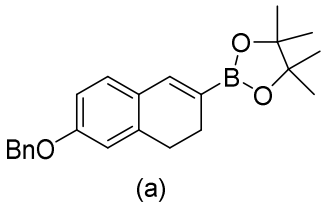
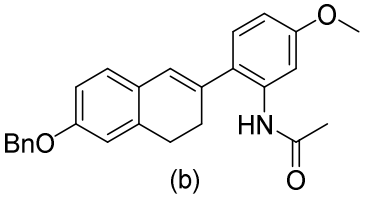
CLAIMS:

1. A compound selected from:

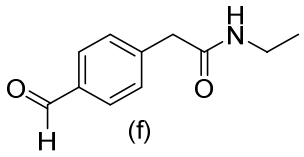


(a)



(b)

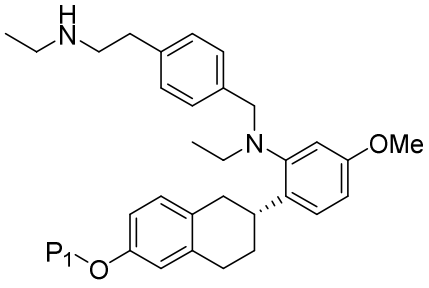
and



(f)

.

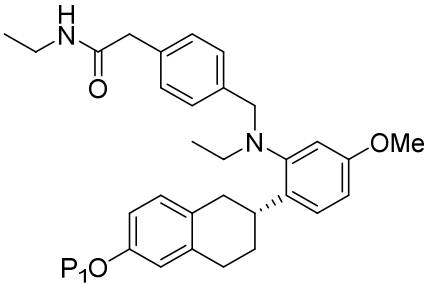
2. A process of preparing a compound of formula (VIII)



(VIII)

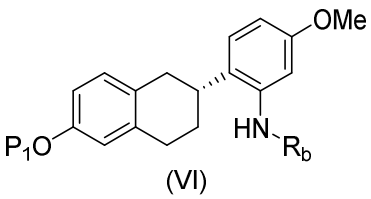
,

comprising the reduction of a compound of formula (VII)



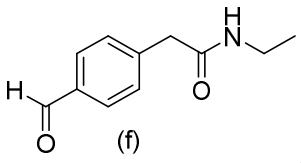
(VII)

wherein said compound of formula (VII) is prepared by a reductive amination of a compound of formula (VI)



(VI)

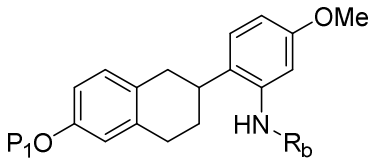
in the presence of a compound of formula (f)



(f)

,

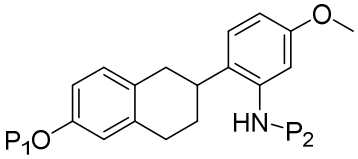
wherein said compound of formula (VI) is prepared by contacting a compound of formula (V)



(V)

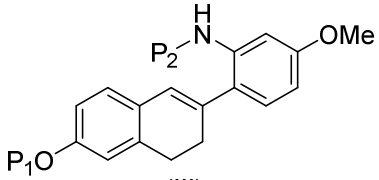
with a chiral acid to form an enantiomerically enriched salt, crystallizing the enantiomerically enriched salt, and freeing the compound of formula (VI),

wherein said compound of formula (V) is prepared by treatment of a compound of formula (IV) with a reducing agent;



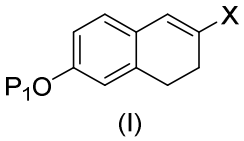
(IV)

wherein said compound of formula (IV) is prepared by reduction of a compound of formula (III)



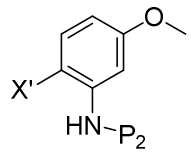
(III)

wherein said compound of formula (III) is prepared by the coupling of a compound of formula (I)



(I)

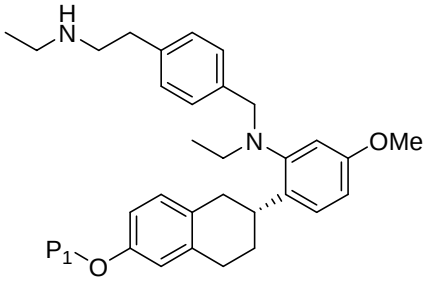
with a compound of formula (II)




(II)

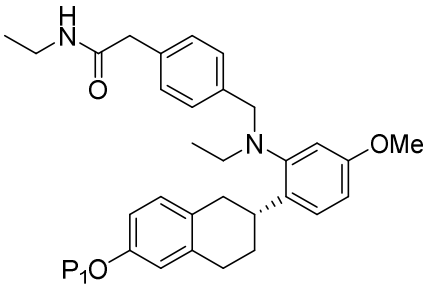
and wherein $P_1$ is H, or a phenol protecting group; $R_b$ is H or Et; $P_2$ is (C=O)-$CH_3$; X is a halogen, transition metal-containing functional group, or boron-containing functional group; and X' is a halogen, transition metal-containing functional group, or boron-containing functional group; and wherein said X and X' are suitable for cross-coupling of compound (I) with compound (II).

3. A process of preparing a compound of formula (VIII):



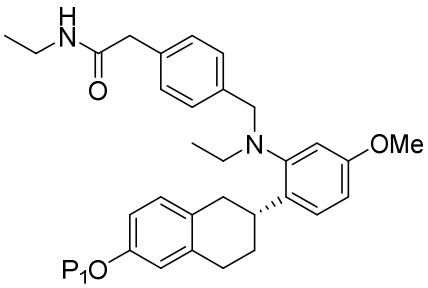

(VIII)

comprising the reduction of a compound of formula (VII):



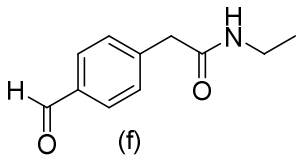

(VII)

wherein $P_1$ is H or a phenol protecting group;



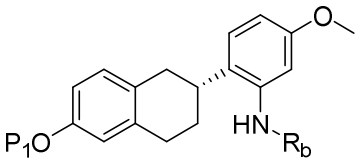

(VII)

comprising the reaction of a compound of formula (f);



(f)

with a compound of formula (VI)



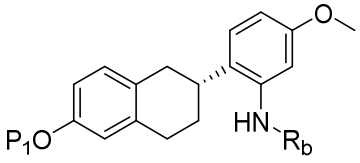
(VI) ,

in the presence of a reducing agent wherein Rb is H or Et.

4. The process of claim 3, conducted in the presence of $AlH_3$, $AlH_2Cl$, $AlHCl_2$, $NaBH_4$, $LiAlH_4$, $LiBH_4$, $LiEt_3BH$, $BH_3$, $BH_3$.THF, $CH_3CH_2C(O)OBH_3Na$, $Zn(OAc)_2/(EtO)_3SiH$, $Mg/TiCL_4$, (HBpin)/tris(4,4-dimethyl-2-oxazolinyl)phenylborateMgMe or combinations thereof.

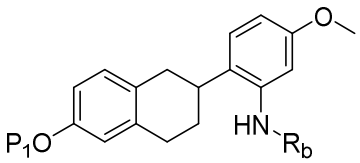
5. The process of claim 3 wherein the reducing agent used to react Compound (f) with a compound of Formula VI is $NaBH(OAc)_3$.

6. The process of claim 3, further comprising a process for increasing the enantiomer excess of a compound of formula (VI):



(VI)

comprising contacting a compound of formula (V) with a chiral acid to form an enantiomerically enriched salt,



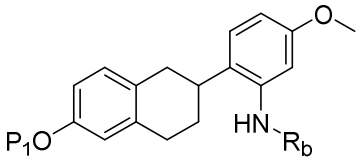
(V)

crystallizing the enantiomerically enriched salt, and freeing the compound of formula (VI).

7. The process of claim 6, wherein said enantiomeric excess of the compound of formula (VI) is >50%.

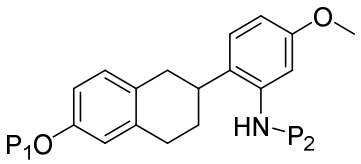
8. The process of claim 6 or claim 7, wherein said processes uses a (+) or (-) chiral acid selected from Aspartic acid, O-Acetyl-Mandelic acid, cis-2-Benzamidocyclohexanecarboxylic acid, 1,1'-Binapthyl-2,2'-diyl hydrogen phosphate, Camphoric acid, 10-Camphorsulfonic acid, trans-1,2-Cyclohexanedicarboxylic acid, Dibenzoyl-Tartaric acid, Diacetyl-tartaric acid, Di-p-toluoyl-tartaric acid, N-(3,5-Dinitrobenzoyl)-α-phenylglycine, Diacetyl-tartaric anhydride, Diacetyl-tartaric acid, Glutamic acid, Malic acid, Mandelic acid, N-(α-methylbenzyl)phthalamic acid, 2-(6-Methoxy-2-napthyl)propionic acid, Pyroglutamic acid, Quinic acid and Tartaric acid, or combinations thereof.

9. The process of claim 6, further comprising a process of preparing a compound of formula (V):




(V)

comprising the reaction of a compound of formula (IV):



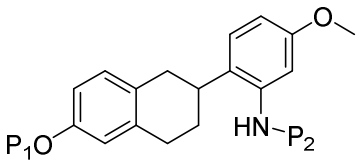

(IV)

with an acid, base, nucleophile or reducing agent wherein $P_2$ is an amino-protecting group selected from (C=O)-$C_1$-$C_8$ alkyl, (C=O)-aryl, (C=O)-heteroaryl, (C=O)-O-$C_1$-$C_8$ alkyl, (C=O)-O-aryl, (C=O)-O-heteroaryl, or (C=O)-O-$C_1$-$C_8$ alkylaryl.

10. The process of claim 9, wherein the compound of formula (IV) is treated with a hydride-containing reducing agent.

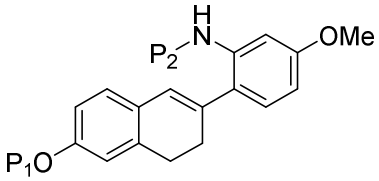
11. The process of claim 9 wherein $R_b$ is H; and the compound according to formula (IV) is treated with an acid, base or nucleophile.

12. The process of claim 9, further comprising a process of preparing a compound of formula (IV):




(IV)

comprising the reduction of a compound of formula (III):

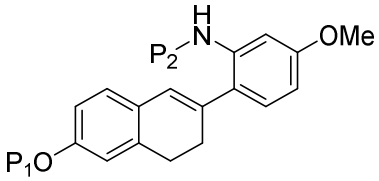



(III)

in the presence of a reducing agent.

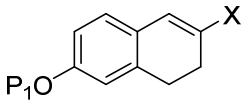
13. The process of claim 12, wherein $P_1$ is H, (C=O)-$C_1$-$C_8$ alkyl, (C=O)-aryl, (C=O)-heteroaryl, Si($C_1$-$C_5$ alkyl)$_3$, Si(aryl)$_2$($C_1$-$C_5$ alkyl) or $CH_2$Aryl.

14. The process of claim 13, further comprising a process of preparing a compound of formula (III):



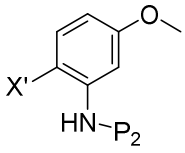

(III)

comprising the reaction of a compound of formula (I):




(I)

with a compound of formula (II):




(II)

in the presence of a base and a transition metal catalyst;

wherein

X is $B(OR)_2$, $B(-O-(C(R_a)_2)_n-O-)$, Cl, Br, I, $OSO_2CF_3$ or $OSO_2$(aryl);

X' is $B(OR)_2$, $B(-O-(C(R_a)_2)_n-O-)$, Cl, Br, I, $OSO_2CF_3$ or $OSO_2$(aryl);

each R is independently H, $C_{1-3}$ alkyl or aryl;

each $R_a$ is independently $C_{1-3}$ alkyl or aryl; and

each n is independently an integer of 2 or 3,

wherein when X is $B(OR)_2$ or $B(-O-(C(R_a)_2)_n-O-)$, X' is Cl, Br, I, $OSO_2CF_3$ or $OSO_2$(aryl).

15. The process of claim 14, wherein $P_1$ is H, or a protecting group selected from (C=O)-$C_1$-$C_8$ alkyl, (C=O)-aryl, (C=O)-heteroaryl, $Si(C_1$-$C_5$ alkyl$)_3$, $Si(aryl)_2(C_1$-$C_5$ alkyl) and $CH_2$Aryl;

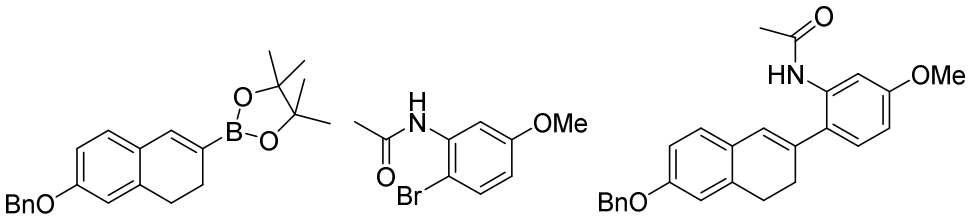
$P_2$ is (C=O)-$CH_3$;

X is $B(OR)_2$, or $B(-O-(C(R_a)_2)_n-O-)$; and

X' is Cl, Br, I, $OSO_2CF_3$ or $OSO_2$(aryl).

16. The process of claim 14 or claim 15, conducted in the presence of a transition metal catalyst selected from the group consisting of $Pd(OAc)_2$, $Pd(PPh_3)_4$, $PdCl_2(PPh_3)_2$, $Pd(dppf)Cl_2$, $Pd_2(Dba)_3$, Cu(0), $Pd(PCy_3)_2$, and any combinations thereof.

17. The process of any one of claims 2, or 14-16, wherein the compounds of formulas (I), (II) and (III) are (a), (aa') and (b):




(a) (aa') (b)