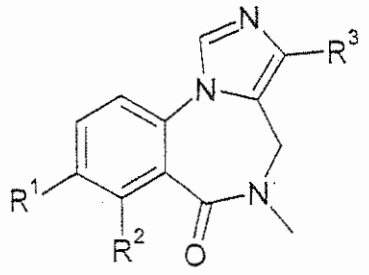
prior art methods.

Summary ~~of the Invention~~

In a first aspect, there is provided a method to obtain a compound of Formula I:



(I)

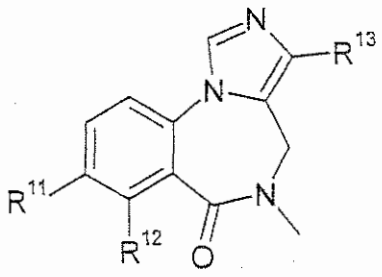
wherein:

R^1 is hydrogen and R^2 is ^{18}F; and,

R^3 is a C_{3-5} heterocycle; or, R^3 is C(=O)-O-R^4 wherein R^4 is hydrogen, or a straight- or branched-chain C_{1-4} alkyl;

wherein said method comprises:

(i) providing a precursor compound of Formula Ia:



(Ia)

wherein:

R^{11} is hydrogen and R^{12} is a leaving group selected from nitro, tri-C_{1-3} alkyl ammonium or -I^+-Ar, wherein Ar is phenyl substituted with one or more R^* groups, wherein R^* is selected from hydrogen, nitro, cyano, halogen, C_{1-10} hydroxyalkyl, C_{2-10} carboxyalkyl, C_{1-10} alkyl, C_{2-10} alkoxyalkyl, C_{1-10} hydroxyalkyl, C_{1-10} aminoalkyl, C_{1-10} haloalkyl, C_{6-14} aryl, C_{3-12} heteroaryl, C_{3-20} alkylaryl, C_{2-10} alkenyl, and C_{2-10} alkynyl; and,

R^{13} is as defined for R^3 of Formula I; and,

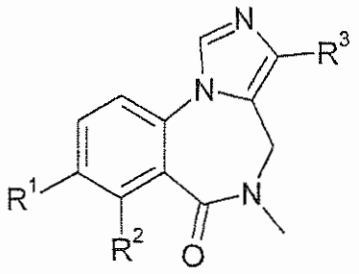
(i) reacting said precursor compound with a suitable source of [^{18}F]Fluoride.

The present disclosure~~invention~~ provides a method to obtain radiofluorinated compounds useful for *in vivo* imaging $GABA_A$ receptors. The method of the disclosure~~invention~~ is

high-yielding in comparison to the prior art methods. A further embodimentaspect of the disclosureinvention is a cassette suitable for carrying out the automated method of synthesis of the disclosureinvention. Novel precursor compounds useful in the method of the disclosureinvention are also provided, as are certain novel radiofluorinated compounds obtained by the method of the disclosureinvention.

Detailed Description of the Invention

In one aspect, the present invention provides a method to obtain a compound of Formula I:



(I)

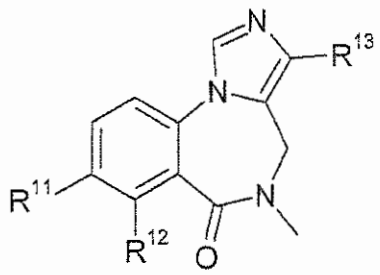
wherein:

one of R^1 and R^2 is ^{18}F and the other is hydrogen; and,

R^3 is a C_{3-5} heterocycle; or, R^3 is C(=O)-O-R^4 wherein R^4 is hydrogen, or a straight- or branched-chain C_{1-4} alkyl;

wherein said method comprises:

(i) providing a precursor compound of Formula Ia:



(Ia)

wherein:

~~11) A cassette for carrying out the method as defined in Claim 10, wherein said~~

~~cassette comprises:~~

~~(i) a vessel containing a precursor compound, wherein said precursor compound is as defined in the method of any one of Claims 1-6; and~~

~~(ii) means for eluting the vessel with a suitable source of [^{18}F]Fluoride, wherein said suitable source of [^{18}F]Fluoride is as defined in any one of Claims 1, 7 or 8.~~

11~~12~~) A compound of Formula I as defined in the method of Claim 1 wherein R^1 is hydrogen, R^2 is ^{18}F, and R^4 is ethyl, isopropyl or *tert*-butyl.