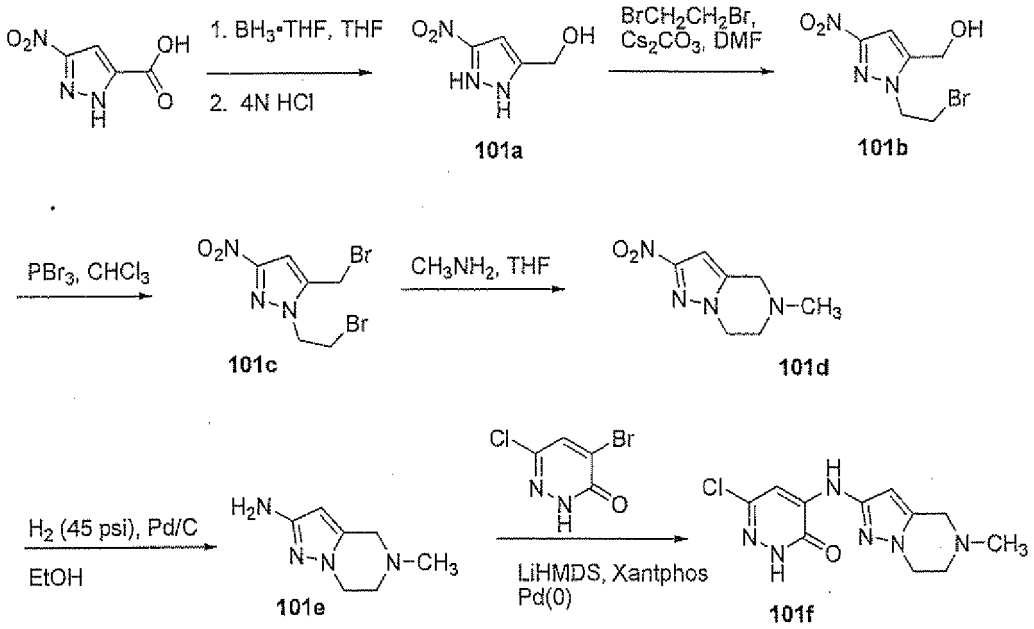

1. BH3•THF, THF
2. 4N HCl
BrCH2CH2Br, Cs2CO3, DMF
101a
101b
PBr3, CHCl3
CH3NH2, THF
101c
101d
H2 (45 psi), Pd/C
EtOH
LiHMDS, Xantphos
Pd(0)
101e
101f

Figure 1

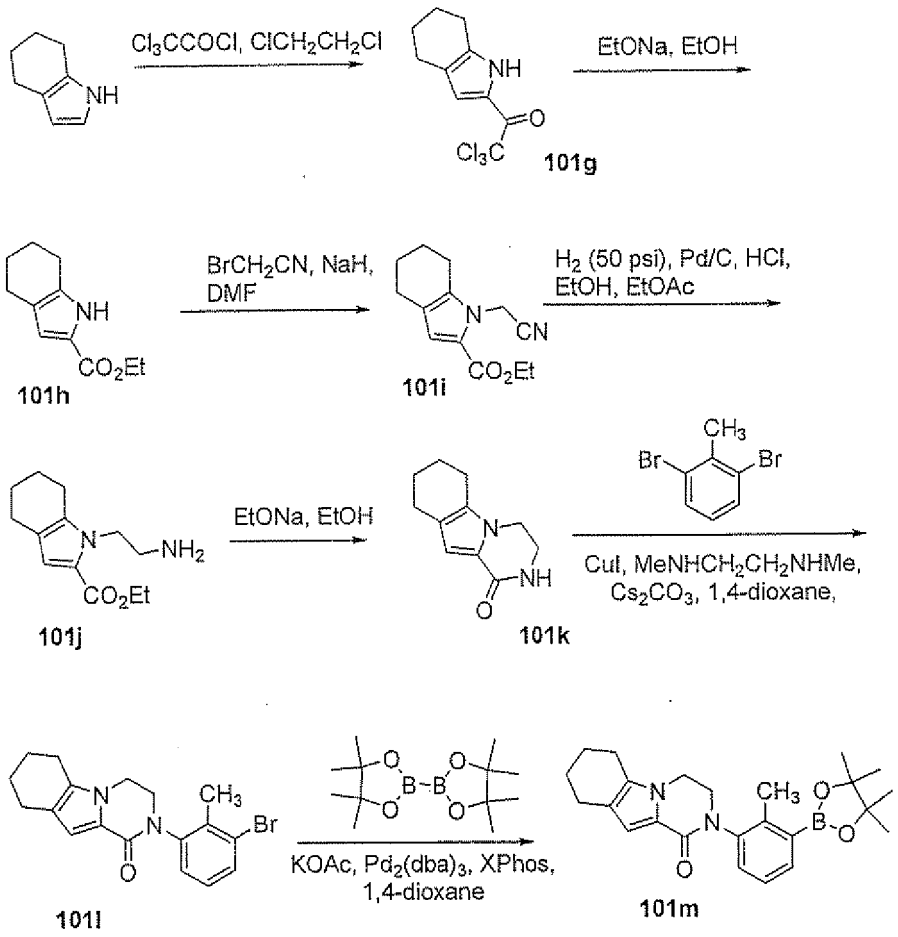

Cl3CCOCl, ClCH2CH2Cl
EtONa, EtOH
101g
BrCH2CN, NaH, DMF
H2 (50 psi), Pd/C, HCl, EtOH, EtOAc
101h
101i
EtONa, EtOH
CuI, MeNHCH2CH2NHMe, Cs2CO3, 1,4-dioxane,
101j
101k
KOAc, Pd2(dba)3, XPhos, 1,4-dioxane
101l
101m

Figure 2

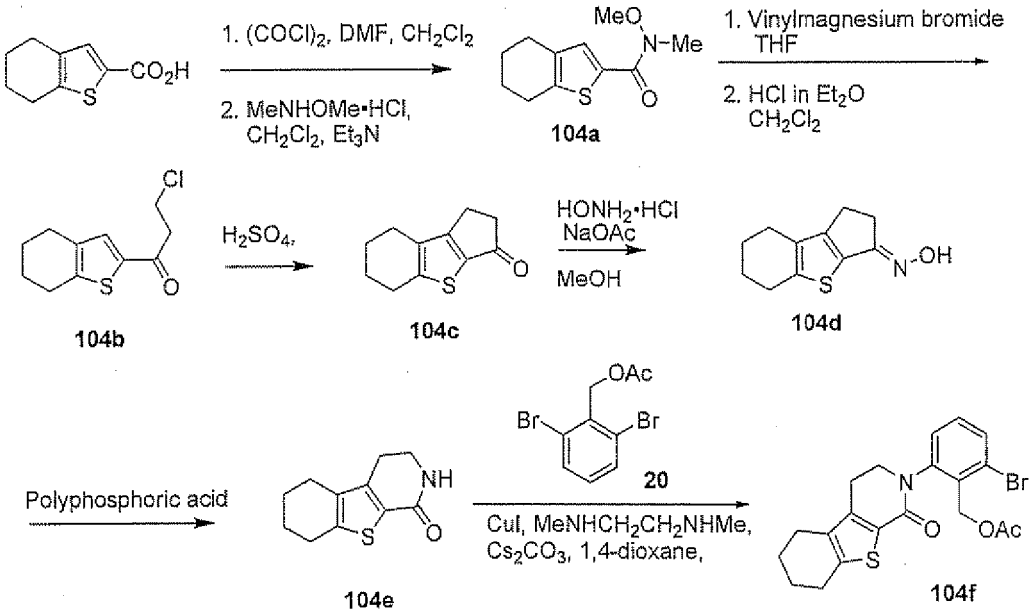

1. (COCl)2, DMF, CH2Cl2
2. MeNHOMe•HCl, CH2Cl2, Et3N
1. Vinylmagnesium bromide THF
2. HCl in Et2O CH2Cl2
104a
104b
H2SO4,
104c
HONH2•HCl NaOAc MeOH
104d
Polyphosphoric acid
104e
20
CuI, MeNHCH2CH2NHMe, Cs2CO3, 1,4-dioxane,
104f

Figure 3

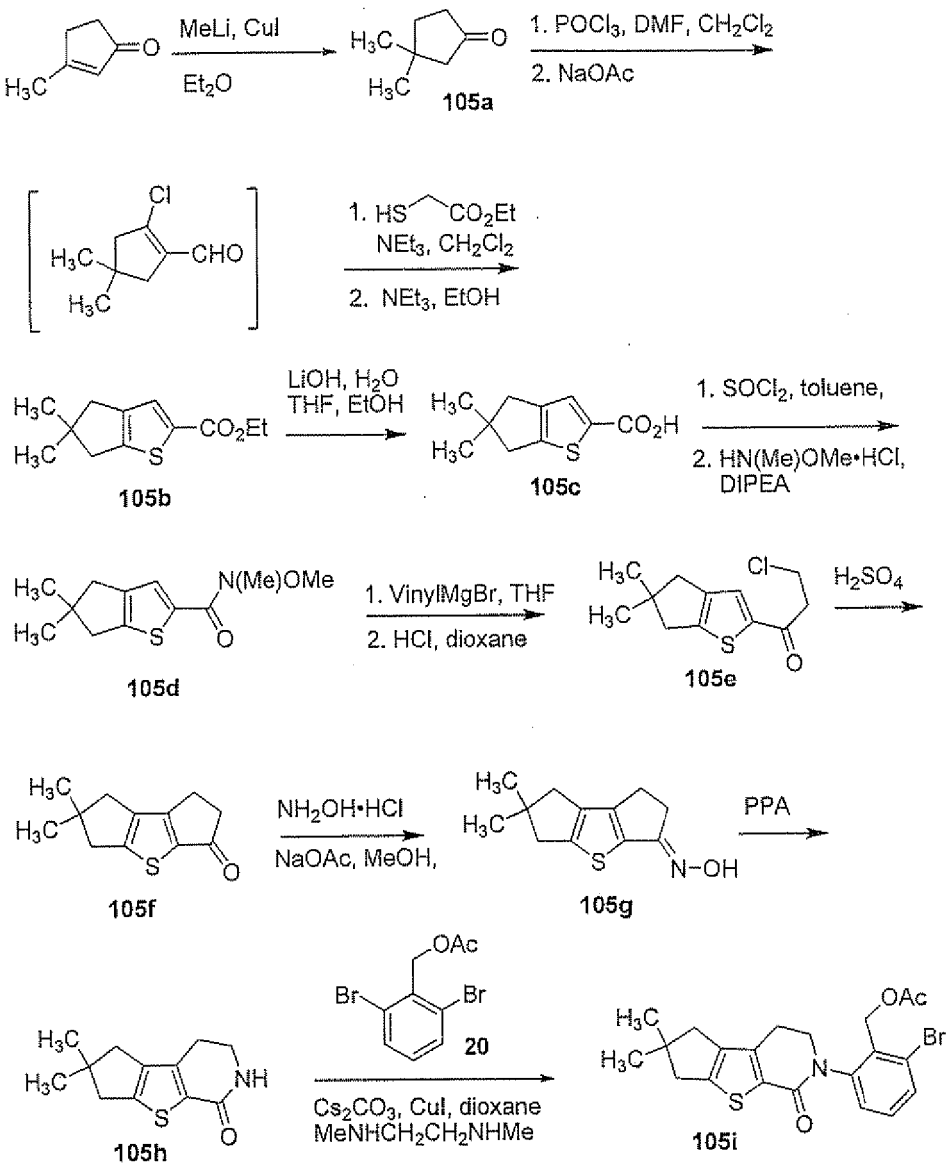

MeLi, CuI
Et2O
1. POCl3, DMF, CH2Cl2
2. NaOAc
105a
1. HS CO2Et
NEt3, CH2Cl2
2. NEt3, EtOH
LiOH, H2O
THF, EtOH
105b
105c
1. SOCl2, toluene,
2. HN(Me)OMe•HCl,
DIPEA
N(Me)OMe
1. VinylMgBr, THF
2. HCl, dioxane
105d
105e
H2SO4
NH2OH•HCl
NaOAc, MeOH,
105f
105g
PPA
20
Cs2CO3, CuI, dioxane
MeNHCH2CH2NHMe
105h
105i

Figure 4

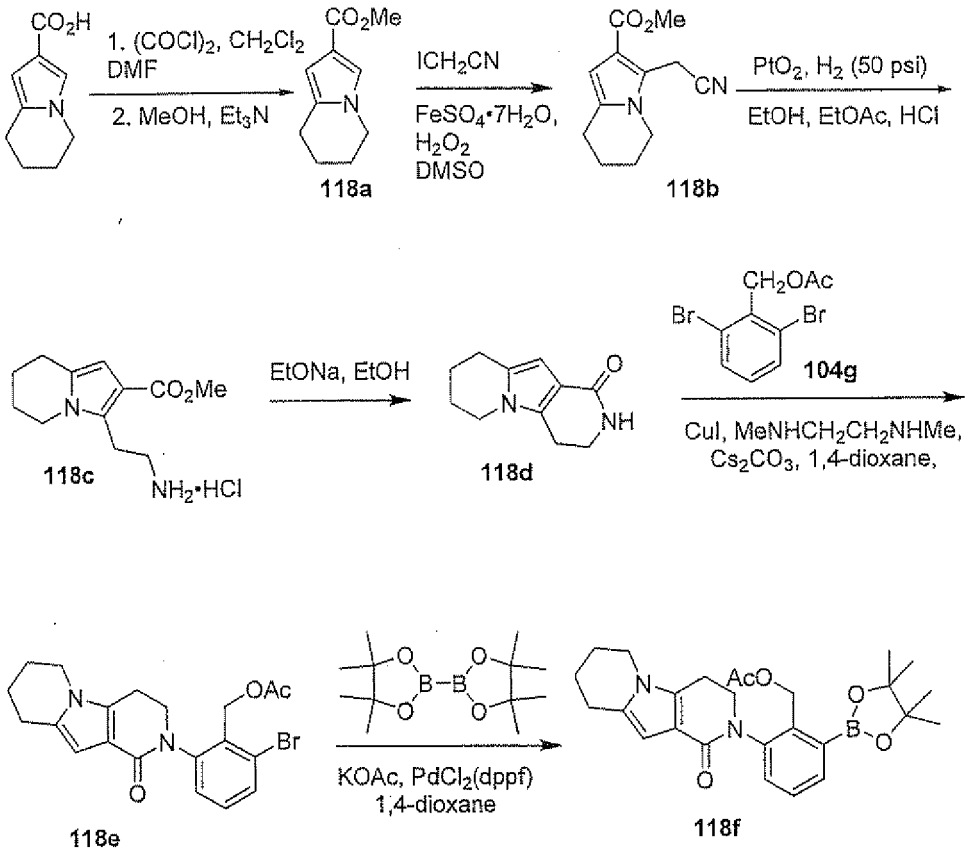

CO2H
1. (COCl)2, CH2Cl2
DMF
2. MeOH, Et3N
CO2Me
118a
ICH2CN
FeSO4•7H2O,
H2O2
DMSO
CO2Me
CN
118b
PtO2, H2 (50 psi)
EtOH, EtOAc, HCl
CO2Me
NH2•HCl
118c
EtONa, EtOH
O
NH
118d
CH2OAc
Br
Br
104g
CuI, MeNHCH2CH2NHMe,
Cs2CO3, 1,4-dioxane,
OAc
Br
118e
KOAc, PdCl2(dppf)
1,4-dioxane
AcO
118f

Figure 5

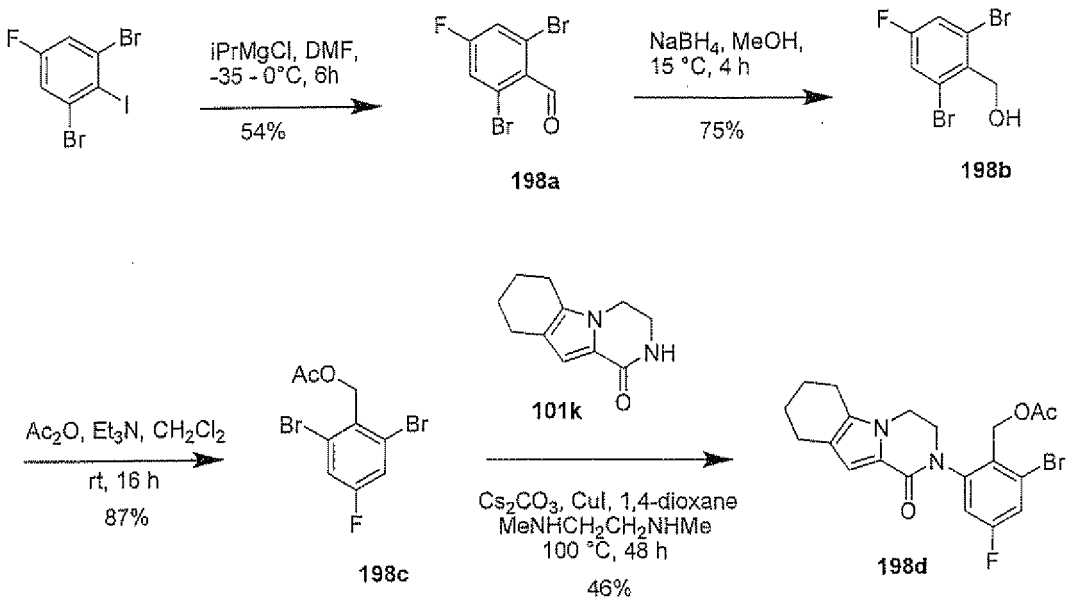


Figure 6

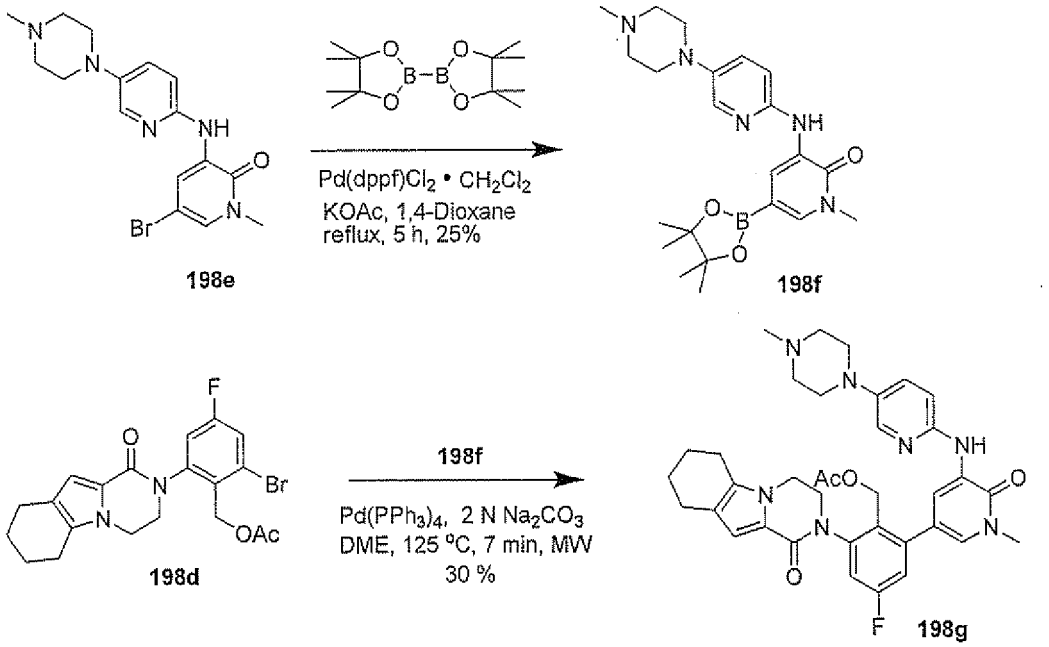


Figure 7

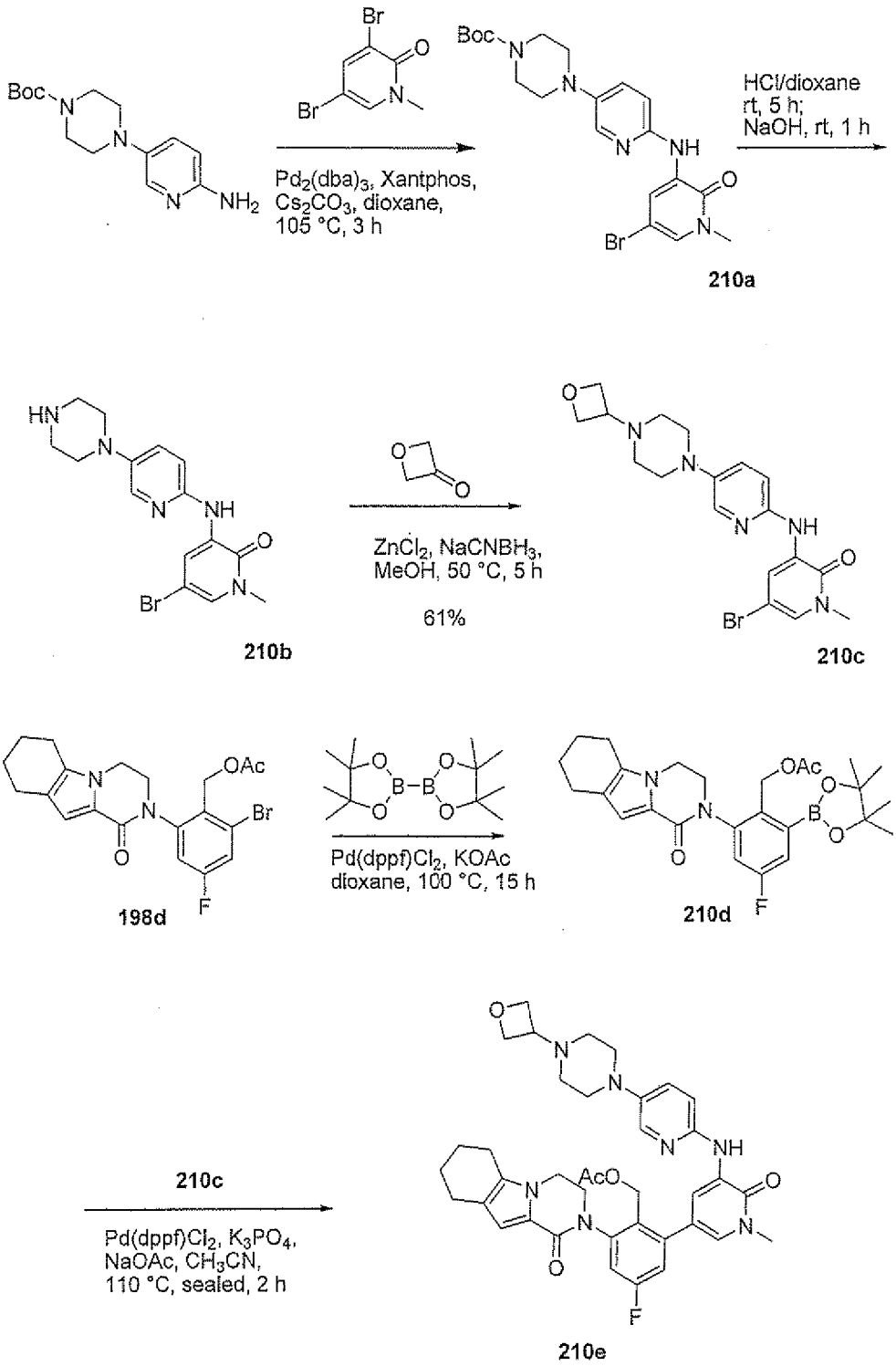

Boc
N
N
NH2
Br
Br
O
N
Pd2(dba)3, Xantphos,
Cs2CO3, dioxane,
105 °C, 3 h
NH
HCl/dioxane
rt, 5 h;
NaOH, rt, 1 h
210a
HN
ZnCl2, NaCNBH3,
MeOH, 50 °C, 5 h
61%
210b
210c
OAc
198d
Pd(dppf)Cl2, KOAc
dioxane, 100 °C, 15 h
210d
210c
Pd(dppf)Cl2, K3PO4,
NaOAc, CH3CN,
110 °C, sealed, 2 h
AcO
210e

Figure 8

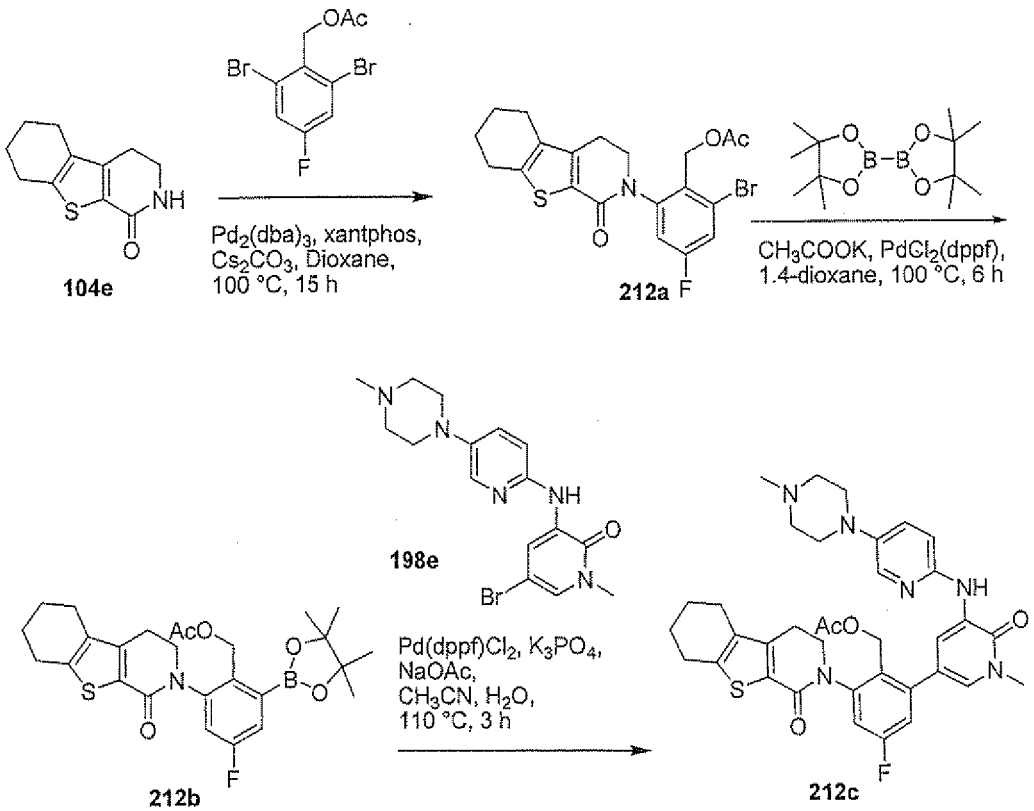

OAc
Br
Br
F
NH
S
O
104e
Pd2(dba)3, xantphos,
Cs2CO3, Dioxane,
100 °C, 15 h
212a
CH3COOK, PdCl2(dppf),
1.4-dioxane, 100 °C, 6 h
198e
AcO
B
212b
Pd(dppf)Cl2, K3PO4,
NaOAc,
CH3CN, H2O,
110 °C, 3 h
212c

Figure 9