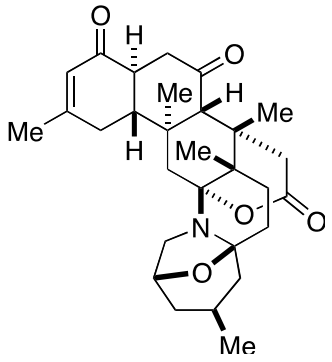
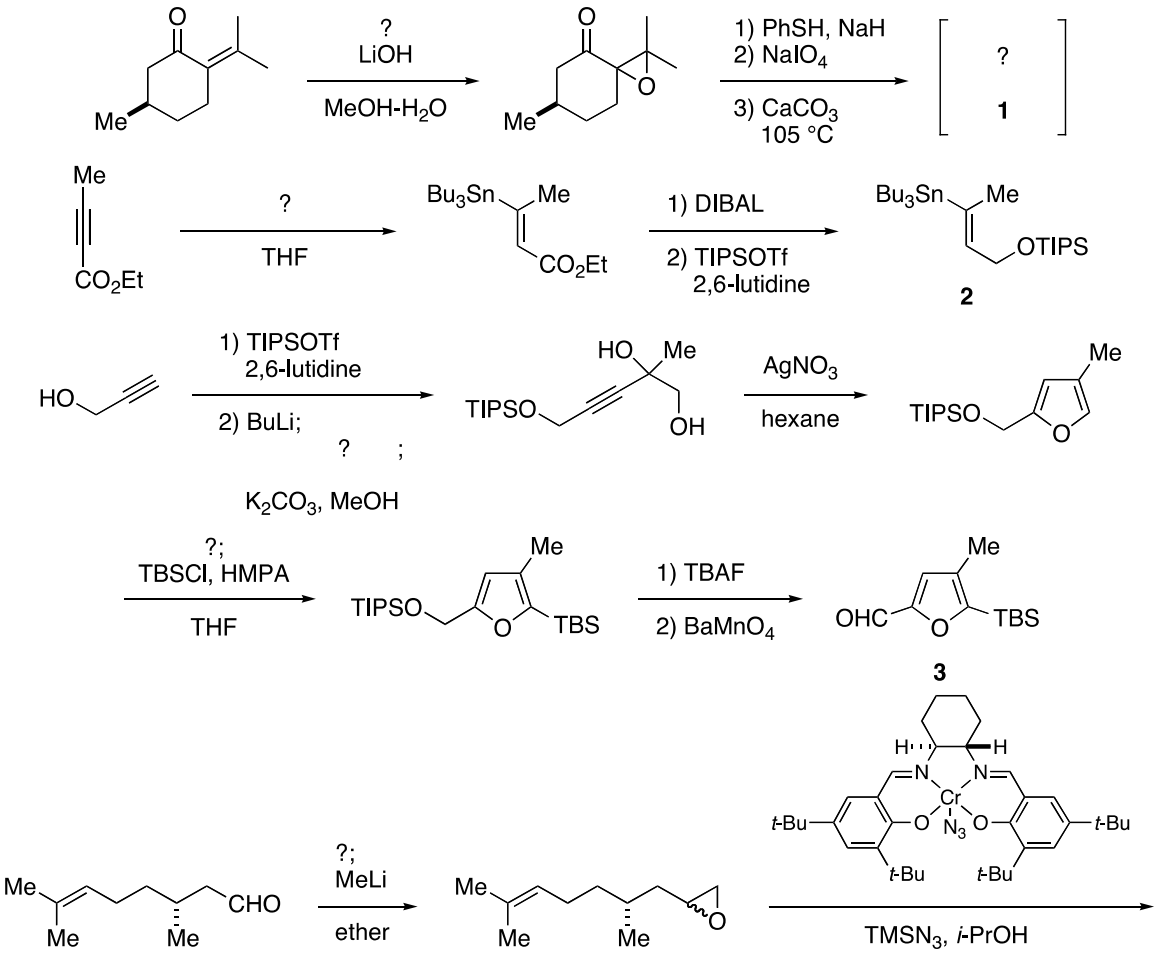
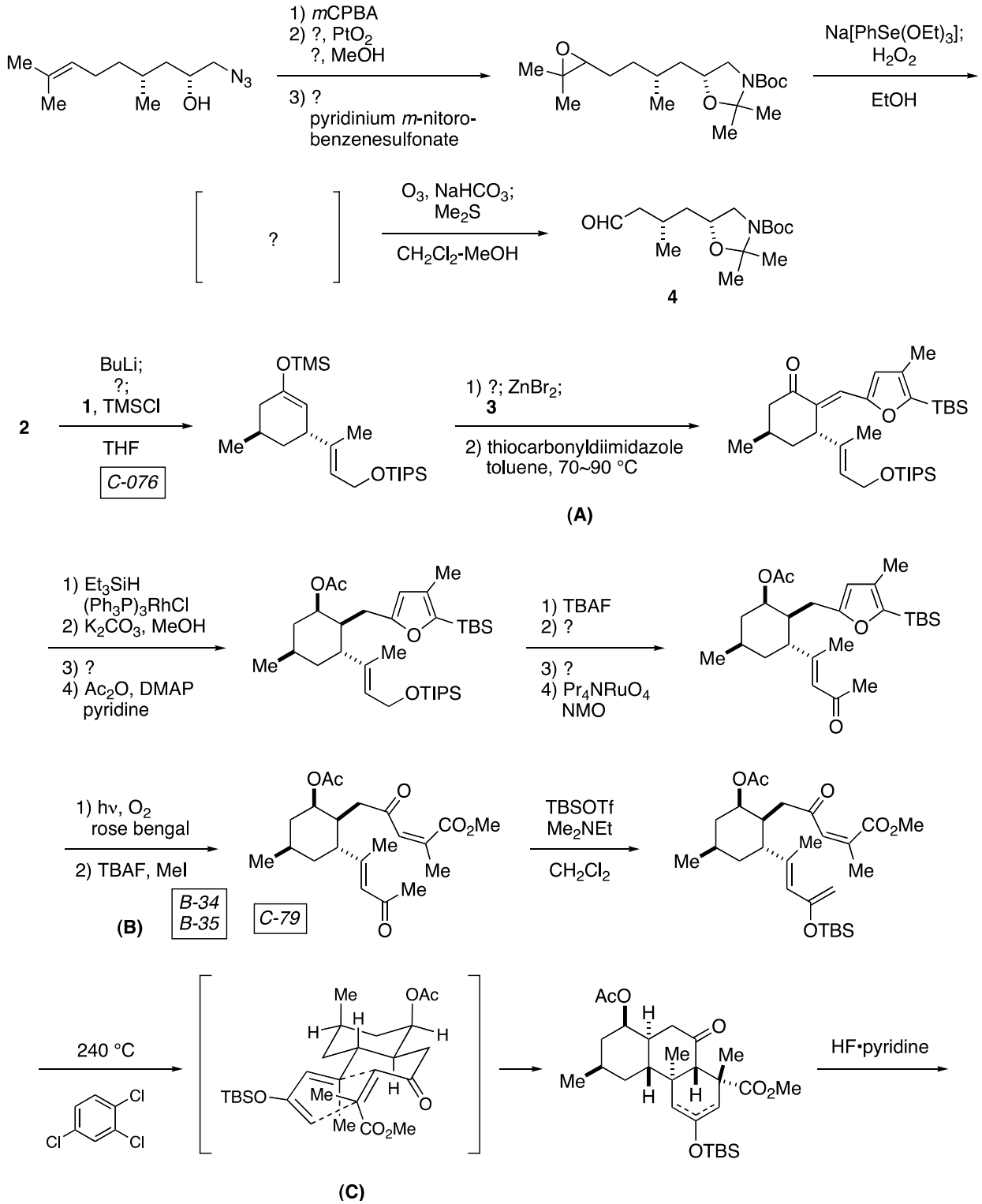
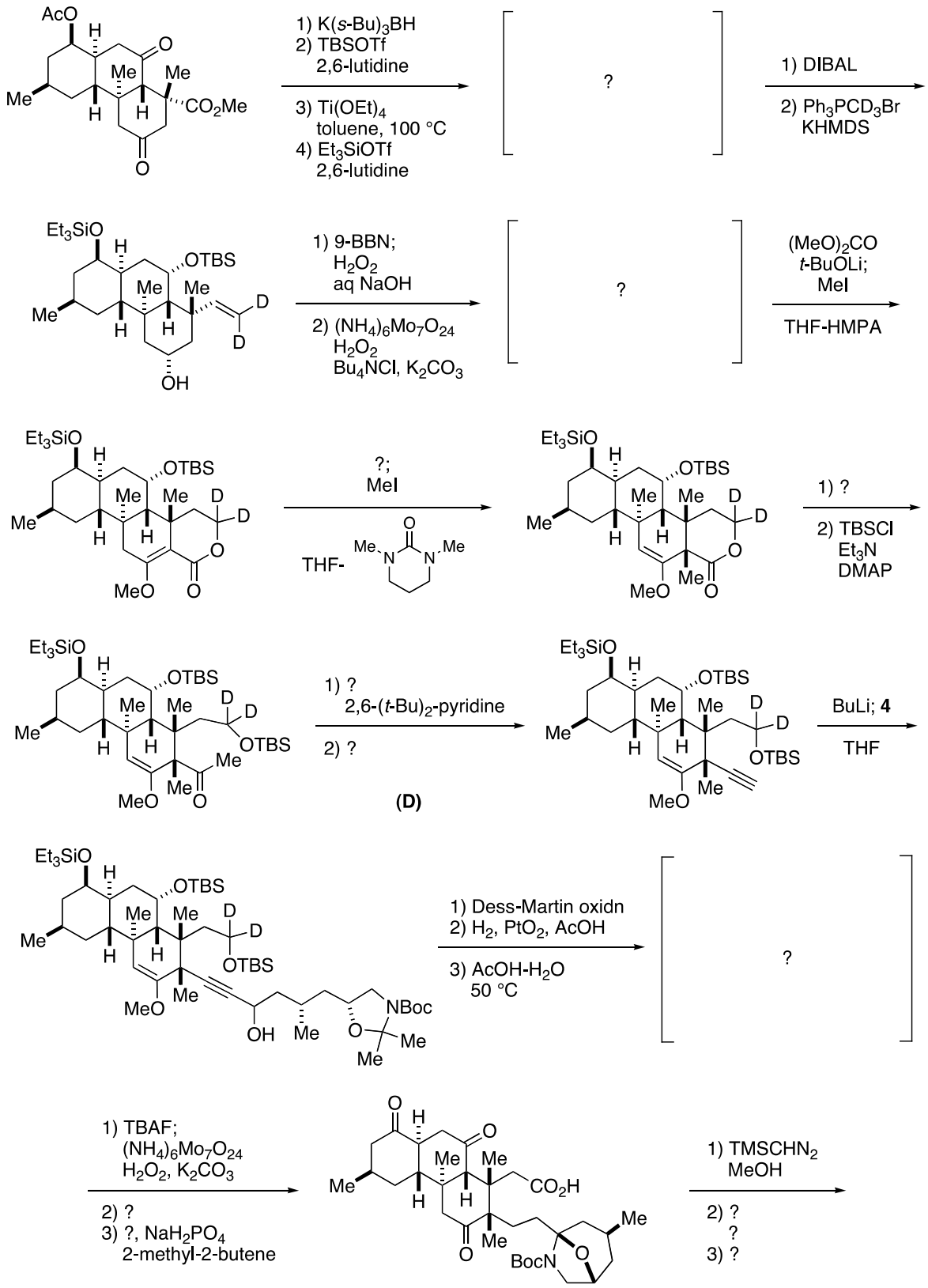
Norzoanthamine (TKGP-170415)	Masaaki Miyashita, Keiji Tanino[1),2)]

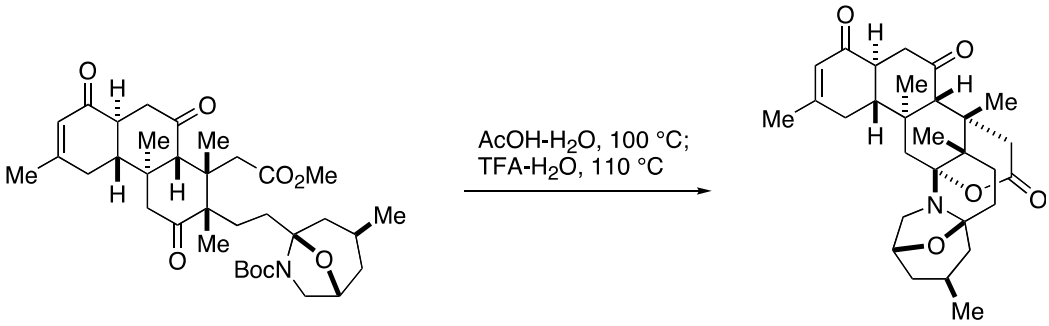


Activity	antiosteoporotic 骨粗鬆症抑制作用
Key Reactions	(A) Three-component coupling, (B) Photosensitized oxidation of 2-silylfuran, (C) Intramolecular Diels-Alder reaction, (D) Kinetic deuterium isotope effect




1) mCPBA
2) ?, PtO2
?, MeOH
3) ?
pyridinium m-nitro-
benzenesulfonate
Na[PhSe(OEt)3];
H2O2
EtOH
?
O3, NaHCO3;
Me2S
CH2Cl2-MeOH
4
2
BuLi;
?;
1, TMSCl
THF
C-076
1) ?; ZnBr2;
3
2) thiocarbonyldiimidazole
toluene, 70~90 °C
(A)
1) Et3SiH
(Ph3P)3RhCl
2) K2CO3, MeOH
3) ?
4) Ac2O, DMAP
pyridine
1) TBAF
2) ?
3) ?
4) Pr4NRuO4
NMO
1) hν, O2
rose bengal
2) TBAF, MeI
(B)
B-34
B-35
C-79
TBSOTf
Me2NEt
CH2Cl2
240 °C
(C)
HF•pyridine


1) K(s-Bu)3BH
2) TBSOTf
2,6-lutidine
3) Ti(OEt)4
toluene, 100 °C
4) Et3SiOTf
2,6-lutidine
?
1) DIBAL
2) Ph3PCD3Br
KHMDS
1) 9-BBN;
H2O2
aq NaOH
2) (NH4)6Mo7O24
H2O2
Bu4NCl, K2CO3
?
(MeO)2CO
t-BuOLi;
MeI
THF-HMPA
?;
MeI
THF-
1) ?
2) TBSCl
Et3N
DMAP
1) ?
2,6-(t-Bu)2-pyridine
2) ?
(D)
BuLi; 4
THF
1) Dess-Martin oxidn
2) H2, PtO2, AcOH
3) AcOH-H2O
50 °C
?
1) TBAF;
(NH4)6Mo7O24
H2O2, K2CO3
2) ?
3) ?, NaH2PO4
2-methyl-2-butene
1) TMSCHN2
MeOH
2) ?
?
3) ?



Norzoanthamine

References

1) M. Sakai, M. Sasaki, K. Tanino, M. Miyashita, *Tetrahedron Lett.*, **43**, 1705-1708 (2002)

2) M. Miyashita, M. Sasaki, I. Hattori, M. Sakai, K. Tanino, *Science*, **305**, 495-499 (2004)