($LiAlH_4$) in tetrahydrofuran, indium in ammonium chloride, and sodium hydride (NaH).

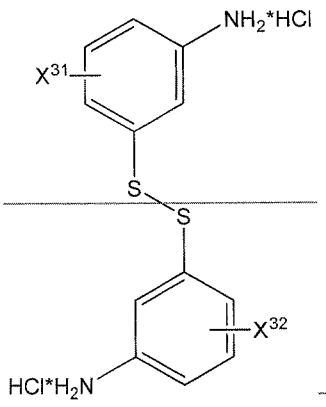
8) The method as defined in any one of Claims 1-7 wherein in said reacting step (c) the compound of Formula III is reacted with [^{18}F]-C_{1-4} fluoroalkyl-LG^2.

9) The method as defined in any one of Claims 1-8 wherein said reducing step (b) and said reacting step (c) are carried out in immediate sequence.

10) The method as defined in any one of Claims 1-9 wherein said reducing step (b) and said reacting step (c) are carried out in the same vessel.

11) The method as defined in any one of Claims 1-10 wherein said method is automated.

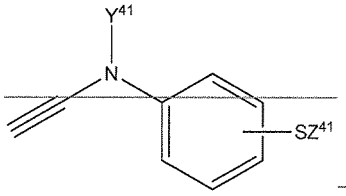
~~12) The method as defined in any one of Claims 1-11 wherein the compound of Formula III as defined in any one of Claims 1 and 3-6 is prepared by reacting a compound of Formula IV:~~



~~(IV)~~

~~wherein X^{31} and X^{32} are the same and are both an X group as defined in any one of Claims 1, 3 and 6;~~

~~with a compound of Formula V:~~



~~(V)~~

~~wherein Y^{41} is a Y group as defined in any one of Claims 1, 4 and 6, and Z^{41} is a Z group as defined in any one of Claims 1, 5 and 6;~~

~~to obtain a compound of Formula II as defined in any one of Claims 1-6; and,~~

~~reducing said compound of Formula II using a reducing agent as defined in either Claim 1 or Claim 7 to obtain said compound of Formula III.~~

~~13~~12) A cassette for carrying out the method as defined in Claim 11, wherein said cassette comprises:

(i) a vessel containing the compound of Formula II as defined in any one of Claims 1-6;

(ii) means for reacting said compound of Formula II with a reducing agent to form a compound of Formula III as defined in any one of Claims 1 and 3-6; and,

(iii) means for reacting said compound of Formula III with either $[^{11}C]C_{1-4}$ alkyl-LG^1 or $[^{18}F]$-C_{1-4} fluoroalkyl-LG^2 to obtain a PET tracer of Formula I, wherein LG^1, LG^2, and said PET tracer of Formula I are as defined in Claim 1.

~~14~~13) The cassette as defined in Claim 12 which further comprises:

(iv) an ion-exchange cartridge for removal of excess $[^{11}C]C_{1-4}$ alkyl-LG^1 or $[^{18}F]$-C_{1-4} fluoroalkyl-LG^2.