



Denksport

Maoecrystal V

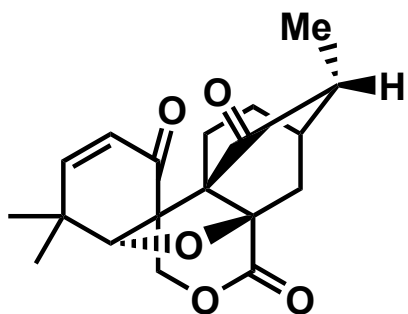
Julien GAGNEPAIN

Wien – 18/11/2010



Diterpenoid Isolated from the leaves of *Isodon Eriocalyx* in China

Han-Dong Sun *et al. Org. Lett.*, **2004**, 6, 4327.



Maoecrystal V

test substance	IC ₅₀ (μg/mL)				
	K562	A549	BGC-823	CNE	HeLa
1	6.43 × 10 ⁴	2.63 × 10 ⁵	1.47 × 10 ⁴	nd ^a	0.02
<i>cis</i> -platin	0.38	1.61	0.25	2.31	0.99

^a Not determined.

Synthetic Study toward the Total Synthesis of Maoecrystal V

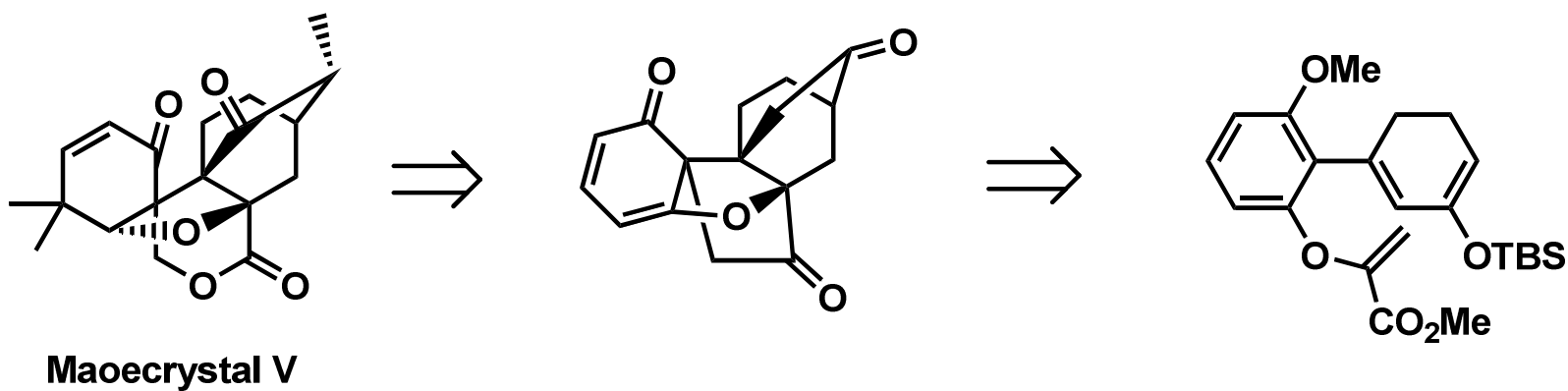
- Yang *et al.*, *Org. Lett.* **2009**, 4770-73
- Baran *et al.* *Org. Lett.* **2009**, 4774-76
- Danishefsky *et al.* *Tetrahedron*, **2009**, 50, 6586.
- Nicolaou *et al.* *Chem. Comm.*, **2009**, 46, 70-72.

Total Synthesis:

- Yang *et al.*, *J. Am. Chem. Soc.* **A.S.A.P.**

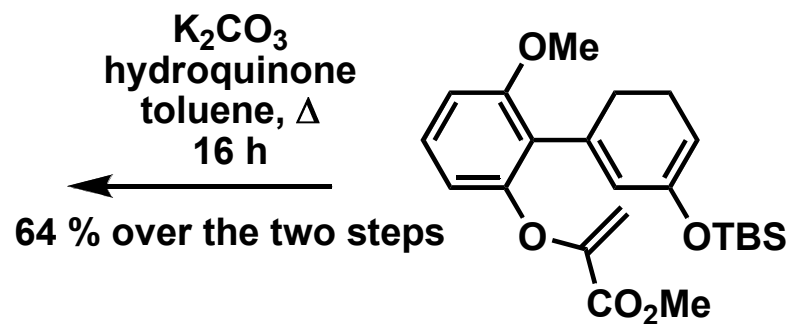
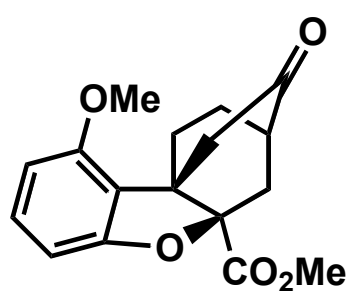
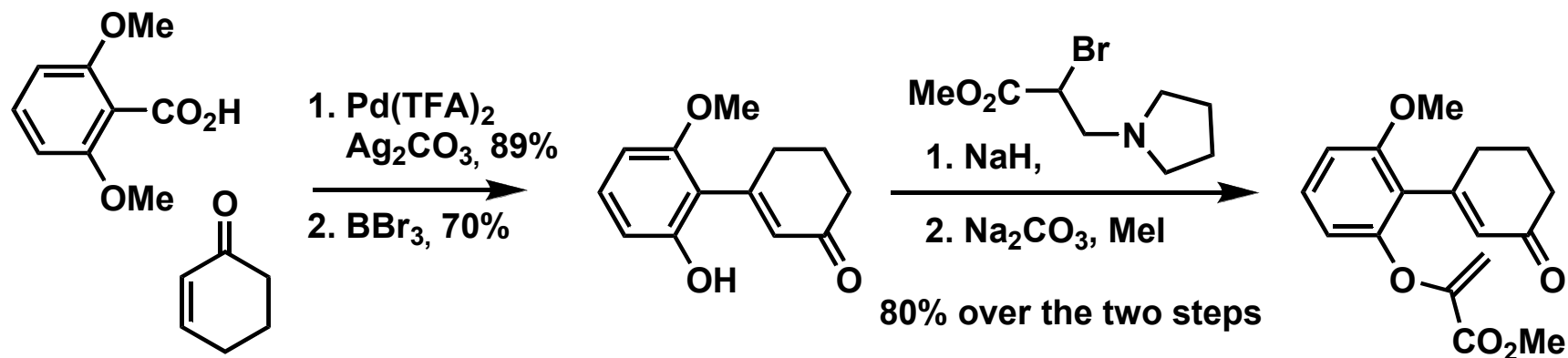


Nicolaou - Retrosynthesis





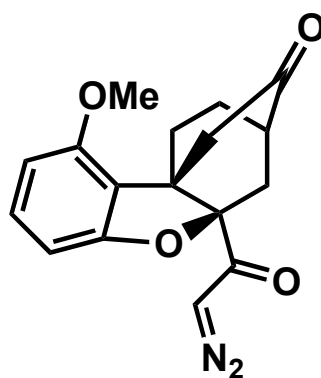
Nicolaou - Synthesis



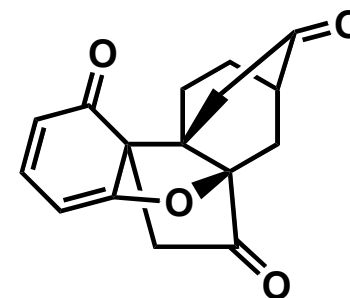
TBSOTf, Et_3N

1. NaOH
2. $(\text{COCl})_2$
3. TMSCHN_2

79% over the three steps

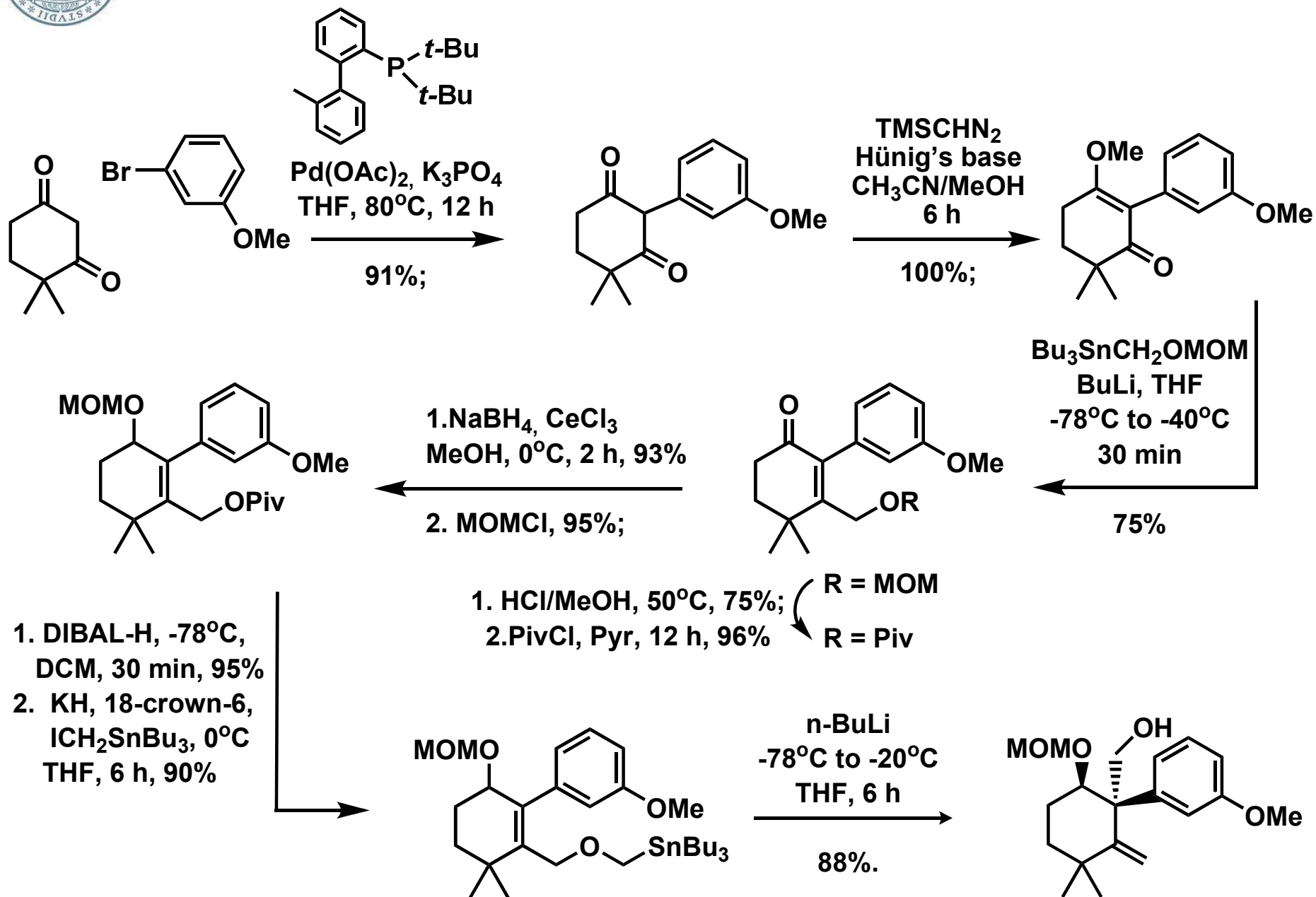


$\text{Rh}_2(\text{OAc})_4$
 CH_2Cl_2
then SiO_2
75%



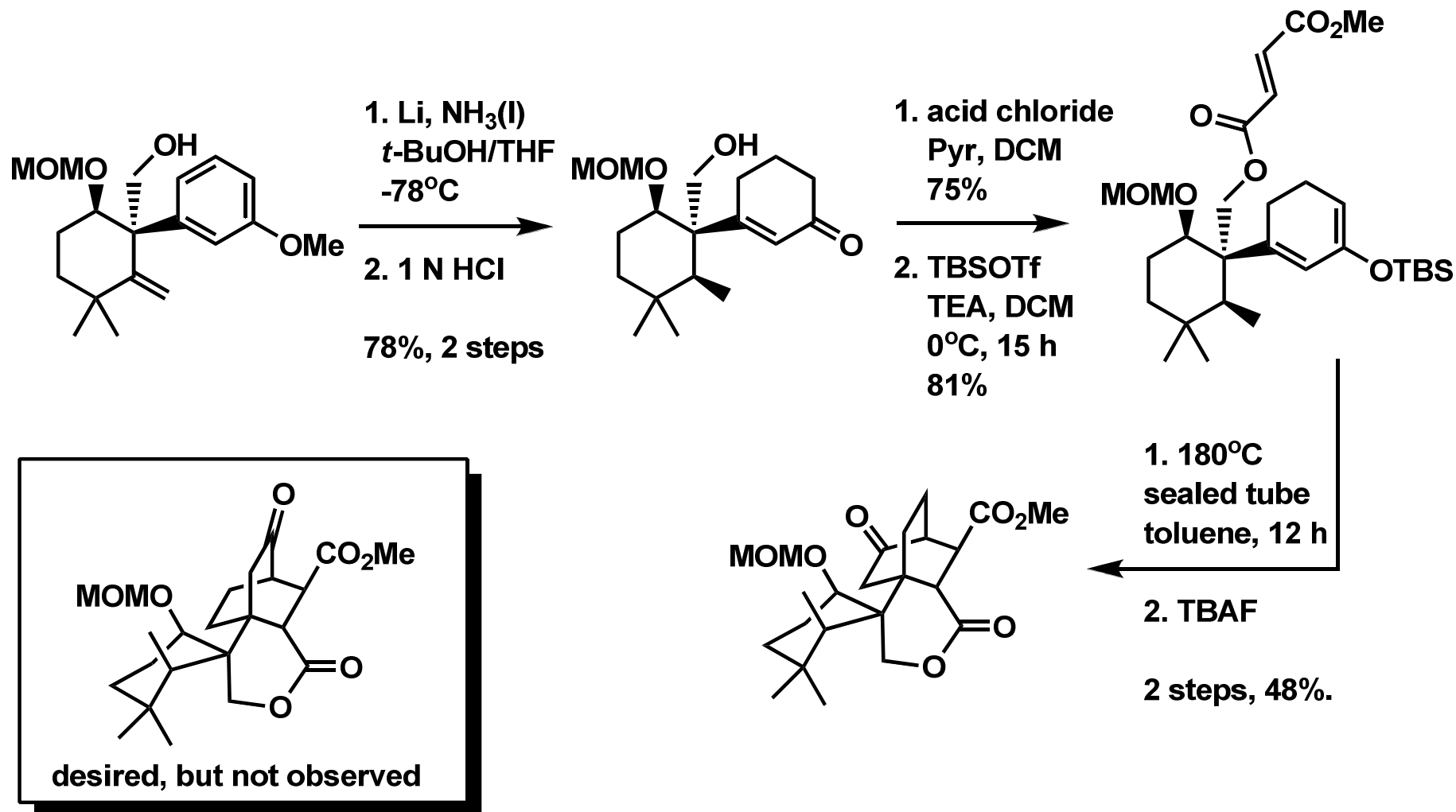


Danishefsky - Synthesis

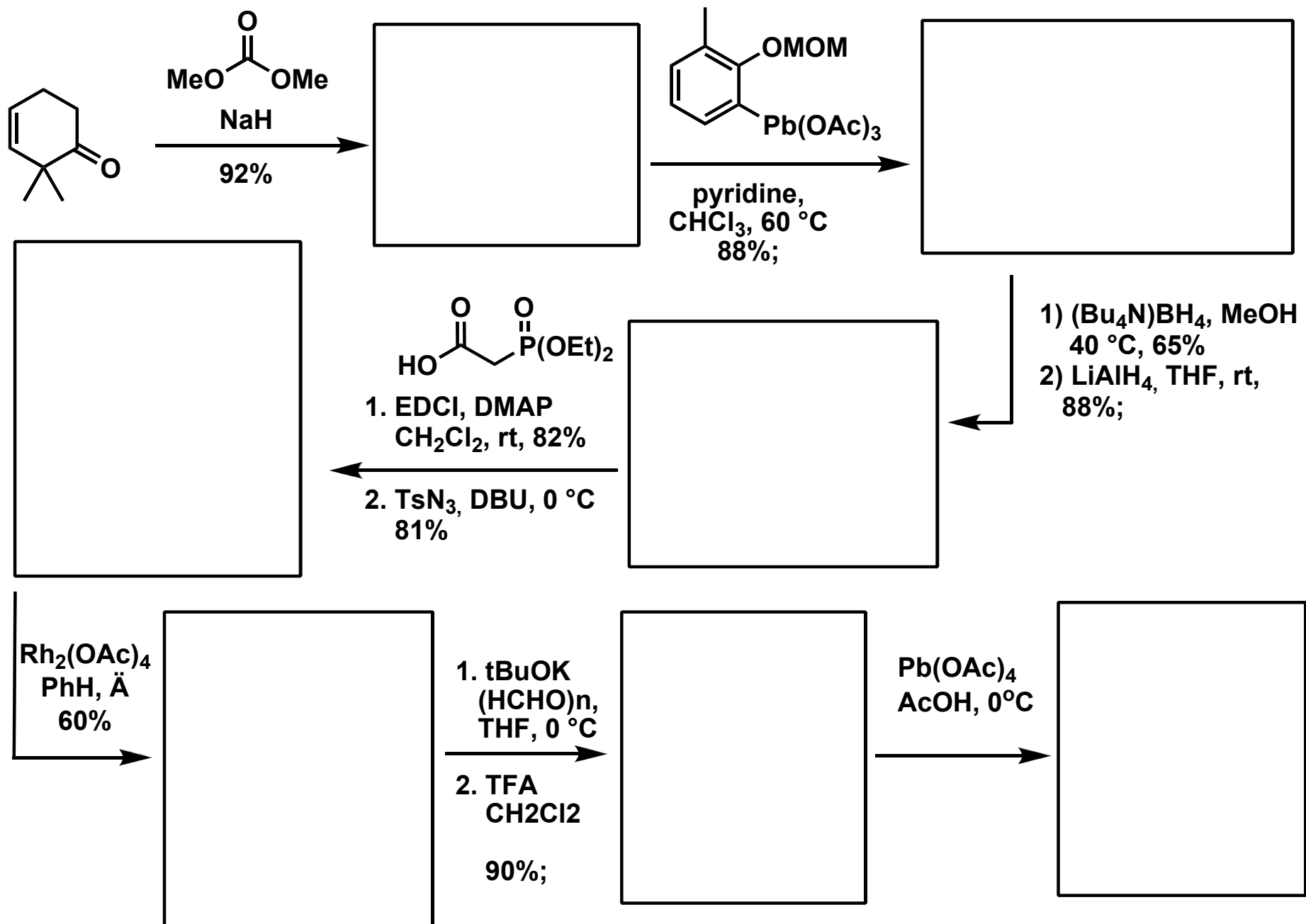




Danishefsky - Synthesis



Yang et al., Total Synthesis of Maoecrystal V, J. Am. Chem. Soc. A.S.A.P.



PhMe
145 °C
24 h
→
3 isomers

+

+

"desired"

1. Zn, AcOH, THF
H₂O, 70 °C
2 h, 85%

2. Sml₂, THF, MeOH
rt, 10 min, 88%;

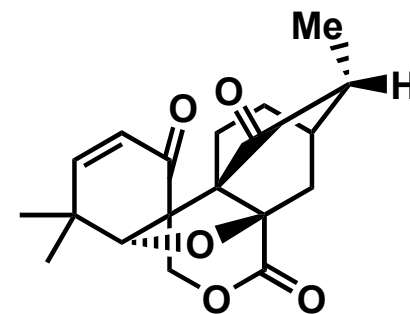
1. NBS, (PhCO₂)₂
CCl₄, reflux, 2 h,
90%;
2. Bu₃SnH, TEMPO
PhH, reflux, 2 h
75%;

1. Lindlar cat.
MeOH, THF
rt, 2 h, 92%

2. DMP, CH₂Cl₂
rt, 1 h, 88%

DBU
toluene,
100 °C, 1 h

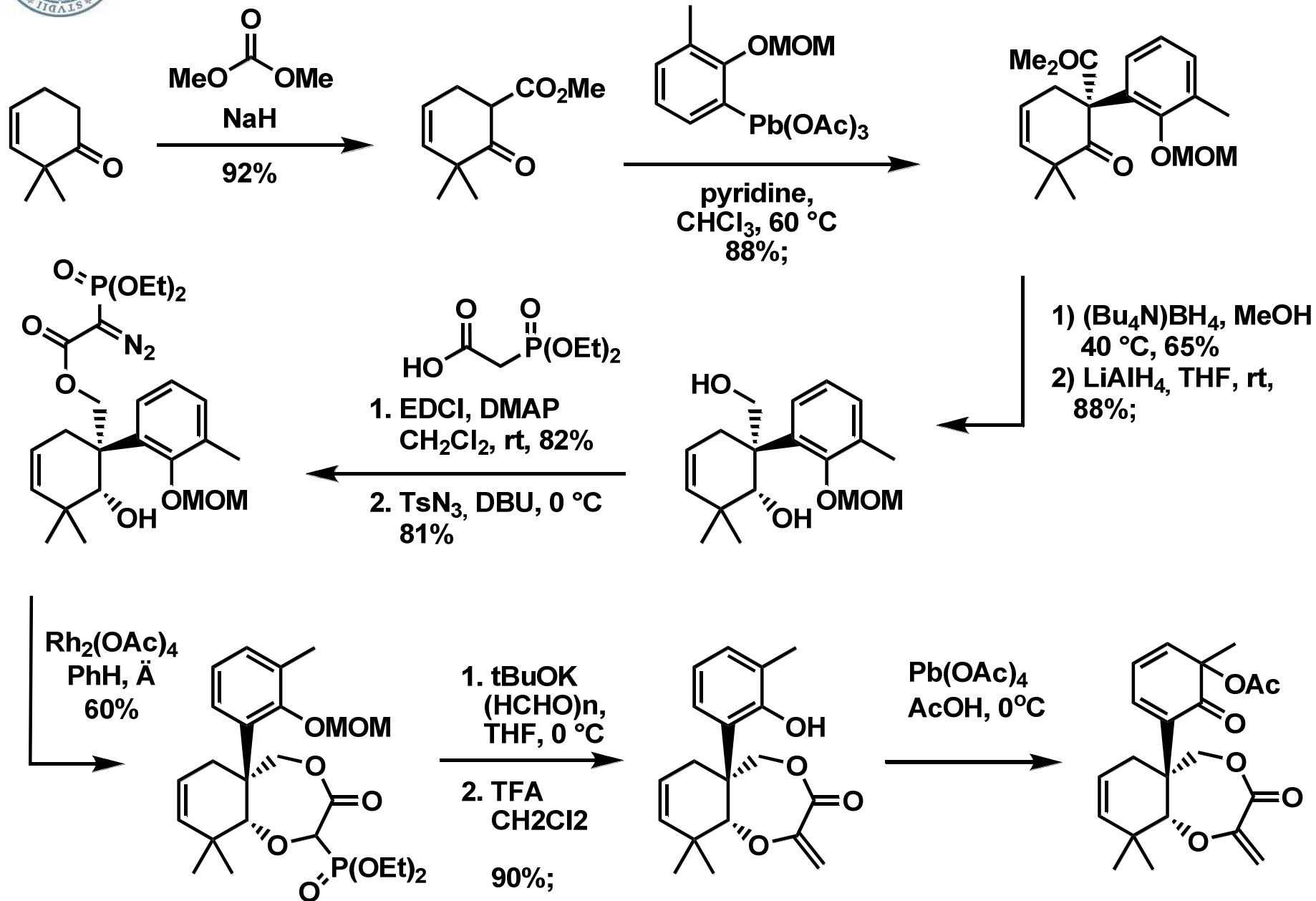
48%
(90% brsm).

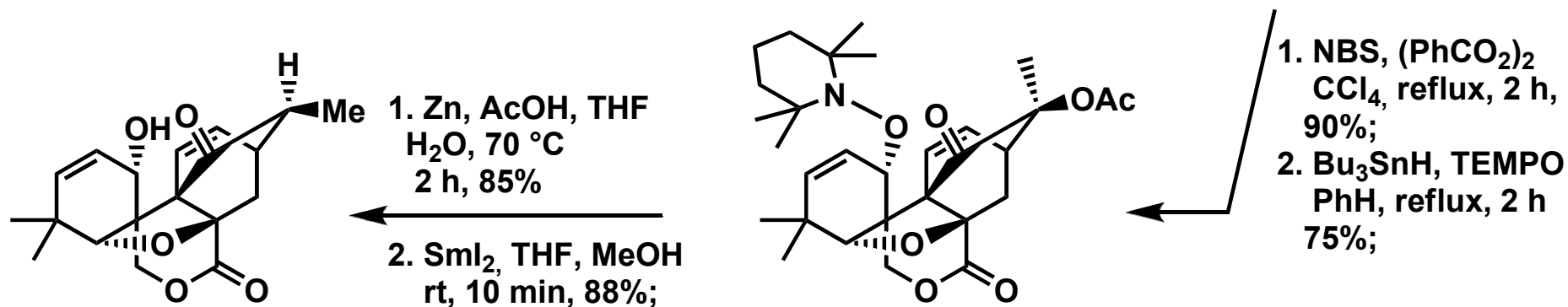
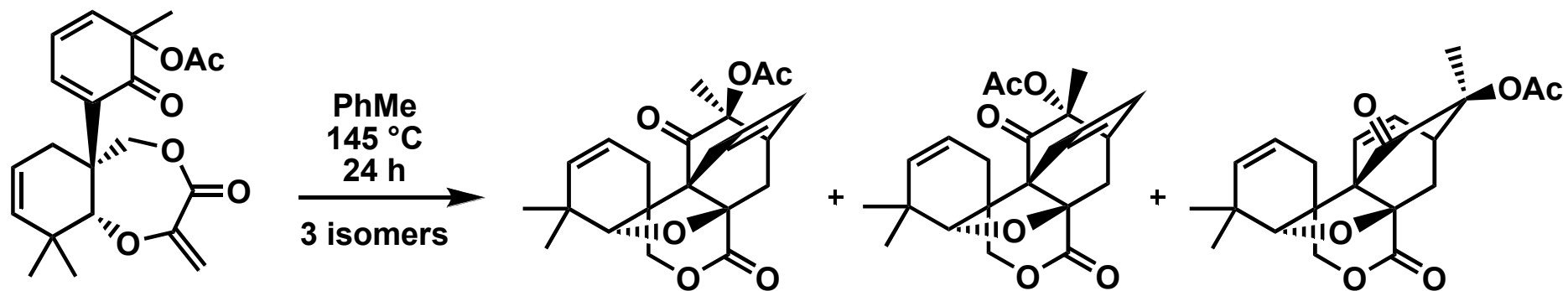


Maoecrystal V



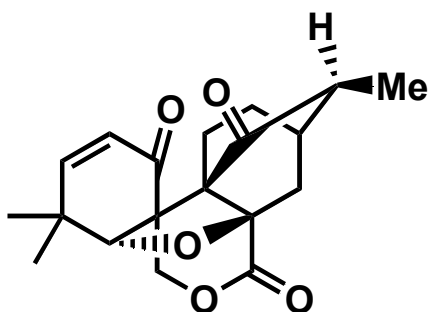
Danishefsky - Correction





1. Lindlar cat.
MeOH, THF
rt, 2 h, 92%

2. DMP, CH₂Cl₂
rt, 1 h, 88%



DBU
toluene,
100 °C, 1 h
48%
(90% brsm).

