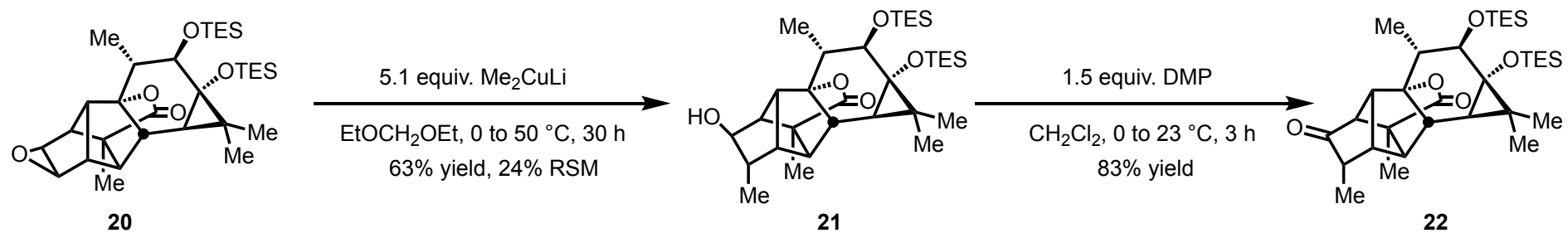


mesylation:

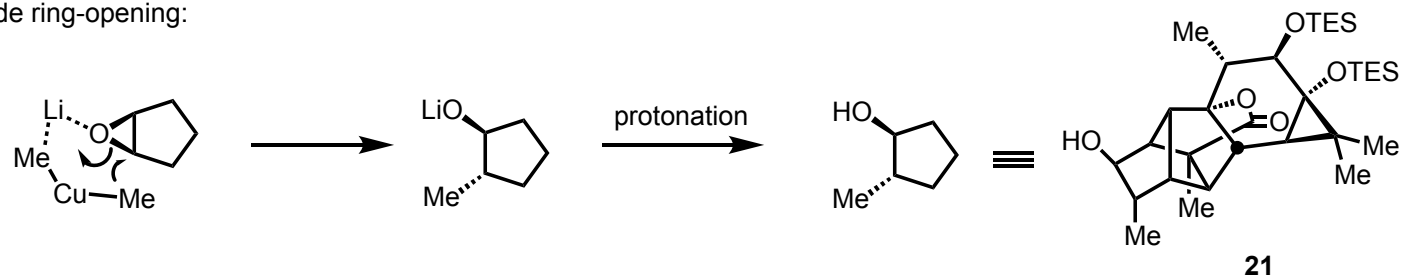




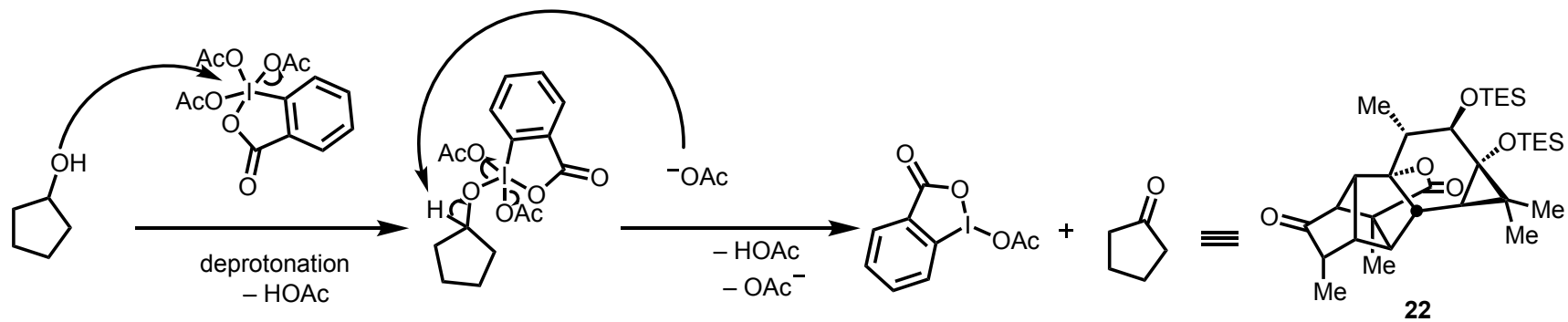
epoxidation see rubbotom reaction mechanism

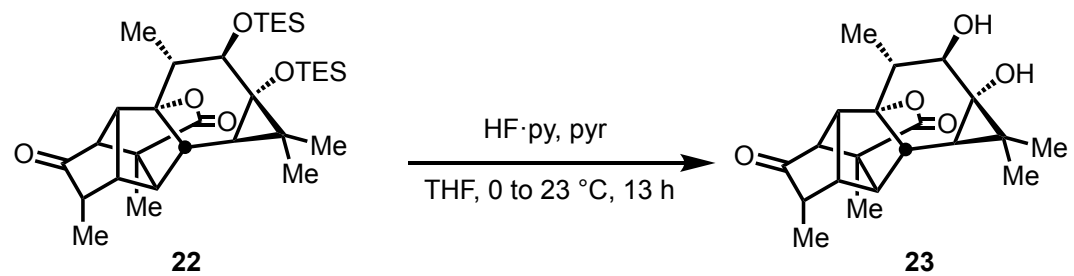


epoxide ring-opening:

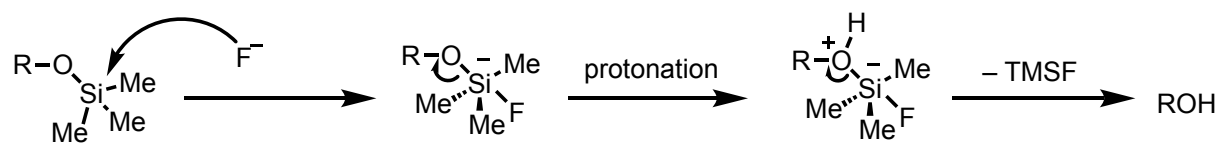


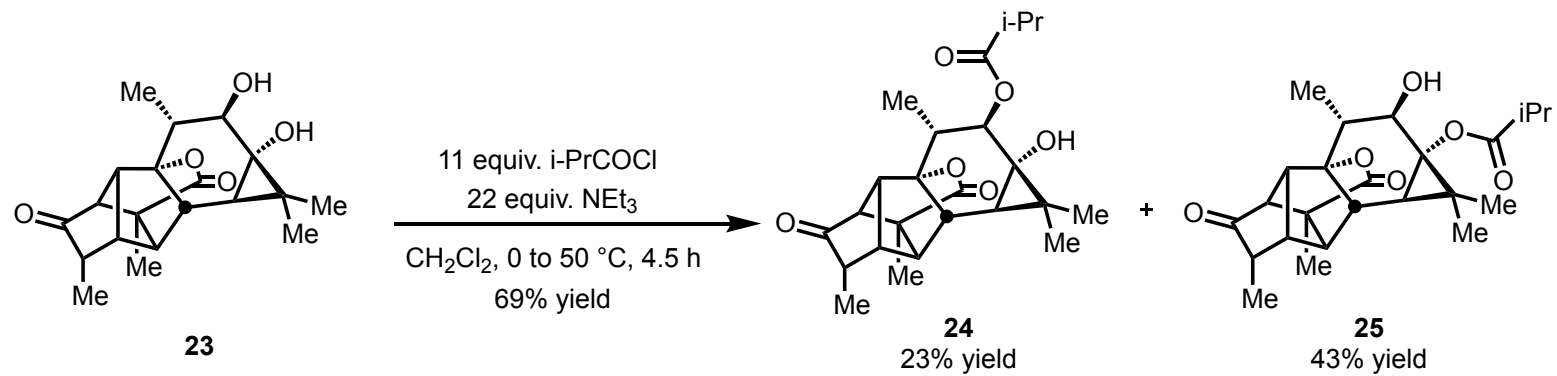
DMP oxidation:



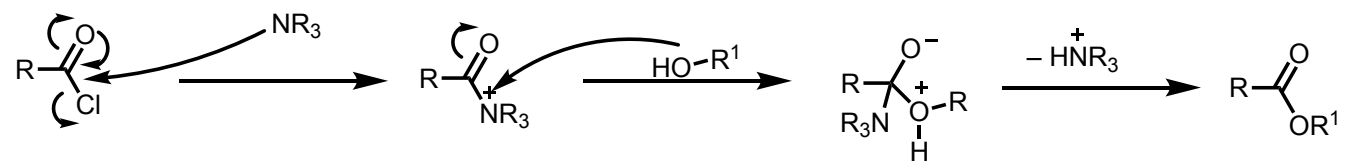


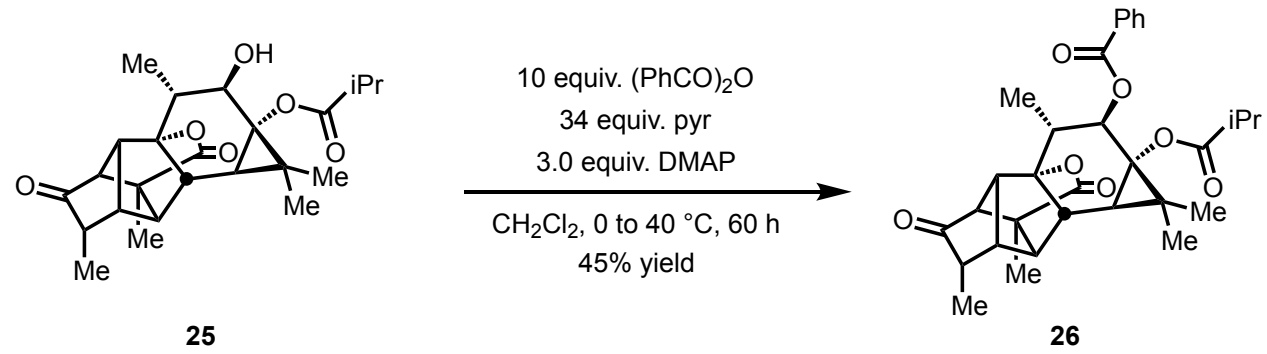
siyl group deprotection: see previous slide





acylation:





acylation:

