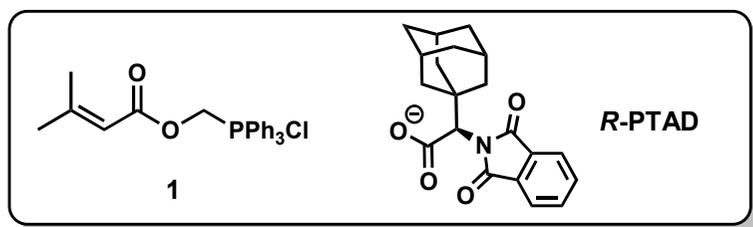
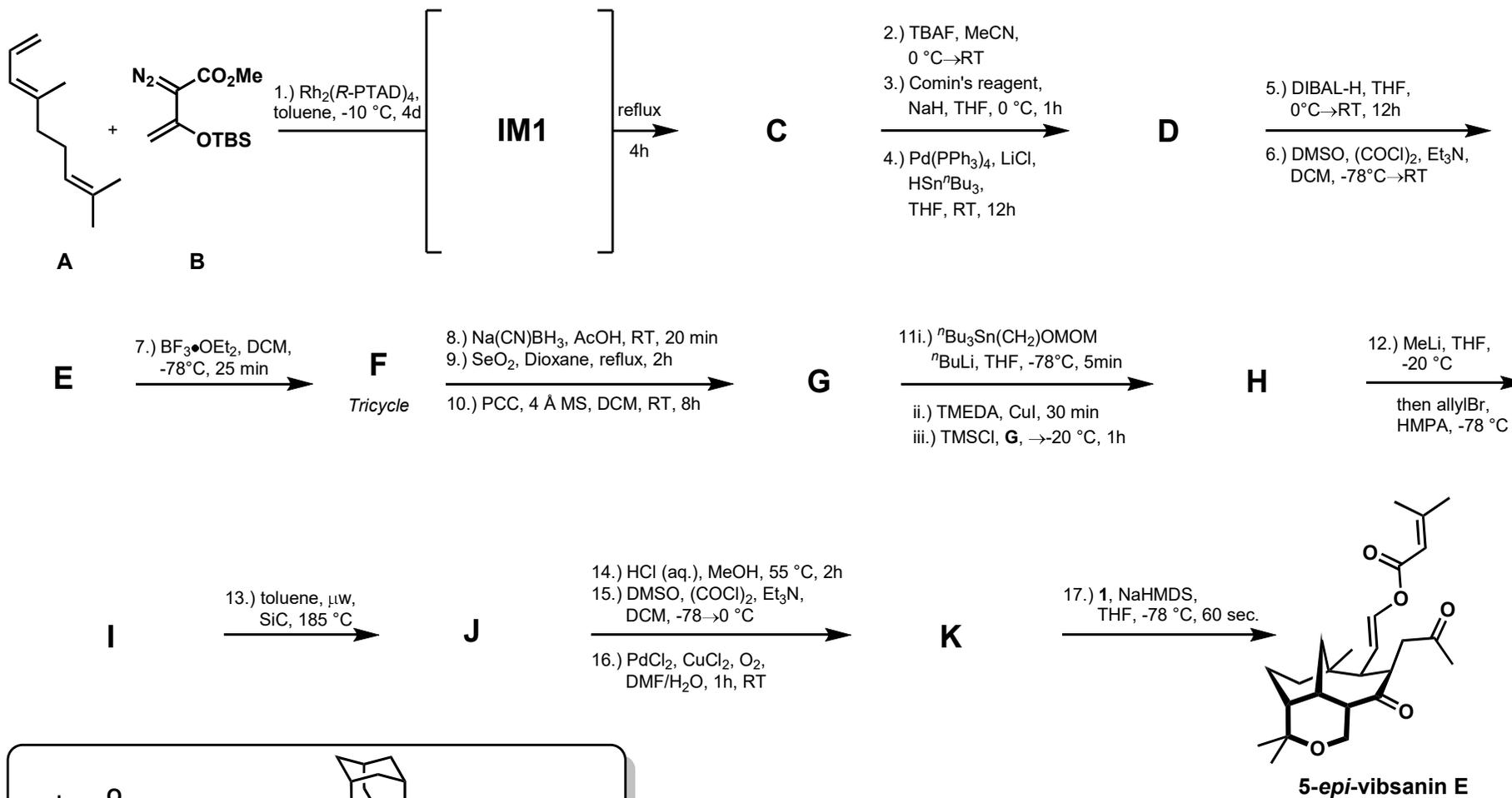


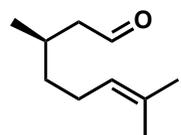
# Total Synthesis of 5-*epi*-Vibsanin E

15.08.18



# Total Synthesis of Cernuine

15.08.18



1.) ethylene glycol  
*p*-TsOH, PhH, reflux  
2.) RuCl<sub>3</sub>, NaIO<sub>4</sub>, DCE,  
H<sub>2</sub>O, RT

**L**

3.) CbzN=NCbz, **2**(cat.),  
DCM, RT, 30 min,  
then NaBH<sub>4</sub>, MeOH  
4.) K<sub>2</sub>CO<sub>3</sub>, toluene, reflux

**M**

5.) H<sub>2</sub>, Pd/C, THF, RT  
6.) H<sub>2</sub>, Raney-Ni,  
MeOH, 60 °C

**N**

7.) *p*TsOH, MeOH,  
reflux  
8.) allyl-TMS, TiCl<sub>4</sub>,  
DCM, -78 → 0 °C

**(+)-citronellal**

**O**

9.) NaOH (aq), MeOH,  
reflux  
10.) acryloyl chloride,  
Et<sub>3</sub>N, DCM, -78 °C

**P**

11.) Grubbs I  
DCM, RT  
12.) H<sub>2</sub>, Pd/C,  
EtOH, RT

**Q**

13.) IBX, DMSO, RT  
14.) Ph<sub>3</sub>PCH<sub>2</sub>(OMe)Cl, KHMDS,  
THF, 0 °C → RT  
15.) 3M HCl (aq), THF, RT

**R**

16.) **3**, CSA, DCM, RT,  
then H<sub>2</sub>NOH/AcOH

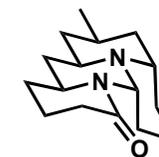


**S**

17.) TiCl<sub>4</sub>, xylene, reflux  
18.) NaBH<sub>4</sub>, AcOH, MeOH, RT  
19.) acryloyl chloride,  
Et<sub>3</sub>N, DCM, -78 °C

**T**

20.) Grubbs II, DCM,  
-78 °C, RT  
21.) H<sub>2</sub>, Pd/C,  
EtOH, RT



**cernuine**

