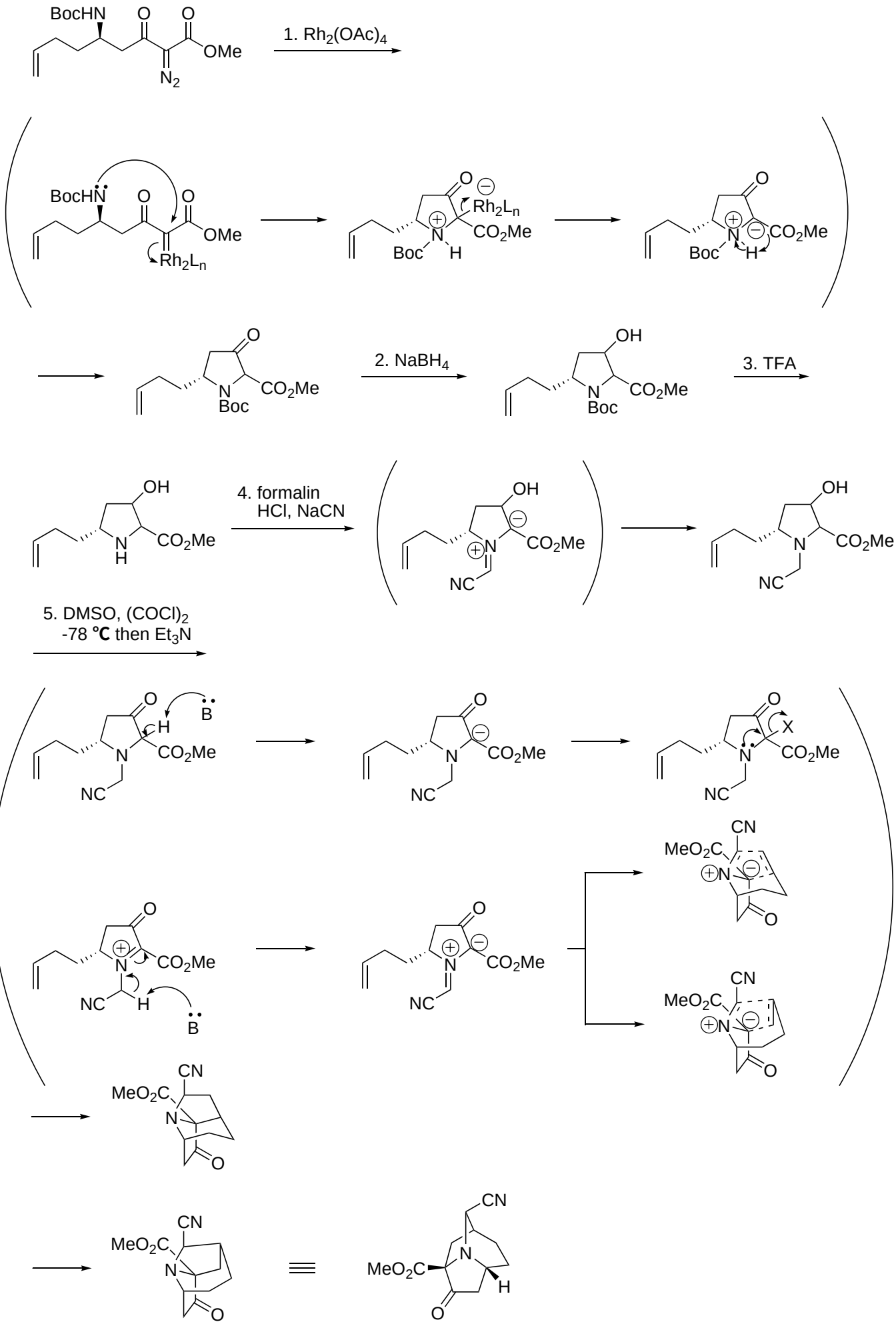
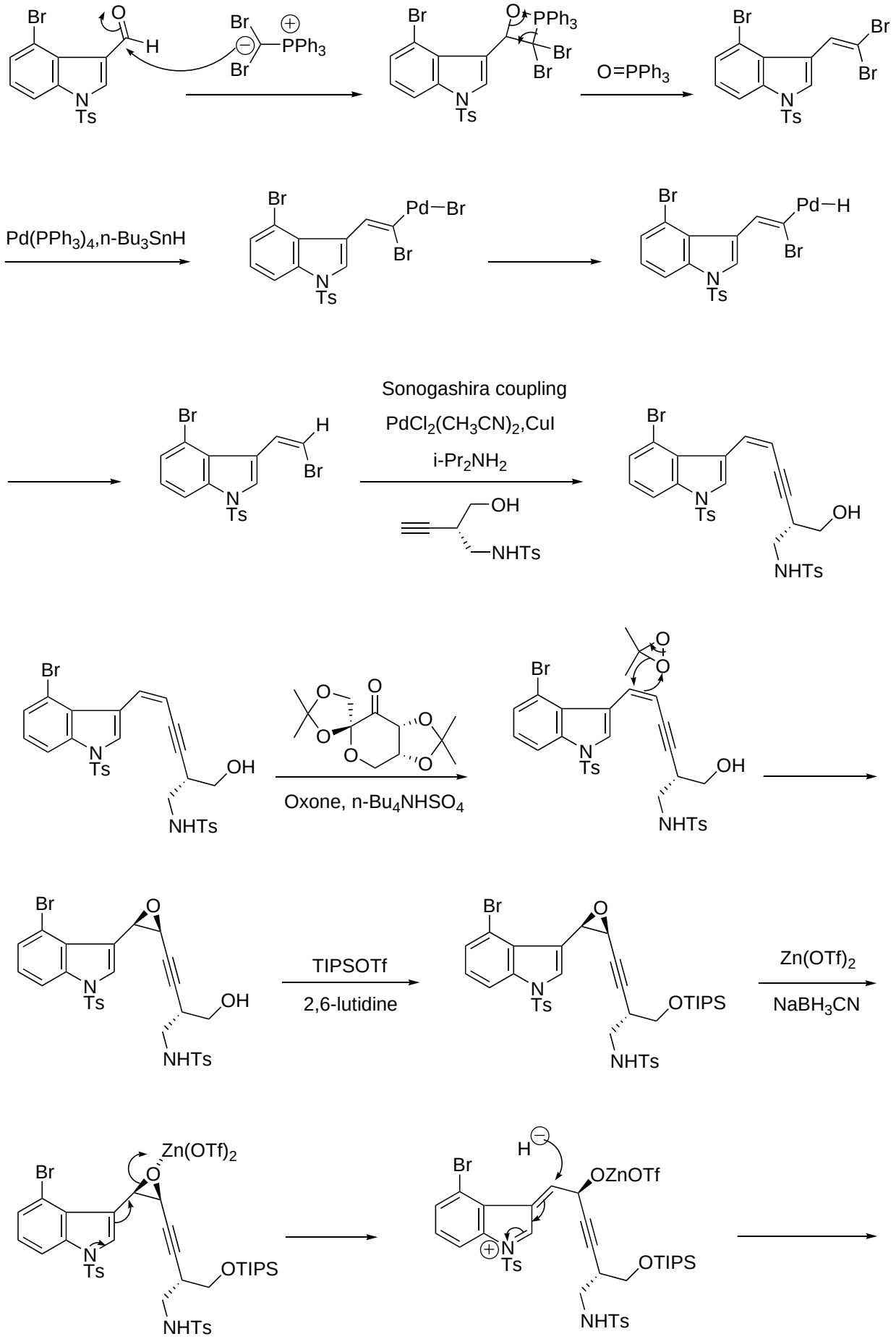
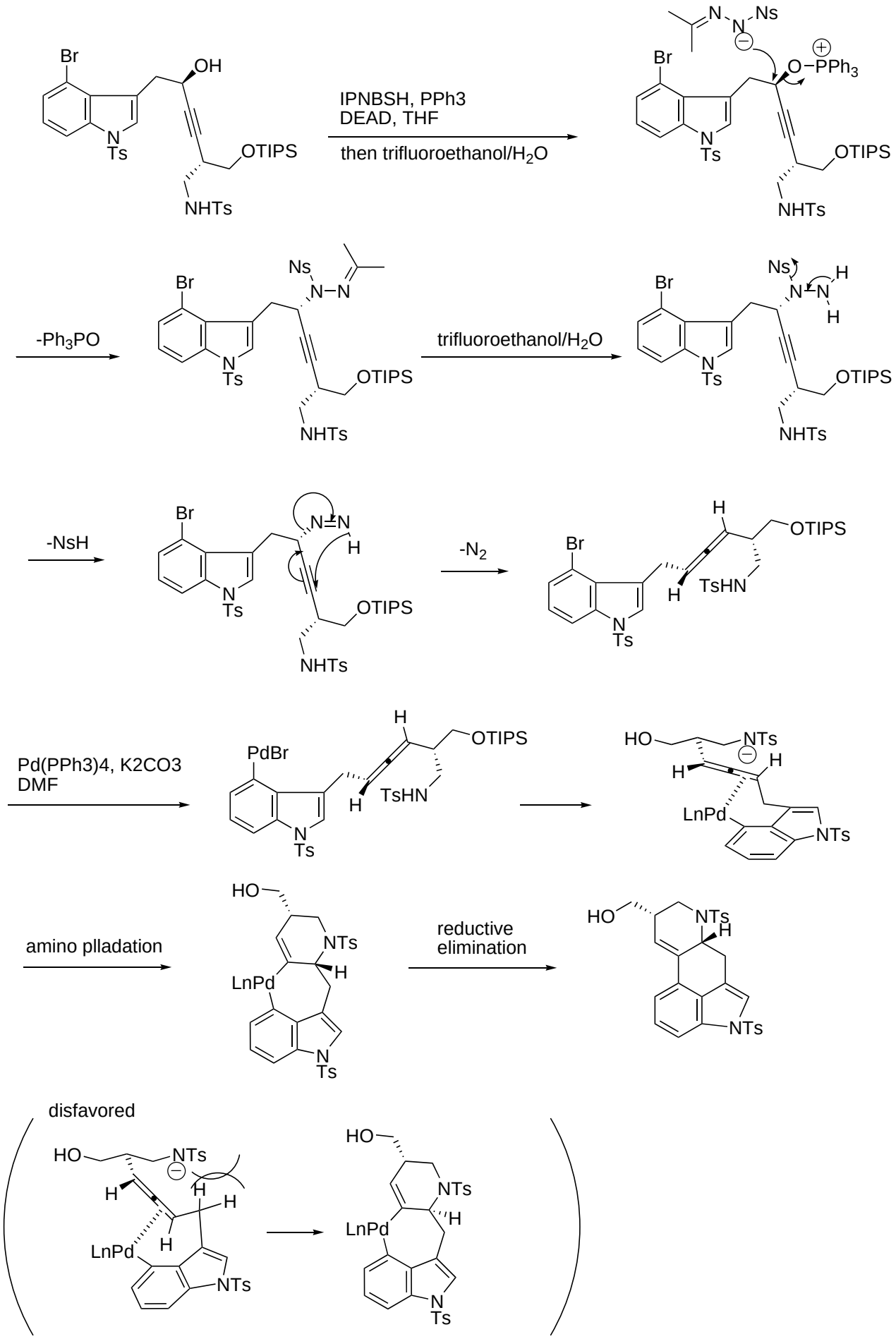

BocHN
O
O
OMe
N2
1. Rh2(OAc)4
Rh2Ln
CO2Me
Boc
H
2. NaBH4
OH
3. TFA
4. formalin
HCl, NaCN
NC
5. DMSO, (COCl)2
-78 ℃ then Et3N
B
X
MeO2C
CN


Br
O
H
N
Ts
Br
PPh3
Br
O=PPh3
Pd(PPh3)4,n-Bu3SnH
Pd—Br
Pd—H
Sonogashira coupling
PdCl2(CH3CN)2,CuI
i-Pr2NH2
OH
NHTs
Oxone, n-Bu4NHSO4
TIPSOTf
2,6-lutidine
OTIPS
Zn(OTf)2
NaBH3CN
OZnOTf


IPNBSH, PPh3
DEAD, THF
then trifluoroethanol/H2O
-Ph3PO
trifluoroethanol/H2O
-NsH
-N2
Pd(PPh3)4, K2CO3
DMF
amino plladation
reductive
elimination
disfavored