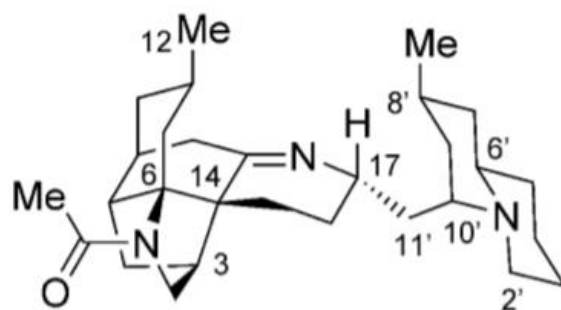


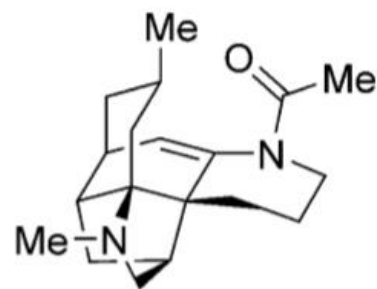


Total Synthesis of (–)-Himeradine A

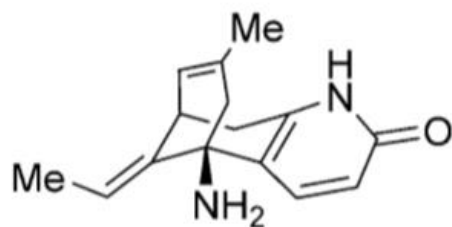
Alexander Burtea, Jacob DeForest, Xinting Li, and Scott D. Rychnovsky*



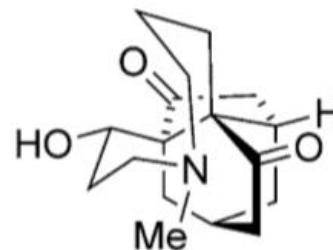
(–)-himeradine A (1)



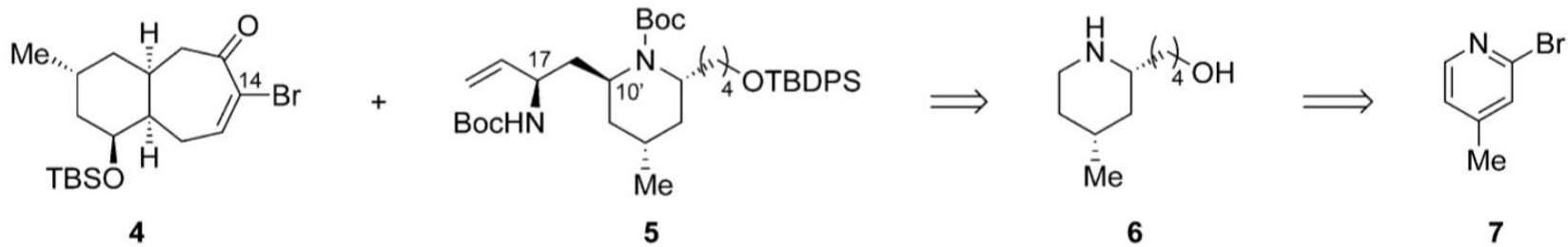
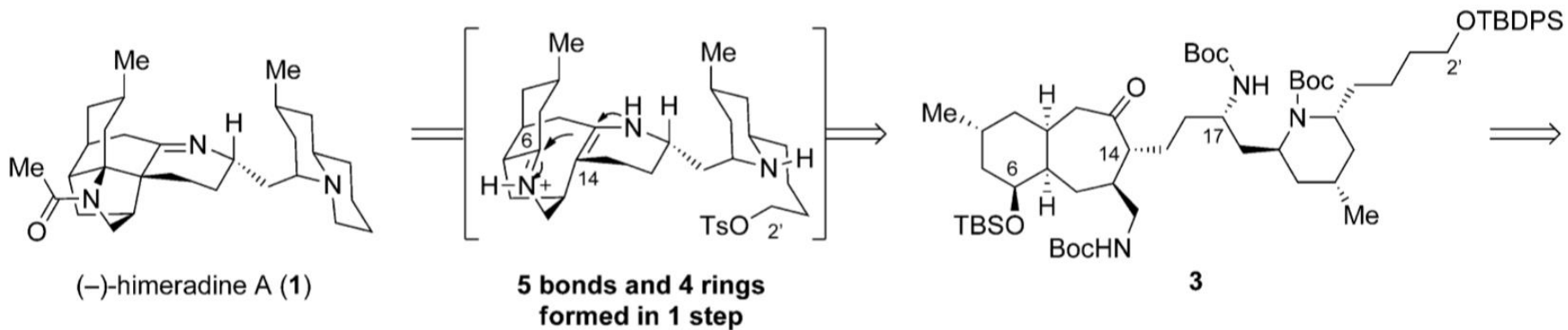
(+)-fastigiatine (2)



(–)-huperzine A



palhinine A



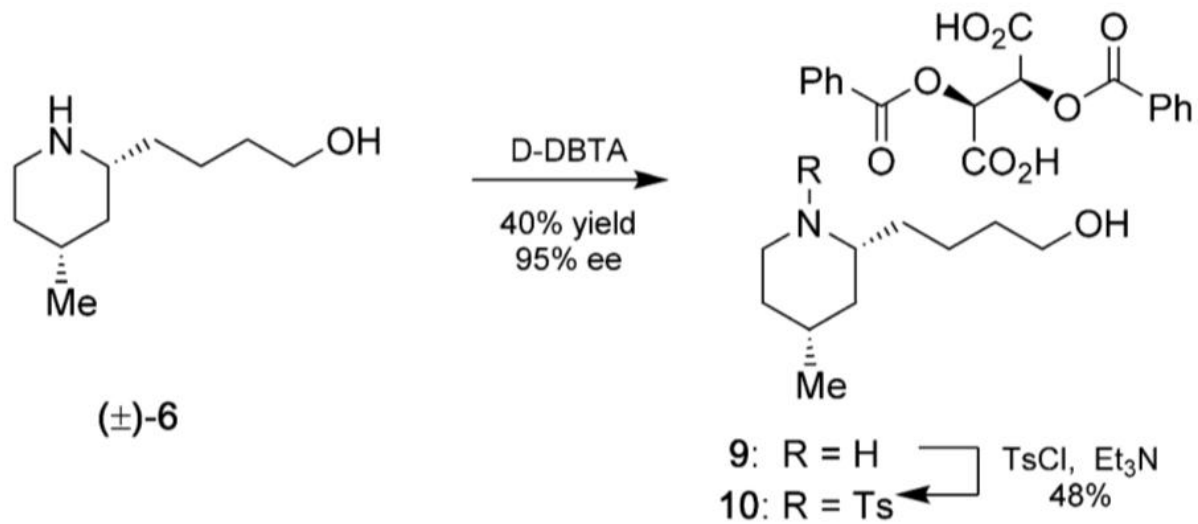
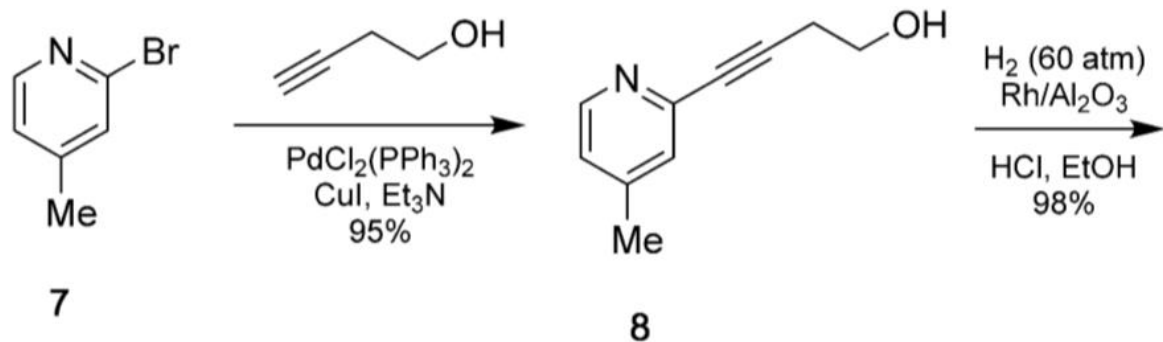
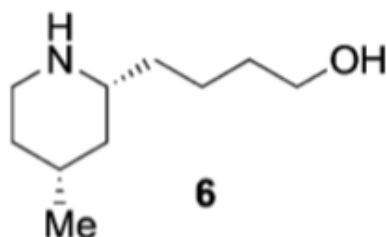


Table 1: Resolution of piperidine **6** with D- or L-dibenzoyl tartrate.

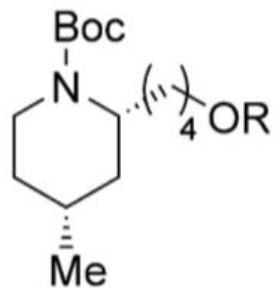


Entry ^[a]	Acid: Equiv	Solvent	Yield	% <i>ee</i>
1	L: 0.5	<i>i</i> PrOH	41	23
2	L: 0.5	EtOH	32	40
3	L: 0.5	MeOH	10	−97
4	D: 1.0	MeOH	41	95
5	D: 1.0	MeOH ^[b]	41	89
6	D: 1.0	MeOH ^[c]	36	95

[a] Solutions of piperidine **6** and the dibenzoyl tartrate were mixed at 80 °C and then slowly cooled to rt. The final concentration of **6** was 30 mLg^{−1}. The crystals were collected by filtration and the %*ee* was analysed as described in the text. [b] Crystallization was conducted with 20 mLg^{−1} solvent. [c] Crystallization was conducted with 40 mLg^{−1} solvent.

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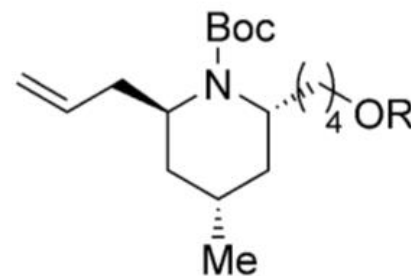
1. Boc_2O , aq NaOH
 2. TBDPSCI, DMAP
 imidazole
 89% 2 steps



(-)-11

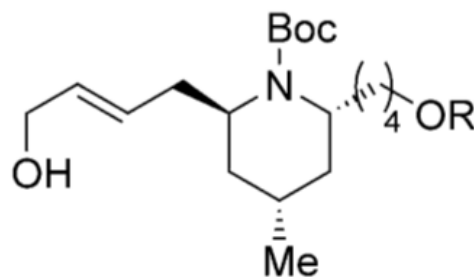
allyl bromide
 $s\text{-BuLi}$, TMEDA
 $\text{CuCN}\cdot 2\text{LiCl}$

82% yield
 90% BRSM
 > 20:1 dr



(-)-12 R = TBDPS

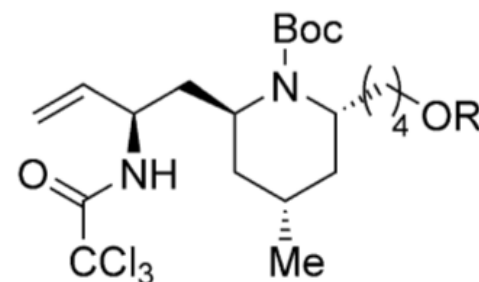
1. crotonaldehyde
 HGII (5 mol%), 89%
 2. NaBH_4 , MeOH, 99%



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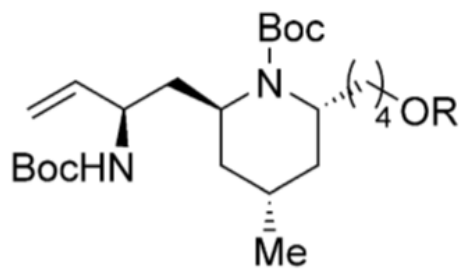
1. Cl_3CCN
 DBU, 95%

2. (-)-COP-Cl
 85%



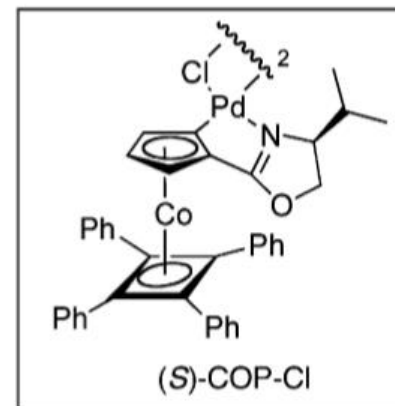
15

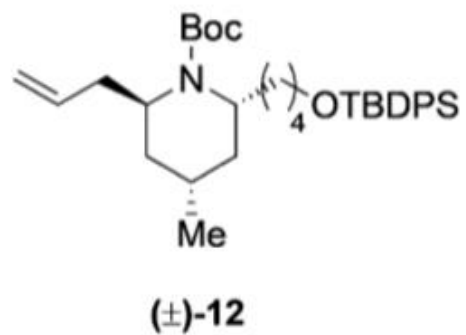
Cs_2CO_3 , DMF
 100 °C; Boc_2O
 45%



(-)-5

or
 LiAlH_4 then Boc_2O
 31%





1. TBAF, 92%
2. TsCl, DMAP,
Et₃N, 87%
-
3. CSA, *o*-DCB,
165 °C;
then TFA, 87%

