A Synthesis of Alsmaphorazine B Demonstrates the Chemical Feasibility of a New Biogenetic Hypothesis

Hong, A. Y., Vanderwal, C. D., *J. Am. Chem. Soc.* **2015**, *137*, 7306-7309
Hong, A. Y., Vanderwal, C. D., *Tetrahedron* **2016**, *73*, 4160-4171

Tryptamine

1-3

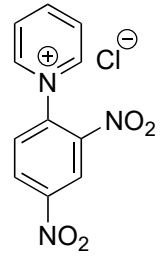
A

5-8

B

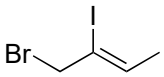
1) anisaldehyde, $NaBH_4$, MeOH
2) **1**, EtOH, reflux, *then* NaOH, H_2O
3) KO^tBu, THF 80 °C

1 =



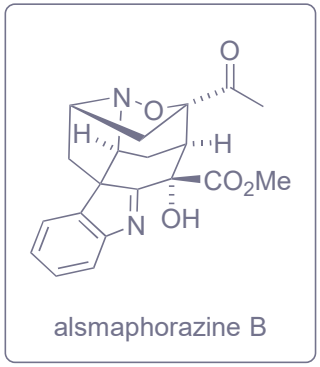
5) Boc_2O, DCE, 80 °C
6) $NaClO_2$, NaH_2PO_4, ^tBuOH, H_2O
7) MeI, DBU, MeCN
8) CAN, MeCN, H_2O, 0°C, *then* **2**, DIPEA

2 =



step 2: How would you prepare **1** (name reaction)?
step 3: mechanism?

step 6: name reaction?

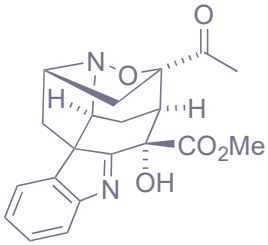


alsmaphorazine B

9, 10

9) TFA, CH_2Cl_2
10) $Pd(OAc)_2$ (20 mol%), PPh_3 (40 mol%), Et_3N, 90 °C

step 10: mechanism?



alsmaphorazine B

C

11-13

11) $K_2OsO_4 \bullet H_2O$ (10 mol%), NMO, citric acid, ^tBuOH, H_2O
12) DMP, ^tBuOH, CH_2Cl_2
13) SmI_2, THF, MeOH

D

14-16

14) DMDO, acetone
15) DBU, O_2 (1 atm), toluene, 80 °C
16) LiHMDS, THF, Davis reagent, –78 °C

step 14: How do you prepare DMDO?
step 15: mechanism?
step 16: name alternative reagents