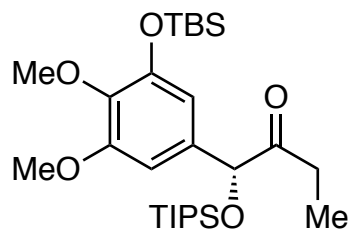
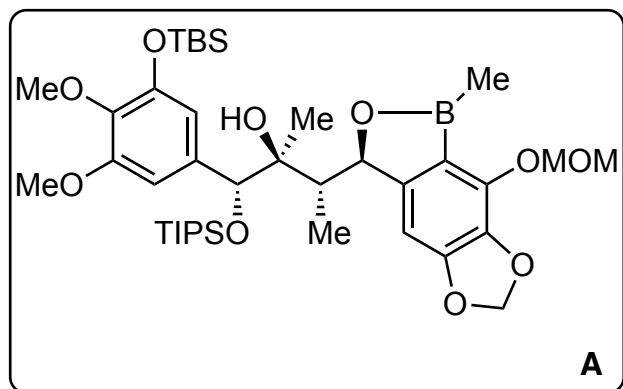


Mimicking oxidative radical cyclization of lignan biosynthesis using redox-neutral photocatalysis

Zheng, H; Lumb, J. P.
Nat. Chem. **2021**, *13*, 24-32.

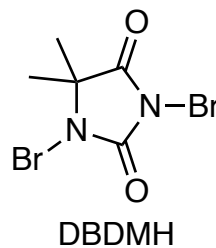
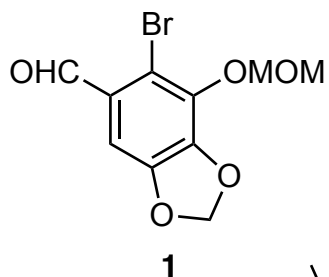


1-4



5-7

- 1) TMPMgBr , Cy_2BCl , then **1**
- 2) TiCl_4 , LiH , MeMgCl
- 3) MeB(OH)_2
- 4) $t\text{-BuLi}$



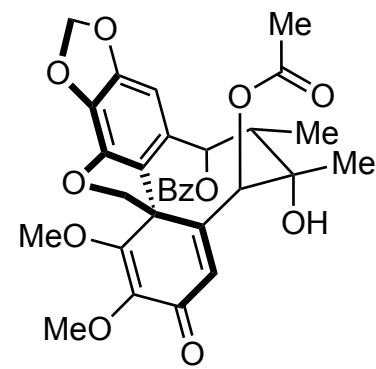
- 5) KHF_2
- 6) DBDMH
- 7) SPhos Pd G2/ SPhos (cat.), K_3PO_4

- 1) Explain the Stereoselectivity of Step 1; draw the transition state
- 2) Draw the transition state for step 2.

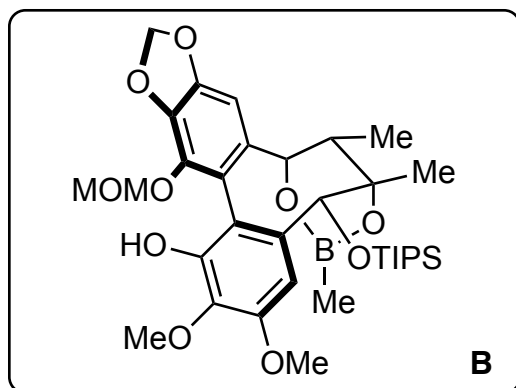
See Page 3

- 7) Please name the reaction for step 7

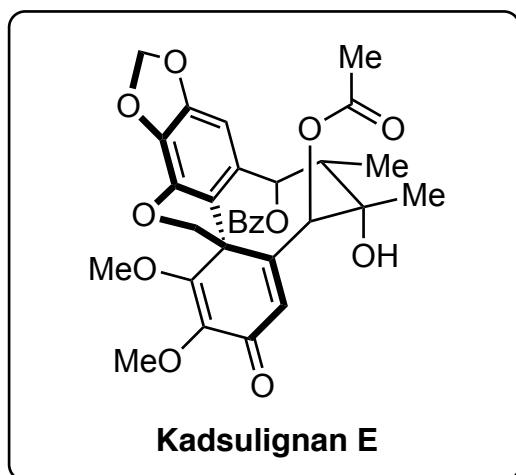
Suzuki Coupling (Buchward's Condition)
 citation: *JACS*, **2010**, *132*, 14073.



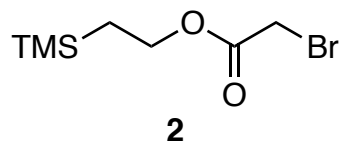
Kadsulignan E



8-14



- 8) MeI, *then* H₂O₂
- 9) BzCl, DMAP
- 10) TBAF
- 11) IBX, *then* NaBH₄
- 12) Ac₂O, DMAP
- 13) NaHSO₄·SiO₂
- 14) **2**, Cs₂CO₃, *then* TBAF
- 15) DIC, NHPI, *then* [Ir(dtbpv)(ppy)₂](PF₆)
(2 mol%), H₂O, Blue LEDs

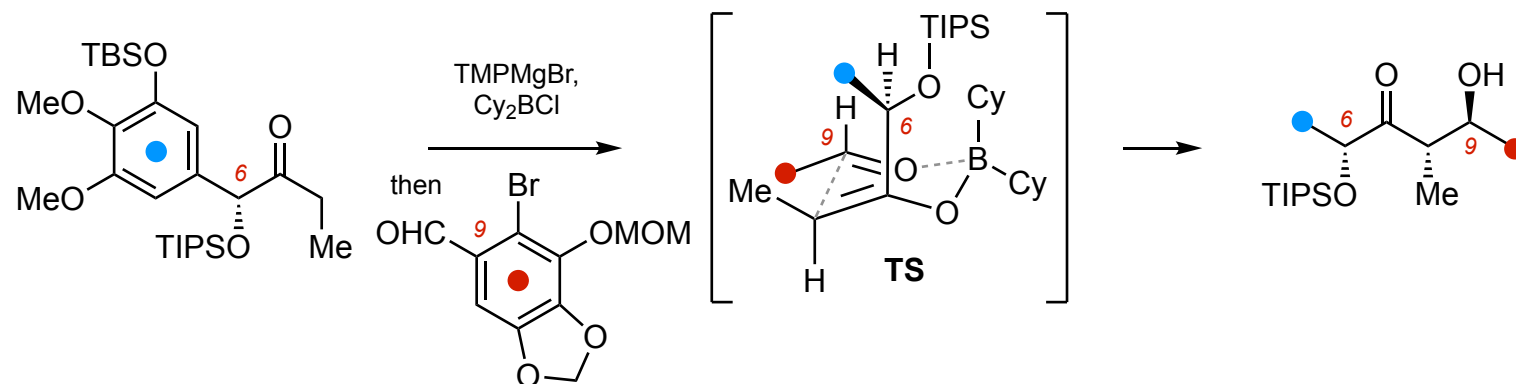


9) *hint*: only one hydroxy was protected

15) Name the cyclization according to Baldwin's rule

5-exo-trig cyclization

solution to step 1:



solution to step 2:

