Total Syntheses of Bisdehydrononeostemoninine and Bisdehydrostemoninine

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1) NaOAc, H$_2$O, CH$_3$Cl$_2$, reflux
2) MeNH$_2$(OMe)$_2$HCl, J-PhMgCl, THF
3) V$_2$O$_5$Br
4) NaH, CuCl$_2$7H$_2$O, MeOH
5) methyl acrylate, Grubbs 2nd, PhOH/PhMe, 110 °C
6) BF$_3$·Et$_2$O, CH$_2$Cl$_2$
7) LDA, ethyl iodide, HMPT, THF
8) K$_2$CO$_3$, MeOH, rt

9) (OPI)$_2$TCl, EMIgBr, THF
10) Pd(nec)$_2$[OAc]$_2$OTf$_2$, benzophenone, CO (1 atm), DCE
11) Eschenmoser's salt, LiHMDS, THF
12) Mel, CH$_2$Cl$_2$/Et$_2$O, then DBU, THF
13) R$_2$CO$_2$N$_2$, N$_2$, dioxide, 100 °C

Step 1: Name Reaction?
Step 2: What is the role of the Grignard reagent?
Step 3: PhOH prevents a typical side reaction for these reactants. Which side reaction is it and what exactly is the role of PhOH?

Step 4: Name Reaction + Mechanism
Step 5: Mechanism
neoc = Neocarvone

Step 6: Name Reaction + Mechanism
Step 7: Mechanism

Step 8: Name Reaction + Mechanism
Step 9: Mechanism

Step 10: Mechanism

Step 11: Name Reaction + Mechanism
Step 12: Mechanism

Step 13: Name Reaction + Mechanism
Step 14: Mechanism

Step 15: Name Reaction + Mechanism
Step 16: Mechanism

Step 17: What is the role of pyridine?