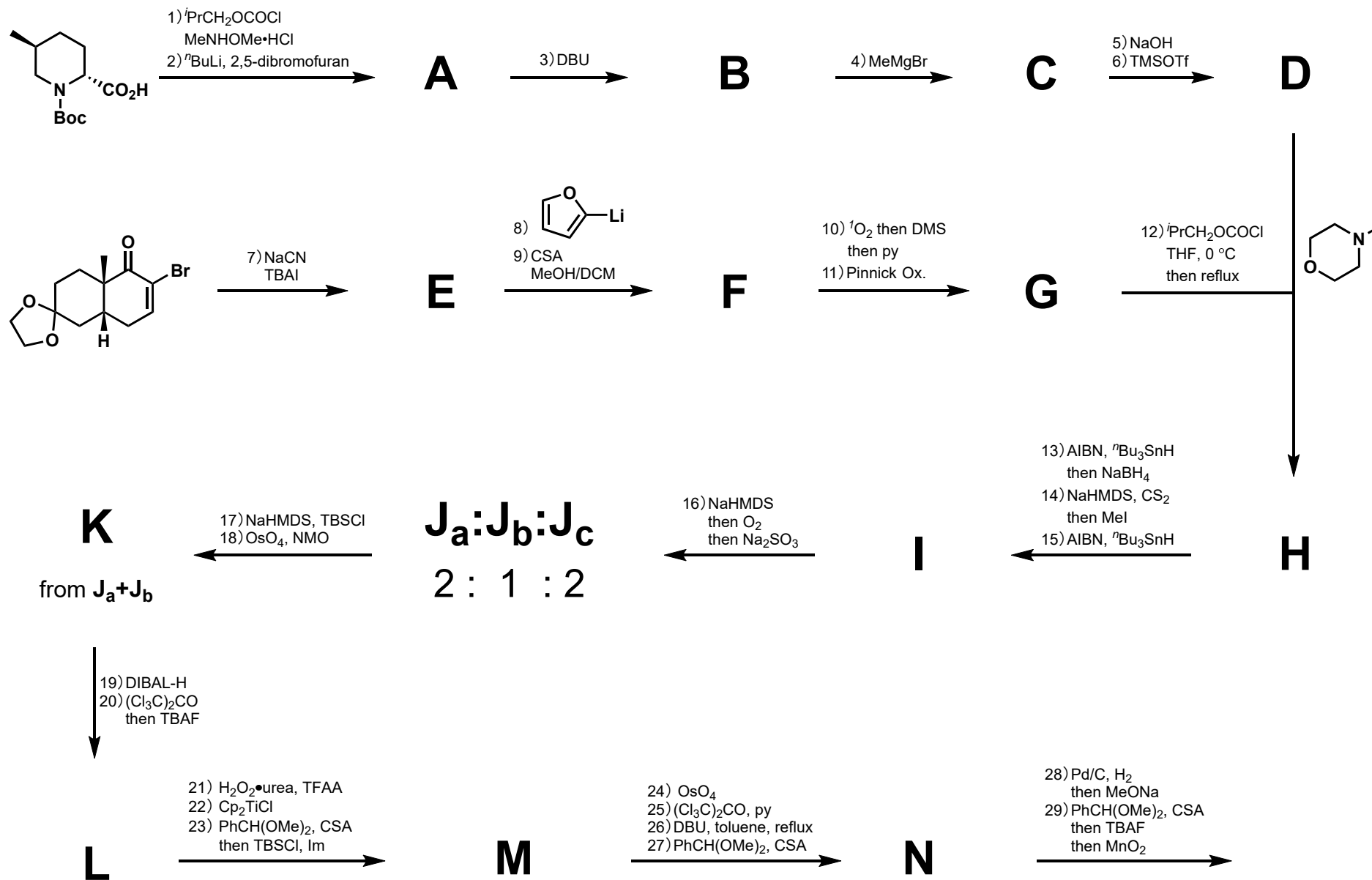


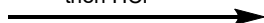
**Enantioselective Total Synthesis of (-)-Zygadenine**  
 Yinliang Guo, Jia-Tian Lu, Runting Fang, Yang Jiao, Jiaqi Liu, and Tuoping Luo\*  
*J. Am. Chem. Soc.* 2023, 145, 20202–20207

Haixiao-29.11.2023



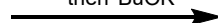
O

30) TsNHNH<sub>2</sub>, AcOH  
then CatBH  
31) AcONa, reflux  
then HCl



P

32) Pd/C, H<sub>2</sub>  
then NaBH<sub>4</sub>  
33) TsCl, py  
then <sup>t</sup>BuOK



Q

34) OsO<sub>4</sub>  
35) TBSCl, Im  
36) BOMCl, then  
TBAF



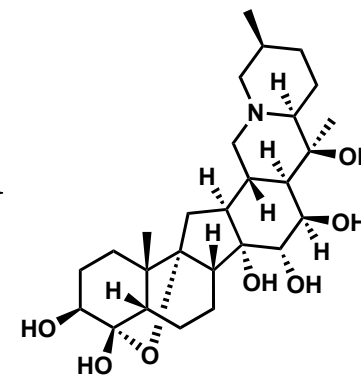
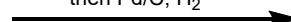
R

37) DMP  
38) TMSCl, HMDS



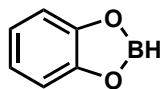
S

39) [Ir(COE)<sub>2</sub>Cl]<sub>2</sub>, Et<sub>2</sub>SiH<sub>2</sub>  
40) HCl/MeOH  
then Pd/C, H<sub>2</sub>



(-)-Zygadenine

CatBH:



Hints:

- 12) **H** is heptacyclic compound.
- 16) **Ja, Jb** are OTMS regioisomers.