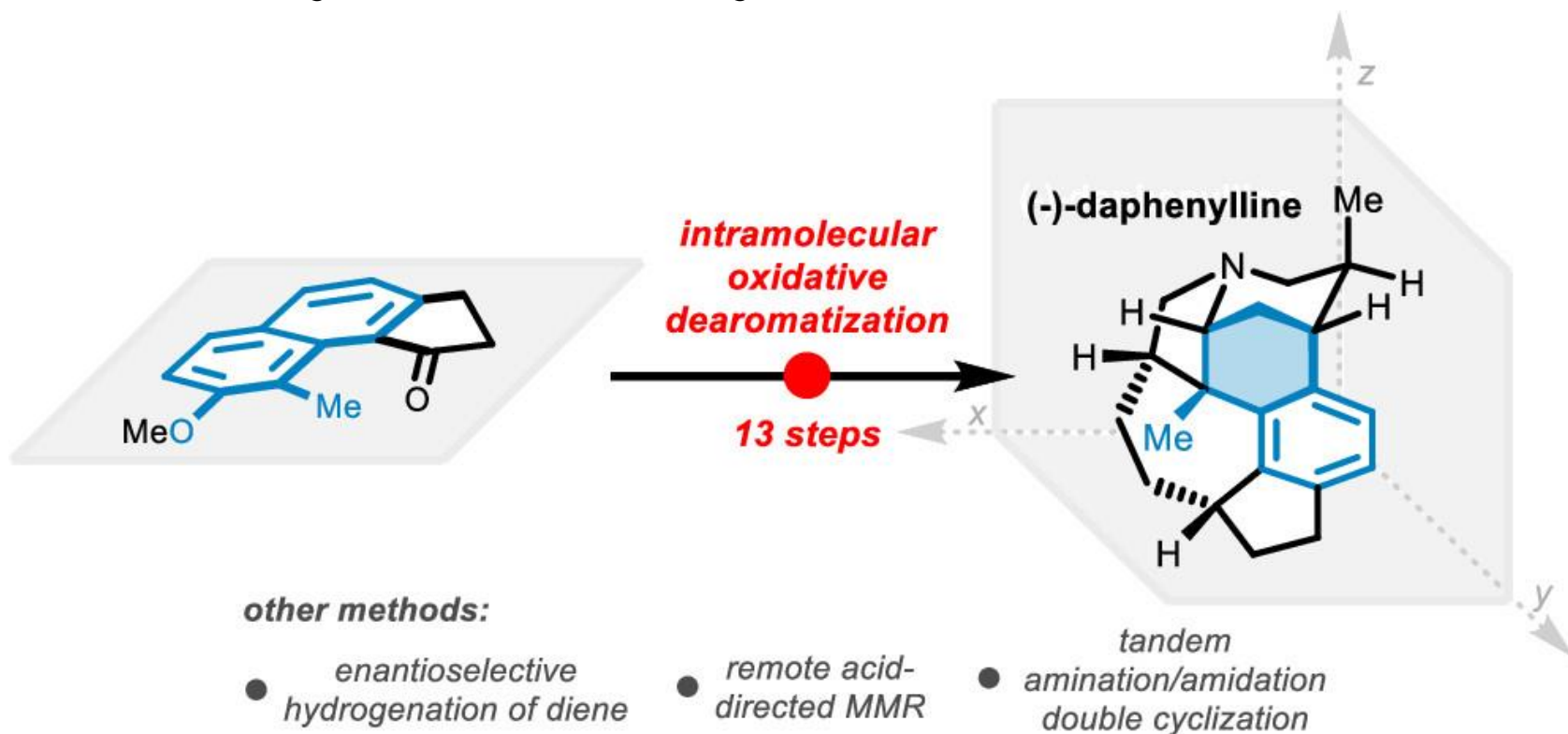
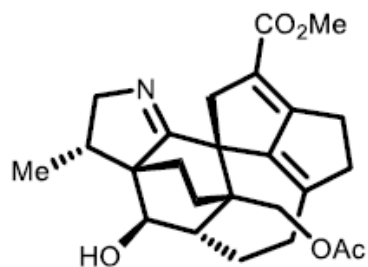


Concise Enantioselective Total Synthesis of Daphenylline Enabled by an Intramolecular Oxidative Dearomatization

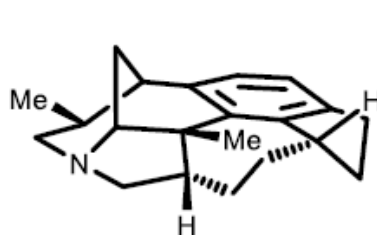
Meng-Yue Cao, Bin-Jie Ma, Qing-Xiu Gu, Bei Fu, and Hai-Hua Lu*



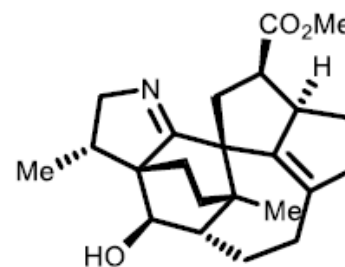
J. Am. Chem. Soc., **2022**, *144*, 13, 5750.



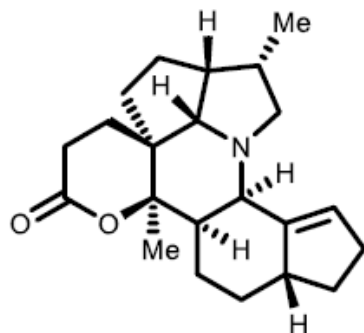
daphmanidin E (1)
Carreira, 2011 (ref.11)



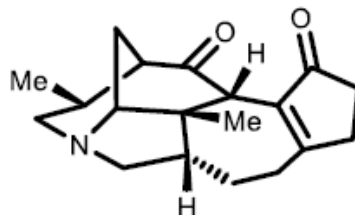
(-)-daphenylline (2)
Li, 2013 (ref.12)



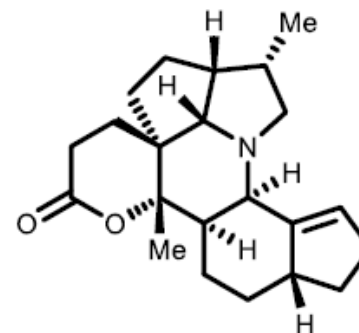
calyciphylline N (3)
Smith, 2015 (ref.13)



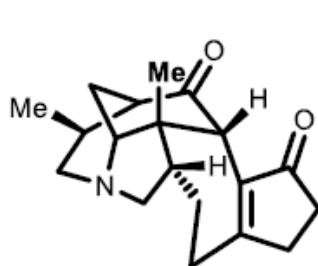
isodaphlongamine H (4)
Hanessian, 2016 (ref.14)



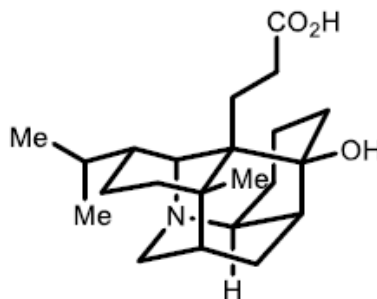
(-)-himalensine A (5)
Dixon, 2017 (ref.16)



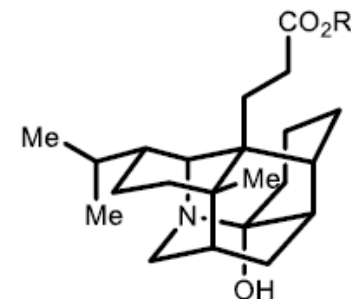
(-)-daphlongamine H (6)
Sarpong, 2019 (ref.17)



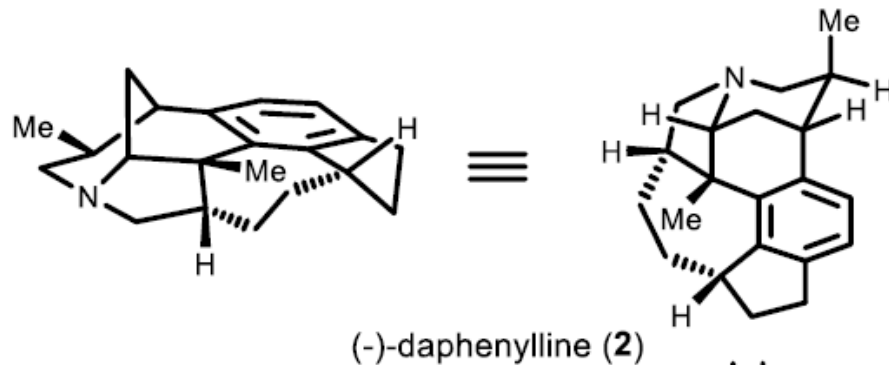
(±)-himalensine A (7)
Gao, 2019 (ref.19)



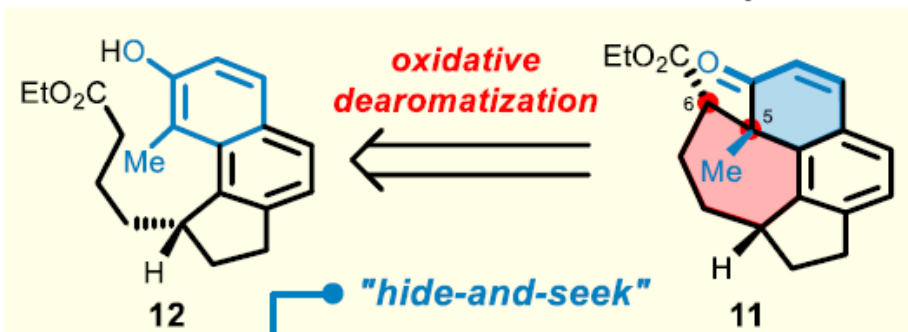
(+)-dapholdhamine B (8)
Xu, 2019 (ref.18)



(-)-daphenezomine A (9: R = H)
(-)-daphenezomine B (10: R = Me)
Li, 2020 (ref.20)

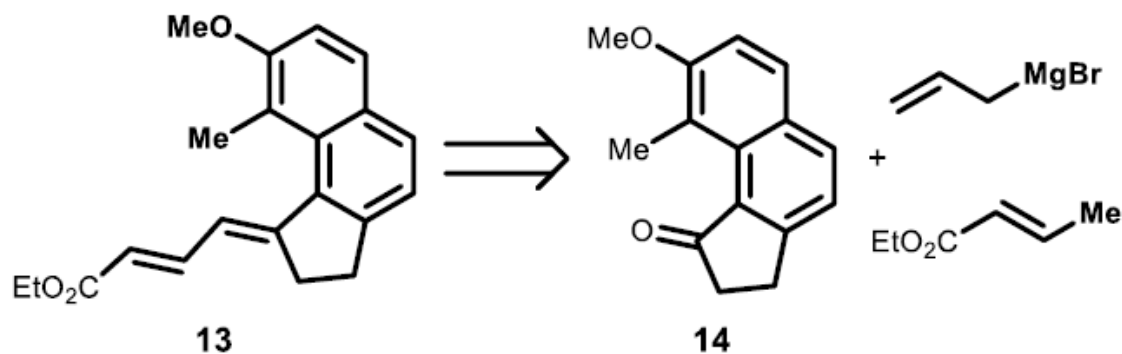


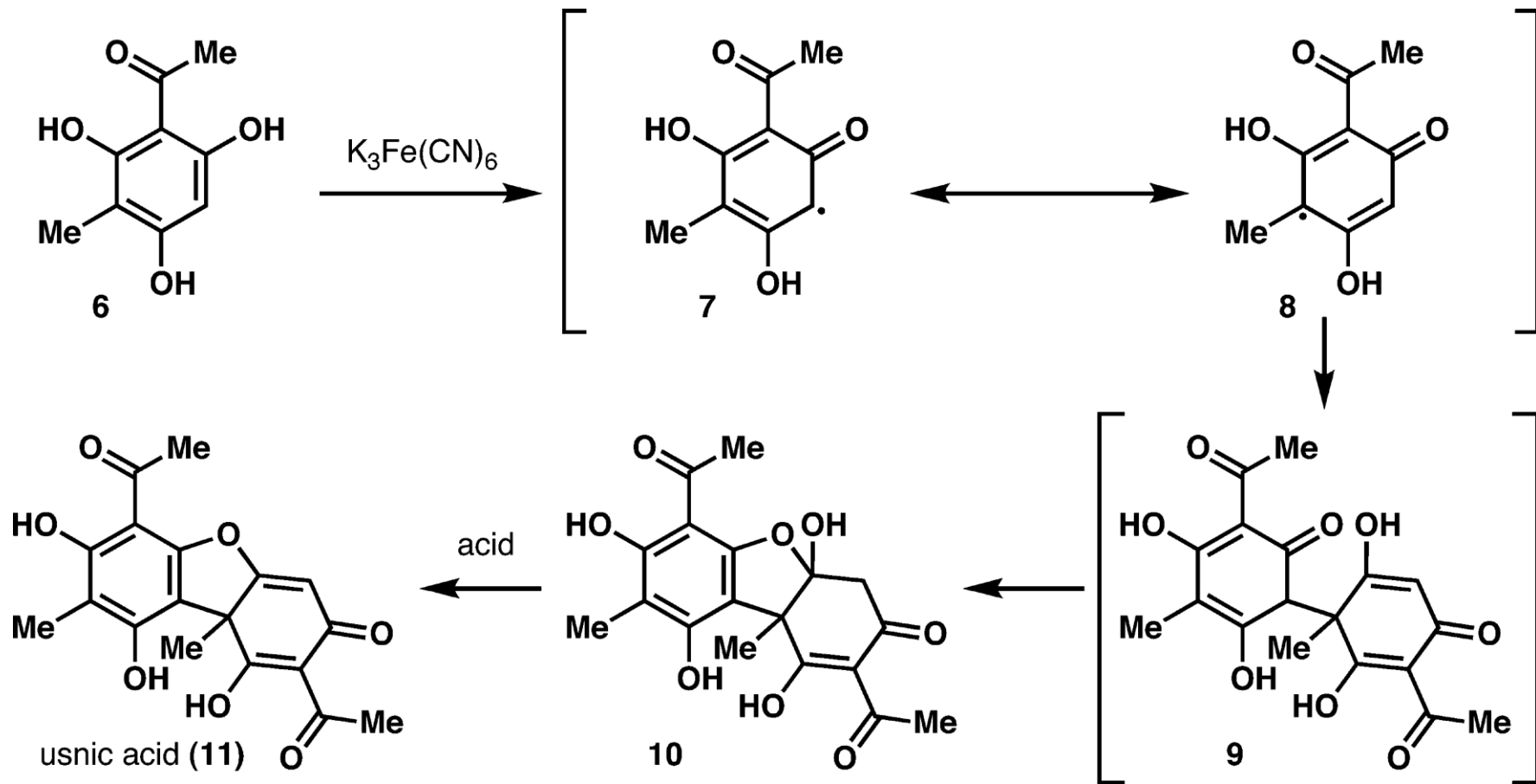
• Remote Directed MMR
 • tandem amination/amidation double cyclization

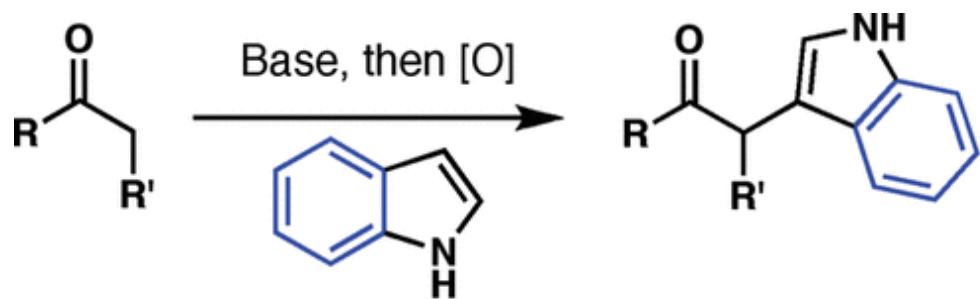


• "hide-and-seek"
 → 7-membered ring
 → quaternary stereocenter
 → cyclohexenone moiety
 (all at once)

• asymmetric hydrogenation

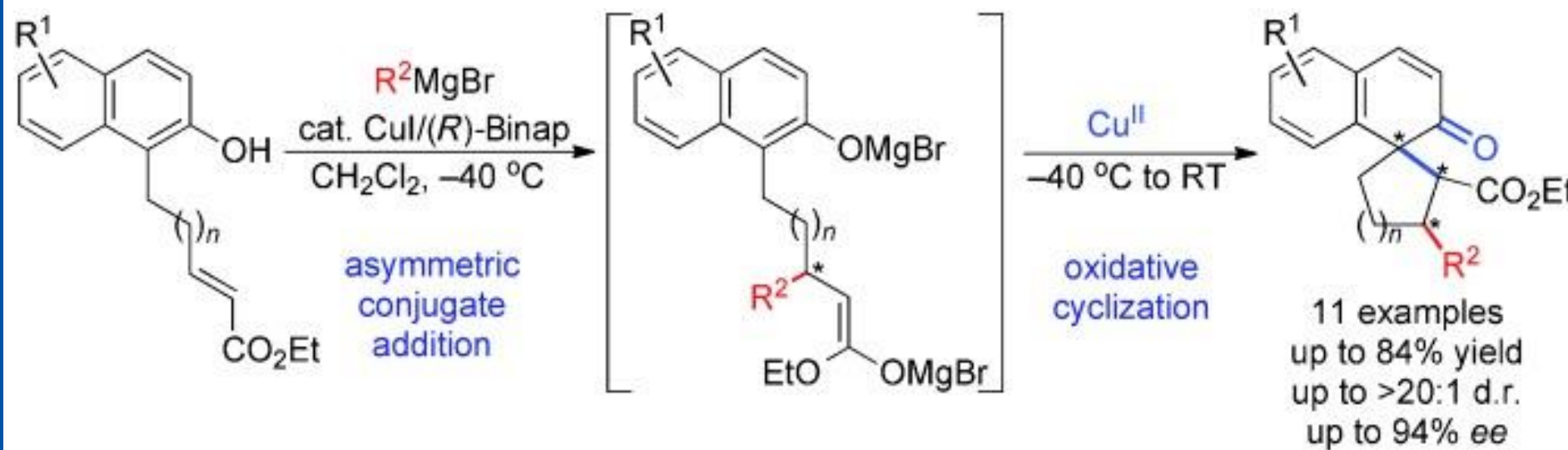




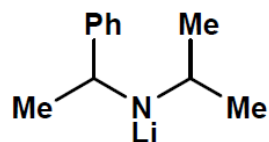
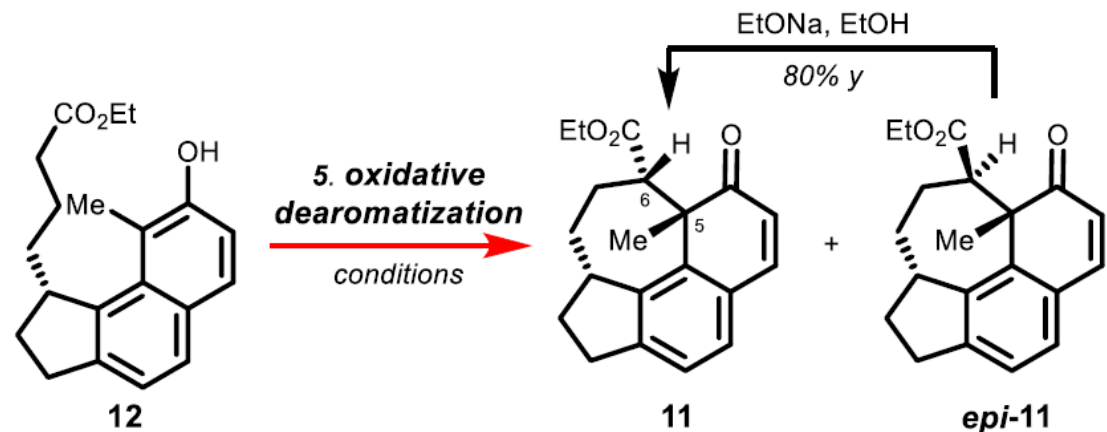


indoles and pyrroles

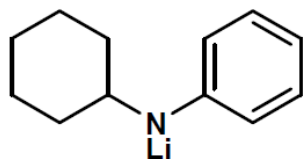
J. Am. Chem. Soc., **2007**, 129,12857.



Angew. Chem. Int. Ed., **2011**, 50, 5834.

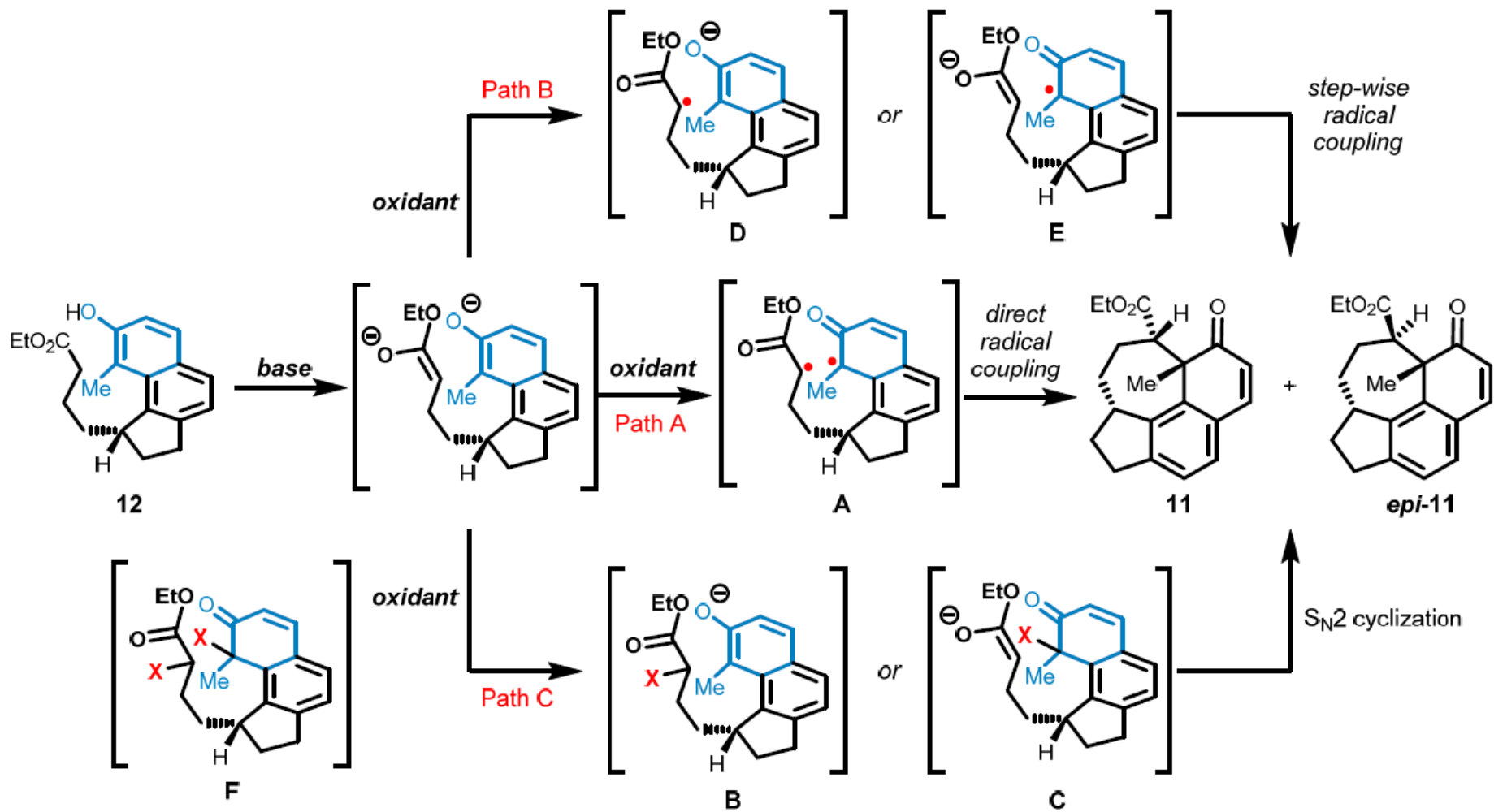


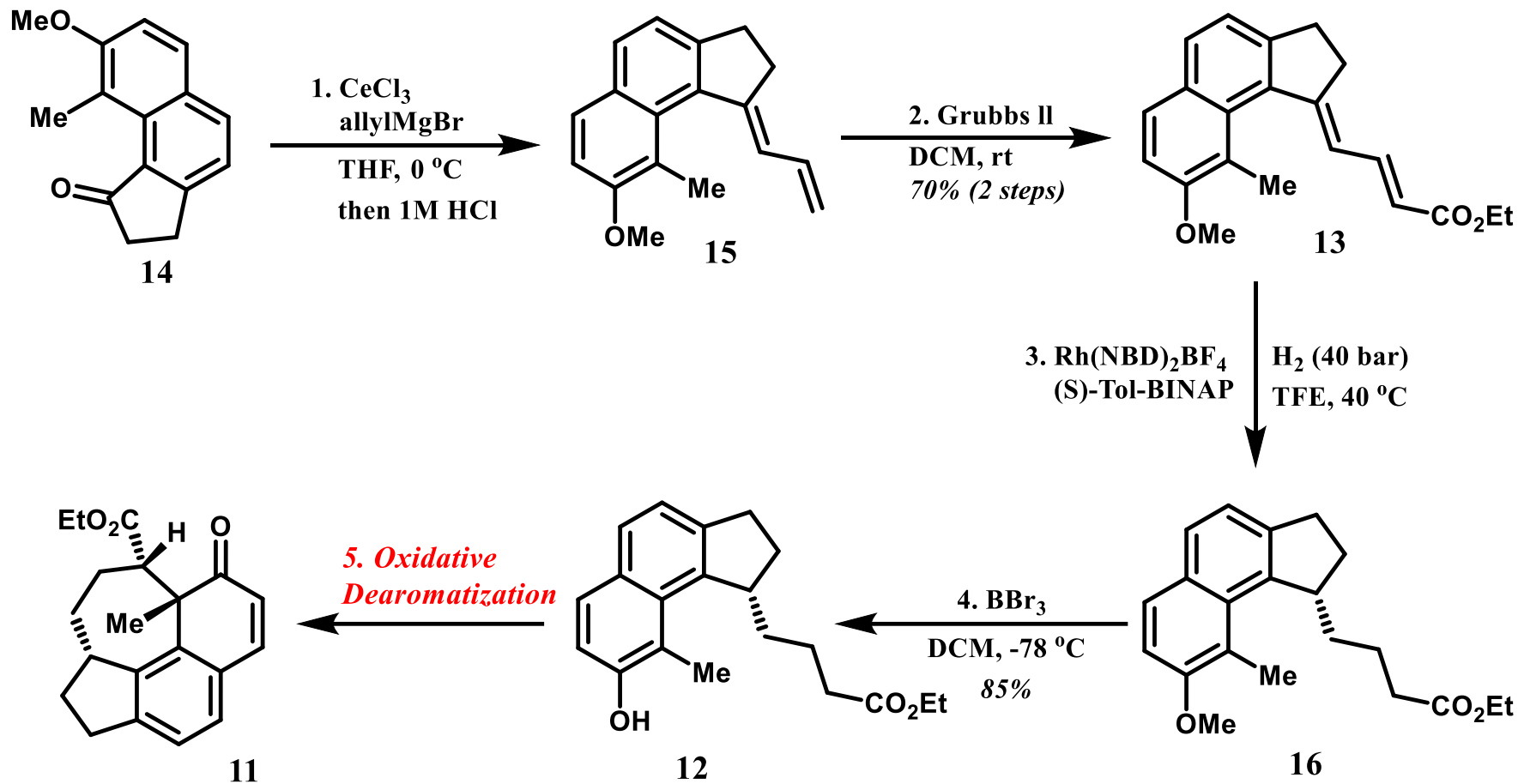
LDCA

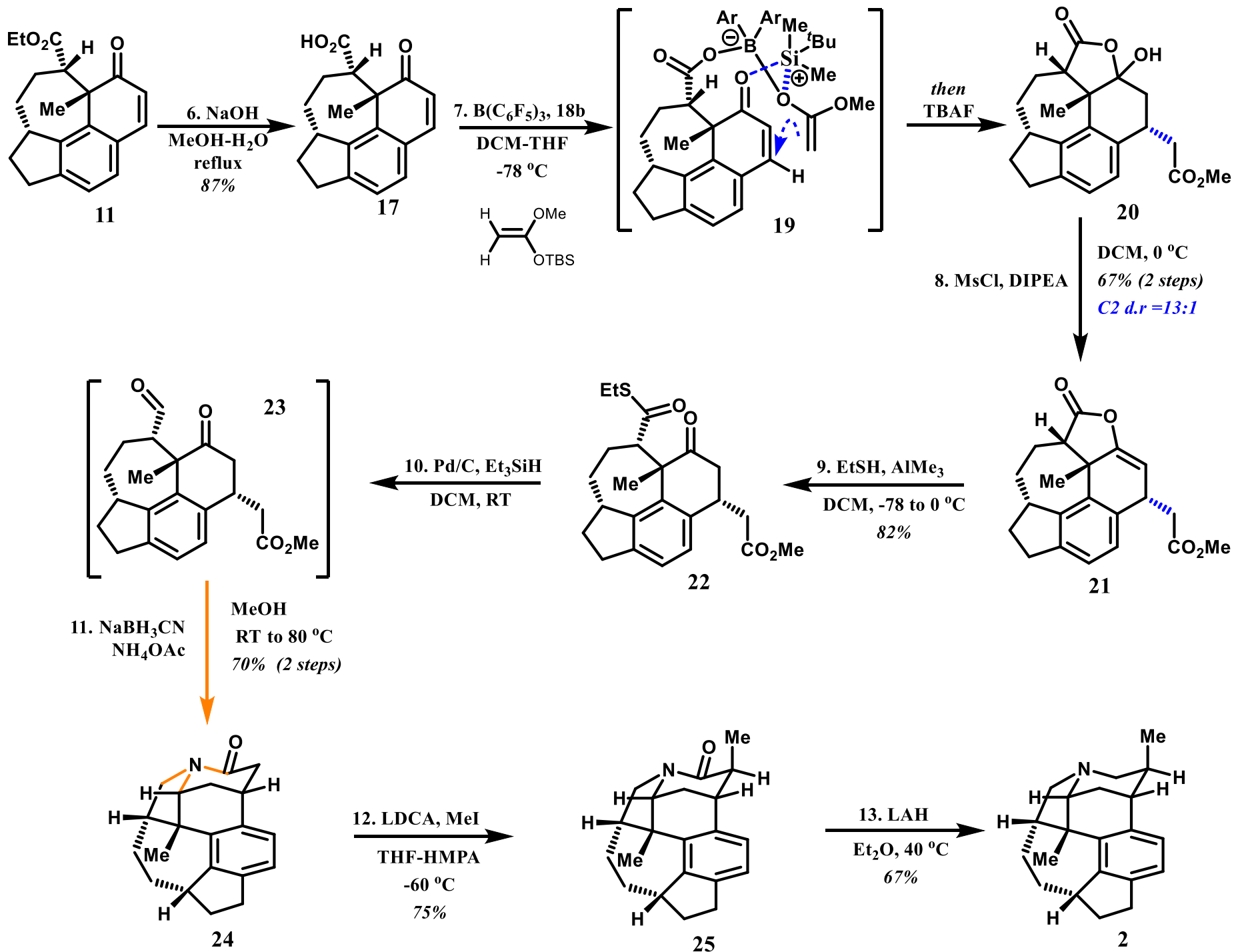


LDIA

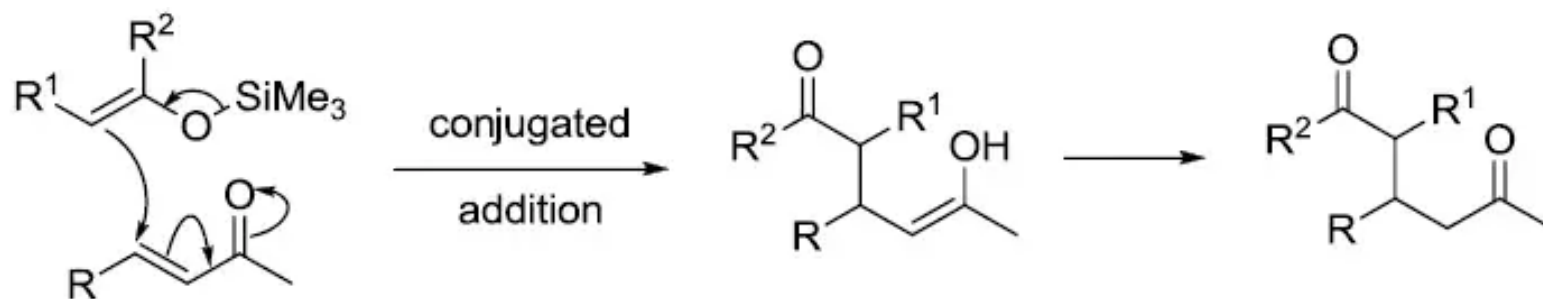
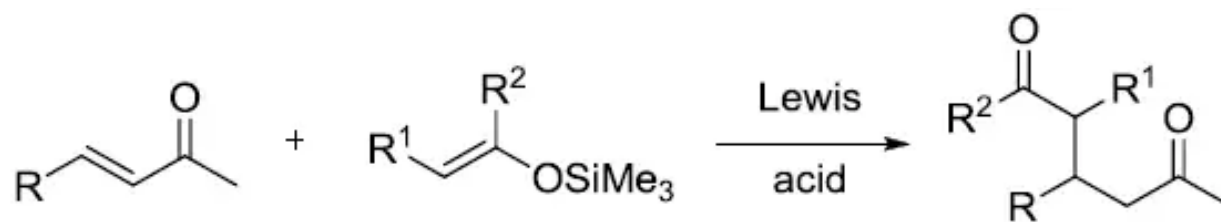
entry	base	oxidant	solvent	yield (%) ^b	d.r.
1	LDA	Fe(acac) ₃	THF	NA	NA
2	LDA	Co(acac) ₂	THF	NA	NA
3	LDA	Cu(acac) ₂	THF	NA	NA
4	LDA	Cu(eha) ₂	THF	2.5	1:1
5	LDA	Cu(OAc) ₂	THF	5	1:1
6	LDA	CuBr ₂	THF	NA	NA
7	LDA	CuCl ₂	THF-DMF	NA	NA
8	LDA	Cu(OTf) ₂	THF	NA	NA
9	LDA	NIS	THF	NA	3:1
10	LDA	ICl	THF	NA	3:1
11	LDA	I ₂	THF	6	3:1
12 ^c	LDA	I ₂	THF	30	3:1
13 ^c	LTMP	I ₂	THF	9	3:1
14 ^c	LHMDS	I ₂	THF	15	3:1
15 ^c	NaHMDS	I ₂	THF	5	3:1
16 ^c	KHMDS	I ₂	THF	NA	NA
17 ^c	LCIA	I ₂	THF	35	3:1







Mukaiyama-Aldol反应



Fukuyama还原反应

