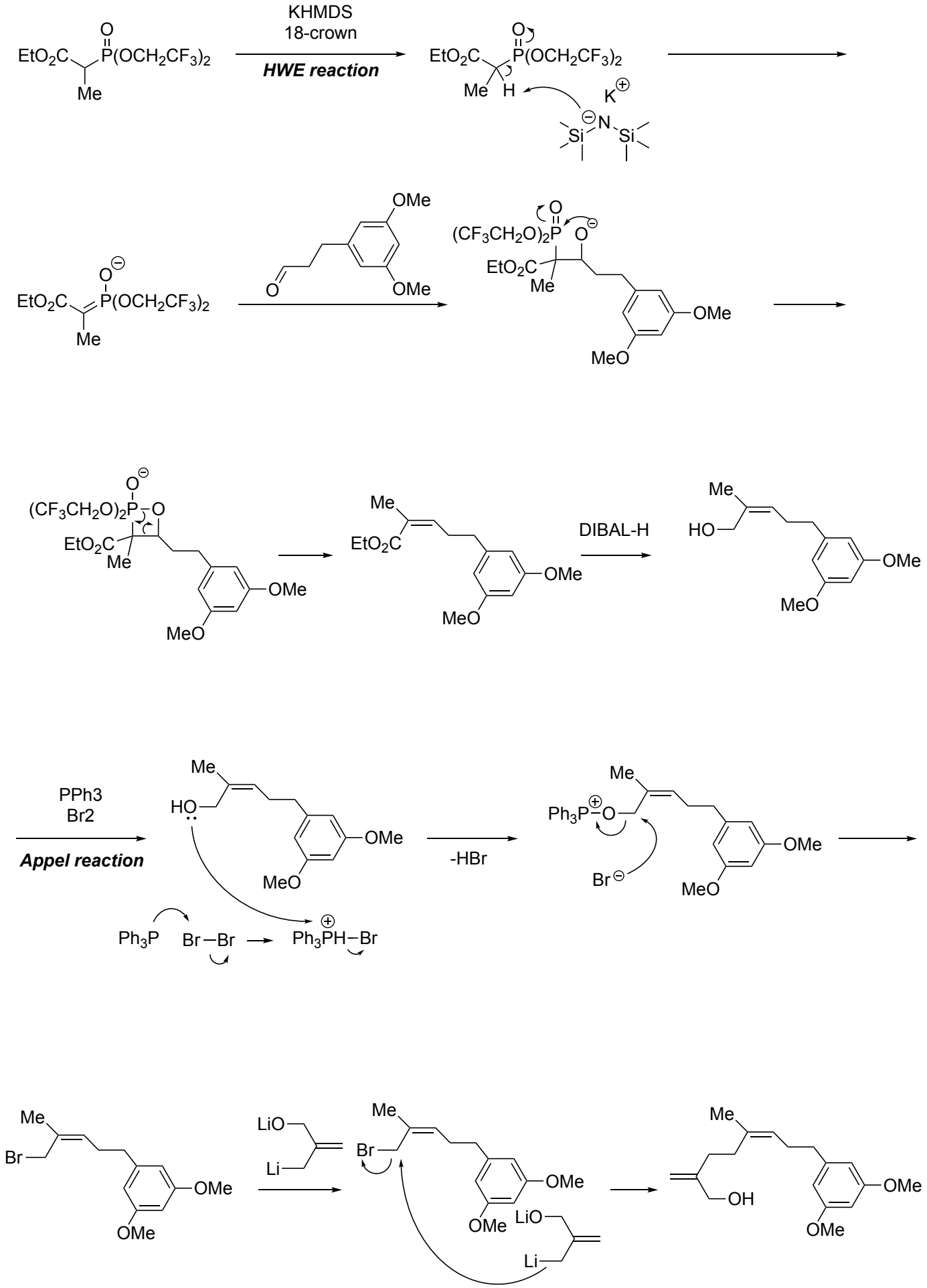
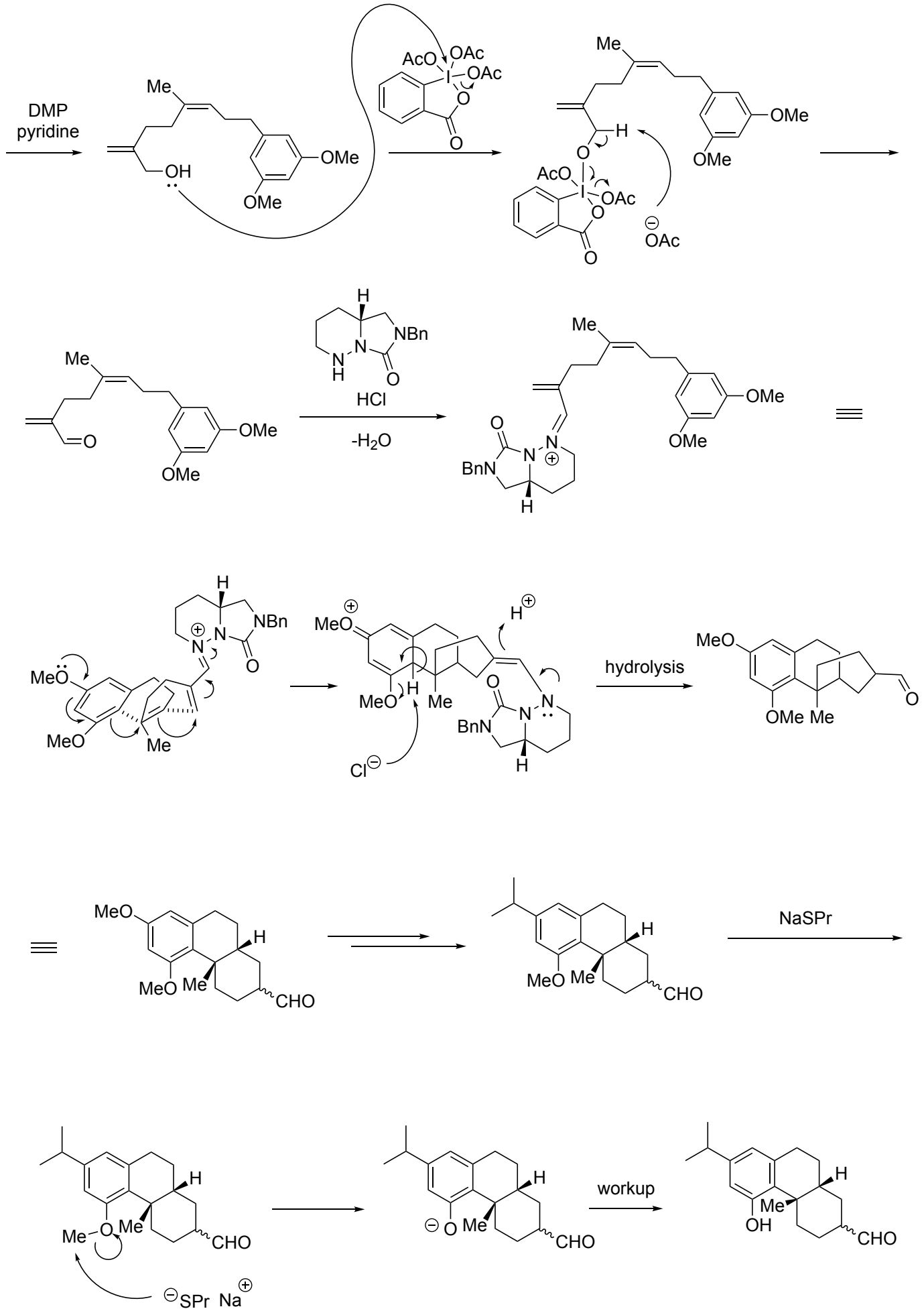
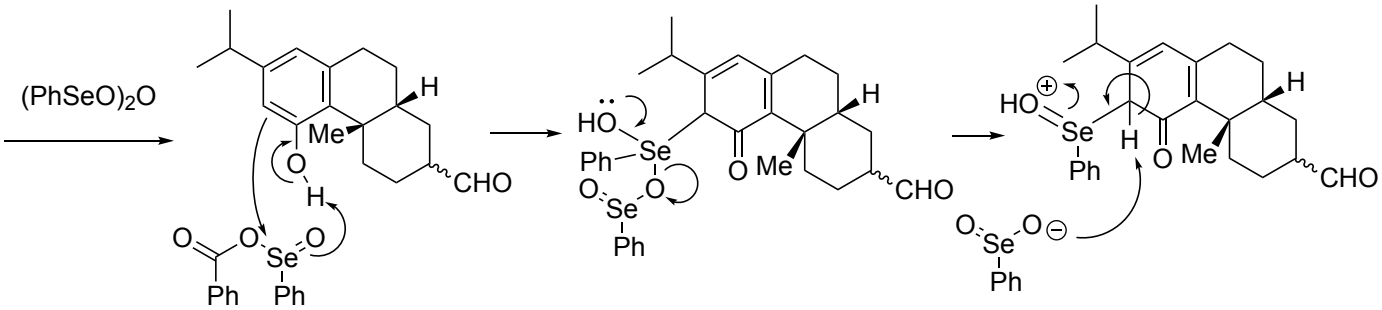
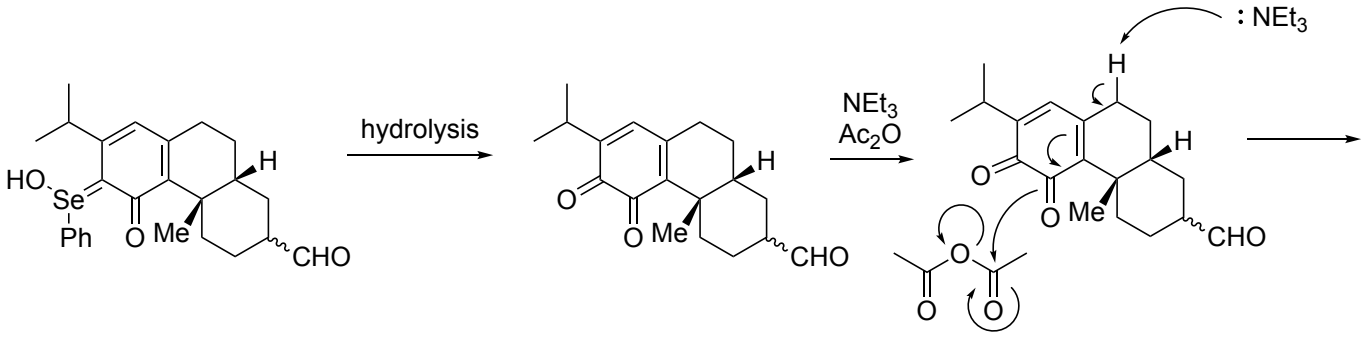
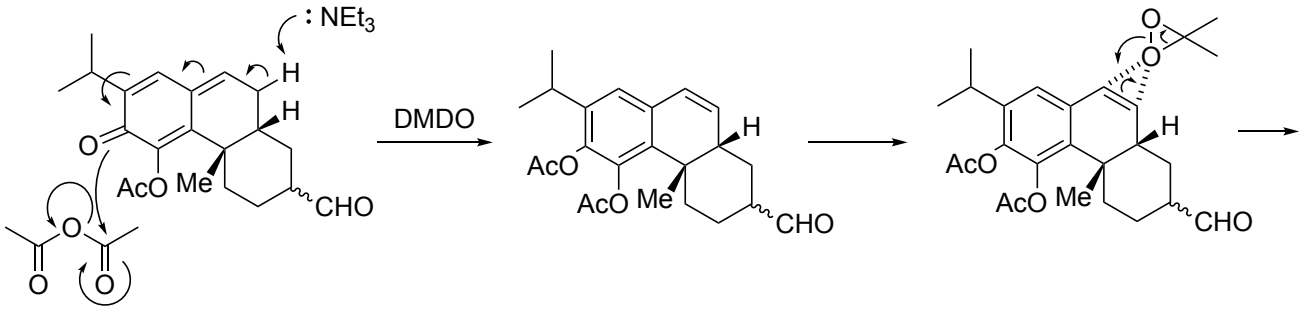
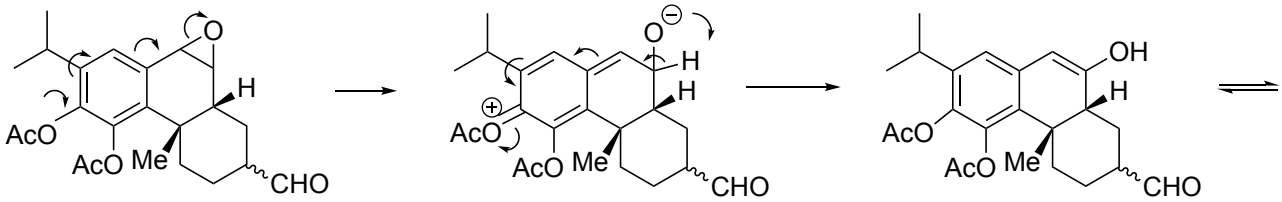

KHMDS
18-crown
HWE reaction
EtO2C
P(OCH2CF3)2
Me
H
K
N
Si
OMe
MeO
(CF3CH2O)2P
DIBAL-H
HO
PPh3
Br2
Appel reaction
-HBr
Ph3P
Br—Br
Ph3PH—Br
LiO
Li
OH

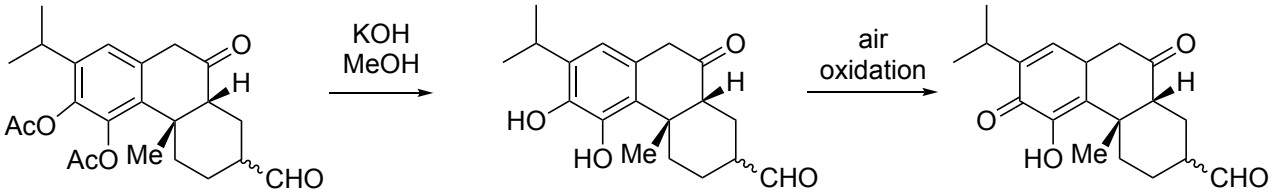

DMP
pyridine
Me
OH
OMe
OMe
AcO
OAc
OAc
I
O
O
H
OAc
HCl
-H2O
NBn
N
H
BnN
MeO
Me
hydrolysis
OMe Me
CHO
NaSPr
workup
SPr
Na
OH

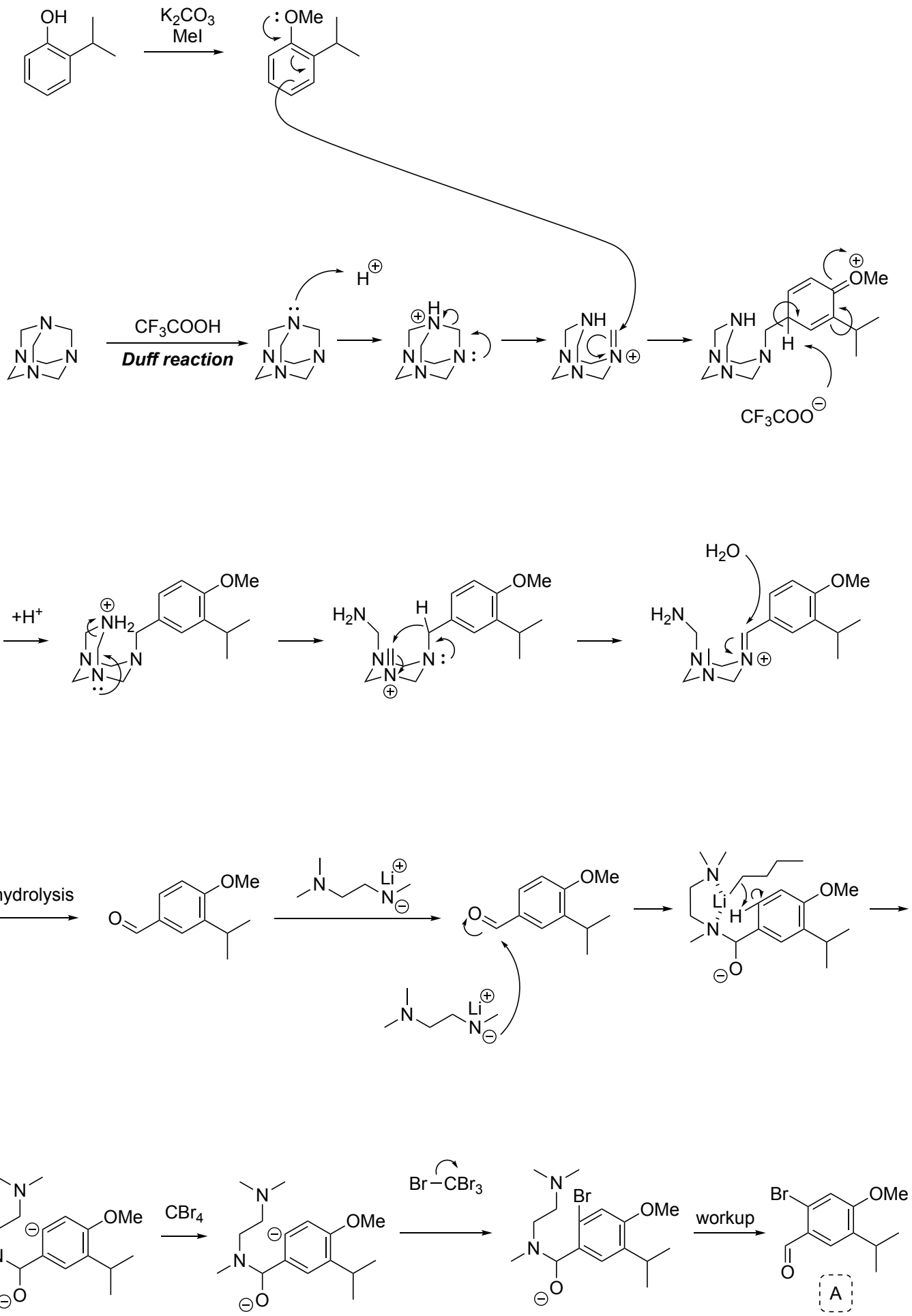

(PhSeO)2O
Me
H
CHO
Ph
Se
O
HO
Ph
Se
O
Se
Ph
O
Me
CHO
H
HO
Se
Ph
H
O
Me
CHO
O
Se
O
Ph

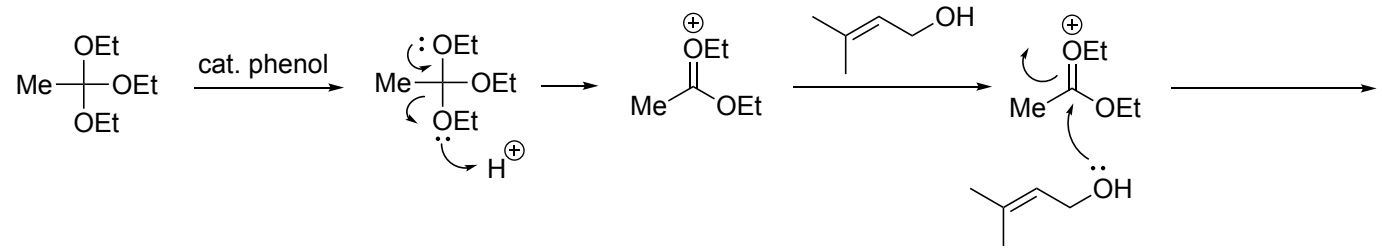

HO
Se
Ph
O
Me
H
CHO
hydrolysis
O
O
Me
H
CHO
NEt3
Ac2O
: NEt3
H
H
O
O
Me
CHO
O
O
O

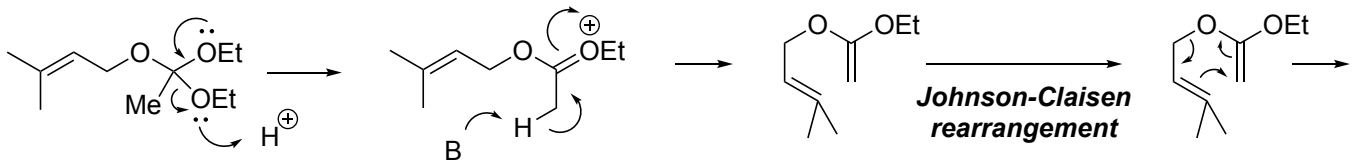

: NEt3
H
H
O
AcO
Me
CHO
O
O
O
DMDO
AcO
AcO
Me
H
CHO
O
O
H
AcO
AcO
Me
CHO

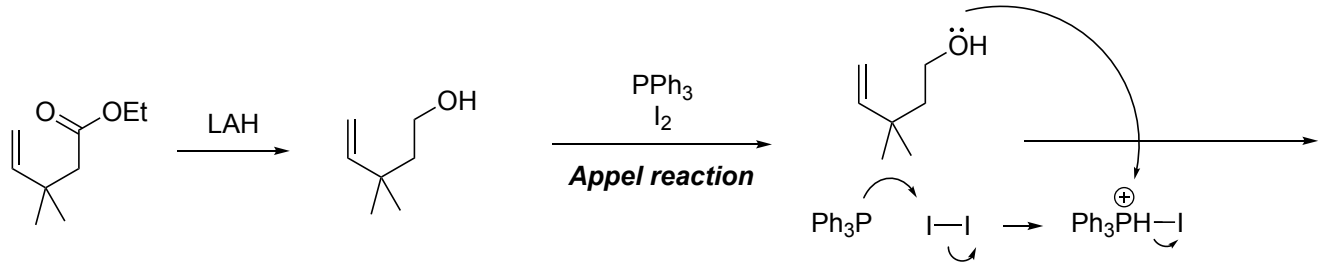

O
H
AcO
AcO
Me
CHO
O
H
H
AcO
AcO
Me
CHO
OH
H
AcO
AcO
Me
CHO

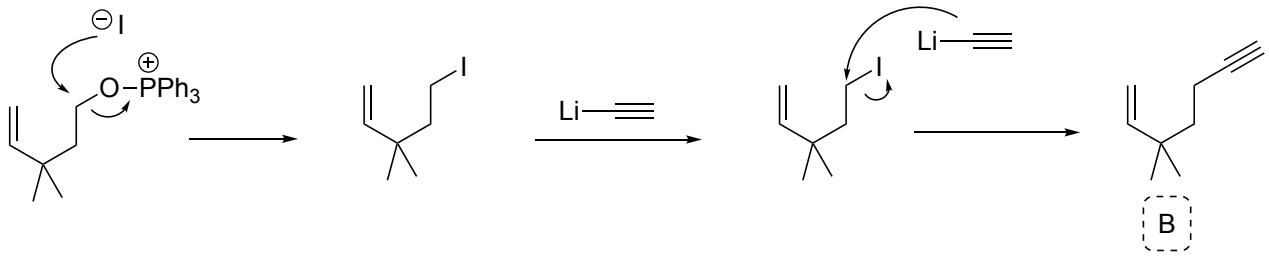

O
H
AcO
AcO
Me
CHO
KOH
MeOH
O
H
HO
HO
Me
CHO
air
oxidation
O
H
O
HO
Me
CHO

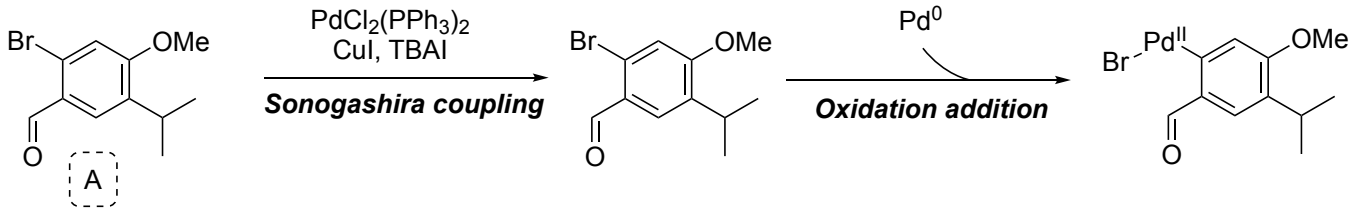

OH
K2CO3
MeI
: OMe
CF3COOH
Duff reaction
H⊕
NH
OMe
H
CF3COO⊖
+H+
NH2
H2N
H2O
hydrolysis
O
Li
N
CBr4
Br−CBr3
Br
workup
A

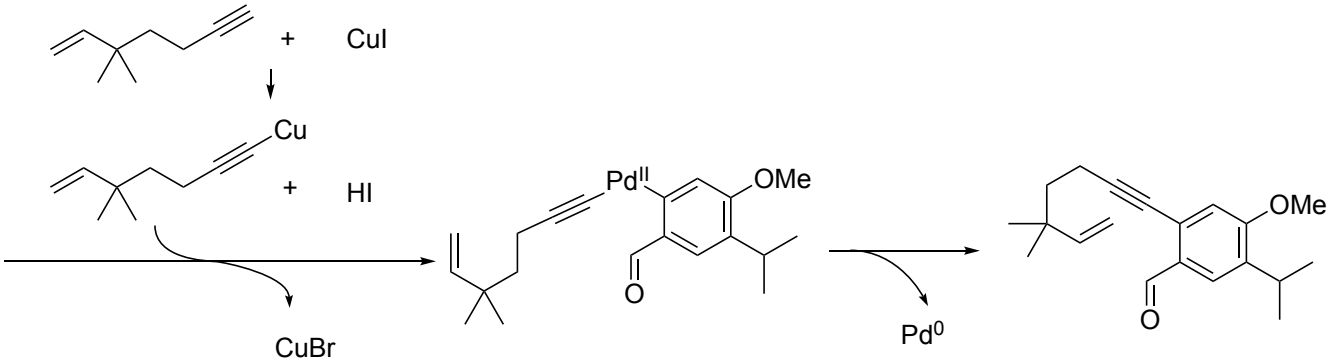

OEt
Me
OEt
OEt
cat. phenol
OEt
Me
OEt
OEt
H
OEt
Me
OEt
OH
OEt
Me
OEt
OH

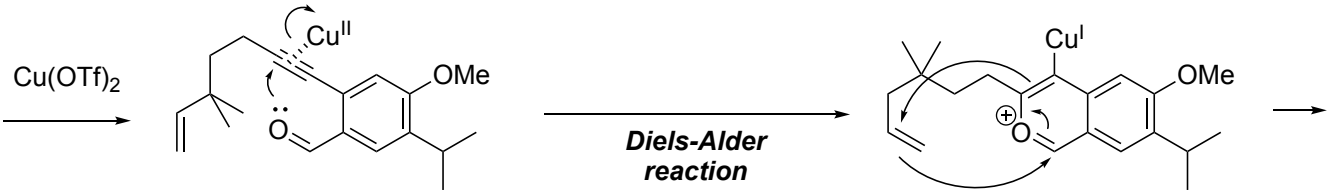

O
OEt
Me
OEt
H
O
OEt
B
H
O
OEt
Johnson-Claisen
rearrangement
O
OEt

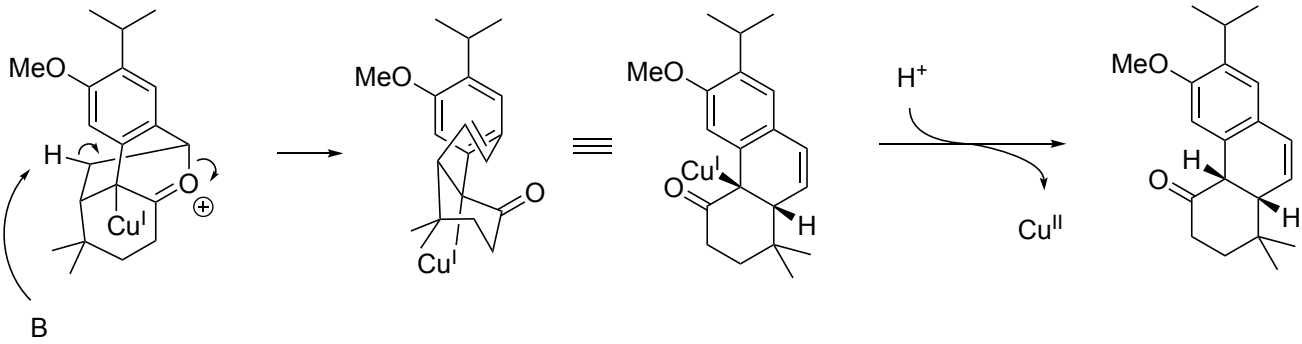

O
OEt
LAH
OH
PPh3
I2
Appel reaction
OH
Ph3P
I—I
Ph3PH—I


I
O–PPh3
I
Li
Li
I
B


Br
OMe
O
A
PdCl2(PPh3)2
CuI, TBAI
Sonogashira coupling
Br
OMe
O
Pd0
Oxidation addition
Br
PdII
OMe
O


+ CuI
Cu
+ HI
CuBr
Transmetalation
Pd^II
OMe
O
Pd^0
OMe
O
Reductive elimination


Cu(OTf)2
Cu^II
OMe
O
Diels-Alder reaction
Cu^I
OMe
O


MeO
H
O
Cu^I
B
MeO
O
Cu^I
MeO
O
Cu^I
H
H+
Cu^II
MeO
H
O
H