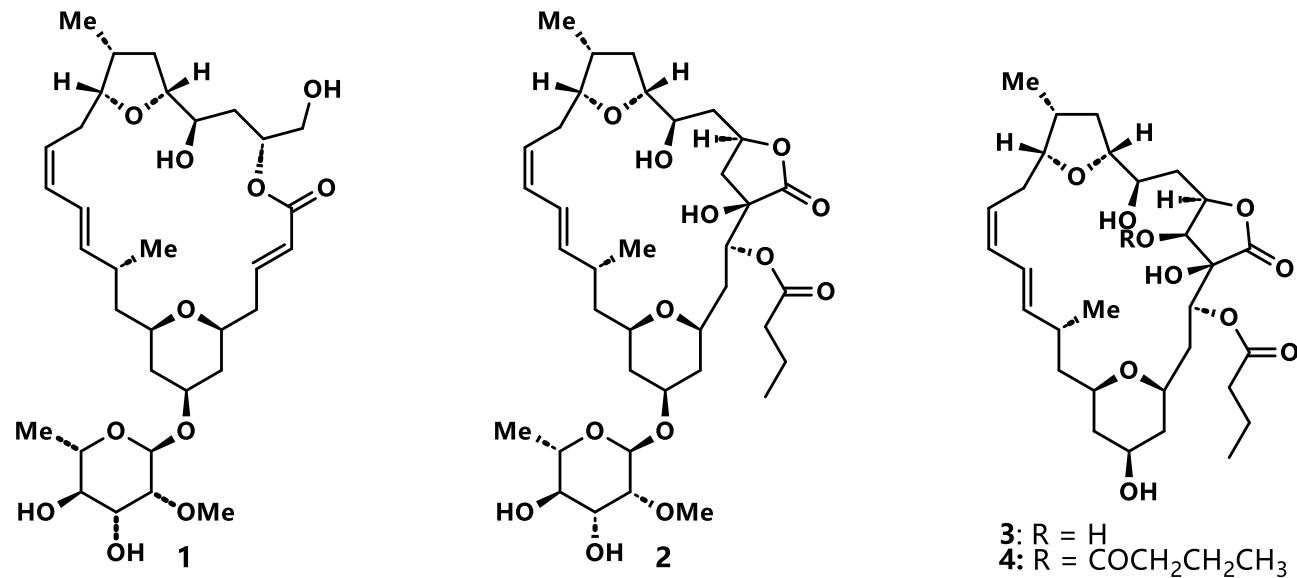


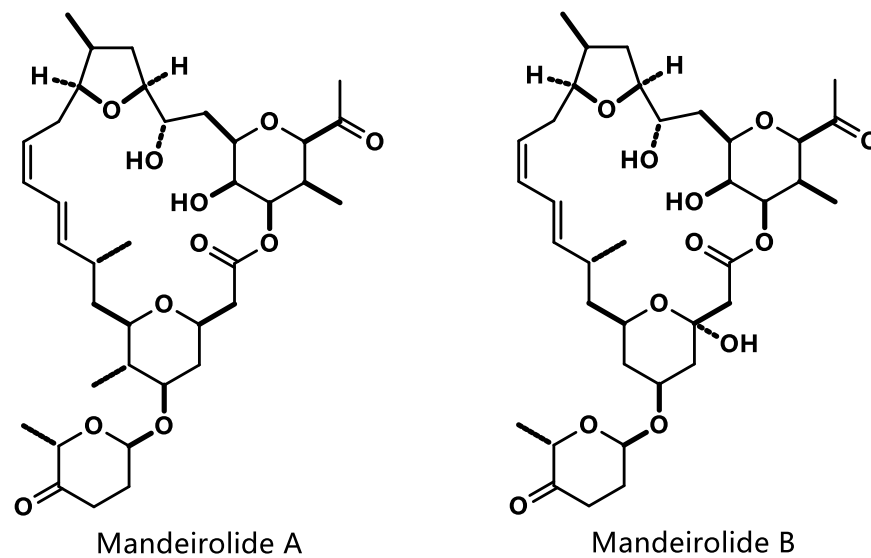
# Mandelalide的全合成

汤笑然 2024.09.28

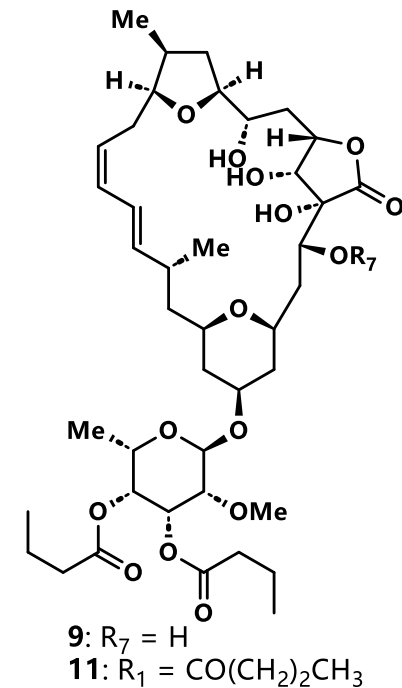
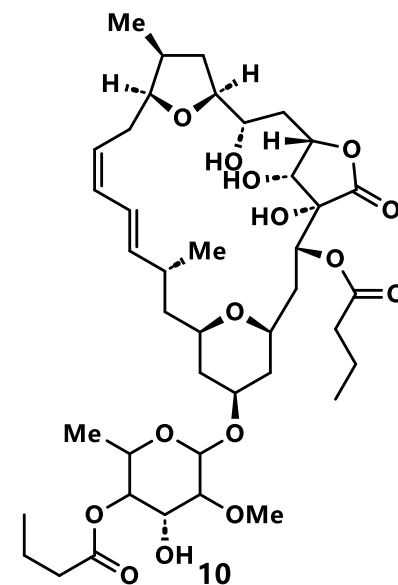
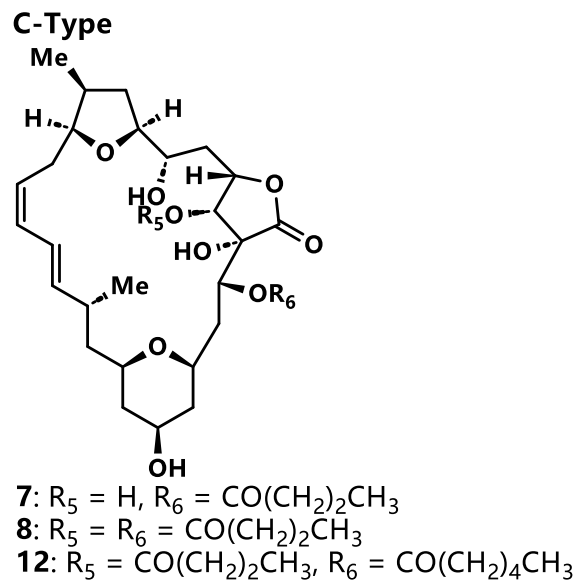
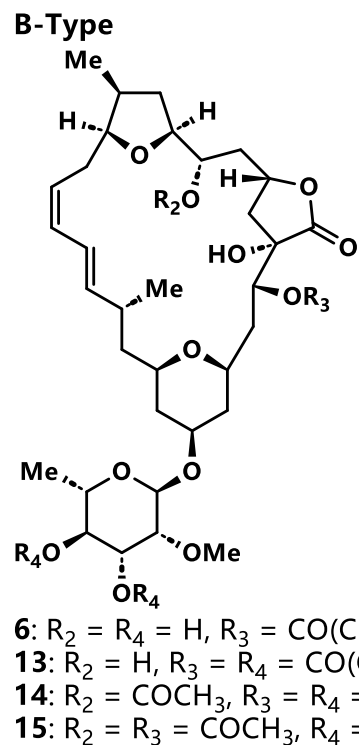
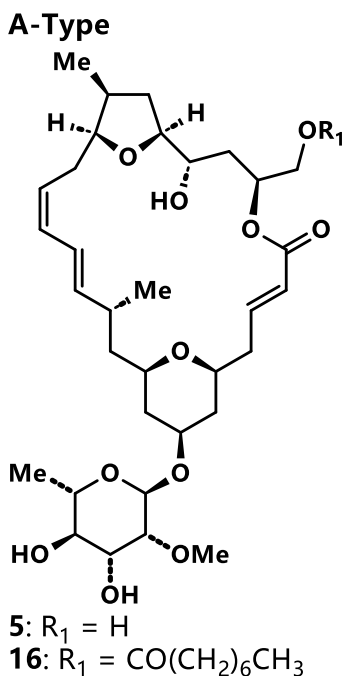
# Mandelalide/Madeirolide Family



Proposed structures of mandelalides A - D (1-4)



# Mandelalide/Madeirolide Family



Revised structures of mandelalides A–D (5–8) and new mandelalides E–L (9–16)

## 来源&生物活性:

- 由McPhail及其同事从南非海鞘Lissoclinum物种中分离出
- 对人类NCI-H460肺癌细胞等表现出强大的低摩尔细胞毒性

	IC <sub>50</sub> (at 48 h) in Cancer Cell Lines <sup>a</sup>		
	NCI-H460	Neuro-2A	MDA-MB-231
organic extract	0.7 $\mu$ g/mL	5.6 $\mu$ g/mL	22.1 $\mu$ g/mL
mandelalide A (1)	12 nM	44 nM	
mandelalide B (2)	29 nM	84 nM	

<sup>a</sup>Cell viability was assessed by MTT assay and IC<sub>50</sub> values were derived using nonlinear regression analysis.

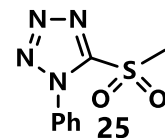
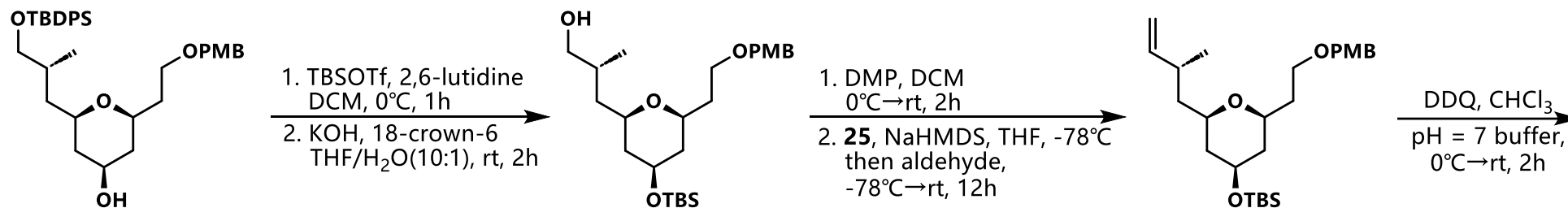
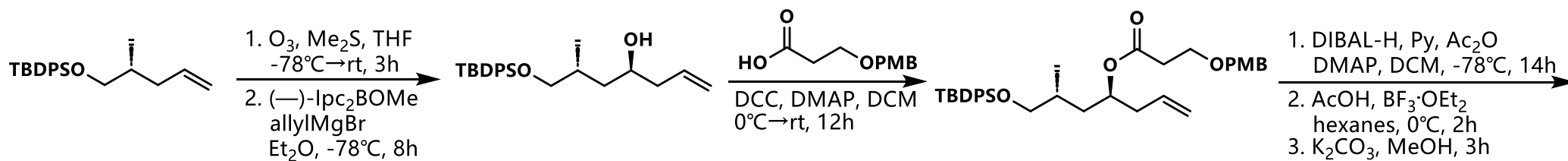
mandelalide	Cancer Cell Line; EC <sub>50</sub> (95% C.I.)			
	NCI-H460 lung	HeLa cervix	U87-MG glioblastoma	HCT116 colon
B (3)	25 nM (10–61)	23 nM (8.6–52)	61 nM (43–88)	54 nM (37–80)
C (4)	<b>inactive</b>	<b>inactive</b>	<b>inactive</b>	<b>inactive</b>
E (1)	2.0 $\mu$ M (1.2–3.2)	1.9 $\mu$ M (1.1–3.3)	>3 $\mu$ M (2–6.2)	>3 $\mu$ M (1–12)

# 主要合成工作:

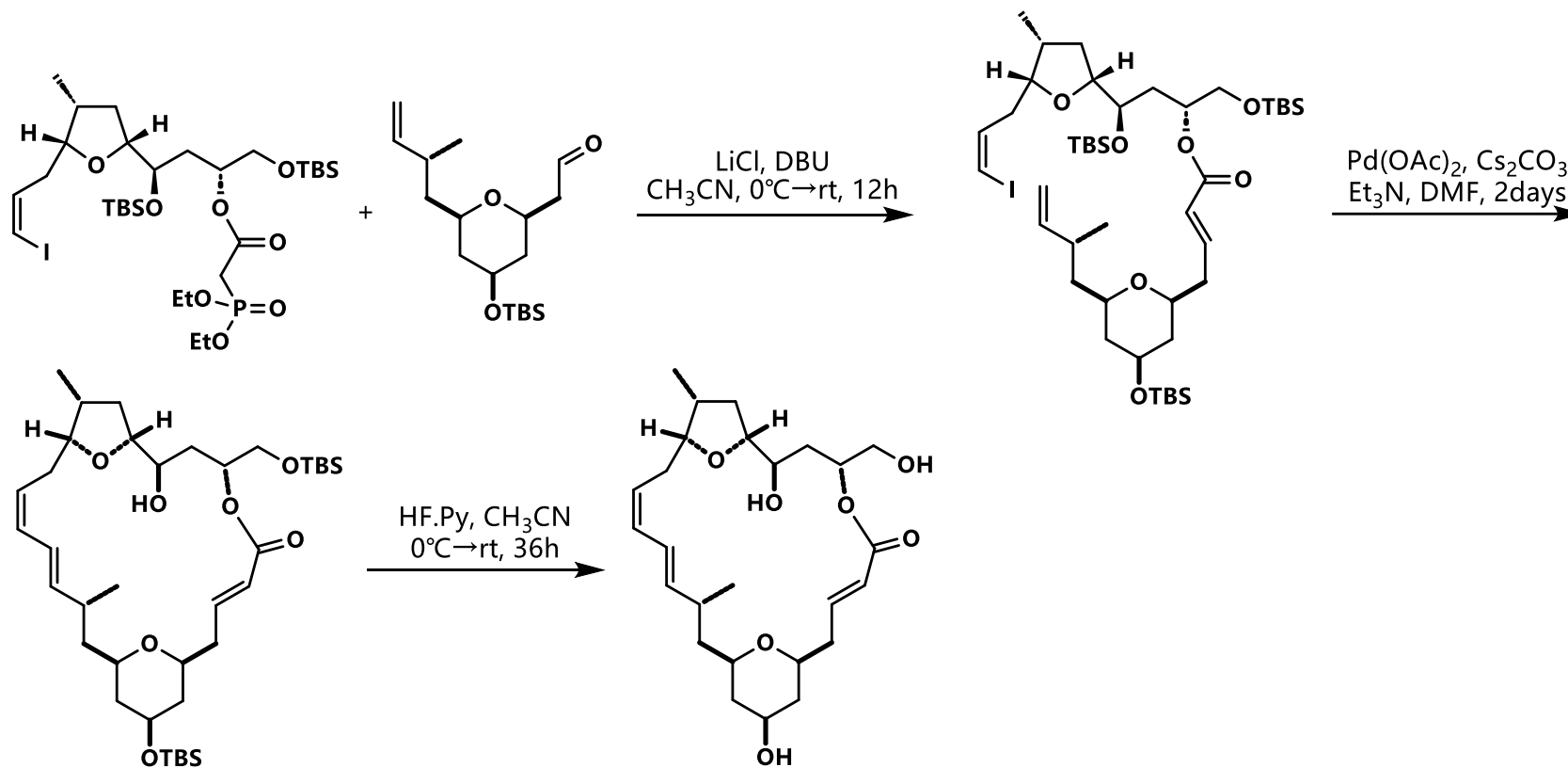
- Ghosh课题组 - Mandelalide A (2014)
- 叶涛课题组 - Mandelalide A (2014)
- Fürstner课题组 - Mandelalide A (2015)
- Altmann课题组 - Mandelalide A (2016)
- Carter课题组 - Mandelalide A (2016)
- Smith课题组 - Mandelalide A (2018)
- Haslett课题组 - Madeirolide A(2013)
- Chulbom Lee课题组 - Madeirolide A (2016,2024)



# Ghosh课题组 - Mandelalide A (2014):

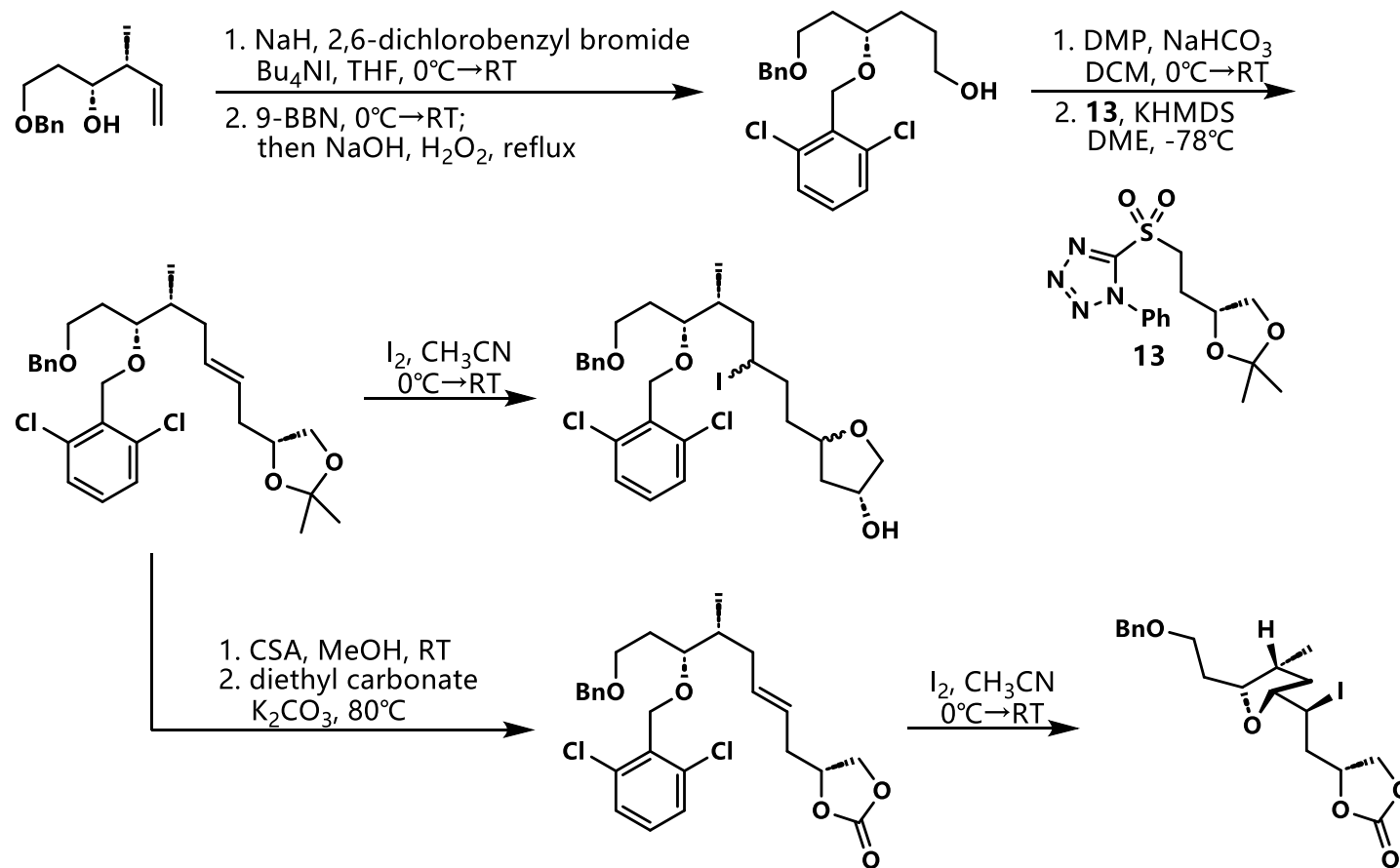


# Ghosh课题组 - Mandelalide A (2014):

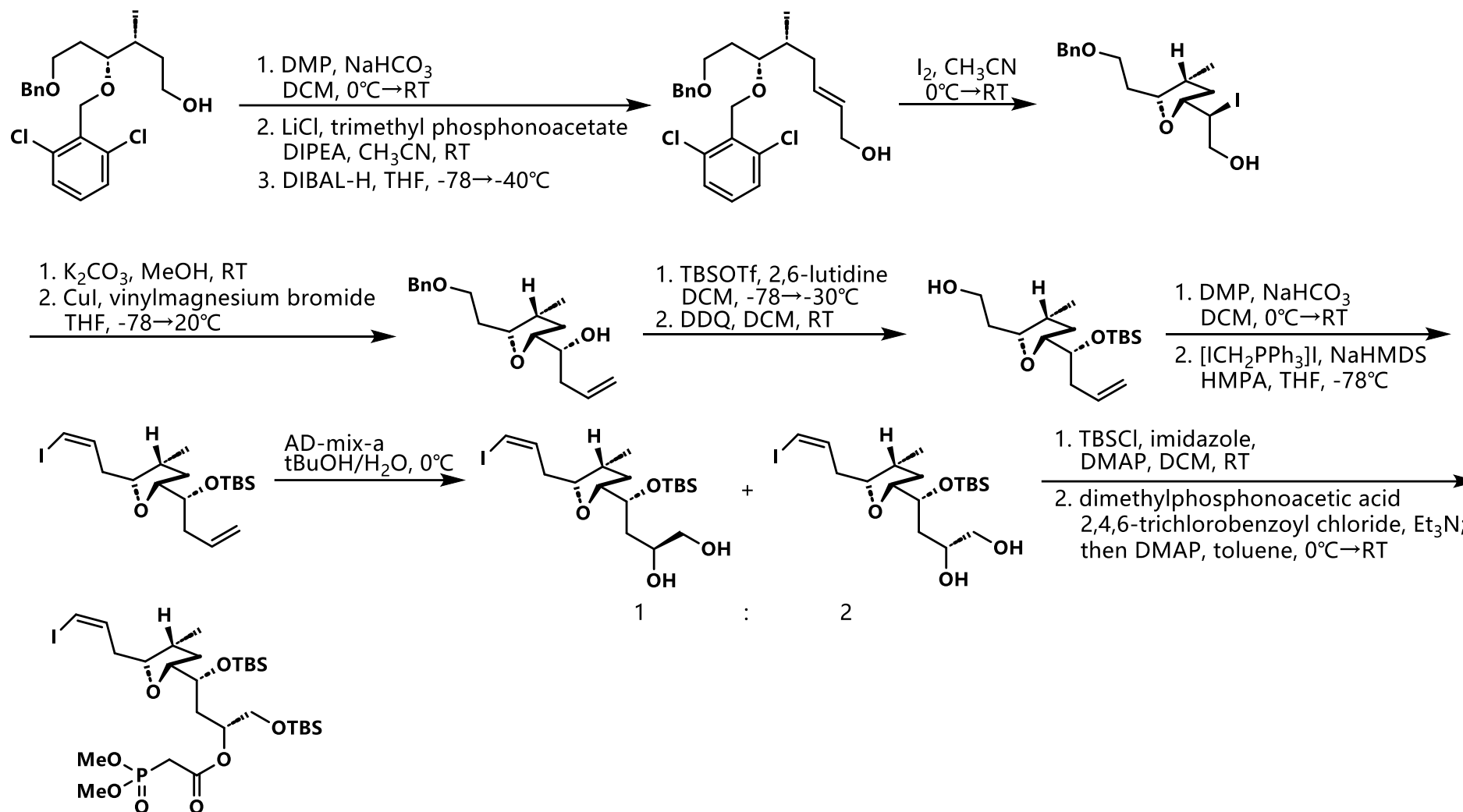




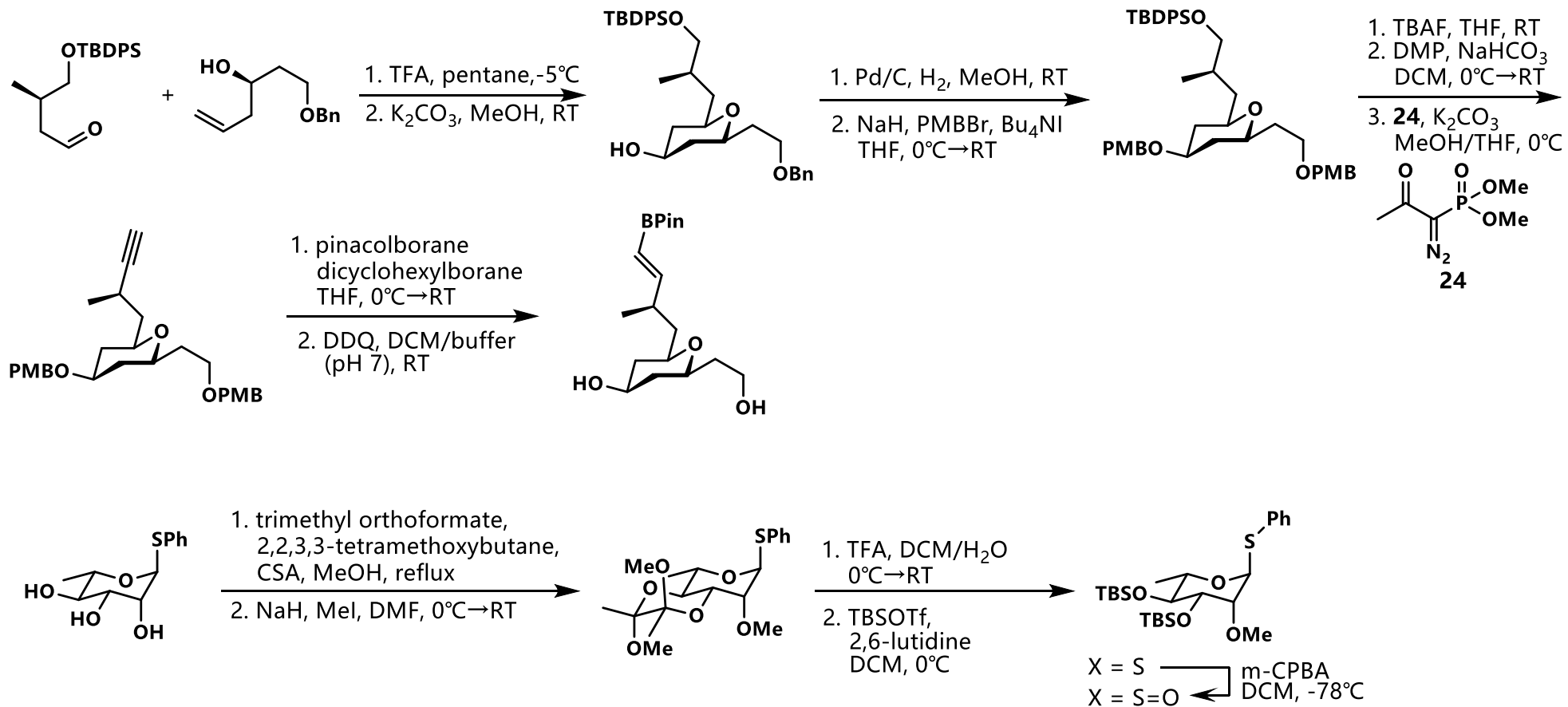
# 叶涛课题组 - Mandelalide A (2014):



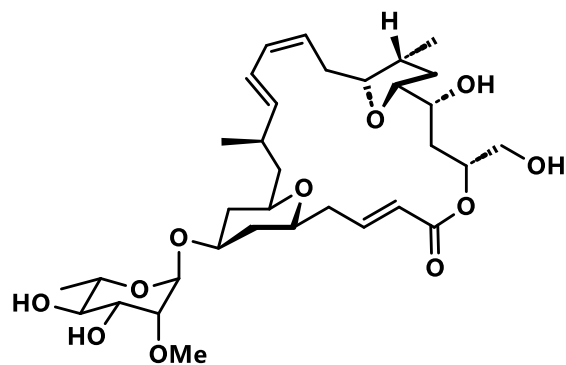
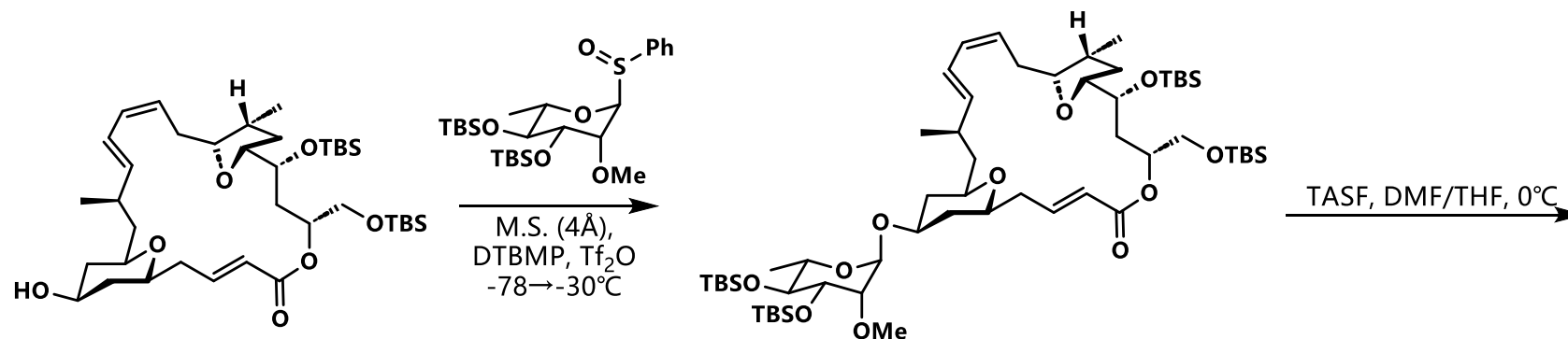
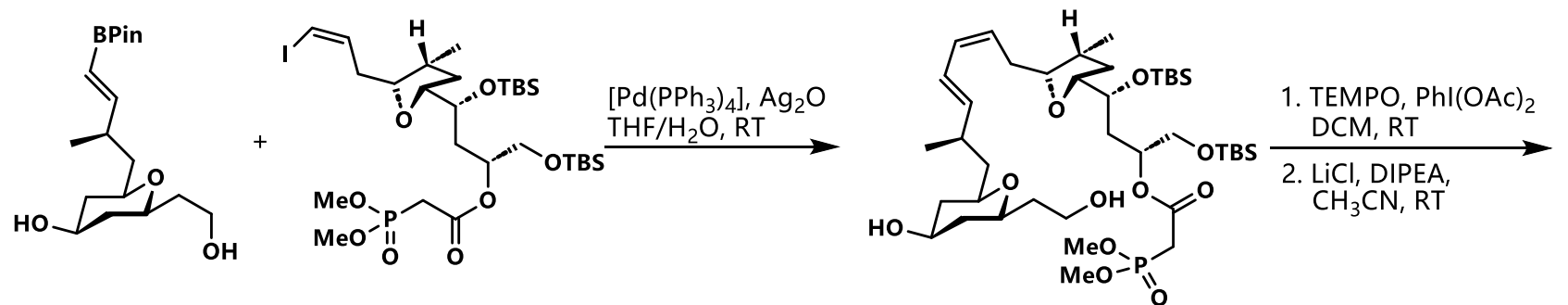
# 叶涛课题组 - Mandelalide A (2014):



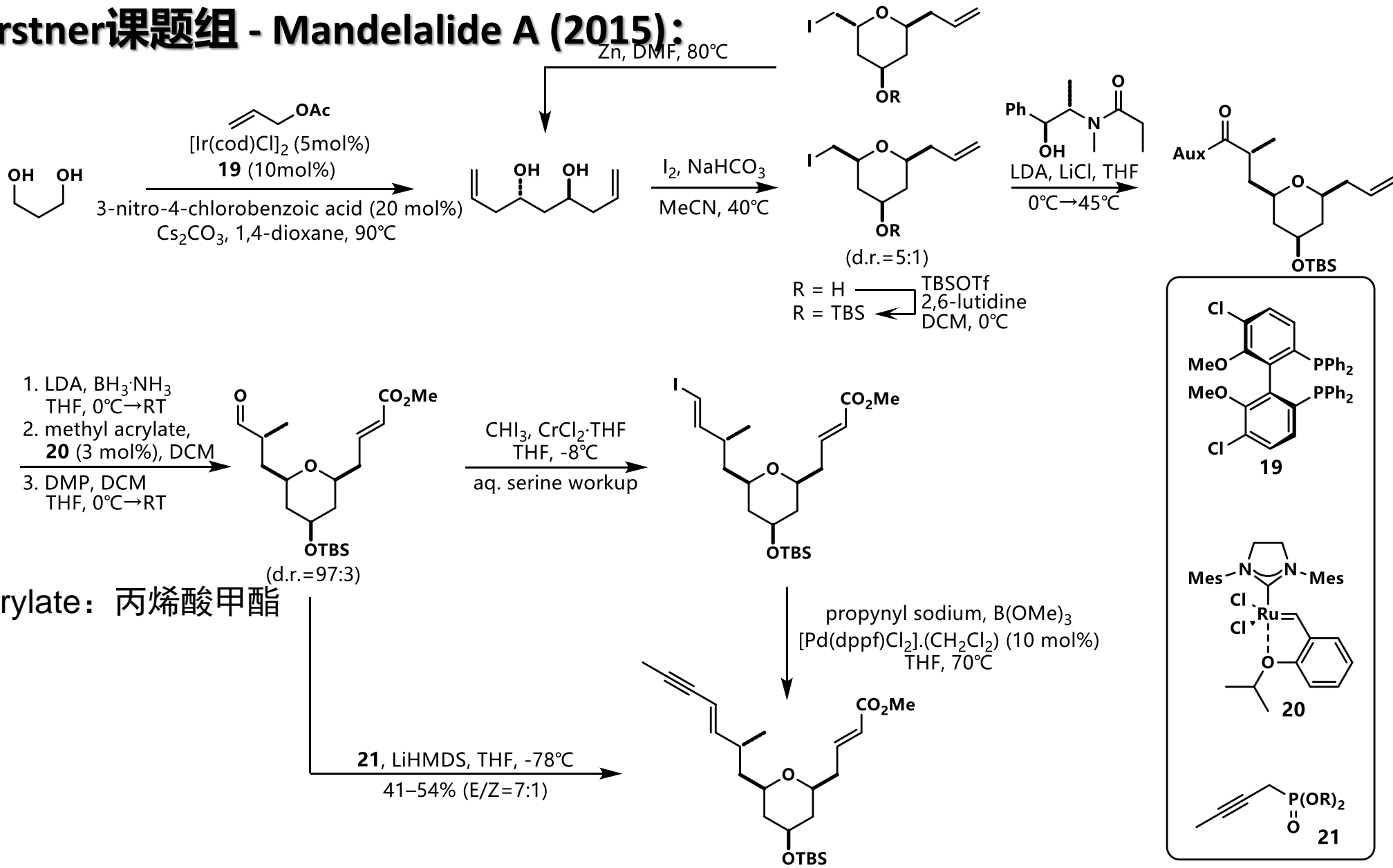
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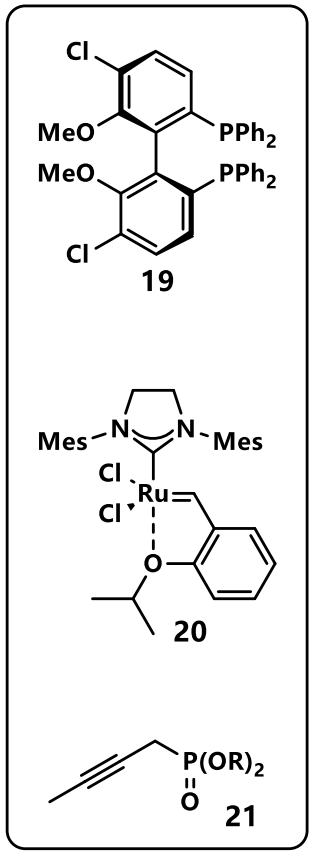
# 叶涛课题组 - Mandelalide A (2014):



# Fürstner课题组 - Mandelalide A (2015):

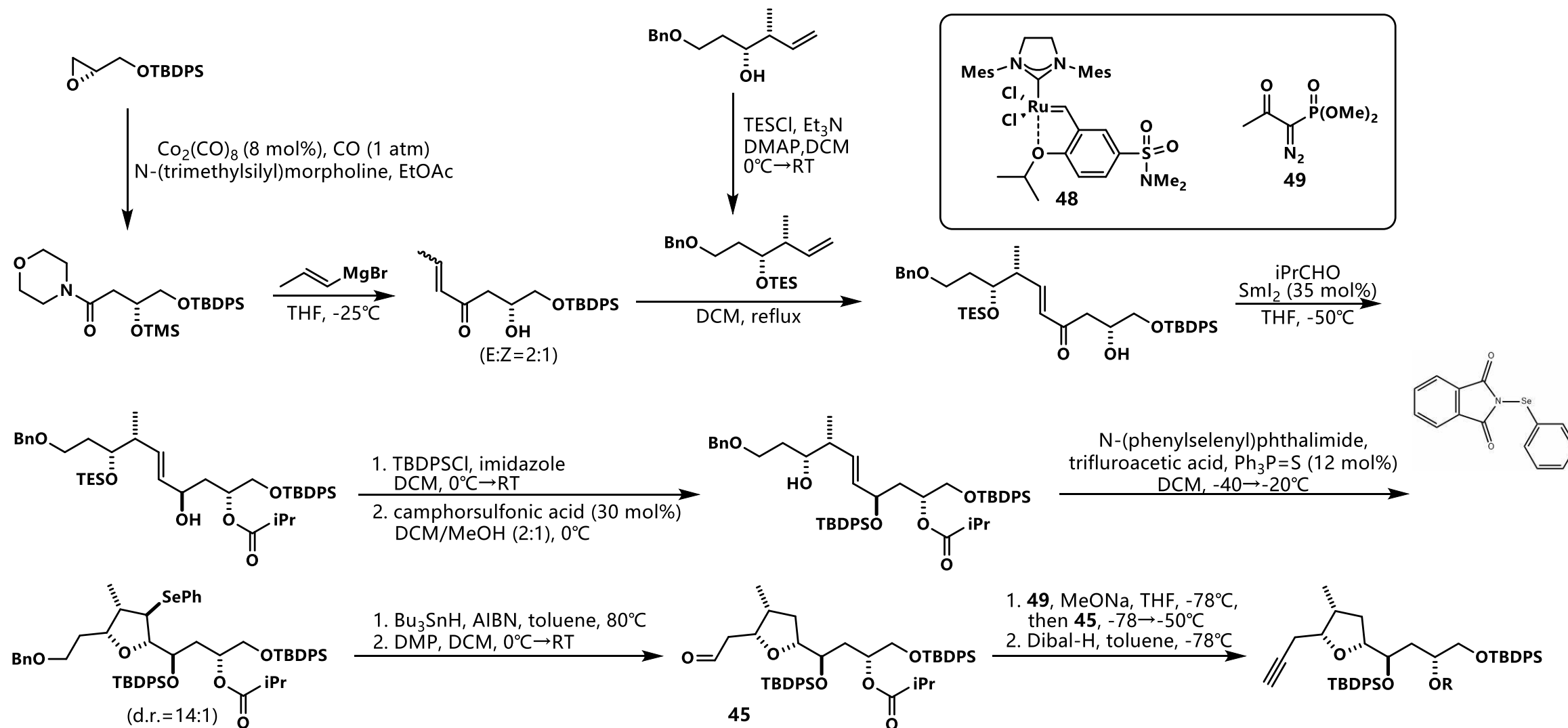


methyl acrylate: 丙烯酸甲酯

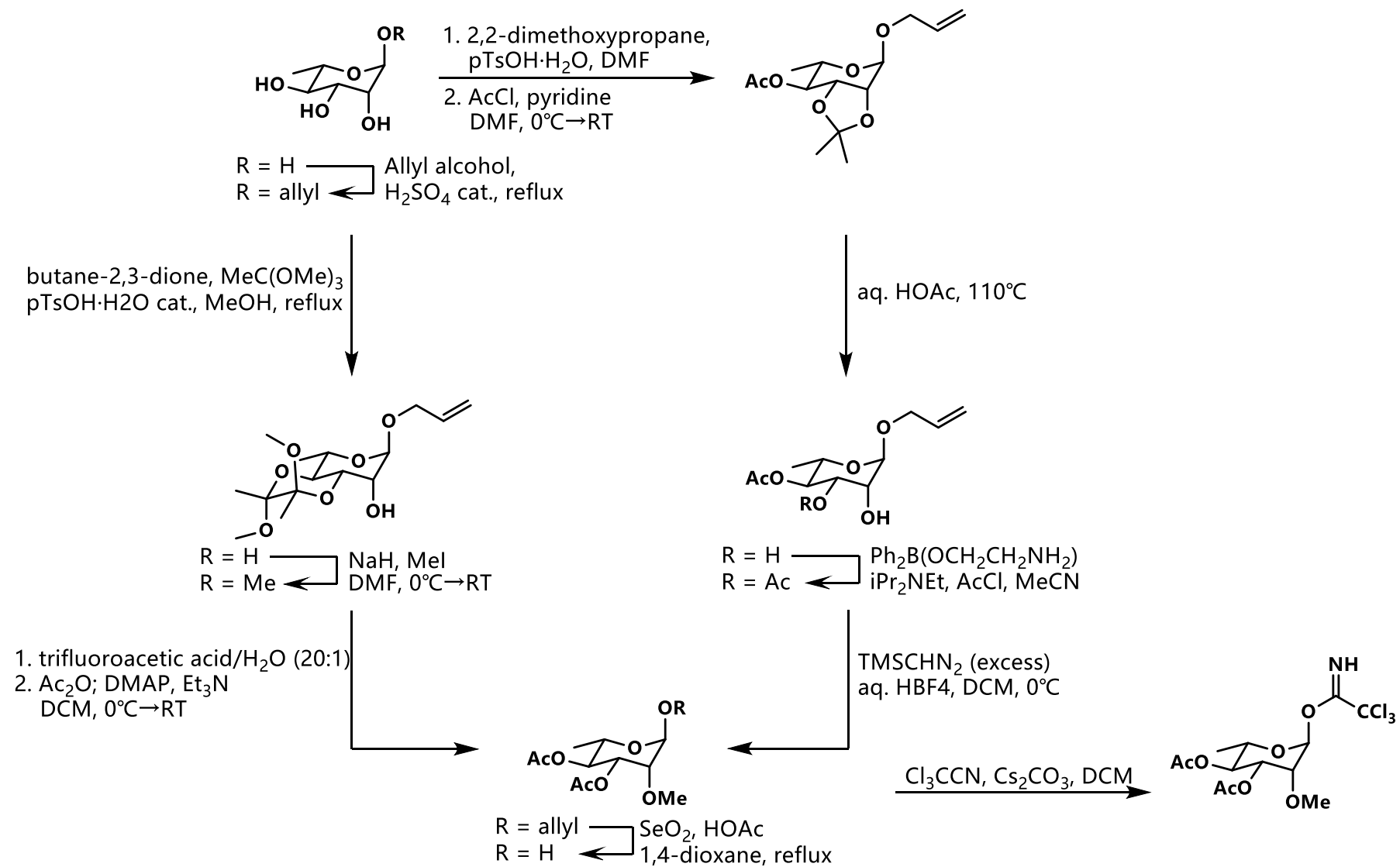




# Fürstner课题组 - Mandelalide A (2015):

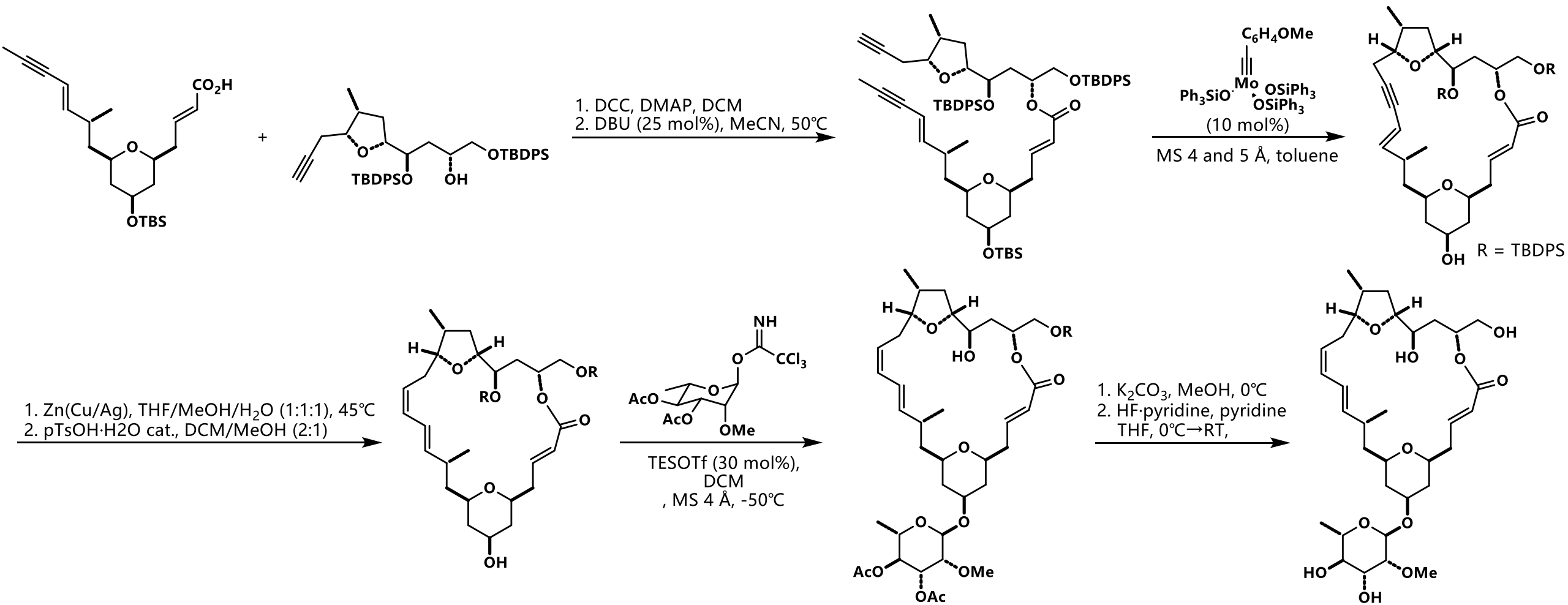


# Fürstner课题组 - Mandelalide A (2015):

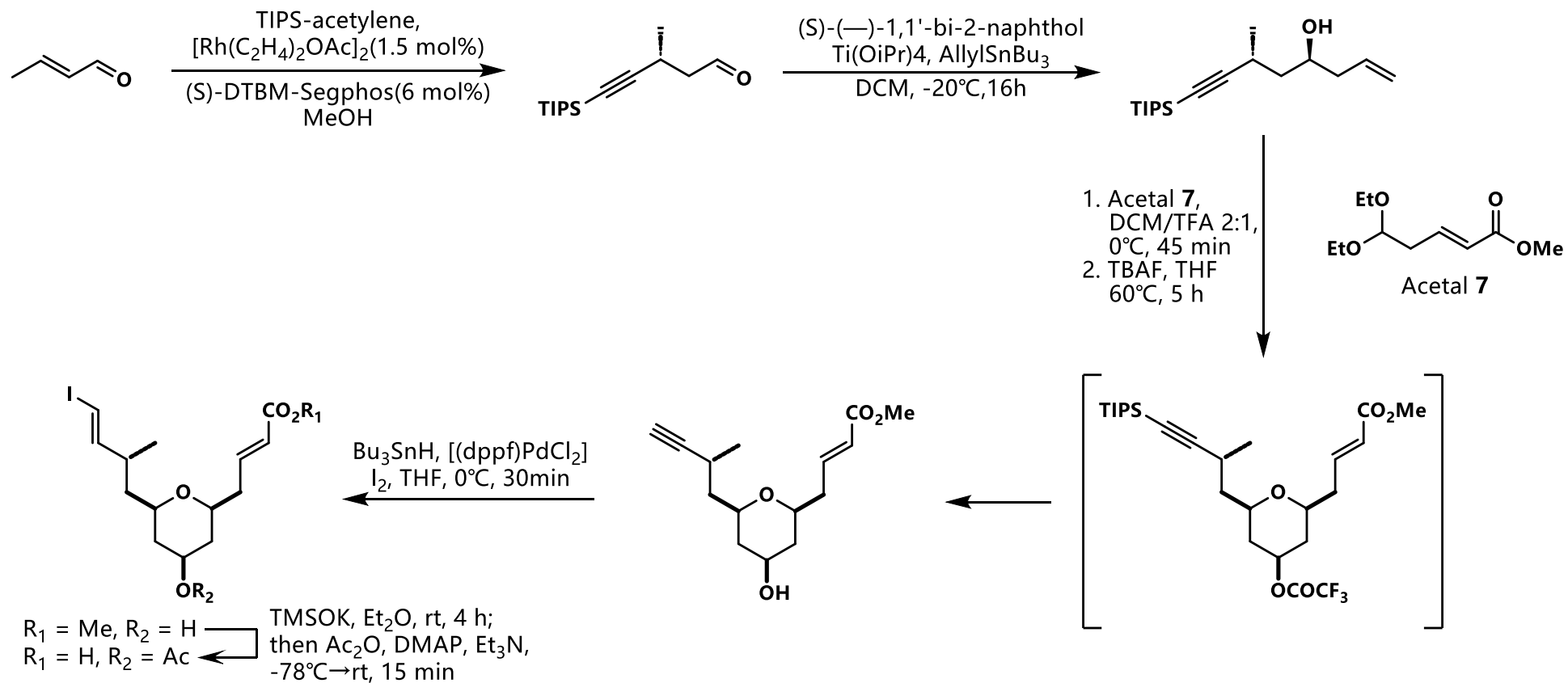




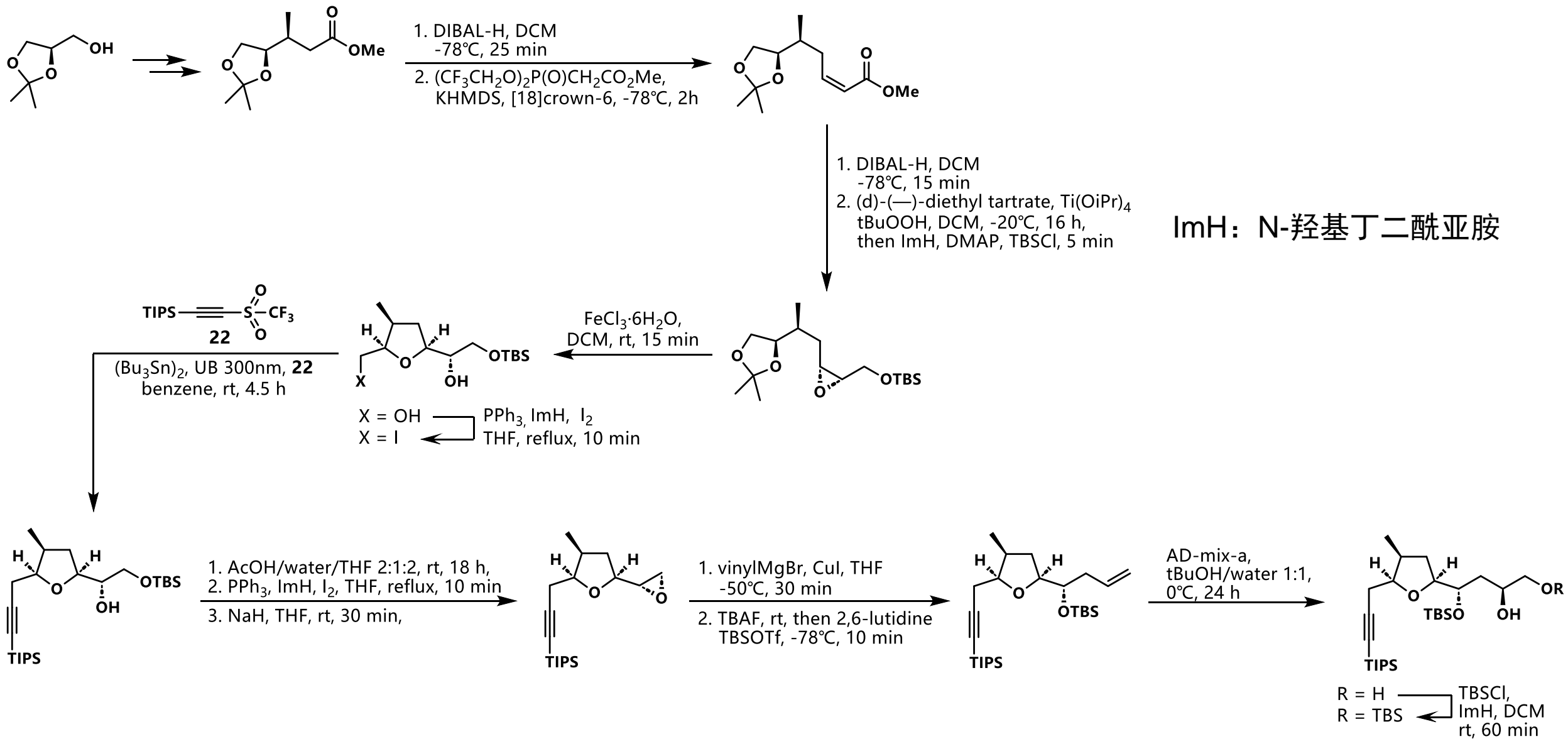
# Fürstner课题组 - Mandelalide A (2015):



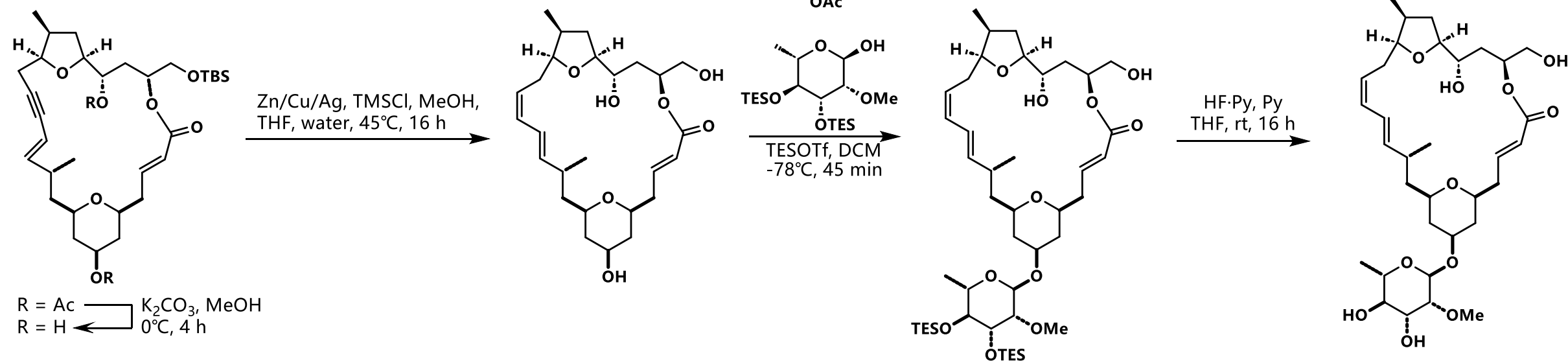
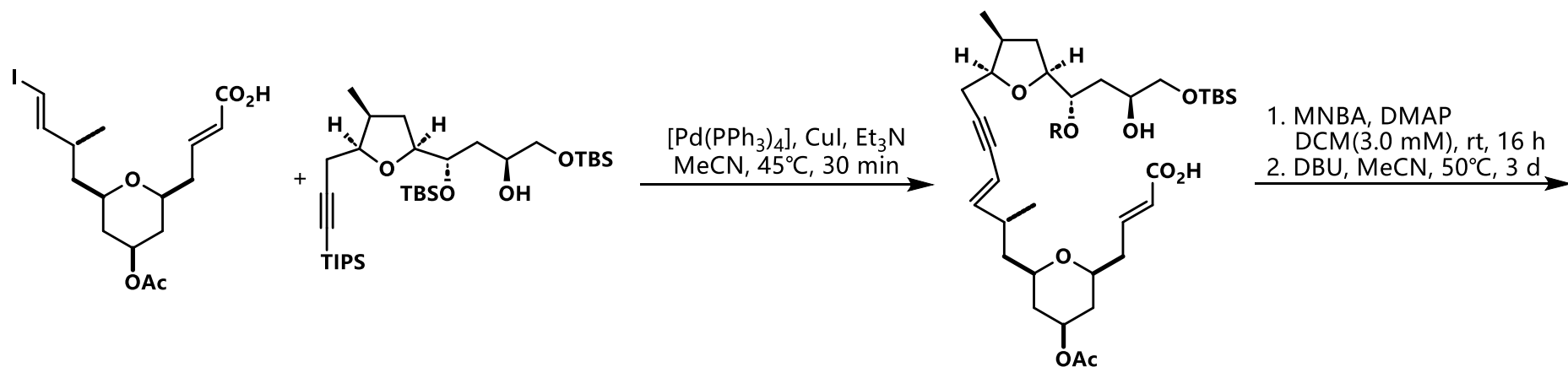
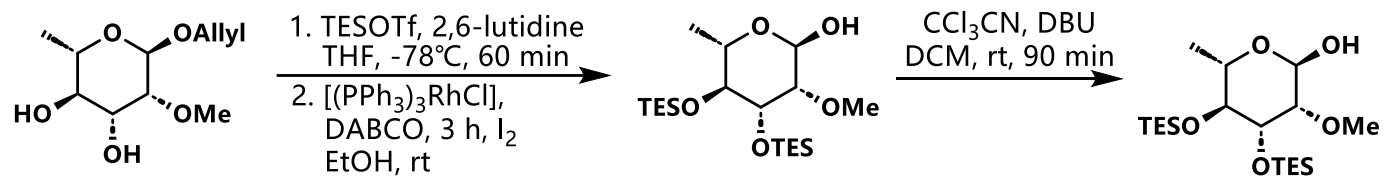
# Altmann课题组 - Mandelalide A (2016):



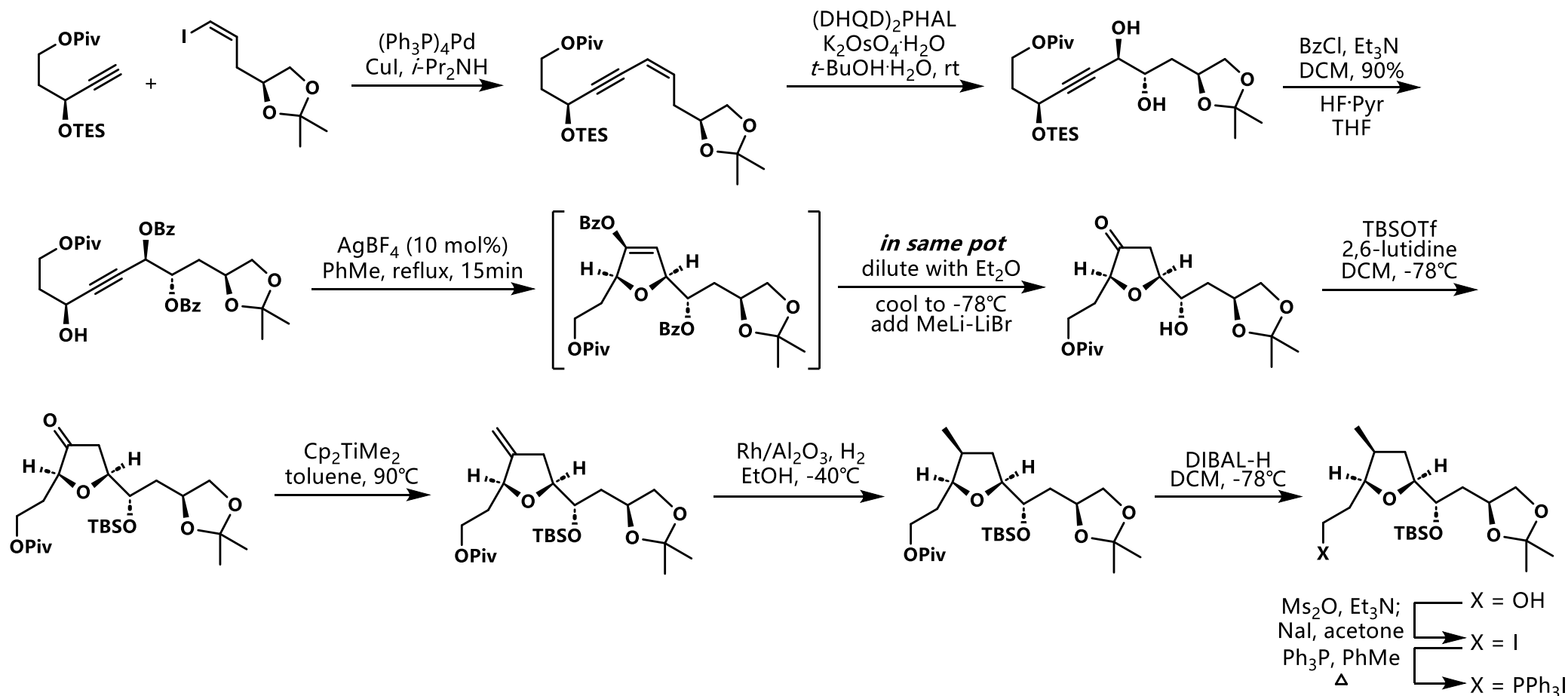
# Altmann课题组 - Mandelalide A (2016):

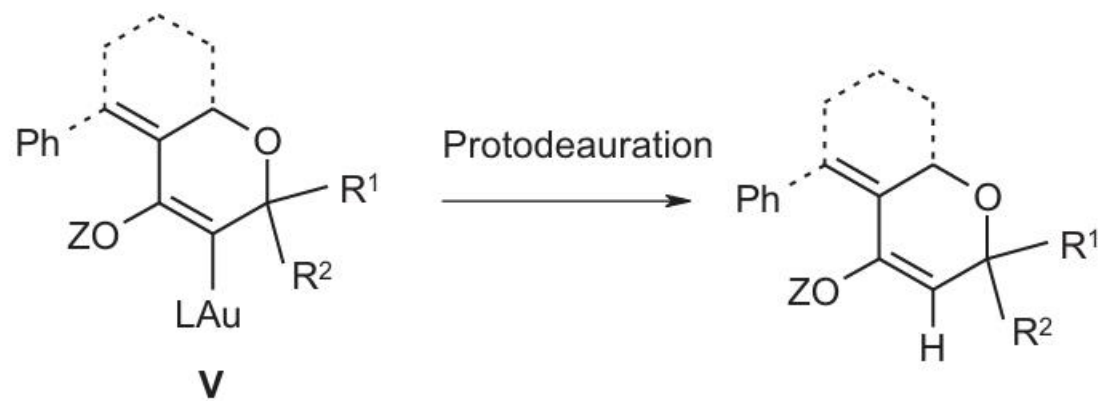
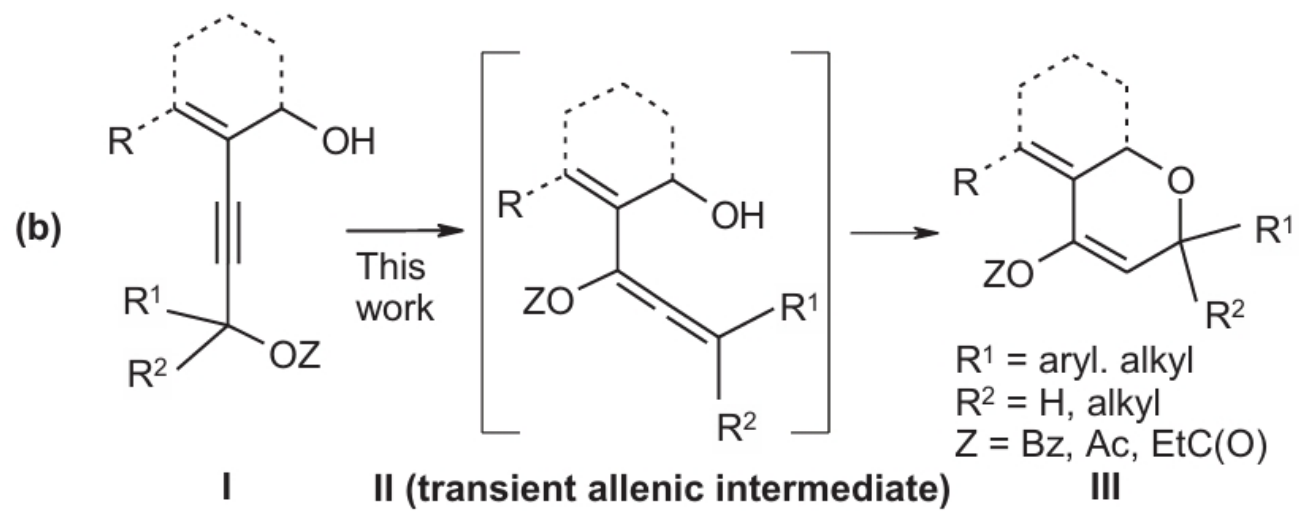
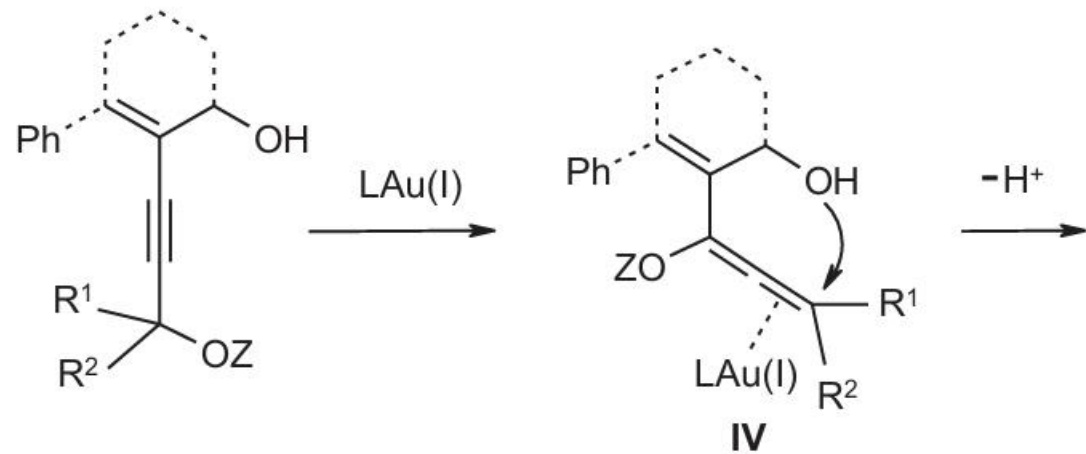
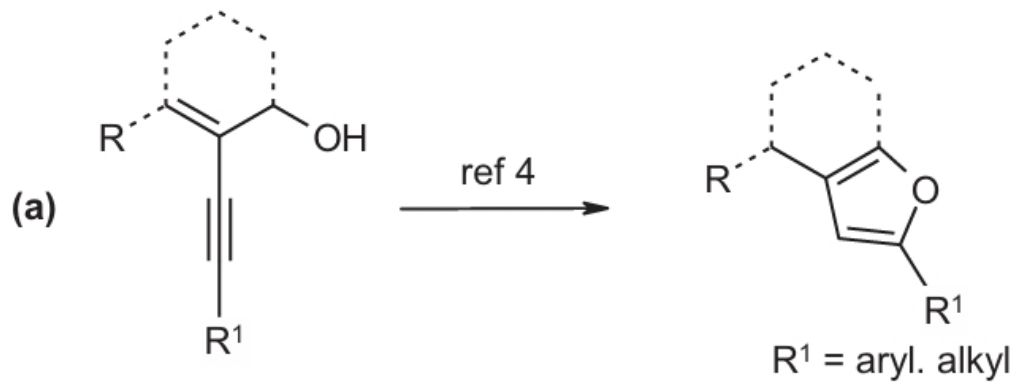


# Altmann课题组 - Mandelalide A (2016):

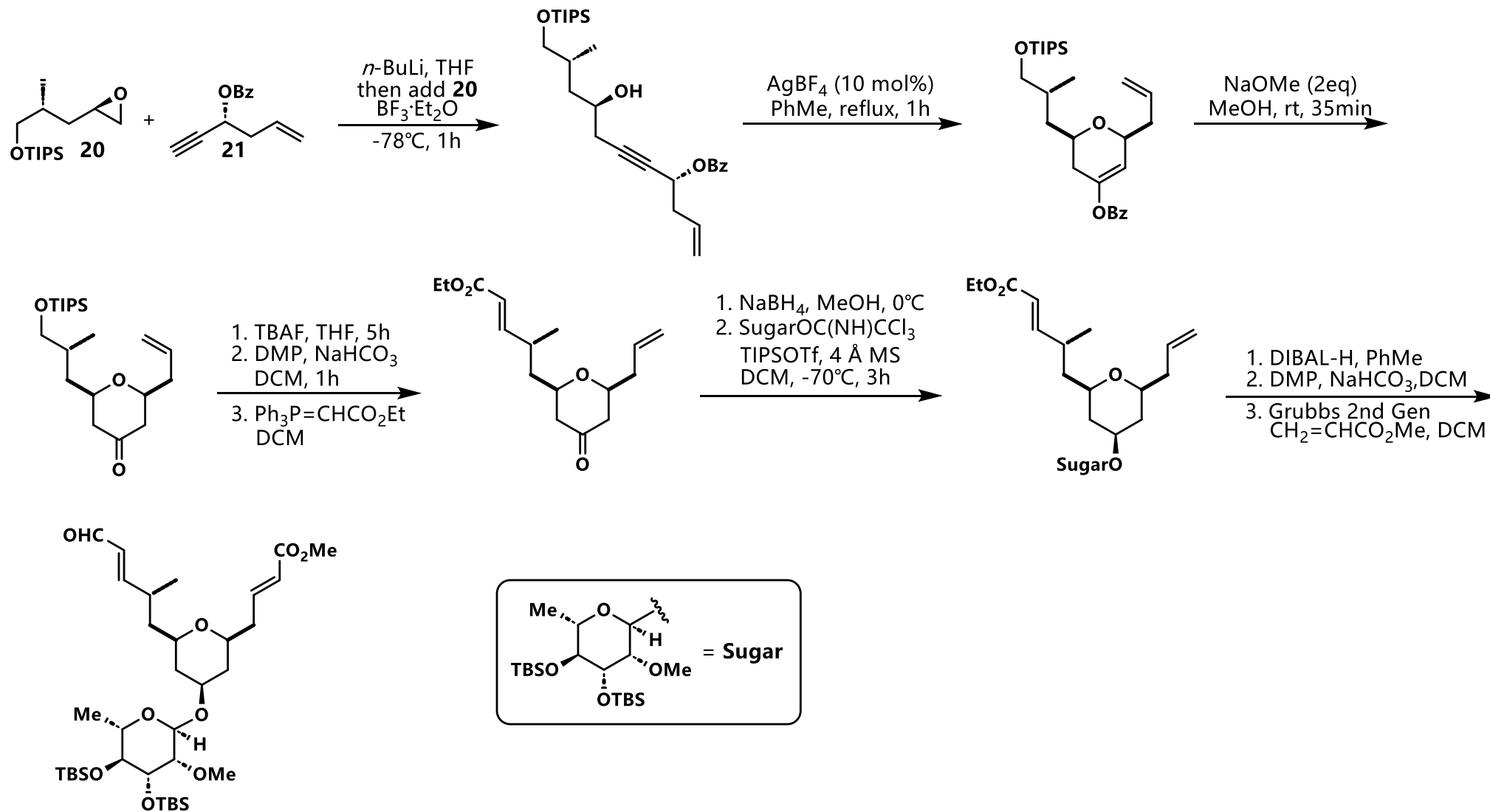


# Carter课题组 - Mandelalide A (2016):

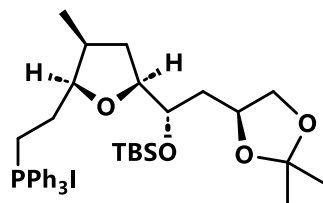




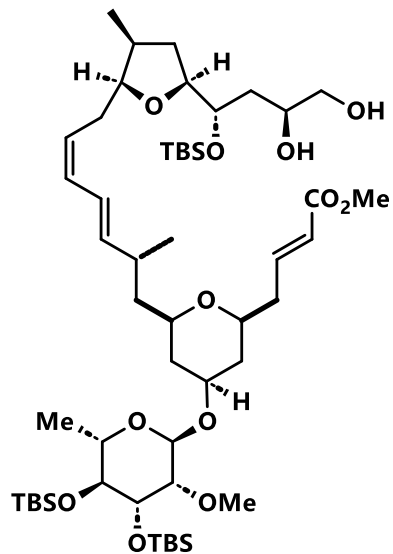
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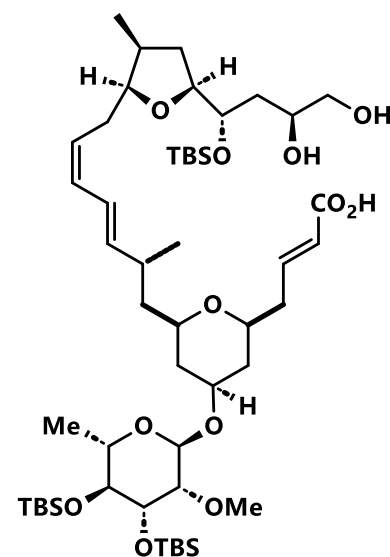
# Carter课题组 - Mandelalide A (2016):



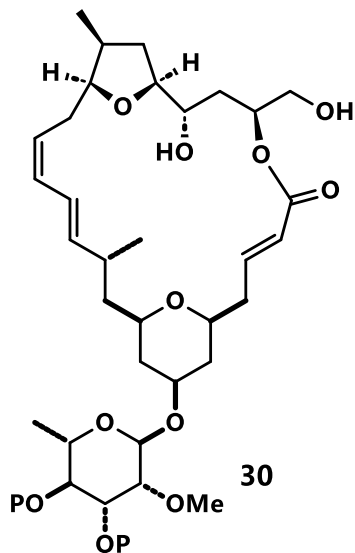
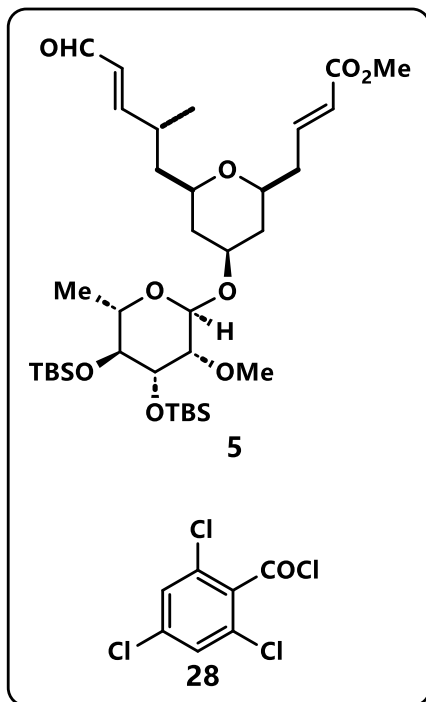
1. NaHMDS, THF  
then add **5**  
2. TFA, DCM



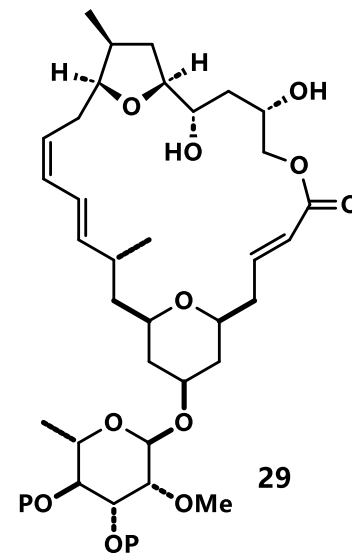
NaOH  
*i*-PrOH,  $\Delta$



**28**, Et<sub>3</sub>N,  
PhMe/THF,  
DMAP  
37% of **29**  
<10% of **30**



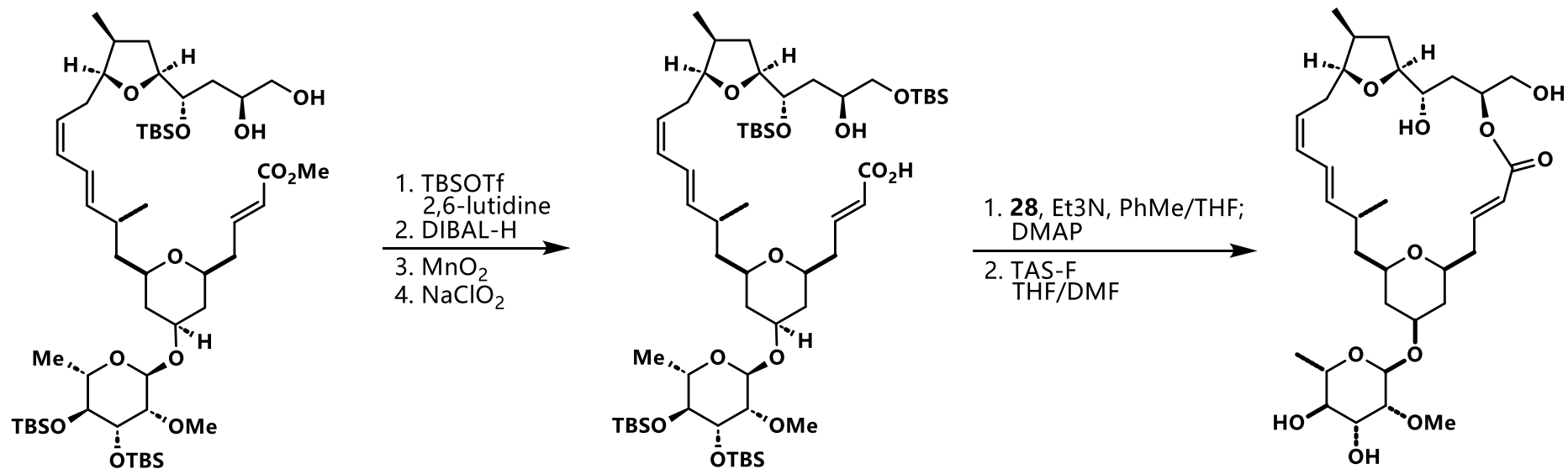
P = TBS  $\xrightarrow{\text{TAS-F}}$  THF/DMF  
P = H  $\xleftarrow{\text{THF/DMF}}$



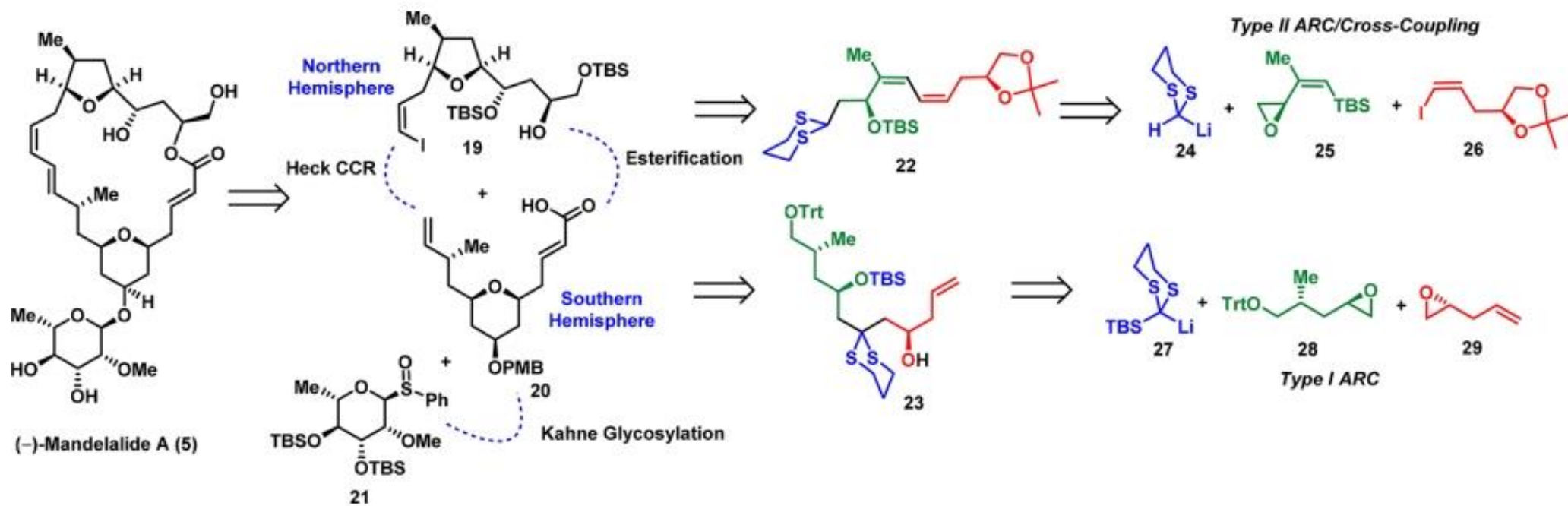
P = TBS  $\xrightarrow{\text{TAS-F}}$  THF/DMF  
P = H  $\xleftarrow{\text{THF/DMF}}$



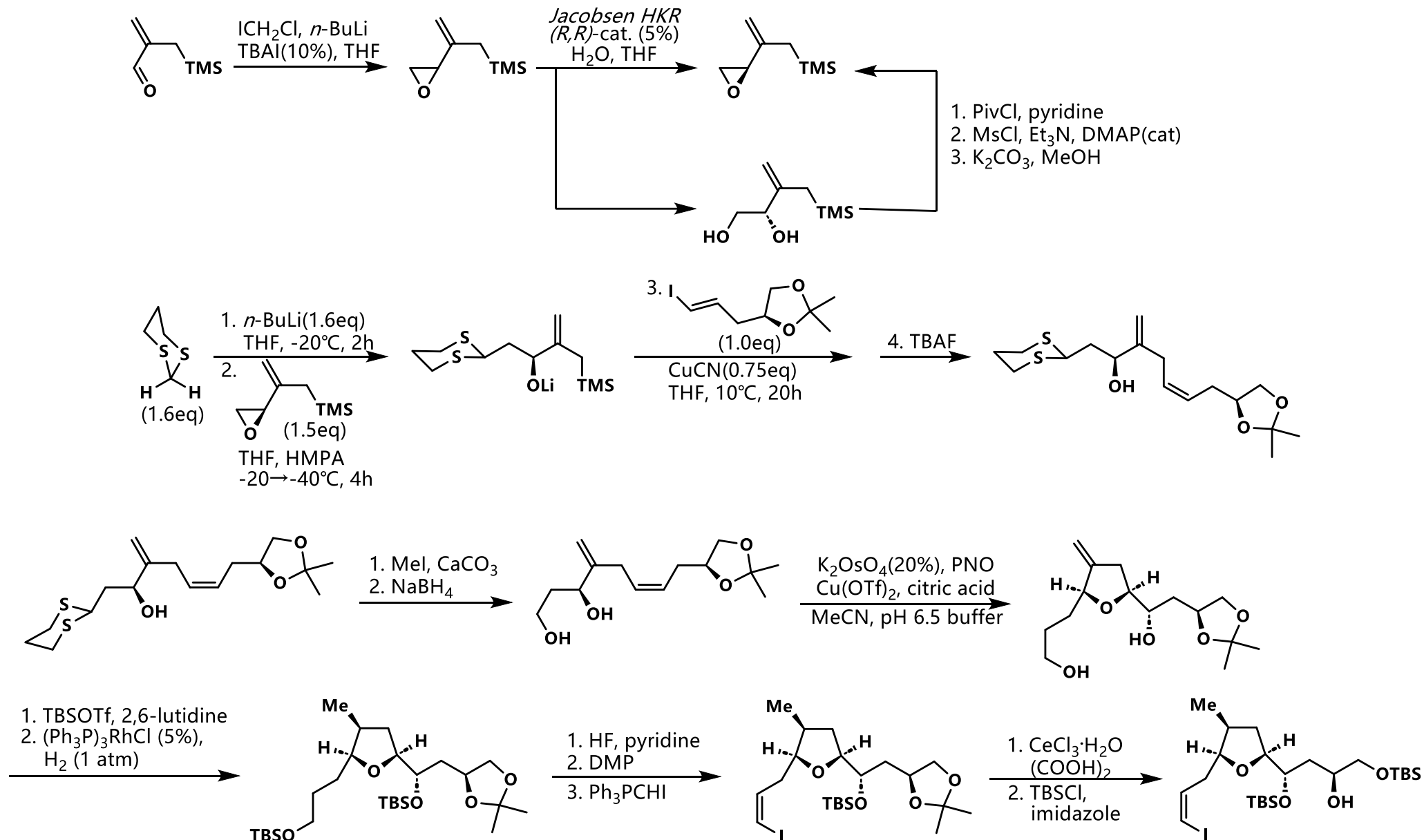
# Carteri课题组 - Mandelalide A (2016):



# Smith课题组 - Mandelalide A (2018):

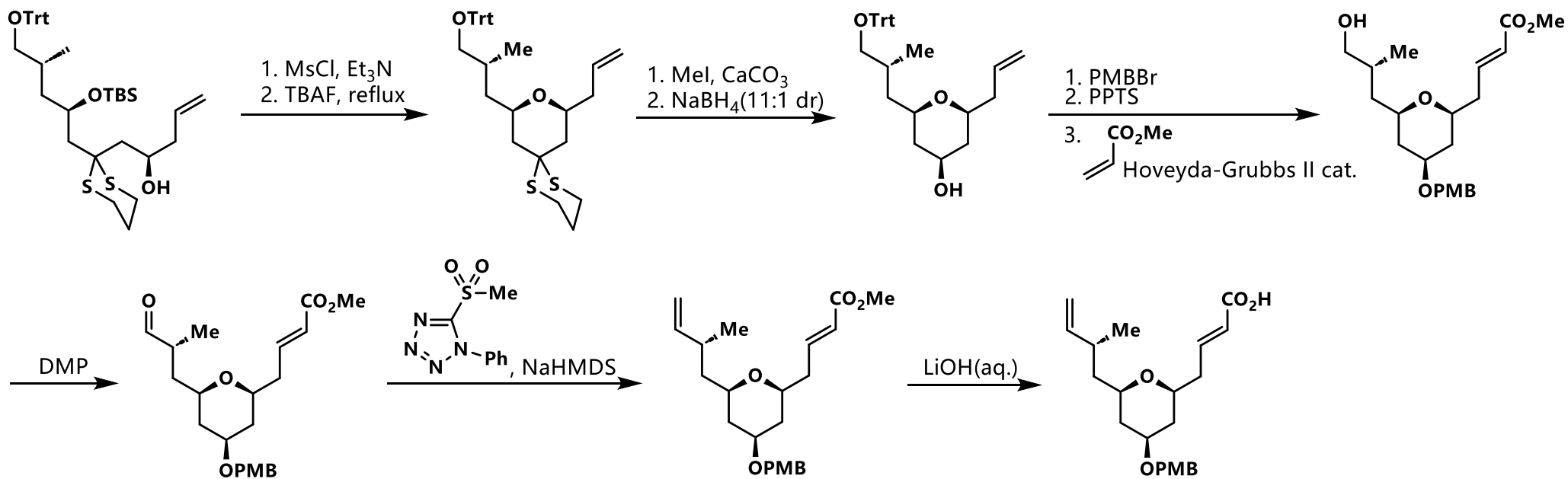


# Smith课题组 - Mandelalide A (2018):

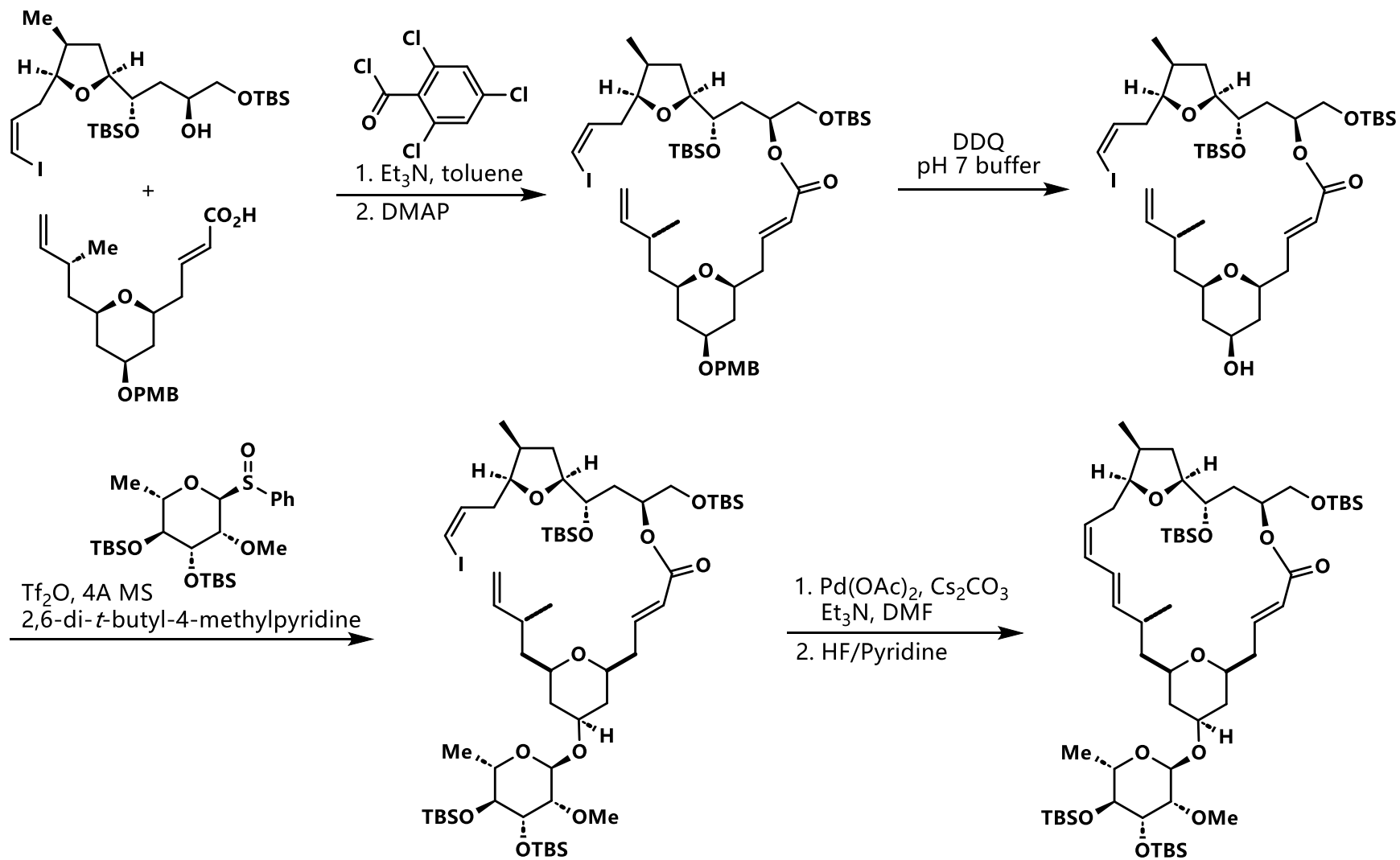




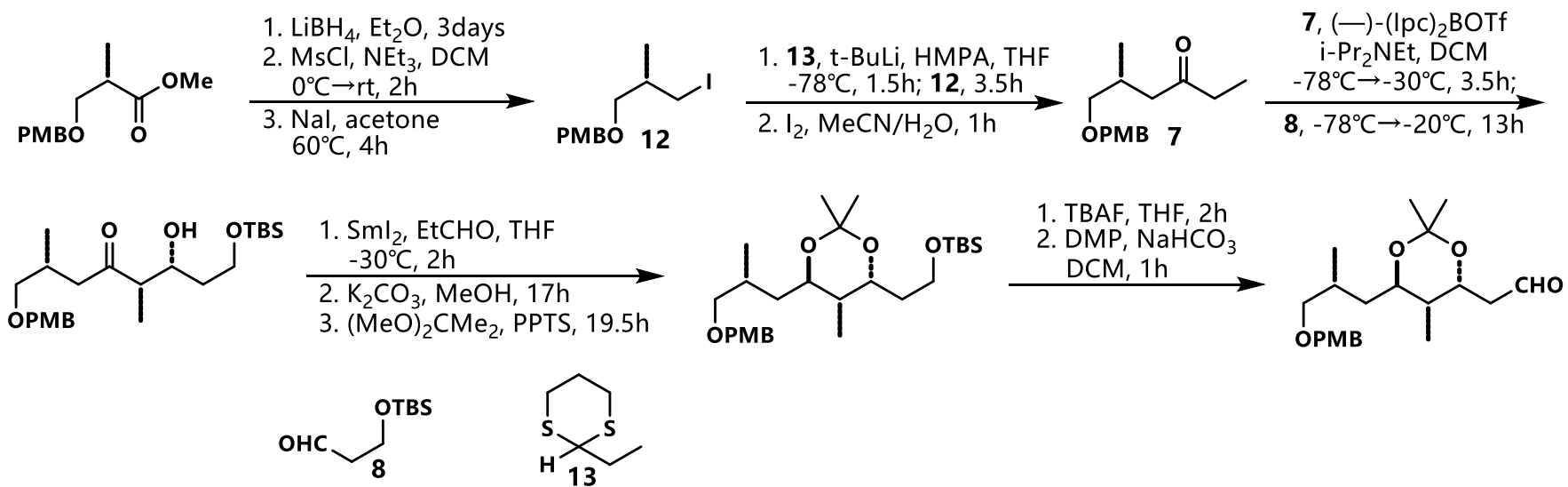
# Smith课题组 - Mandelalide A (2018):



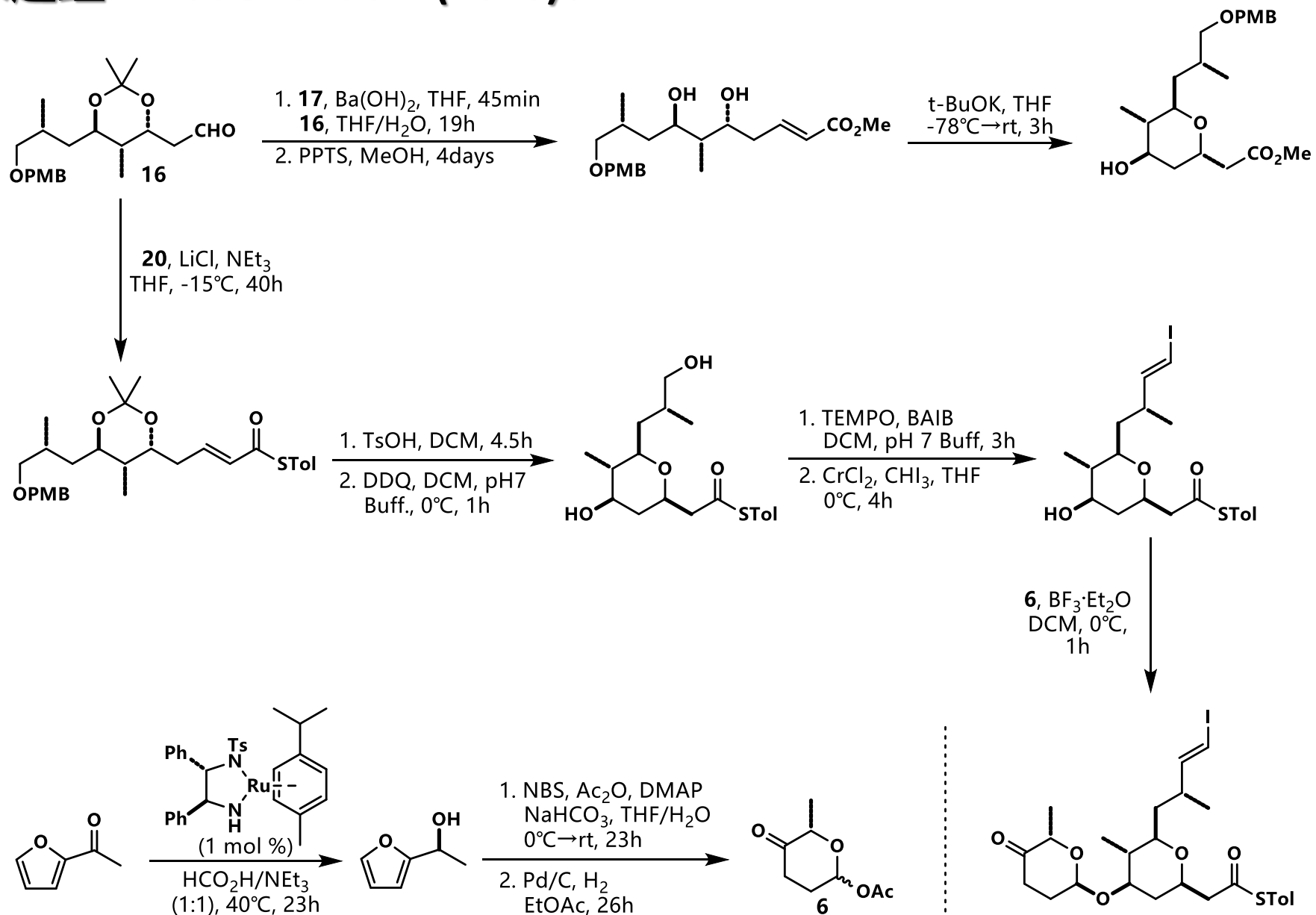
# Smith课题组 - Mandelalide A (2018):



# Hasletti课题组 - Madeirolide A (2013):

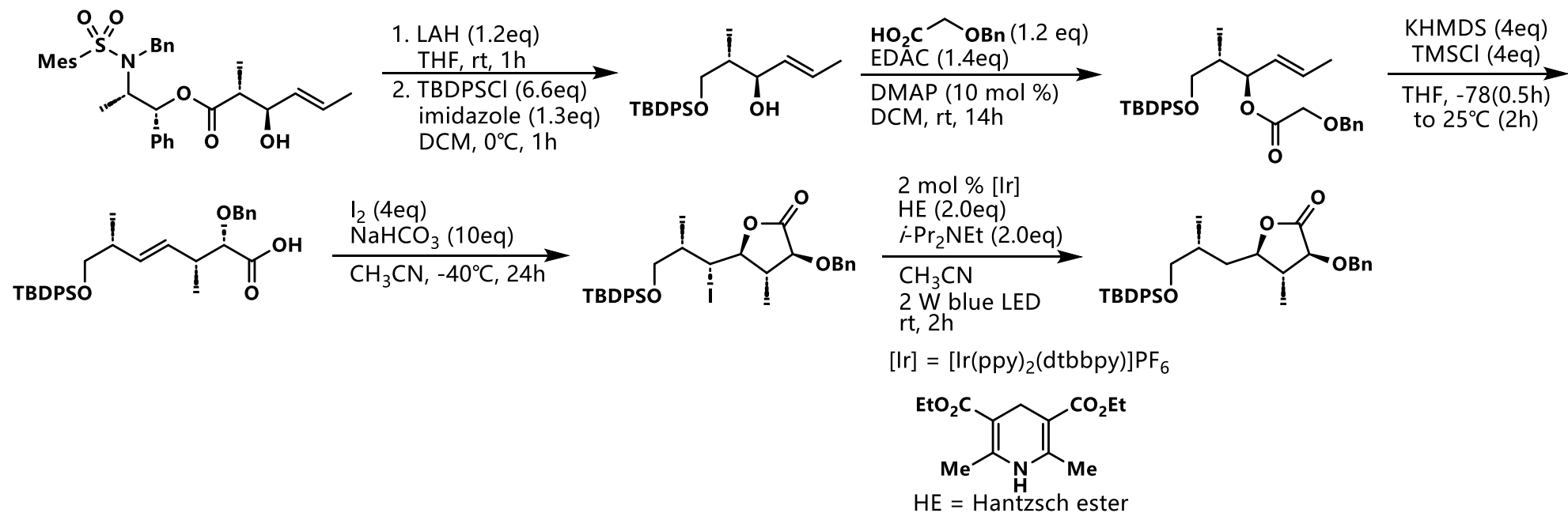


# Hasletti课题组 - Madeirolide A (2013):

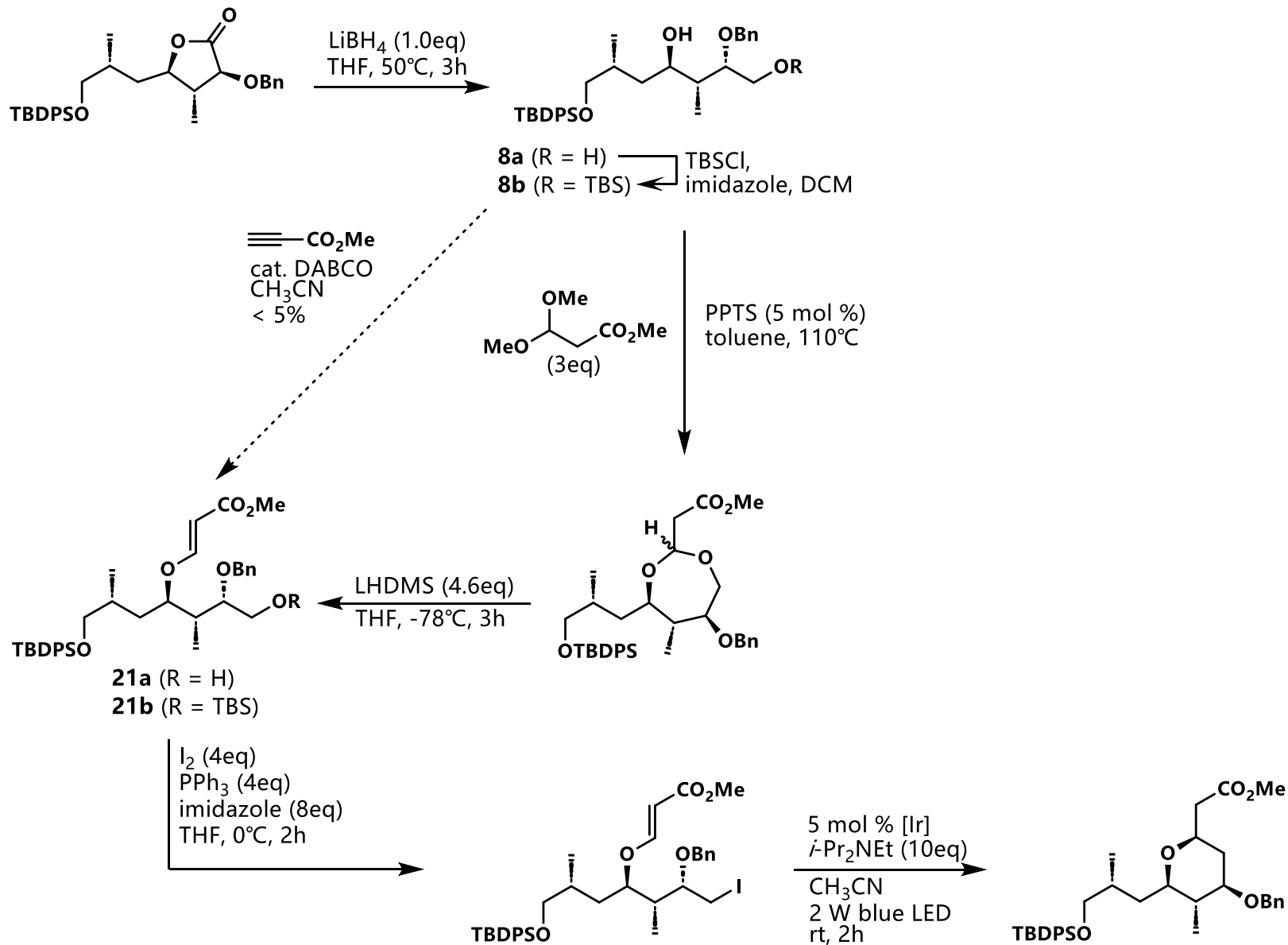




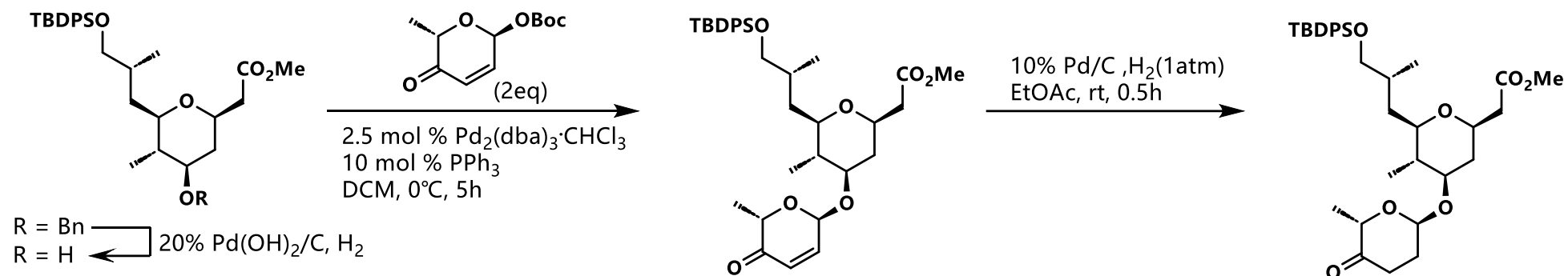
# Chulbom Lee 课题组 - Madeirolide A (2016):



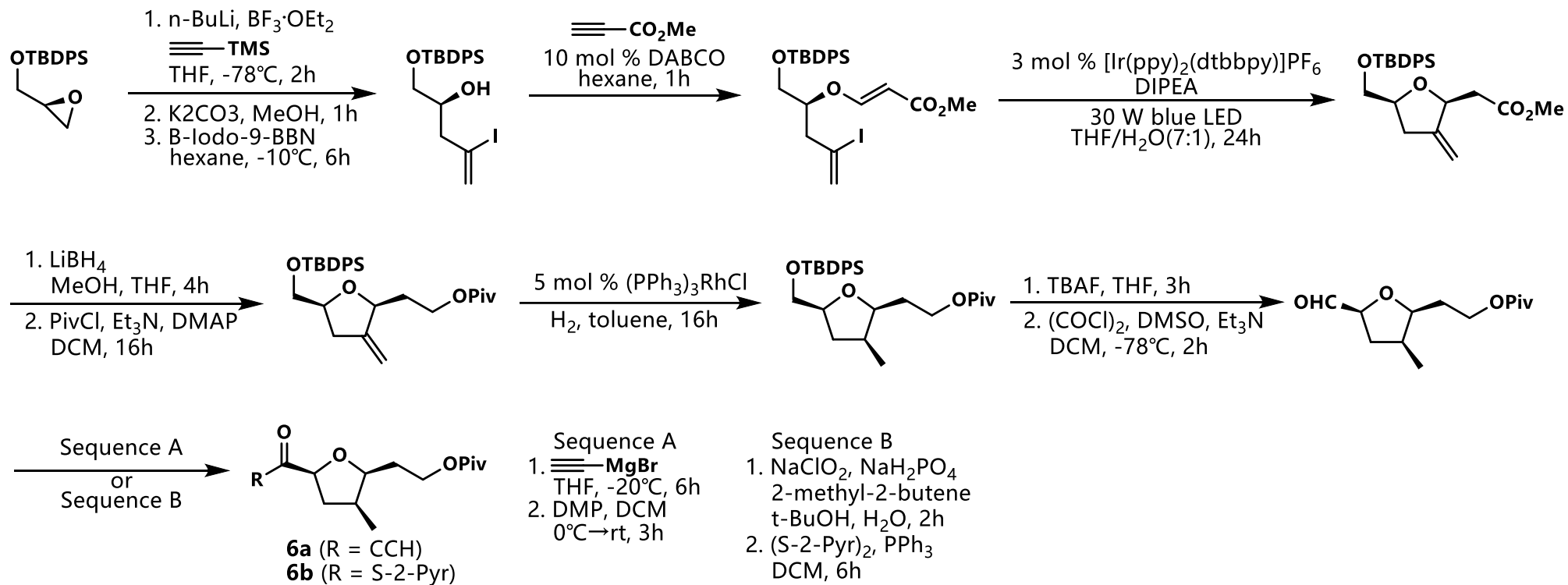
# Chulbom Lee 课题组 - Madeirolide A (2016):



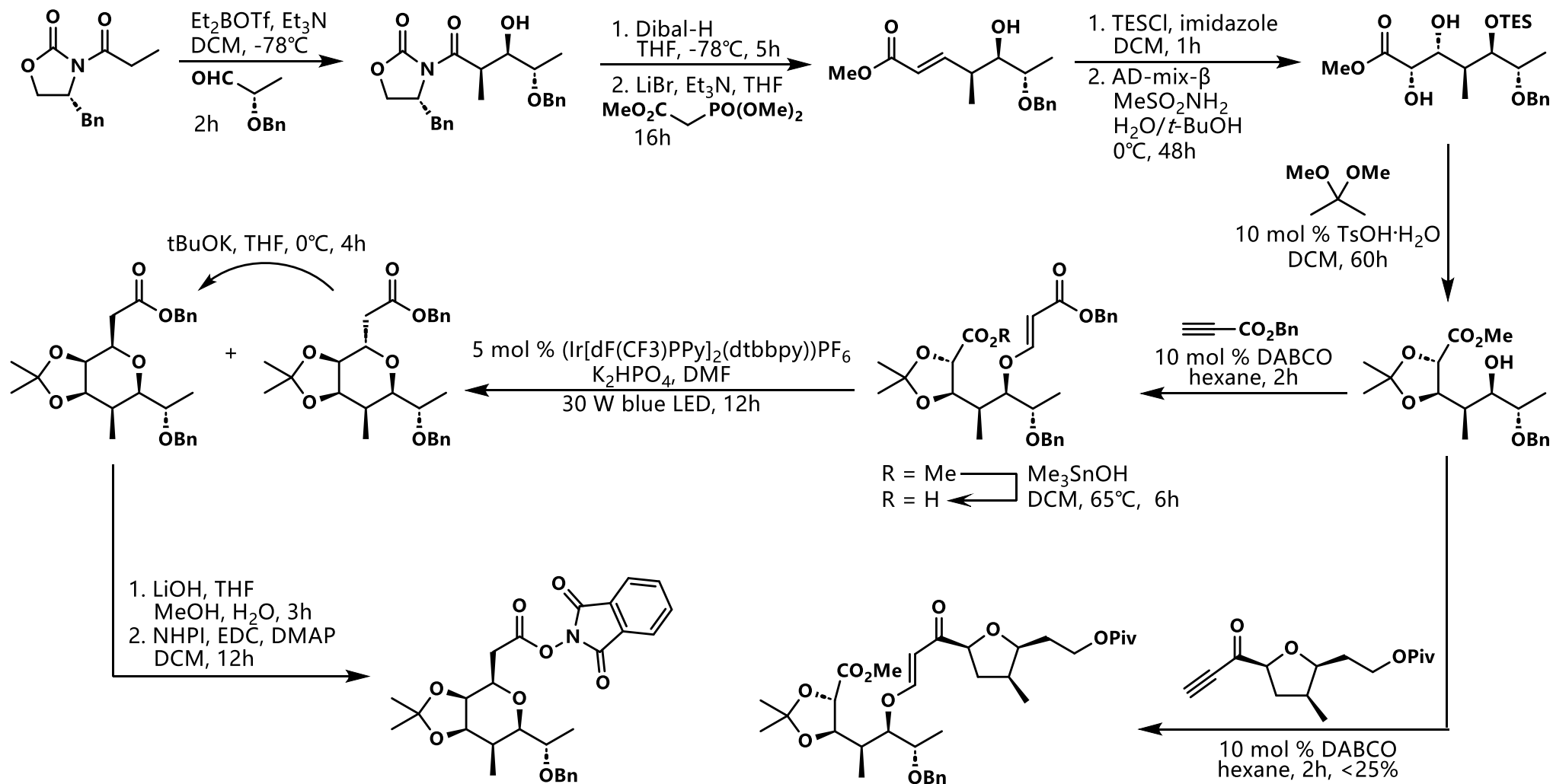
# Chulbom Lee课题组 - Madeirolide A (2016):



# Chulbom Lee课题组 - Madeirolide A (2024):



# Chulbom Lee课题组 - Madeirolide A (2024):



# Chulbom Lee课题组 - Madeirolide A (2024):

L-selectride: 三仲丁基硼氢化锂

