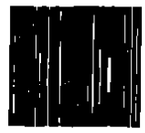
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Industria y Comercio
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FORMULARIO UNICO DE SOLICITUD DE PATENTE 2000-3

1 **SOLICITUD DE:**

☒ Patente de Invención ☐ Patente de Modelo de Utilidad

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(5) **TITULO (54)** **DERIVADOS BENZIMIDAZOL Y PIRIDILIMIDAZOL COMO LIGANDOS PARA $GABA_A$**

(6) **Clasificación Internacional (51)** A61K 31/4184, C07D 233/54

(7) **Prioridad** SI ☒ NO ☐

(33) País de Origen	(32) Fecha	(31) Número de Solicitud
US.	21 de diciembre de 2000	60/257.492

(8) **Para publicar a partir de la fecha de la presente solicitud a los**

6 meses ☐ 12 meses ☐ 18 meses ☒ Otro ☐

(9) **Comprobante de pago No.** 01-74.216 por $ 356.640.oo **Fecha:** 26 de noviembre de 2001
Comprobante de pago No. 01-74.167 por $ 100.000.oo **Fecha:** 26 de noviembre de 2001

10

ANEXOS

- [x] Comprobante de pago de la tasa de presentación de la solicitud
- [ ] Comprobante de pago de la tasa por concepto de excedente de palabras en la publicación
- [x] Comprobante de pago por reivindicación de prioridad
- [ ] Certificado de existencia y representación legal cuando el solicitante sea persona jurídica
- [x] Poderes, si fuere el caso (2 poderes)
- [ ] Copia certificada de la primera solicitud, si se reivindica prioridad
- [ ] Traducción simple de la primera solicitud, si se reivindica prioridad
- [ ] Documento de cesión del inventor al solicitante o a su causante
- [x] Descripción de la invencion (En Ingles)
- [x] Una o más reivindicaciones (En Ingles)
- [ ] Dibujos y/o planos necesarios
- [ ] De ser el caso, copia del contrato de acceso
- [ ] De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas
- [ ] De ser el caso, certificado de depósito del material biológico
- [ ] Arte final 12 x 12.

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FIGURA CARACTERISTICA:

12

NOMBRE: EMILIO FERRERO

FIRMA:

C.C. 438.019 de Usaquén T.P. 31.929

Instrucciones para el diligenciamiento del presente formulario, ver reverso de esta página

FIELD OF THE INVENTION

This invention relates to a benzimidazole and pyridylimidazole derivatives, and, more specifically, to such derivatives that bind with high selectively and/or high affinity to the benzodiazepine site of $GABA_A$ receptors. This invention also relates to pharmaceutical compositions comprising such compounds and to the use of such compounds in the treatment of central nervous system (CNS) diseases.

BACKGROUND

The $GABA_A$ receptor superfamily represents one of the classes of receptors through which the major inhibitory neurotransmitter, γ-aminobutyric acid, or GABA, acts. Widely, although unequally, distributed throughout the mammalian brain, GABA mediates many of its actions through a complex of proteins called the $GABA_A$ receptor, which causes alteration in chloride conductance and membrane polarization. In addition to being the site of neurotransmitter action, a number of drugs including the anxiolytic and sedating benzodiazepines bind to this receptor. The $GABA_A$ receptor comprises a chloride channel that generally, but not invariably, opens in response to GABA, allowing chloride to enter the cell. This, in turn, effects a slowing of neuronal activity through hyperpolarization of the cell membrane potential.

$GABA_A$ receptors are composed of five protein subunits. A number of cDNAs for these $GABA_A$ receptor subunits have been cloned and their primary structures determined. While these subunits share a basic motif of 4 membrane-spanning helices, there is sufficient sequence diversity to classify them into several groups. To date at least 6α, 3β, 3γ, 1ε, 1δ and 2ρ subunits have been identified. Native $GABA_A$ receptors are typically composed of 2α, 2β, and 1γ. Various lines of evidence (such as message distribution, genome localization and biochemical study results) suggest that the major

naturally occurring receptor combinations are $\alpha_1\beta_2\gamma_2$, $\alpha_2\beta_3\gamma_2$, $\alpha_3\beta_3\gamma_2$, and $\alpha_5\beta_3\gamma_2$ (Mohler et al. *Neuroch. Res.* 1995; 20(5):631-36).

The $GABA_A$ receptor binding sites for GABA (2 per receptor complex) are formed by amino acids from the α and β subunits.. Amino acids from the α and γ subunits together form one benzodiazepine site per receptor. Benzodiazepines exert their pharmacological actions by interacting with the benzodiazepine binding sites associated with the $GABA_A$ receptor. In addition to the benzodiazepine site (sometimes referred to as the benzodiazepine or BDZ receptor), the $GABA_A$ receptor contains sites of interaction for several other classes of drugs. These include a steroid binding site, a picrotoxin site, and a barbiturate site. The benzodiazepine site of the $GABA_A$ receptor is a distinct site on the receptor complex that does not overlap with the site of interaction for other classes of drugs that bind to the receptor or for. GABA (see, e.g., Cooper, et al., The Biochemical Basis of Neuropharmacology, 6th ed., 1991, pp. 145-148, Oxford University Press, New York).

In a classic allosteric mechanism, the binding of a drug to the benzodiazepine site increases the affinity of the GABA receptor for GABA. Benzodiazepines and related drugs that enhance the ability of GABA to open $GABA_A$ receptor channels are known as agonists or partial agonists depending on the level of GABA enhancement. Other classes of drugs, such as β-carboline derivatives, that occupy the same site and negatively modulate the action of GABA are called inverse agonists. A third class of compounds exists which occupy the same site as both the agonists and inverse agonists and yet have little or no effect on GABA activity. These compounds will, however, block the action of agonists or inverse agonists and are thus referred to as $GABA_A$ receptor antagonists.

The important allosteric modulatory effects of drugs acting at the benzodiazepine site were recognized early, and

the distribution of activities at different subtype receptors has been an area of intense pharmacological discovery. Agonists that act at the benzodiazepine site are known to exhibit anxiolytic, sedative, and hypnotic effects, while compounds that act as inverse agonists at this site elicit anxiogenic, cognition enhancing, and proconvulsant effects. While benzodiazepines have enjoyed long pharmaceutical use as anxiolytics, these compounds are known to exhibit a number of unwanted side effects. These may include cognitive impairment, sedation, ataxia, potentiation of ethanol effects, and a tendency for tolerance and drug dependence.

$GABA_A$ selective ligands may also act to potentiate the effects of certain other CNS active compounds. For example, there is evidence that selective serotonin reuptake inhibitors (SSRIs) may show greater antidepressant activity when used in combination with $GABA_A$ selective ligands than when used alone.

SUMMARY OF THE INVENTION

This invention provides benzimidazole and pyridylimidazole derivatives that bind to the benzodiazepine site of $GABA_A$ receptors, including human $GABA_A$ receptors. Preferred compounds of the invention bind with high selectivity and/or high affinity to $GABA_A$ receptors. Preferred compounds act as agonists, antagonists or inverse agonists of such receptors. As such, they are useful in the treatment of various CNS disorders.

The invention provides compounds of Formula I (shown below), and pharmaceutical compositions comprising compounds of Formula I.

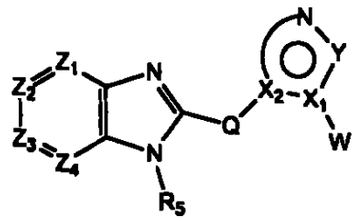
The invention provides methods for synthesizing compounds of Formula I.

The invention further provides methods of treating patients suffering from certain CNS disorders with an effective amount of a compound of the invention. The patient may be a human or other mammal. Treatment of humans, domesticated companion animals (pets) or livestock animals suffering from certain CNS disorders with an effective amount of a compound of the invention is encompassed by the invention.

In a separate aspect, the invention provides methods of potentiating the actions of other CNS active compounds. These methods comprise administering an effective amount of a compound of the invention in conjunction with the administration of another CNS active compound.

Additionally this invention relates to the use of compounds of Formula I as probes for the localization of $GABA_A$ receptors in tissue sections.

In a first aspect, the invention provides compounds of Formula I



and the pharmaceutically acceptable salts thereof.

In this aspect, Z_1 is nitrogen or CR_1; Z_2 is nitrogen or CR_2;

Z_3 is nitrogen or CR_3; and Z_4 is nitrogen or CR_4; provided that no more than two of Z_1, Z_2, Z_3, and Z_4 are nitrogen.

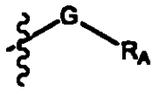
Further in Formula I,

R_1, R_2, R_3, and R_4 are independently selected from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, haloalkyl, and haloalkoxy,

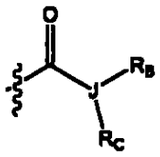
ii) alkyl, alkoxy, cycloalkyl, alkenyl, alkynyl, (cycloalkyl)alkyl, $-NH(R_{10})$, $-N(R_{10})(R_{11})$, hydroxyalkyl, aminoalkyl, $(R_{10})NHalkyl-$, $(R_{10})(R_{11})Nalkyl-$, alkanoyl, alkoxycarbonyl, (heterocycloalkyl)alkyl, alkylsulfonyl, alkylthio, mono- or dialkylaminocarbonyl, heterocycloalkyl, aryl, and heteroaryl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}, wherein R_{10} and R_{11} are independently selected from the group consisting of alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, (cycloalkyl)alkyl, aryl, arylalkyl, alkanoyl, and mono and dialkylaminoalkyl; and

iii) a group of the formula:



where G is a bond, alkyl, -O-, -C(=O)-, or $-CH_2C(=O)-$, and R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20},

iv) a group of the formula



where J is N, CH, or C-alkyl, and R_B and R_C are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, (cycloalkyl)alkyl, heterocycloalkyl, aryl, arylalkyl, alkanoyl, heteroaryl, and mono and dialkylaminoalkyl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, alkoxy, and alkyl; R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain:

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, or N-R_D wherein R_D is hydrogen, Ar_1, alkyl, cycloalkyl, heterocycloalkyl, or Ar_1alkyl; wherein Ar_1 is aryl or heteroaryl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, alkoxy, and alkyl,

c) one or more substituents R_{20};

v) $-OC(=O)R_E$, $-C(=O)OR_E$, $-C(=O)NH_2$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-S(O)_nR_E$, $-S(O)_nNH_2$, $-S(O)_nNHR_E$, $-S(O)_nNR_ER_F$, $-NHC(=O)R_E$, $-C(=NR_E)R_F$, -HC=N-OH, -HC=N(alkoxy), -HC=N(alkyl), $-NR_EC(=O)R_F$, $-NHS(O)_mR_E$, and $-NR_ES(O)_mR_F$, where m is 0, 1 or 2, and

R_E and R_F are independently selected at each occurrence from alkyl, cycloalkyl, heterocycloalkyl, alkoxy, mono- or dialkylamino, aryl, or heteroaryl each of which is optionally substituted by 1, 2, or 3 of R_{30}.

R_{20}, in this aspect of the invention, is independently selected at each occurrence from the group consisting of: halogen; hydroxy; nitro; cyano; amino; alkyl; alkoxy optionally substituted with amino or mono- or dialkylamino; cycloalkyl; cycloalkylalkyl; cycloalkylalkoxy; alkenyl;

alkynyl; haloalkyl; oxo; haloalkoxy; mono- and dialkylamino; aminoalkyl; and mono- and dialkylaminoalkyl.

R_{30} is independently selected at each occurrence from halogen, hydroxy, nitro, cyano, amino, alkyl, alkoxy optionally substituted with amino or mono- or dialkylamino, cycloalkyl, cycloalkylalkyl, cycloalkylalkoxy, heterocycloalkyl, alkenyl, alkynyl, haloalkyl, haloalkoxy, oxo, mono- and dialkylamino, aminoalkyl, and mono- and dialkylaminoalkyl.

R_5 represents hydrogen or haloalkyl; or

R_5 represents alkyl, cycloalkyl, or (cycloalkyl)alkyl, each of which may contain one or more double or triple bonds, and each of which is optionally substituted with 1, 2, or 3 of R_{30}, or

R_5 represents aryl, arylalkyl, heteroaryl, or heteroarylalkyl each of which is optionally substituted with 1, 2, or 3 substituents selected from the group consisting of haloalkyl, amino, $-NH(R_{10})$, $-N(R_{10})(R_{11})$, carboxamido, $(R_{10})NH$carbonyl, $(R_{10})(R_{11})N$carbonyl, halogen, hydroxy, nitro, cyano, amino, alkyl, alkoxy optionally substituted with amino or mono- or dialkylamino, cycloalkyl, cycloalkylalkyl, cycloalkylalkoxy, heterocycloalkyl, alkenyl, alkynyl, haloalkyl, haloalkoxy, aminoalkyl, and mono- and dialkylaminoalkyl.

Q represents $-C(R_6)(R_7)$ or oxygen, with the proviso that Q is not oxygen when X_2 is nitrogen.

R_6 and R_7 independently represent hydrogen, fluorine, or alkyl.

The group:



represents a 5 to 7 membered heteroaryl or heterocycloalkyl ring containing up to 4 heteroatoms selected from nitrogen, sulfur, and oxygen, said 5 to 7 membered heteroaryl or

heterocycloalkyl ring is substituted at each carbon atom by R, and substituted at each nitrogen atom available for substitution by R'.

R is independently chosen at each occurrence from hydrogen, halogen, amino, alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, (cycloalkyl)alkyl, haloalkyl, haloalkoxy, carboxamido, and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which may be further substituted with one or more substituents independently selected from halogen, oxo, hydroxy, alkyl, and alkoxy.

R' is independently chosen at each occurrence from alkyl, hydrogen, cycloalkyl, cycloalkyl(alkyl), and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which 3- to 7-membered carbocyclic or heterocyclic groups are optionally substituted with one or more substituents independently selected from halogen, oxo, hydroxy, alkyl, and alkoxy.

X_1 and X_2 independently represent nitrogen, carbon or CH.

Y is nitrogen, oxygen, carbon, -CH-, $-CH_2-$, or absent.

W represents aryl or heteroaryl, wherein the aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0, 1, or 2.

DETAILED DESCRIPTION

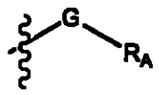
In addition to the compounds and salts of Formula I, described above, the invention further provides compounds of Formula I wherein

R_1, R_2, R_3, and R_4 are independently selected from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6) alkyl, and halo(C_1-C_6)alkoxy,

ii) (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_2-C_6)alkenyl, alkynyl, ((C_3-C_8)cycloalkyl)(C_1-C_4)alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), hydroxy(C_1-C_6)alkyl, amino(C_1-C_6)alkyl, (R_{10})NH (C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (C_1-C_6)alkanoyl, (C_1-C_6)alkoxycarbonyl, (C_1-C_6)alkylsulfonyl, (C_1-C_6)alkylthio, mono- or di(C_1-C_6)alkylaminocarbonyl, heterocycloalkyl, (heterocycloalkyl)C_1-C_4alkyl, aryl, and heteroaryl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}, wherein R_{10} and R_{11} are independently selected from the group consisting of (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkylalkyl, aryl, aryl(C_1-C_6)alkyl, (C_1-C_6)alkanoyl, and mono and di(C_1-C_6)alkylaminoalkyl;

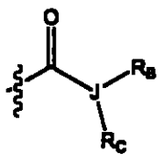
iii) a group of the formula:



where G is (C_1-C_6)alkyl, -O-, -C(=O)-, or -CH_2C(=O)-, and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring consisting of from 3 to 8 ring atoms, and each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O; said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20},

iv) a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8cycloalkyl) (C_1-C_4)alkyl, heterocycloalkyl, aryl, aryl(C_1-C_4)alkyl, (C_1-C_6)alkanoyl, heteroaryl, and mono and di(C_1-C_6)alkylamino(C_1-C_6)alkyl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, C_1-C_6alkoxy, and C_1-C_6alkyl; or R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen, Ar_1, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, heterocycloalkyl, or Ar_1(C_1-C_6)alkyl; wherein Ar_1 is aryl or heteroaryl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, C_1-C_6alkoxy, and C_1-C_6alkyl;

c) one or more substituents R_{20};

v) -OC(=O)R_E, -C(=O)OR_E, -C(=O)NH_2, -C(=O)NHR_E, -C(=O)N$R_E$$R_F$, -S(O)$_n$$R_E$, -S(O)$_n$$NH_2$, -S(O)$_nNHR_E$, -S(O)$_nNR_E$$R_F$, -NHC(=O)$R_E$, -C(=N$R_E$)$R_F$, -HC=N-OH, -HC=N($C_1$-$C_6$alkoxy), -HC=N($C_1$-$C_6$alkyl), -N$R_E$C(=O)$R_F$, -NHS(O)$_m$$R_E$, and -N$R_E$S(O)$_m$$R_F$, where m is 0, 1 or 2, and R_E and R_F are independently selected at each occurrence from (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, heterocycloalkyl, (C_1-C_6)alkoxy, mono- and di(C_1-C_6)alkylamino, aryl, and heteroaryl each of which is optionally substituted by 1, 2, or 3 of R_{30}.

R_{20} is independently selected at each occurrence from the group consisting of halogen; hydroxy; nitro; cyano; amino; (C_1-C_6)alkyl; (C_1-C_6)alkoxy optionally substituted with amino or mono- or di(C_1-C_6)alkylamino; (C_3-C_8)cycloalkyl; (C_3-C_8)cycloalkyl(C_1-C_4)alkyl; (C_3-C_8)cycloalkyl(C_1-C_4)alkoxy; (C_2-C_6)alkenyl; (C_2-C_6)alkynyl; halo(C_1-C_6)alkyl; halo(C_1-C_6)alkoxy;

oxo; mono- and di(C_1-C_6)alkylamino; amino(C_1-C_6)alkyl; and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl.

R_{30} is independently selected at each occurrence from halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy optionally substituted with amino or mono- or di(C_1-C_6)alkylamino, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_4)alkyl, (C_3-C_8)cycloalkyl(C_1-C_4)alkoxy, heterocycloalkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, oxo, mono- and di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl.

R_5 represents hydrogen or halo(C_1-C_6)alkyl; or

R_5 represents (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, or (C_3-C_8cycloalkyl)(C_1-C_4)alkyl, each of which may contain one or more double or triple bonds, and each of which is optionally substituted with 1, 2, or 3 of R_{30}, or

R_5 represents aryl, aryl(C_1-C_4)alkyl, heteroaryl, or heteroaryl(C_1-C_4)alkyl each of which is optionally substituted with 1, 2, or 3 substituents selected from the group consisting of: halo(C_1-C_6)alkyl, amino, NH(R_{10}), N(R_{10})(R_{11}), carboxamido, NH(R_{10})carbonyl, N(R_{10})(R_{11})carbonyl, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy optionally substituted with amino or mono- or di(C_1-C_6)alkylamino, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_4)alkyl, (C_3-C_8)cycloalkyl(C_1-C_4)alkoxy, heterocyclo(C_1-C_4)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

Q represents -C(R_6)(R_7) or oxygen, with the proviso that Q is not oxygen when X_2 is nitrogen;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6alkyl; and

the group:



represents a 5 to 7 membered heteroaryl or heterocycloalkyl ring containing up to 4 heteroatoms selected from nitrogen, sulfur, and oxygen, said 5 to 7 membered heteroaryl or heterocycloalkyl ring is substituted at each carbon atom by R, and is substituted at each nitrogen atom available for substitution by R';

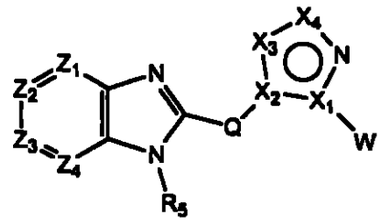
R is independently chosen at each occurrence from hydrogen, halogen, amino, C_1-C_6alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_1-C_6alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8cycloalkyl)(C_1-C_4)alkyl, halo(C_1-C_6)alkyl, haloalkoxy, carboxamido, and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which may be further substituted with one or more substituents independently selected from halogen, oxo, hydroxy, C_{1-4}alkyl, and -O(C_{1-4}alkyl);

R' is independently chosen at each occurrence from hydrogen, C_1-C_6alkyl, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl(C_1-C_4alkyl), and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which 3- to 7-membered carbocyclic or heterocyclic groups are optionally substituted with one or more substituents independently selected from halogen, oxo, hydroxy, C_{1-4}alkyl, and -O(C_{1-4}alkyl); and

X_1, X_2, W, and Y are as defined for Formula I, above.

Such compounds will be referred to as compounds of Formula IA.

A particular aspect of the invention is directed to compounds and pharmaceutically acceptable salts of Formula II



Formula II

In Formula II, the variables Z_1, Z_2, Z_3, Z_4, R_5, Q, X_1, X_2, and W carry the definition set forth for Formula I, or more preferably, for Formula IA;

X_3 and X_4 are independently selected from the group consisting of carbon, CR, N, O, S, NH, and N(C_1-C_6)alkyl; provided that at least one of X_1, X_2, X_3, and X_4 is carbon or CR; and

R is independently chosen at each occurrence from hydrogen, halogen, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, carboxamido, and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which may be further substituted with one or more substituents independently selected from halogen, oxo, hydroxy, C_{1-4}alkyl, and -O(C_{1-4}alkyl).

The invention is particularly directed to compounds of Formula I, Formula IA, and Formula II, in which Z_1 is CR_1, Z_2 is CR_2, Z_3 is CR_3, and Z_4 is CR_4.

The invention is also directed to compounds of Formula I, Formula IA, and Formula II, in which one, and only one, of Z_1, Z_2, Z_3, and Z_4 is nitrogen.

Another particular aspect of the invention provides compounds of Formula I, Formula IA, and Formula II, in which Z_1 is CR_1, Z_4 is CR_4, and only one, of Z_2 and Z_3 is nitrogen.

The invention is further directed to compounds of Formula I, Formula IA, and Formula II wherein:

i) X_2 is carbon; and Q is oxygen;

ii) X_2 is N; and Q is $C(R_6)(R_7)$;

iii) X_2 is carbon; and Q is $C(R_6)(R_7)$;

iv) X_1 is carbon; X_2 is N; and Q is $C(R_6)(R_7)$;

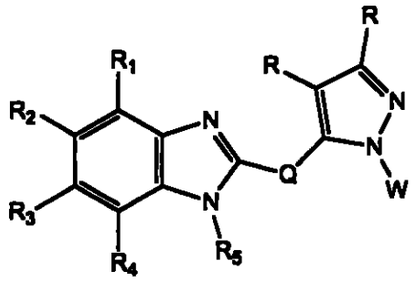
v) X_1 is nitrogen; X_2 is carbon; and Q is $C(R_6)(R_7)$; or

wherein

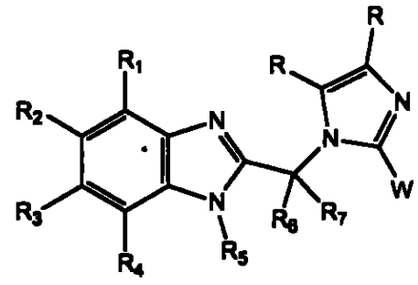
vi) Q is $C(R_6)(R_7)$.

For each of i) through vi) preferred compounds are those where Z_1 is CR_1, Z_2 is CR_2, Z_3 is CR_3, and Z_4 is CR_4. For each of i) through vi) preferred compounds are those in which one, and only one, of Z_1, Z_2, Z_3, and Z_4 is nitrogen. For each of i) through vi) compounds in which Z_1 is CR_1, and only one, of Z_2 and Z_3 is nitrogen are particularly preferred.

In another aspect, the invention provides compounds of Formula III and Formula IV:



Formula III



Formula IV

wherein R, R_1, R_2, R_3, R_4, R_5, Q, and W carry the definitions set forth for Formula I, or more preferably for Formula IA.

Particular compounds of Formula III included in the invention are those wherein Q is $C(R_6)(R_7)$.

Other compounds of the invention include compounds of Formula III or Formula IV, wherein R is independently selected at each occurrence from the group consisting of:

i) hydrogen, halogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_1-C_6)alkoxy, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, and

ii) phenyl and pyridyl each of which is optionally substituted with up to 3 substituents independently chosen from halogen, hydroxy, C_{1-4}alkyl, and -O(C_{1-4}alkyl).

Q (in Formula III) is $C(R_6)(R_7)$.

In Formula III and IV, R_1, R_2, R_3, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, heterocycloalkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents hydrogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, phenyl, benzyl, thiophenyl, thiazoyl, pyridyl, imidazolyl, pyrazolyl, or pyrimidinyl;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6 alkyl; and

W represents phenyl, thienyl, thiazoyl, pyridyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, or pyrimidinyl, each of which is optionally substituted with up to 4 R_{30} groups, where R_{30} carries the definition set forth for Formula I, or more preferably R_{30} carries the definition set forth for Formula IA.

Particularly included in the invention are compounds of Forumula III and Formula IV in which wherein R, R_1, R_2, R_3, R_4, R_5, Q, and W carry the definition set forth for Formula I, or more preferably for Formula IA, and

W represents a 6-membered aryl or heteroaryl groups, wherein the 6-membered aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, $-S(O)_nR_E$, and $-OR_E$ or wherein

W represents a 5-membered heteroaryl group, wherein the 5-membered heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, $-S(O)_nR_E$, and $-OR_E$.

In these embodiments of the invention m is 0, 1, or 2, and R_8 carries the definition set forth for Formula I, or more preferably R_8 carries the definition set forth for Formula IA and R_{30} carries the definition set forth above with respect to Formula IA.

Specific compounds of Formula III or Formula IV are those in which one of R_2 or R_3 carries the definition set forth for Formula I, or more preferably for Formula IA.

In this aspect of the invention, R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1, R_4, and the other of R_2 and R_3 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl; and

Q (in Formula III) is CH_2, and R_6 and R_7 in Formula IV are hydrogen; and

W, in this aspect, represents phenyl, furanyl, thienyl, thiazoyl, pyridyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, pyrimidinyl, benzimidazolyl, quinolinyl, isoquinolinyl each of which is optionally substituted with up to 4 R_{30} groups, where R_{30} carries the definition set forth for Formula I, or more preferably R_{30} carries the definition set forth for Formula IA.

Another aspect of the invention compounds of Formula III or Formula IV wherein R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1, R_4, and one of R_2 and R_3 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano. Preferably R, R_1, and R_4 are hydrogen;

the other of R_2 and R_3 carries the definition set forth for Formula I, or more preferably for Formula IA; and

R_5 represents (C_1-C_6)alkyl.

Preferred R_5 groups are ethyl and n-propyl.

In this aspect, Q (in Formula III) is CH_2, and R_6 and R_7 in Formula IV are hydrogen; and

W, is phenyl, pyridyl, or thiazolyl, each which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy, or more preferably W is 2-thiazolyl, 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl. Such compounds will be referred to as compounds of Formula III-A and Formula IV-A.

A particular aspect of the invention provides compounds of Formula III-A and Formula IV-A, wherein:

one of R_2 and R_3 is chosen from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

the other of R_2 and R_3 is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy, and

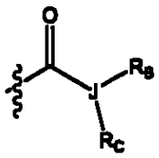
ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, $(C_3-C_8$cycloalkyl$)C_1-C_4$alkyl, $-NH(R_{10})$, $-N(R_{10})(R_{11})$, $(R_{10})NH(C_1-C_6)$alkyl, $(R_{10})(R_{11})N(C_1-C_6)$alkyl, (heterocycloalkyl)alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}; and

R_{20} carries the definition set forth for Formula I, or more preferably R_{20} carries the definition set forth with respect to Formula IA.

Another aspect of the invention provides compounds of Formula III-A and Formula IV-A, wherein:

one of R_2 and R_3 is chosen from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

the other of R_2 and R_3 is chosen from



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_3-C_8)cycloalkyl, and $(C_3-C_8$cycloalkyl) (C_1-C_4)alkyl; or

R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl;

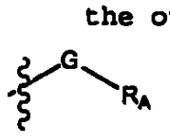
c) one or more of R_{20}; and

R_{20} carries the definition set forth with respect to Formula I, or more preferably R_{20} carries the definition set forth for R_{20} Formula IA.

The invention also provides compounds of Formula III-A and Formula IV-A, wherein:

one of R_2 and R_3 is chosen from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

the other of R_2 and R_3 is a group of the formula:



where G is a bond or C_1-C_2alkyl;

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}; and

R_{20} carries the definition set forth for R_a in Formula I, or more preferably R_{20} carries the definition set forth for R_{20} in Formula IA R_{20}.

Preferably R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

Other compounds of the invention are compounds of Formula III-A and Formula IV-A, wherein:

one of R_2 and R_3 is chosen from hydrogen; halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl; and

the other of R_2 and R_3 is -HC=N-OH or -HC=N(C_1-C_6alkoxy).

Another aspect of the invention is directed to compounds of Formula I, Formula IA and Formula II wherein

one and only one of Z_1 is CR_1, Z_4 is CR_4, either Z_2 or Z_3 is nitrogen; and

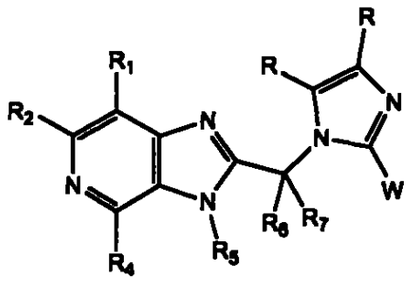
i) W represents a 5-membered heteroaryl group, and the 5-membered heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$; or

ii) W represents a 6-membered aryl or heteroaryl group, wherein the 6-membered aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from

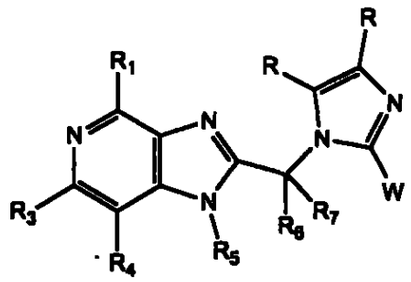
R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$; where

R_{30} and R_E carry the definitions set forth for those groups in Formula I, or preferably for Formula IA, and m is 0, 1, or 2.

Thus, the invention includes compounds represented by Formula V and Formula VI



Formula V



Formula VI

wherein R, R_1, R_2, R_3, R_4, R_5, and Q carry the definitions set forth for Formula I, or more preferably for Formula IA, and W is a 5-membered heteroaryl group as described above.

The invention further includes compounds of Formula V and Formula VI wherein

R is independently selected at each occurrence from the group consisting of

i) hydrogen, halogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_1-C_6)alkoxy, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, and

ii) phenyl and pyridyl each of which is optionally substituted with up to 3 substituents independently chosen from halogen, hydroxy, C_{1-4}alkyl, and $-O(C_{1-4}$alkyl);

R_1, R_2, R_3, and R_4, are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, heterocycloalkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino,

amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents hydrogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, phenyl, benzyl, thiophenyl, thiazoyl, pyridyl, imidazolyl, pyrazolyl, or pyrimidinyl;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6 alkyl;

W represents either a 5-membered heteroaryl group chosen from thienyl, thiazolyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, or isoxazolyl each of which is optionally substituted with up to 4 R_{30} groups; or

W represents a 6-membered aryl or heteroaryl group chosen from phenyl, pyrimidinyl, pyridyl, pyridizinyl, or pyrazinyl, each of which is optionally substituted with up to 4 R_{30} groups; and

R_{30} is as defined for Formula I, or preferably as defined for Formula IA.

In another aspect the invention is directed to compounds of Formula V and Formula VI wherein:

R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl. Preferably H is hydrogen;

R_1 and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl.

R_2 (Formula V) and R_3 (Formula VI) in this aspect of the invention carry the definitions set forth with respect to Formula I, or more preferably for Formula IA;

R_5 represents (C_1-C_6)alkyl, preferably ethyl or n-propyl;

R_6 and R_7 are hydrogen;

W represents a 5-membered heteroaryl group chosen from furanyl, thienyl, thiazoyl, imidazolyl, oxazolyl, triazolyl,

tetrazolyl, pyrazolyl, or isoxazolyl, each of which is optionally substituted with up to 4 R_{30} groups, or

W represents a 6-membered aryl or heteroaryl group chosen from phenyl, pyrimidinyl, pyridyl, pyridizinyl, or pyrazinyl each of which is optionally substituted with up to 4 R_{30} groups; and

R_{30} is as defined for Formula I, or more preferably for Formula IA.

Preferred R_1 and R_4 groups for this aspect of the invention include hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano. Preferably R_1 and R_4 are hydrogen. More preferably R, R_1, and R_4 are all hydrogen.

Preferred compounds of this aspect of the invention in which W is a 5-membered heteroaryl group include those wherein W is thiazolyl which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy. Other preferred compounds are those wherein W is 2-thiazolyl.

Preferred compounds of this aspect in which W is a 6-membered heteroaryl group include those wherein W is phenyl or pyridyl, each of which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy. Also preferred are compounds wherein W is 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

Compounds of this aspect of the invention will be referred to as compounds of Formula V-A and Formula VI-A.

Other aspects of the invention include compounds of Formula V-A and Formula VI-A wherein

R_2 (for Formula V-A) or R_3 (for Formula VI-A) is chosen from

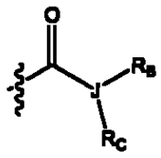
i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_1-C_6alkynyl, (C_3-C_8cycloalkyl)C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl)

C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}, where R_{20} carries the definition set forth for compounds of Formula I, or preferably for compounds of Formula IA.

Another aspect of the invention is directed to compounds of Formula V-A and Formula VI-A wherein R_2 (for Formula V-A) or R_3 (for Formula VI-A) is chosen from hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy.

Further aspects of the invention include compounds of Formula V-A and Formula VI-A wherein R_2 (for Formula V-A) or R_3 (for Formula VI-A) is a group of the formula

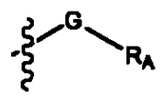


where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_3-C_8)cycloalkyl, and (C_3-C_8cycloalkyl) (C_1-C_4)alkyl; or

R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain a) one or more double bonds, b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl; and/or c) one or more substituents R_{20}, where R_{20} carries the definition set forth for compounds of Formula I, or more preferably that set forth for compounds of Formula IA.

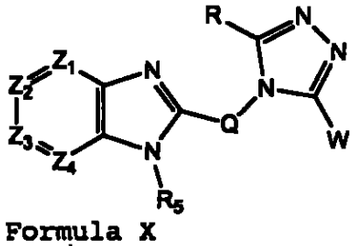
Also provided by the invention are compounds of Formula V-A and Formula VI-A wherein R_2 (for Formula V-A) or R_3 (for Formula VI-A) is a group of the formula



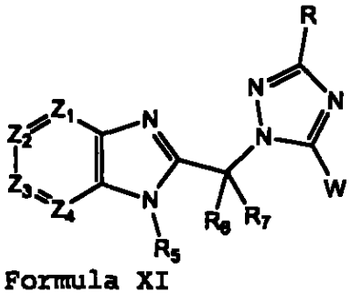
where G is a bond or C_1-C_2alkyl; and R_A is a saturated, partially unsaturated, or aromatic carbocycle consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently selected from N, S, and O, where the saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}. Preferred compounds of this class are those where R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}. R_{20} carries the definition set forth for compounds of Formula I, or more preferably that set forth for compounds of Formula IA.

The invention also includes compounds of Formula V-A and Formula VI-A wherein R_2 (for Formula V-A) or R_3 (for Formula VI-A) is -HC=N-OH or -HC=N(C_1-C_6alkoxy).

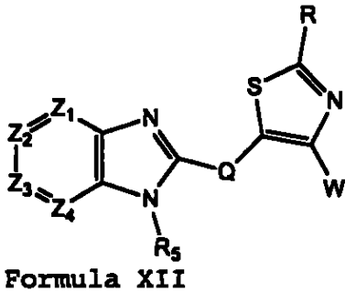
Other benzimidazole and pyridylimidazole compounds of the invention are represented by Formula X - Formula XVIII, below.



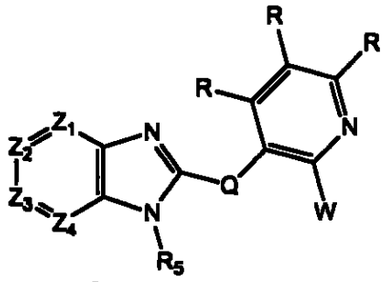
Formula X



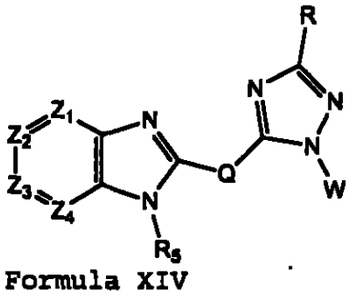
Formula XI



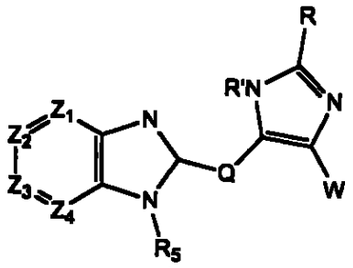
Formula XII



Formula XIII

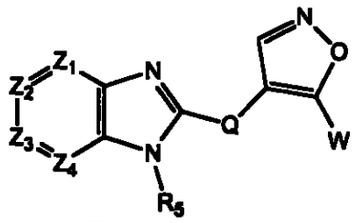


Formula XIV

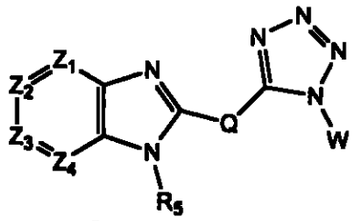


where R' is H or C_1-C_6alkyl

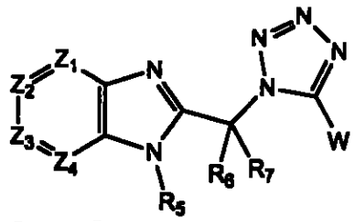
Formula XV



Formula XVI



Formula XVII



Formula XVIII

The variables Z_1, Z_2, Z_3, Z_4, R, Q, and W, which appear in Formulae X - XVIII carry the definition set forth for Formula I, or more preferably for Formula IA.

Compounds of Formulae X - XVIII wherein Z_1 is CR_1, Z_2 is CR_2, Z_3 is CR_3, and Z_4 is CR_4 are preferred. Compounds of Formulae X - XVIII wherein one and only one Z_1, Z_2, Z_3, Z_4 is nitrogen are also preferred. Compounds of Formulae X - XVIII wherein one and only one Z_1, Z_2, Z_3, Z_4 is nitrogen, and either Z_2 or Z_3 is nitrogen are particularly preferred.

Particularly embodied in the invention are compounds of Formulae X - XVIII wherein Q (when present) is $C(R_6)(R_7)$. Preferably R_6 and R_7 are hydrogen.

Other embodiments of the invention are directed to compounds of Formulae X - XVIII wherein W represents a 5-membered heteroaryl group, and the 5-membered heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0, 1, or 2. Preferred compounds of this class are compounds wherein wherein Z_1 is CR_1, Z_2 is CR_2, Z_3 is CR_3, and Z_4 is CR_4 or wherein one and only one Z_1, Z_2, Z_3, Z_4 is nitrogen are also preferred; compounds of this class wherein one and only one Z_1, Z_2, Z_3, Z_4 is nitrogen, and either Z_2 or Z_3 is nitrogen are particularly preferred.

This invention relates to benzimidazole and pyridylimidazole derivatives, preferred examples of which bind with high affinity to the benzodiazepine site of $GABA_A$ receptors, including human $GABA_A$ receptors. Preferred benzimidazole and pyridylimidazole derivatives that bind with high selectivity to the benzodiazepine site of $GABA_A$ receptors, including human $GABA_A$ receptors, are also included in this invention. Without wishing to be bound to any particular theory, it is believed that the interaction of the compounds of Formula I with the benzodiazepine site results in the pharmaceutical utility of these compounds.

The invention further comprises methods of treating patients in need of such treatment with an amount of a compound of the invention sufficient to alter the symptoms of a CNS disorder. Compounds of the inventions that act as agonists at $\alpha_2\beta_3\gamma_2$ and $\alpha_3\beta_3\gamma_2$ receptor subtypes are useful in treating anxiety disorders such as panic disorder, obsessive compulsive disorder and generalized anxiety disorder; stress disorders including post-traumatic stress, and acute stress disorders. Compounds of the inventions that act as agonists at $\alpha_2\beta_3\gamma_2$ and $\alpha_3\beta_3\beta_2$ receptor subtypes are also useful in treating depressive or bipolar disorders and in treating sleep disorders. Compounds of the invention that act as inverse agonists at the $\alpha_5\beta_3\gamma_2$ receptor subtype or $\alpha_1\beta_2\gamma_2$ and $\alpha_5\beta_3\gamma_2$ receptor subtypes are useful in treating cognitive disorders including those resulting from Down Syndrome, neurodegenerative diseases such as Alzheimer's disease and Parkinson's disease, and stroke related dementia. Compounds of the invention that act as inverse agonists at the $\alpha_5\beta_3\gamma_2$ are particularly useful in treating cognitive disorders through the enhancement of memory, and particularly short-term memory, in memory-impaired patients. Compounds of the invention that act as agonists at the $\alpha_1\beta_2\gamma_2$ receptor subtype are useful in treating convulsive disorders such as epilepsy. Compounds that act as antagonists at the benzodiazepine site are useful

in reversing the effect of benzodiazepine overdose and in treating drug and alcohol addiction.

The diseases and/ or disorders that can also be treated using compounds and compositions according to the invention include:

Depression, e.g. depression, atypical depression, bipolar disorder, depressed phase of bipolar disorder.

Anxiety, e.g. general anxiety disorder (GAD), agoraphobia, panic disorder +/- agoraphobia, social phobia, specific phobia, Post traumatic stress disorder, obsessive compulsive disorder (OCD), dysthymia, adjustment disorders with disturbance of mood and anxiety, separation anxiety disorder, anticipatory anxiety acute stress disorder, adjustment disorders, cyclothymia.

Sleep disorders, e.g. sleep disorders including primary insomnia, circadian rhythm sleep disorder, dyssomnia NOS, parasomnias, including nightmare disorder, sleep terror disorder, sleep disorders secondary to depression and/or anxiety or other mental disorders, substance induced sleep disorder.

Cognition Impairment, e.g. cognition impairment, memory impairment, short-term memory impairment, Alzheimer's disease, Parkinson's disease, mild cognitive impairment (MCI), age-related cognitive decline (ARCD), stroke, traumatic brain injury, AIDS associated dementia, and dementia associated with depression, anxiety or psychosis.

Attention Deficit Disorder, e.g. attention deficit disorder (ADD), and attention deficit and hyperactivity disorder (ADHD).

Speech disorders, e.g. stuttering, including motor tic, clonic stuttering, dysfluency, speech blockage, dysarthria, Tourete syndrome or logospasm.

Psychosis e.g. schizophrenia, hallucinatory disorders

The invention also provides pharmaceutical compositions comprising one or more compounds of the invention together with a pharmaceutically acceptable carrier or excipient, for

treating disorders responsive to $GABA_A$ receptor modulation, e.g., treatment of anxiety, depression, sleep disorders or cognitive impairment by $GABA_A$ receptor modulation. Pharmaceutical compositions include packaged pharmaceutical compositions comprising a container holding a therapeutically effective amount of at least one $GABA_A$ receptor modulator as described supra and instructions (e.g., labeling) indicating the contained $GABA_A$ receptor ligand is to be used for treating a disorder responsive to $GABA_A$ receptor modulation in the patient.

In a separate aspect, the invention provides a method of potentiating the actions of other CNS active compounds, which comprises administering an effective amount of a compound of the invention in combination with another CNS active compound. Such CNS active compounds include, but are not limited to the following: for anxiety, serotonin receptor (e.g. $5\text{-}HT_{1A}$) agonists and antagonists; for anxiety and depression, neurokinin receptor antagonists or corticotropin releasing factor receptor (CRF_1) antagonists; for sleep disorders, melatonin receptor agonists; and for neurodegenerative disorders, such as Alzheimer's dementia, nicotinic agonists, muscarinic agents, acetylcholinesterase inhibitors and dopamine receptor agonists. Particularly the invention provides a method of potentiating the antidepressant activity of selective serotonin reuptake inhibitors (SSRIs) by administering an effective amount of a GABA agonist compound of the invention in combination with an SSRI.

Combination administration can be carried out in a fashion analogous to that disclosed in Da-Rocha, et al., *J. Psychopharmacology* (1997) 11(3) 211-218; Smith, et al., *Am. J. Psychiatry* (1998) 155(10) 1339-45; or Le, et al., *Alcohol and Alcoholism* (1996) 31 Suppl. 127-132. Also see, the discussion of the use of the $GABA_A$ receptor ligand 3-(5-methylisoxazol-3-yl)-6-(1-methyl-1,2,3-triazol-4-yl) methyloxy-1,2,4-triazolo [3,4-a]phthalzine in combination with nicotinic agonists, muscarinic agonists, and acetylcholinesterase inhibitors, in

PCT International publications Nos. WO 99/47142, WO 99/47171, and WO 99/47131, respectively. Also see in this regard PCT International publication No. WO 99/37303 for its discussion of the use of a class of $GABA_A$ receptor ligands, 1,2,4-triazolo[4,3-b]pyridazines, in combination with SSRIs.

The present invention also pertains to methods of inhibiting the binding of benzodiazepine compounds, such as Ro15-1788, or GABA to the $GABA_A$ receptors which methods involve contacting a solution containing compound of the invention with cells expressing $GABA_A$ receptors, wherein the compound is present at a concentration sufficient to inhibit benzodiazepine binding or GABA binding to $GABA_A$ receptors *in vitro*. This method includes inhibiting the binding of benzodiazepine compounds to $GABA_A$ receptors *in vivo*, e.g., in a patient given an amount of a compound of Formula I that would be sufficient to inhibit the binding of benzodiazepine compounds or GABA to $GABA_A$ receptors *in vitro*. In one embodiment, such methods are useful in treating benzodiazepine drug overdose. The amount of a compound that would be sufficient to inhibit the binding of a benzodiazepine compound to the $GABA_A$ receptor may be readily determined via a $GABA_A$ receptor binding assay, such as the assay described in Example 53. The $GABA_A$ receptors used to determine *in vitro* binding may be obtained from a variety of sources, for example from preparations of rat cortex or from cells expressing cloned human $GABA_A$ receptors.

The present invention also pertains to methods for altering the signal-transducing activity, particularly the chloride ion conductance of $GABA_A$ receptors, said method comprising exposing cells expressing such receptors to an effective amount of a compound of the invention. This method includes altering the signal-transducing activity of $GABA_A$ receptors *in vivo*, e.g., in a patient given an amount of a compound of Formula I that would be sufficient to alter the signal-transducing activity of $GABA_A$ receptors *in vitro*. The amount of a compound that would be sufficient to alter the

signal-transducing activity of $GABA_A$ receptors may be determined via a $GABA_A$ receptor signal transduction assay, such as the assay described in Example 54. The cells expressing the GABA receptors in vivo may be, but are not limited to, neuronal cells or brain cells. Such cells may be contacted with compounds of the invention through contact with a body fluid containing the compound, for example through contact with cerebrospinal fluid. Alteration of the signal-transducing activity of $GABA_A$ receptors *in vitro* may be determined from a detectable change in the electrophysiology of cells expressing $GABA_A$ receptors, when such cells are contacted with a compound of the invention in the presence of GABA.

Intracellular recording or patch-clamp recording may be used to quantitate changes in electrophysiology of cells. A reproducible change in behavior of an animal given a compound of the invention may also be used to indicate that changes in the electrophysiology of the animal's cells expressing $GABA_A$ receptors has occurred.

The $GABA_A$ receptor ligands provided by this invention and labeled derivatives thereof are also useful as standards and reagents in determining the ability of a potential pharmaceutical to bind to the $GABA_A$ receptor. Radiolabeled derivatives the $GABA_A$ receptor ligands provided by this invention are also useful as radiotracers for positron emission tomography (PET) imaging or for single photon emission computerized tomography (SPECT).

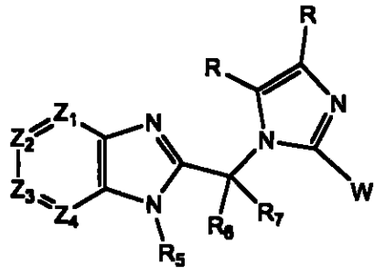
More particularly compounds of the invention may be used for demonstrating the presence of $GABA_A$ receptors in cell or tissue samples. This may be done by preparing a plurality of matched cell or tissue samples, at least one of which is prepared as an experimental sample and at least one of which is prepared as a control sample. The experimental sample is prepared by contacting (under conditions that permit binding of RO15-1788 to $GABA_A$ receptors within cell and tissue samples) at least one of the matched cell or tissue samples that has not previously been contacted with any compound or salt of the

invention with an experimental solution comprising the detectably-labeled preparation of the selected compound or salt at the first measured molar concentration. The control sample is prepared by in the same manner as the experimental sample and also contains an unlabelled preparation of the same compound or salt of the invention at a greater molar concentration.

The experimental and control samples are then washed to remove unbound detectably-labeled compound. The amount of remaining bound detectably-labeled compound is then measured and the amount of detectably-labeled compound in the experimental and control samples is compared. A comparison that indicates the detection of a greater amount of detectable label in the at least one washed experimental sample than is detected in any of control samples demonstrates the presence of $GABA_A$ receptors in that experimental sample.

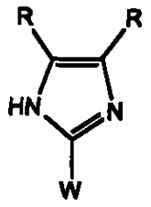
The detectably-labeled compound used in this procedure may be labeled with a radioactive label or a directly or indirectly luminescent label. When tissue sections are used in this procedure and the detectably-labeled compound is radiolabeled, the bound, labeled compound may be detected autoradiographically to generate an autoradiogram. The amount of detectable label in an experimental or control sample may be measured by viewing the autoradiograms and comparing the exposure density of the autoradiograms.

The invention provides a method for preparing a compound of Formula A



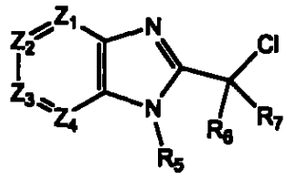
Formula A

which comprises reacting a compound of Formula B



Formula B

with a compound of Formula C



Formula C.

In Formula A and C, above Z_1, Z_2, Z_3, Z_4, and R_5 carry the definitions forth for Formula I, or more preferably Z_1, Z_2, Z_3, Z_4, and R_5 carry the definitions forth for Formula Ia.

R_6 and R_7 independently represent hydrogen, fluorine, or alkyl.

R in Formula B, above, is independently chosen at each occurrence from hydrogen, halogen, amino, C_1-C_6alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_1-C_6alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8cycloalkyl)(C_1-C_4)alkyl, halo(C_1-C_6)alkyl, haloalkoxy, carboxamido, and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which may be further substituted with one or more substituents independently selected from halogen, oxo, hydroxy, C_{1-4}alkyl, and
-O(C_{1-4}alkyl).

W in Formula B represents aryl or heteroaryl, wherein the aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as for Formula I or preferably as defined for Formula Ia and m is 0, 1, or 2. This process will be referred to as Process 1.

In particular embodiments the invention includes a process of preparing a compound of Formula A as described above wherein:

Z_1 is CR_1, Z_2 is CR_2, Z_3 is CR_3, and Z_4 is CR_4.

R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1, R_4, and one of R_2 and R_3 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl.

The other of R_2 and R_3 carries the definition set forth for Formula I, or preferably that set forth for Formula Ia, or in certain preferred embodiments this group is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, $(C_3-C_8$cycloalkyl$)$ C_1-C_4alkyl, $-NH(R_{10})$, $-N(R_{10})(R_{11})$, $(R_{10})NH(C_1-C_6)$alkyl, $(R_{10})(R_{11})N(C_1-C_6)$alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

In certain preferred embodiments R, R_1, and R_4 are all hydrogen.

R_5 represents (C_1-C_6)alkyl. Preferred definitions of R_5 include ethyl and n-propyl.

R_6 and R_7 are hydrogen.

W represents phenyl, furanyl, thienyl, thiazolyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, pyrimidinyl, benzimidazolyl, quinolinyl, isoquinolinyl each of which is optionally substituted with up to 4 R_{30} groups, where R_{30} is as defined in the above process. Preferred W groups include, 2-thiazolyl, 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

In other preferred embodiments the invention is directed to a process, as described as for Process 1, wherein Z_1 is CR_1; one and only one of Z_2 or Z_3 is nitrogen; Z_4 is CR_4.

R_1 and R_4 may carry the definition set forth in Process 1. Preferred definitions of R_1 and R_4 include hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano.

In certain preferred embodiments R, R_1, and R_4 are all hydrogen.

R_2 or R_3 (for whichever one of Z_2 or Z_3 is CR_2 or CR_3) is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl) C_1-C_4alkyl, -$NH(R_{10})$, -$N(R_{10})(R_{11})$, $(R_{10})NH(C_1$-$C_6)$alkyl, $(R_{10})(R_{11})N(C_1$-$C_6)$alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

R_5 represents (C_1-C_6)alkyl. Preferred definitions of R_5 include ethyl and n-propyl.

R_6 and R_7 are hydrogen.

W represents a 5-membered heteroaryl group, the 5-membered heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, -CO_2H, -$C(=O)OR_E$, -$C(=O)NHR_E$, -$C(=O)NR_ER_F$, -$C(O)R_E$, and -$S(O)_mR_E$, -OR_E, where R_{30} and R_E are as defined above and m is 0, 1, or 2; or

W represents a 6-membered aryl or heteroaryl group, wherein the 6-membered aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, -CO_2H, -$C(=O)OR_E$, -$C(=O)NHR_E$, -$C(=O)NR_ER_F$, -$C(O)R_E$, and -$S(O)_mR_E$, -OR_E, where R_{30} and R_E are as defined above and m is 0, 1, or 2.

When W represents a 5-membered heteroaryl group W is preferably thiazolyl, thienyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, or isoxazolyl, each of which is optionally substituted by one or more substituents

independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy. Unsubstituted 2-thiazolyl is a particularly preferred W group.

When W represents a 6-membered aryl or heteroaryl group, W is preferably phenyl, pyrimidinyl, pyridyl, pyrazinyl, or pyridizinyl, each of which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy. Particularly preferred W groups include 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

Chemical description and terminology

Formula I includes, but is not limited to the subformulae exemplified as Formula Ia, Formulae II-VI and Formulae X - XVIII and their pharmaceutically acceptable acid and base addition salts.

The phrase "pharmaceutically acceptable" is employed herein to refer to those compounds, materials, compositions, and/or dosage forms which are, within the scope of sound medical judgment, suitable for use in contact with the tissues of human beings or animals without excessive toxicity, irritation, allergic response, or other problem or complication, commensurate with a reasonable benefit/risk ratio. As used herein, "pharmaceutically acceptable salts" refer to derivatives of the disclosed compounds wherein the parent compound is modified by making acid or base salts thereof. Those skilled in the art will recognize a wide variety of non-toxic pharmaceutically acceptable addition salts.

Examples of pharmaceutically acceptable salts include, but are not limited to, mineral or organic acid salts of basic residues such as amines; alkali or organic salts of acidic residues such as carboxylic acids; and the like. The pharmaceutically acceptable salts include the conventional non-toxic salts or the quaternary ammonium salts of the parent compound formed, for example, from non-toxic inorganic or

organic acids. For example, such conventional non-toxic salts include those derived from inorganic acids such as hydrochloric, hydrobromic, hydroiodic, sulfuric, sulfamic, sulfinic, phosphoric, nitric and the like; and the salts prepared from organic acids such as alkanoic such as acetic, HOOC-(CH_2)n-ACOOH where n is 0-4, and the like, tartaric, maleic, propionic, succinic, glycolic, stearic, lactic, malic, tartaric, citric, ascorbic, pamoic, malefic, hydroxymaleic, phenylacetic, glutamic, benzoic, salicylic, sulfanilic, 2-acetoxybenzoic, fumaric, toluenesulfonic, methanesulfonic, ethane disulfonic, oxalic, isethionic, HOOC-(CH_2)n-COOH where n is 0-4, and the like. The pharmaceutically acceptable salts of the present invention can be synthesized from the parent compound which contains a basic or acidic moiety by conventional chemical methods. Generally, such salts can be prepared by reacting the free acid or base forms of these compounds with a stoichiometric amount of the appropriate base or acid in water or in an organic solvent, or in a mixture of the two; generally, nonaqueous media like ether, ethyl acetate, ethanol, isopropanol, or acetonitrile are preferred. Lists of suitable salts are found in *Remington's Pharmaceutical Sciences*, 17th ed., Mack Publishing Company, Easton, PA, p. 1418 (1985).

The invention includes hydrates of compounds of Formula I.

The invention includes all crystalline forms of the compounds of Formula I. Certain crystalline forms may be preferred.

The present invention also encompasses the acylated prodrugs of the compounds of Formula I. Those skilled in the art will recognize various synthetic methodologies that may be employed to prepare non-toxic pharmaceutically acceptable addition salts and acylated prodrugs of the compounds encompassed by Formula I. The invention further encompasses all enantiomers and diastereomers of the disclosed compounds. Those of ordinary skill in the art will readily recognize

methods by which mixtures of enantiomers and diasteromers may be resolved. The definition of Formula I as used in herein include possible isomers, such as tautomers and rotamers.

The compounds herein described may have one or more asymmetric centers or planes. Compounds of the present invention containing an asymmetrically substituted atom may be isolated in optically active or racemic forms. It is well known in the art how to prepare optically active forms, such as by resolution of racemic forms (racemates), by asymmetric synthesis, or by synthesis from optically active starting materials. Resolution of the racemates can be accomplished, for example, by conventional methods such as crystallization in the presence of a resolving agent, or chromatography, using, for example a chiral HPLC column. Many geometric isomers of olefins, C=N double bonds, and the like can also be present in the compounds described herein, and all such stable isomers are contemplated in the present invention. *Cis* and *trans* geometric isomers of the compounds of the present invention are described and may be isolated as a mixture of isomers or as separated isomeric forms. All chiral (enantiomeric and diastereomeric), and racemic forms, as well as all geometric isomeric forms of a structure are intended, unless the specific stereochemistry or isomeric form is specifically indicated.

When any variable occurs more than one time in any constituent or formula for a compound, its definition at each occurrence is independent of its definition at every other occurrence. Thus, for example, if a group is shown to be substituted with 0 to 3 R^*, (where R^* indicates any variable group such as R) then said group may optionally be substituted with up to three R^* groups and R^* at each occurrence is selected independently from the definition of R^*. Also, combinations of substituents and/or variables are permissible only if such combinations result in stable compounds.

When any group, such as an aryl group, heteroaryl group, carbocyclic group, heterocyclic group, or monocylic or

bicyclic ring is said to be "optionally substituted by one or more substituents" that group may contain 0 or from 1 to the maximum number of substituents allowable without exceeding the valency of the atoms of the substituted group. Preferably such groups are substituted with 0 or from 1 to 4 substituents, and more preferably such groups are substituted with 0 or from 1 to 3 substituents. Preferably such groups are not substituted with more that one oxo substituent.

A dash "-" that is not between two letters or symbols is used to indicate a point of attachement for a substituent. For example $-C(=O)NH_2$ is attached through the carbon atom.

As used herein, "alkyl" is intended to include both branched and straight-chain aliphatic hydrocarbon groups, having the specified number of carbon atoms. Alkyl groups of 2 or more carbon atoms may contain double or triple bonds. Examples of alkyl include, but are not limited to, methyl, ethyl, n-propyl, i-propyl, n-butyl, s-butyl, t-butyl, n-pentyl, and s-pentyl. Preferred alkyl groups are C_1-C_6 alkyl groups. "C_1-C_6 alkyl" indicates alkyl groups having from 1 to about 6 carbon atoms.

As used herein, "alkoxy" represents an alkyl group as defined above with the indicated number of carbon atoms attached through an oxygen bridge. Examples of alkoxy include, but are not limited to, methoxy, ethoxy, n-propoxy, i-propoxy, n-butoxy, 2-butoxy, t-butoxy, n-pentoxy, 2-pentoxy, 3-pentoxy, isopentoxy, neopentoxy, n-hexoxy, 2-hexoxy, 3-hexoxy, and 3-methylpentoxy. "C_1-C_6 alkoxy" indicates alkoxy groups having from 1 to about 6 carbon atoms.

"Alkenyl" is intended to include hydrocarbon chains of either a straight or branched configuration comprising one or more unsaturated carbon-carbon bonds which may occur in any stable point along the chain, such as ethenyl and propenyl. Alkenyl groups typically will have 2 to about 8 carbon atoms, more typically 2 to about 6 carbon atoms.

"Alkynyl" is intended to include hydrocarbon chains of either a straight or branched configuration comprising one or

more triple carbon-carbon bonds which may occur in any stable point along the chain, such as ethynyl and propynyl. Alkynyl groups typically will have 2 to about 8 carbon atoms, more typically 2 to about 6 carbon atoms.

"Aryl" refers to aromatic groups having 1 or more rings, wherein the members of the aromatic ring or rings are carbon. When indicated such groups may be substituted. Such groups include optionally substituted phenyl and optionally substituted naphthyl.

The term "Cycloalkyl" is intended to include saturated ring groups, having the specified number of carbon atoms, such as cyclopropyl, cyclobutyl, cyclopentyl, or cyclohexyl. Cycloalkyl groups typically will have 3 to about 8 ring members.

In the term "(cycloalkyl)alkyl", Cycloalkyl and alkyl are as defined above and the point of attachment is on the alkyl group. This term encompasses, but is not limited to, cyclopropylmethyl, cyclohexylmethyl, cyclohexylmethyl.

As used herein, "haloalkyl" is intended to include both branched and straight-chain saturated aliphatic hydrocarbon groups having the specified number of carbon atoms, substituted with 1 or more halogen atoms (for example $-C_vF_w$ where v = 1 to 3 and w =1 to (2v+1). Examples of haloalkyl include, but are not limited to, trifluoromethyl, difluoromethyl, trichloromethyl, pentafluoroethyl, and pentachloroethyl.

As used herein, "haloalkoxy" indicates a haloalkyl group as defined above with the indicated number of carbon atoms attached through an oxygen bridge. Examples of haloalkoxy groups include, but are not limited to, trifluoromethoxy and trichloromethoxy.

As used herein the term "heteroaryl" is intended to mean a stable 5-to 7-membered monocyclic or 7-to 10-membered bicyclic heterocyclic aromatic ring which consists of carbon atoms and from 1 to 4 heteroatoms independently selected from the group consisting of N, O and S. It is preferred that the

total number of S and O atoms in the heteroaryl group is not more than 1.

Examples of heteroaryl groups include, but are not limited to, pyrimidinyl, pyridyl, quinolinyl, benzothienyl, indolyl, pryidazinyl, pyazinyl, isoindolyl, isoquinolyl, quinazolinyl, quinoxalinyl, phthalazinyl, imidazolyl, isoxazolyl, pyrazolyl, oxazolyl, thienyl, thiazolyl, indolizinyl, indazolyl, benzothiazolyl, benzimidazolyl, benzofuranyl, benzoisoxolyl, dihydro-benzodioxinyl, furanyl, pyrrolyl, oxadiazolyl, thiadiazolyl, triazolyl, tetrazolyl, oxazolopyridinyl, imidazopyridinyl, isothiazolyl, naphthyridinyl, cinnolinyl, carbazolyl, beta-carbolinyl, isochromanyl, chromanonyl, chromanyl, tetrahydroisoquinolinyl, isoindolinyl, isobenzotetrahydrofuranyl, isobenzotetrahydrothienyl, isobenzothienyl, benzoxazolyl, pyridopyridinyl, benzotetrahydrofuranyl, benzotetrahydrothienyl, purinyl, benzodioxolyl, triazinyl, phenoxazinyl, phenothiazinyl, pteridinyl, benzothiazolyl, imidazopyridinyl, imidazothiazolyl, dihydrobenzisoxazinyl, benzisoxazinyl, benzoxazinyl, dihydrobenzisothiazinyl, benzopyranyl, benzothiopyranyl, coumarinyl, isocoumarinyl, chromanyl, tetrahydroquinolinyl, dihydroquinolinyl, dihydroquinolinonyl, dihydroisoquinolinonyl, dihydrocoumarinyl, dihydroisocoumarinyl, isoindolinonyl, benzodioxanyl, benzoxazolinonyl, pyrrolyl N-oxide, pyrimidinyl N-oxide, pyridazinyl N-oxide, pyrazinyl N-oxide, quinolinyl N-oxide, indolyl N-oxide, indolinyl N-oxide, isoquinolyl N-oxide, quinazolinyl N-oxide, quinoxalinyl N-oxide, phthalazinyl N-oxide, imidazolyl N-oxide, isoxazolyl N-oxide, oxazolyl N-oxide, thiazolyl N-oxide, indolizinyl N-oxide, indazolyl N-oxide, benzothiazolyl N-oxide, benzimidazolyl N-oxide, pyrrolyl N-oxide, oxadiazolyl N-oxide, thiadiazolyl N-oxide, triazolyl N-oxide, tetrazolyl N-oxide, benzothiopyranyl S-oxide, and benzothiopyranyl S,S-dioxide.

Preferred heteroaryl groups include imidazolyl, pyrrolyl, pyridyl, thiazolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, pyrimidinyl, and oxazolyl.

The term "heterocycloalkyl" is intended to include saturated ring groups having at least 1 heteroatom. Heterocycloalkyl groups typically include 3 to 8 ring atoms, preferably 5 to 7 ring atoms. Heterocycloalkyl groups typically have from 1 to 3 heteroatoms selected from N, S, and O with remaining ring atoms being carbon. Preferably not more than one S atom and one O atom is present in a heterocycloalkyl group. Preferred heterocycloalkyl groups include morpholinyl, piperidinyl, piperazinyl, thiomorpholinyl, and pyrrolidinyl.

The phrase "monocyclic or bicyclic ring" refers to saturated, partially unsaturated, or aromatic rings or ring systems, which optionally contain from 1 to 4 heteroatoms independently chosen from N, S, and O with remaining ring members being carbon. Preferred monocyclic and bicyclic rings are saturated and partially unsaturated rings or ring systems.

The term "oxo" indicates a carbonyl group. When an oxo group appears as a substituent the allowed valence of the substituted position is not exceeded.

Pharmaceutical Compositions

The compounds of general Formulas I may be administered orally, topically, parenterally, by inhalation or spray or rectally in dosage unit formulations containing conventional non-toxic pharmaceutically acceptable carriers, adjuvants and vehicles. Oral administration in the form of a pill, capsule, elixir, syrup, lozenge, troche, or the like is particularly preferred. The term parenteral as used herein includes subcutaneous injections, intradermal, intravascular (e.g., intravenous), intramuscular, spinal, intrathecal injection or like injection or infusion techniques. In addition, there is provided a pharmaceutical formulation comprising a compound of general Formula I and a pharmaceutically acceptable carrier.

One or more compounds of general Formula I may be present in association with one or more non-toxic pharmaceutically acceptable carriers and/or diluents and/or adjuvants and if desired other active ingredients. The pharmaceutical compositions containing compounds of general Formula I may be in a form suitable for oral use, for example, as tablets, troches, lozenges, aqueous or oily suspensions, dispersible powders or granules, emulsion, hard or soft capsules, or syrups or elixirs.

Compositions intended for oral use may be prepared according to any method known to the art for the manufacture of pharmaceutical compositions and such compositions may contain one or more agents selected from the group consisting of sweetening agents, flavoring agents, coloring agents and preserving agents in order to provide pharmaceutically elegant and palatable preparations. Tablets contain the active ingredient in admixture with non-toxic pharmaceutically acceptable excipients that are suitable for the manufacture of tablets. These excipients may be for example, inert diluents, such as calcium carbonate, sodium carbonate, lactose, calcium phosphate or sodium phosphate; granulating and disintegrating agents, for example, corn starch, or alginic acid; binding agents, for example starch, gelatin or acacia, and lubricating agents, for example magnesium stearate, stearic acid or talc. The tablets may be uncoated or they may be coated by known techniques to delay disintegration and absorption in the gastrointestinal tract and thereby provide a sustained action over a longer period. For example, a time delay material such as glyceryl monosterate or glyceryl distearate may be employed.

Formulations for oral use may also be presented as hard gelatin capsules wherein the active ingredient is mixed with an inert solid diluent, for example, calcium carbonate, calcium phosphate or kaolin, or as soft gelatin capsules wherein the active ingredient is mixed with water or an oil medium, for example peanut oil, liquid paraffin or olive oil.

Aqueous suspensions contain the active materials in admixture with excipients suitable for the manufacture of aqueous suspensions. Such excipients are suspending agents, for example sodium carboxymethylcellulose, methylcellulose, hydropropylmethylcellulose, sodium alginate, polyvinylpyrrolidone, gum tragacanth and gum acacia; dispersing or wetting agents may be a naturally-occurring phosphatide, for example, lecithin, or condensation products of an alkylene oxide with fatty acids, for example polyoxyethylene stearate, or condensation products of ethylene oxide with long chain aliphatic alcohols, for example heptadecaethyleneoxycetanol, or condensation products of ethylene oxide with partial esters derived from fatty acids and a hexitol such as polyoxyethylene sorbitol monooleate, or condensation products of ethylene oxide with partial esters derived from fatty acids and hexitol anhydrides, for example polyethylene sorbitan monooleate. The aqueous suspensions may also contain one or more preservatives, for example ethyl, or n-propyl p-hydroxybenzoate, one or more coloring agents, one or more flavoring agents, and one or more sweetening agents, such as sucrose or saccharin.

Oily suspensions may be formulated by suspending the active ingredients in a vegetable oil, for example arachis oil, olive oil, sesame oil or coconut oil, or in a mineral oil such as liquid paraffin. The oily suspensions may contain a thickening agent, for example beeswax, hard paraffin or cetyl alcohol. Sweetening agents such as those set forth above, and flavoring agents may be added to provide palatable oral preparations. These compositions may be preserved by the addition of an anti-oxidant such as ascorbic acid.

Dispersible powders and granules suitable for preparation of an aqueous suspension by the addition of water provide the active ingredient in admixture with a dispersing or wetting agent, suspending agent and one or more preservatives. Suitable dispersing or wetting agents and suspending agents are exemplified by those already mentioned above. Additional

excipients, for example sweetening, flavoring and coloring agents, may also be present.

Pharmaceutical compositions of the invention may also be in the form of oil-in-water emulsions. The oily phase may be a vegetable oil, for example olive oil or arachis oil, or a mineral oil, for example liquid paraffin or mixtures of these. Suitable emulsifying agents may be naturally-occurring gums, for example gum acacia or gum tragacanth, naturally-occurring phosphatides, for example soy bean, lecithin, and esters or partial esters derived from fatty acids and hexitol, anhydrides, for example sorbitan monoleate, and condensation products of the said partial esters with ethylene oxide, for example polyoxyethylene sorbitan monoleate. The emulsions may also contain sweetening and flavoring agents.

Syrups and elixirs may be formulated with sweetening agents, for example glycerol, propylene glycol, sorbitol or sucrose. Such formulations may also contain a demulcent, a preservative and flavoring and coloring agents. The pharmaceutical compositions may be in the form of a sterile injectable aqueous or oleaginous suspension. This suspension may be formulated according to the known art using those suitable dispersing or wetting agents and suspending agents which have been mentioned above. The sterile injectable preparation may also be sterile injectable solution or suspension in a non-toxic parentally acceptable diluent or solvent, for example as a solution in 1,3-butanediol. Among the acceptable vehicles and solvents that may be employed are water, Ringer's solution and isotonic sodium chloride solution. In addition, sterile, fixed oils are conventionally employed as a solvent or suspending medium. For this purpose any bland fixed oil may be employed including synthetic mono- or diglycerides. In addition, fatty acids such as oleic acid find use in the preparation of injectables.

The compounds of general Formulas I may also be administered in the form of suppositories, e.g., for rectal administration of the drug. These compositions can be

prepared by mixing the drug with a suitable non-irritating excipient that is solid at ordinary temperatures but liquid at the rectal temperature and will therefore melt in the rectum to release the drug. Such materials are cocoa butter and polyethylene glycols.

Compounds of general Formulas I may be administered parenterally in a sterile medium. The drug, depending on the vehicle and concentration used, can either be suspended or dissolved in the vehicle. Advantageously, adjuvants such as local anesthetics, preservatives and buffering agents can be dissolved in the vehicle.

For administration to non-human animals, the composition may also be added to the animal feed or drinking water. It will be convenient to formulate these animal feed and drinking water compositions so that the animal takes in an appropriate quantity of the composition along with its diet. It will also be convenient to present the composition as a premix for addition to the feed or drinking water.

Dosage levels of the order of from about 0.1 mg to about 140 mg per kilogram of body weight per day are useful in the treatment of the above-indicated conditions (about 0.5 mg to about 7 g per patient per day). The amount of active ingredient that may be combined with the carrier materials to produce a single dosage form will vary depending upon the host treated and the particular mode of administration. Dosage unit forms will generally contain between from about 1 mg to about 500 mg of an active ingredient.

Frequency of dosage may also vary depending on the compound used and the particular disease treated. However, for treatment of most disorders, a dosage regimen of 4 times daily or less is preferred. For the treatment of anxiety, depression, or cognitive impairment a dosage regimen of 1 or 2 times daily is particularly preferred. For the treatment of sleep disorders a single dose that rapidly reaches effective concentrations is desirable.

It will be understood, however, that the specific dose level for any particular patient will depend upon a variety of factors including the activity of the specific compound employed, the age, body weight, general health, sex, diet, time of administration, route of administration, and rate of excretion, drug combination and the severity of the particular disease undergoing therapy.

Preferred compounds of the invention will have certain pharmacological properties. Such properties include, but are not limited to high solubility (preferably 500 ng/ ml or more) in aqueous solutions, oral bioavailability, low toxicity, low serum protein binding, lack of clinically relevant EKG effects, and desirable *in vitro* and *in vivo* half-lifes. Penetration of the blood brain barrier for compounds used to treat CNS disorders is necessary, while low brain levels of compounds used to treat periphereal disorders are often preferred.

Assays may be used to predict these desirable pharmacological properties. Assays used to predict bioavailability include transport across human intestinal cell monolayers, including Caco-2 cell monolayers. Toxicity to cultured hepatocyctes may be used to predict compound toxicity. Penetration of the blood brain barrier of a compound in humans may be predicted from the brain levels of the compound in laboratory animals given the compound intravenously.

Serum protein binding may be predicted from albumin binding assays. Such assays are described in a review by Oravcová, et al. (Journal of Chromatography B (1996) volume 677, pages 1-27).

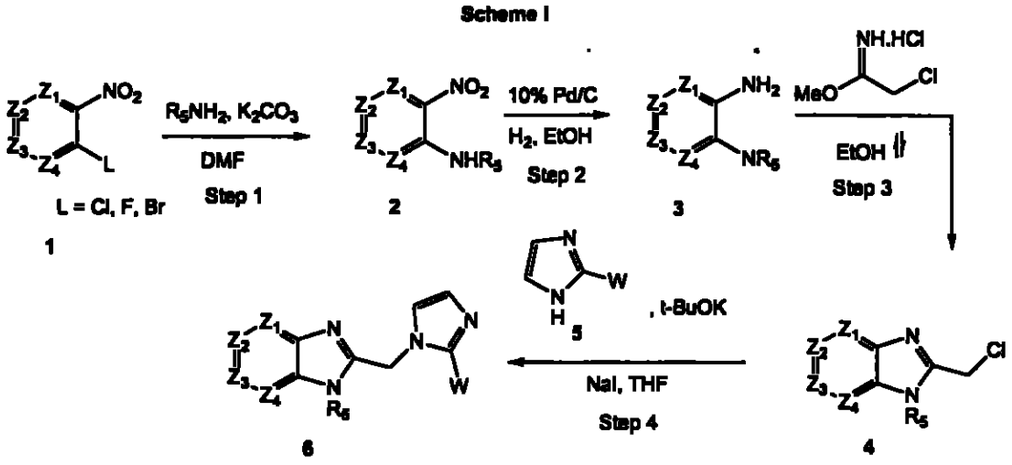
Compound half-life is inversely proportional to the frequency of dosage of a compound. *In vitro* half-lifes of compounds may be predicted from assays of microsomal half-life as described by Kuhnz and Gieschen (Drug Metabolism and Disposition, (1998) volume 26, pages 1120-1127).

EXAMPLES

Preparation of Compounds

Representative procedures suitable for the preparation of compounds of Formula I are outlined in Schemes I-X, which are not to be construed as limiting the invention in scope or spirit to the specific reagents and conditions shown in them. Those having skill in the art will recognize that the reagents and conditions may be varied and additional steps employed to produce compounds encompassed by the present invention. In some cases, protection of reactive functionalities may be necessary to achieve the desired transformations. In general, such need for protecting groups, as well as the conditions necessary to attach and remove such groups, will be apparent to those skilled in the art of organic synthesis.

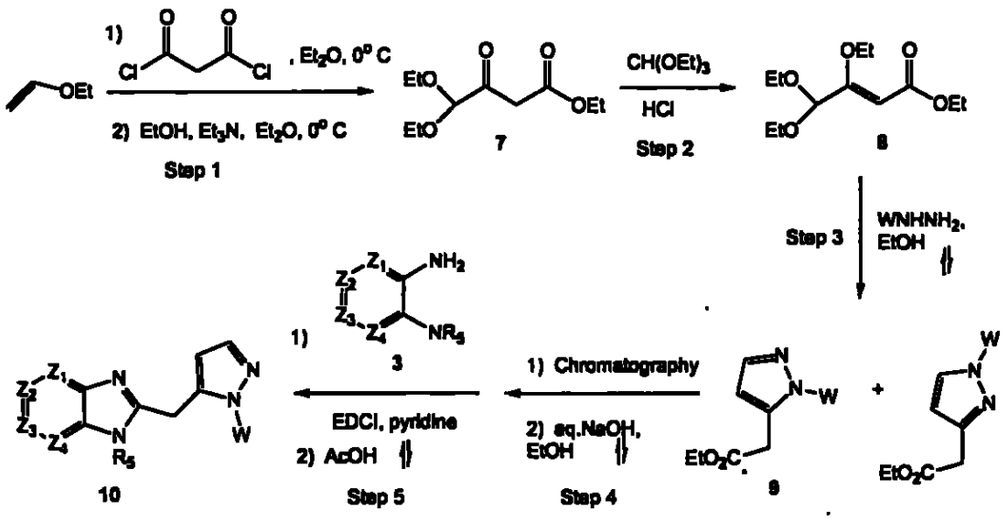
Scheme I



Scheme I illustrates a route to selected compounds of Formula 6 via coupling of chloromethyl compounds 4 and aryl imidazoles 5. In Step 1, aryl and heteroaryl halides of formula 1 are reacted with appropriate amines in the presence of base to obtain amino adducts of formula 2. In Step 2, reduction of the nitro group in compounds of formula 2 yields diamines 3. In Step 3, diamines of formula 3 are reacted with 2-chloro-acetimidic acid methyl ester hydrochloride or a similar electrophile such as 2-chloro-1,1,1-trimethoxy-ethane

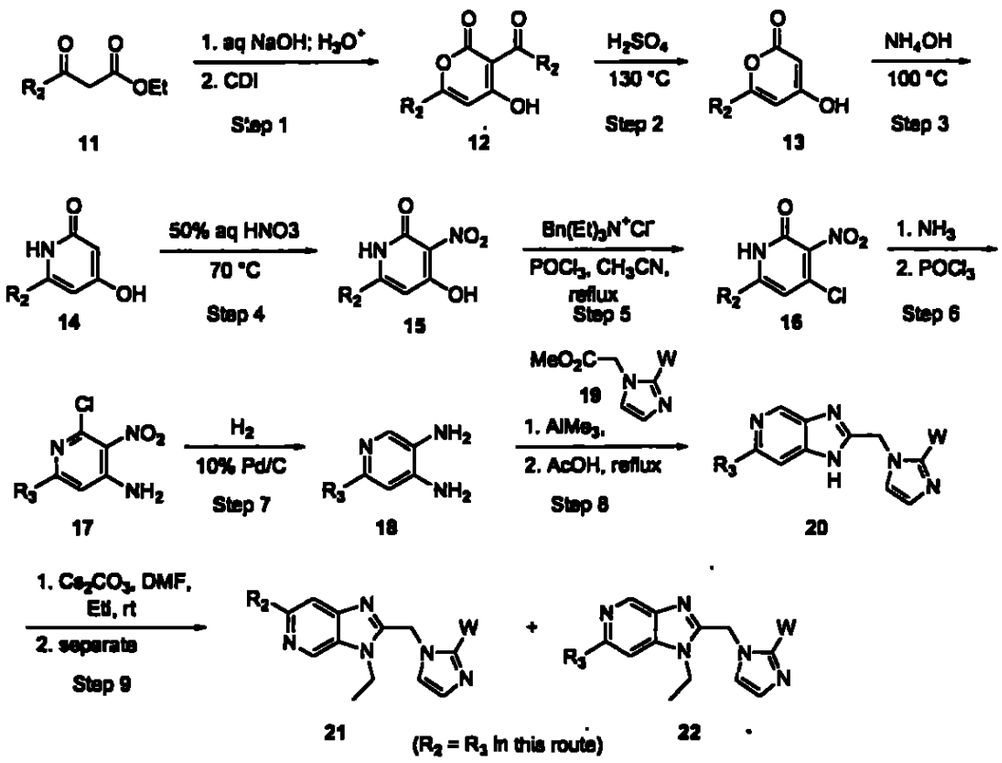
or chloroacetic acid anhydride. In Step 4, chloromethyl compounds of formula 4 are reacted with aryl and heteroaryl imidazoles of formula 6 in the presence of base and solvent to obtain compounds of formula 6. Depending on the particular nature of 6, a stronger or weaker base may be selected to facilitate the reaction in Step 4.

Scheme II



Scheme II illustrates the synthesis of compounds of formula 10 from diamines 3. In Step 1, reaction of malonyl dichloride with ethyl vinyl ether provides 7. In Step 2, treatment of 7 with triethyl orthoformate in the presence of acid yields 8. Compound 8 is reacted in Step 3 with a variety of aryl and heteroaryl hydrazines to obtain compounds of formula 9 as a mixture with the undesired regioisomer. As illustrated in Steps 4 and 5, compounds of formula 9 can be hydrolyzed to the corresponding acids and coupled with compounds of formula 3 to obtain, following cyclization in refluxing acetic acid, compounds of formula 10. As described in subsequent schemes and examples, compounds of formula 9 may also be directly coupled to compounds of formula 3 in the presence of trimethylaluminum. Depending on the particular example and reaction conditions selected, cyclization may occur without need for heating in acetic acid as described in Step 5.

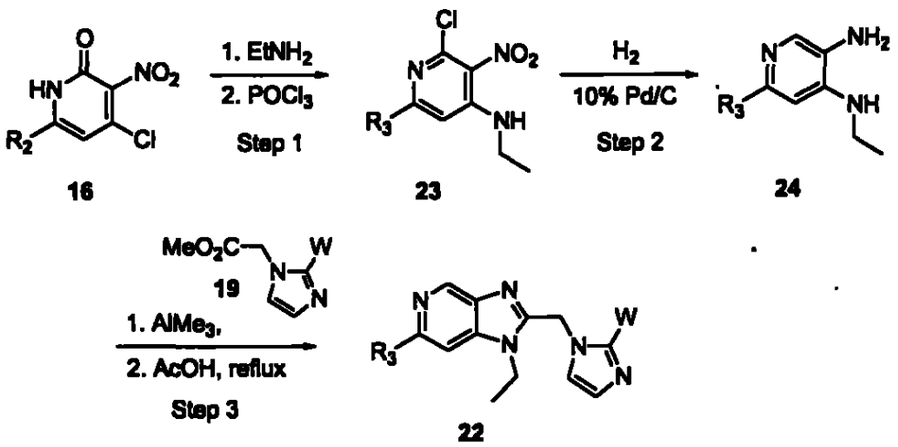
Scheme III



Scheme III illustrates a method for preparing compounds of formula 21 and 22. Step 1 encompasses hydrolysis of compounds of formula 11 to the corresponding acids followed by dimerization in the presence of a suitable coupling reagent such as 1,1'-carbonyldiimidazole to form compounds of formula 12. In Step 2, deacylation of compounds of formula 12 is accomplished by heating with concentrated sulfuric acid to obtain compounds of formula 13. Heating of compounds of formula 13 with ammonium hydroxide in Step 3 results in formation of compounds of formula 14. Nitration of compounds of formula 14 in Step 4 is affected using nitric acid to obtain compounds of formula 15. Compounds of formula 15 are converted to the corresponding chlorides 16 in Step 5 by heating with phosphorous oxychloride. In Step 6, chlorides 16 are reacted with ammonia followed by heating with phosphorous oxychloride to obtain 2-chloropyridines 17 which are subsequently reduced to diamines 18 in Step 7. In Step 8,

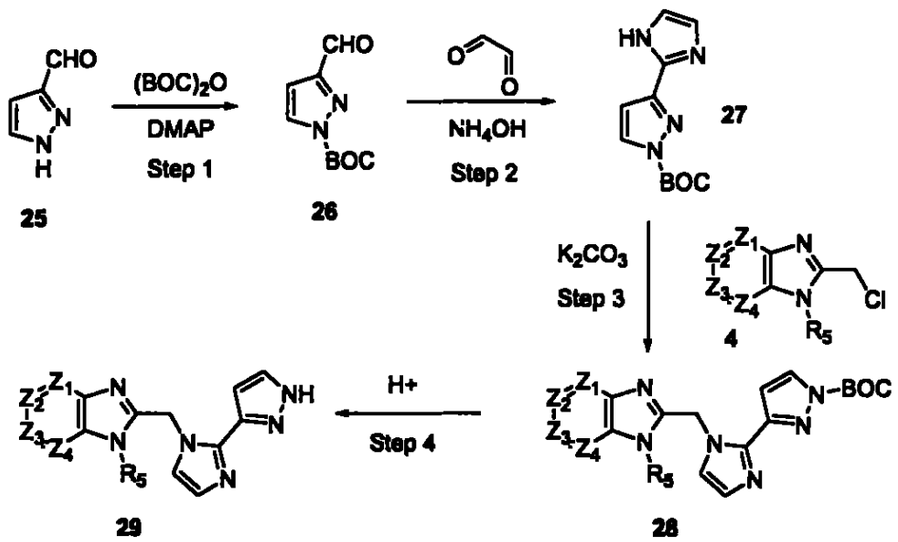
diamines 18 are reacted with esters of formula 19 in the presence of trimethylaluminum followed by heating in acetic acid to obtain compounds of formula 20. Step 9 illustrates alkylation of compounds of formula 20 with ethyl iodide in the presence of base to obtain a mixture of compounds of formula 21 and 22. Those skilled in the art will realize that alternate alkylating agents may be employed to obtain similar compounds bearing different R_5 groups. When R_3 is hydrogen in 20, competing alkylation of the adjacent pyridyl nitrogen may be observed.

Scheme IV



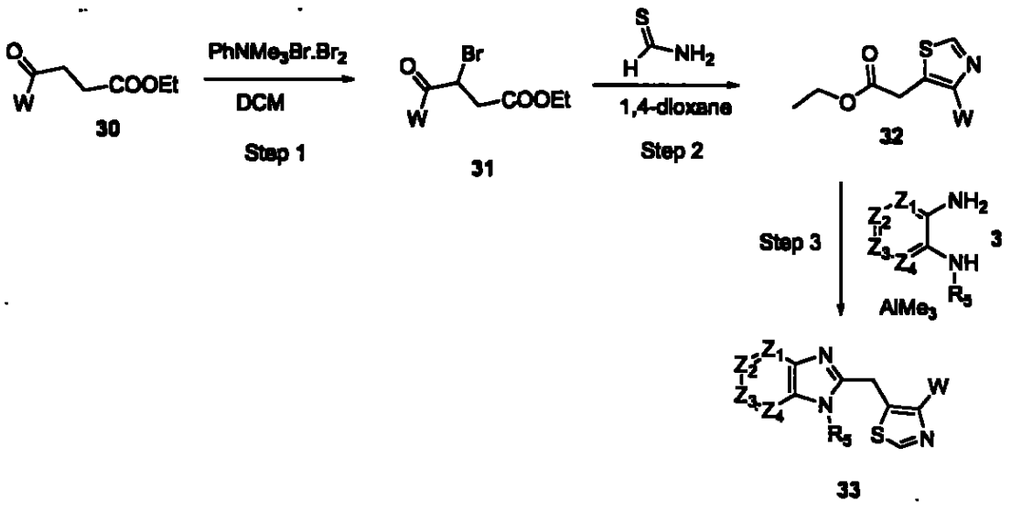
Scheme IV illustrates a variation of Scheme III for specifically preparing compounds of formula 22. In Step 1, compounds of formula 16 are reacted with ethyl amine to form the amino adducts which are subsequently converted to 2-chloropyridines 23 by reaction with phosphorous oxychloride. Those skilled in the art will realize that numerous other suitable amines of formula R_5NH_2 may be employed in Step 1 to yield other variants of Formula I. In Steps 2 and 3, hydrogenation of compounds of formula 23 to diamines of formula 24 followed by trimethylaluminum-facilitated coupling and cyclization in acetic acid provides compounds of formula 22.

Scheme V



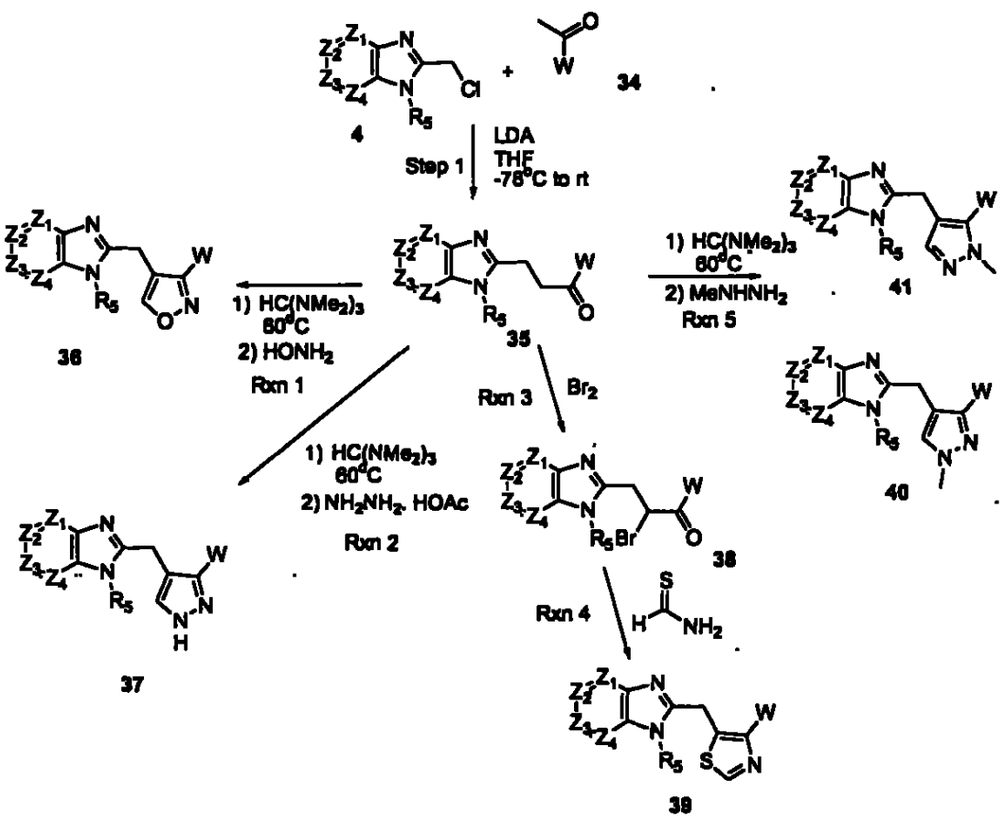
Scheme V illustrates a route employing a protecting group strategy for preparing pyrazole compounds of formula **29**. In Step 1, pyrazole **25** is reacted with di-tert-butyldicarbonate in the presence of 4-dimethylaminopyridine to obtain **26**. Reaction with glyoxal and ammonium hydroxide provides **27**. Reaction of **27** with chloromethyl compounds of formula **4** in the presence of base provides compounds of formula **28**. Deprotection of compounds of formula **28** with acid in Step 4 provides pyrazoles of formula **29**.

Scheme VI



Scheme VI provides a route for preparing thiazole compounds of formula 33. Step 1 involves bromination of ketoesters of formula 30 to form α-bromoketones of formula 31. In Step 2, compounds of formula 31 are reacted with thioformamide to obtain thiazoles of formula 32. Condensation of 32 with 3 in Step 3 in the presence of trimethylaluminum provides compounds of formula 33. Depending on the particular reactants and conditions employed in Step 3, the product mixture may require heating in a suitable solvent such as acetic acid to enhance formation of 33.

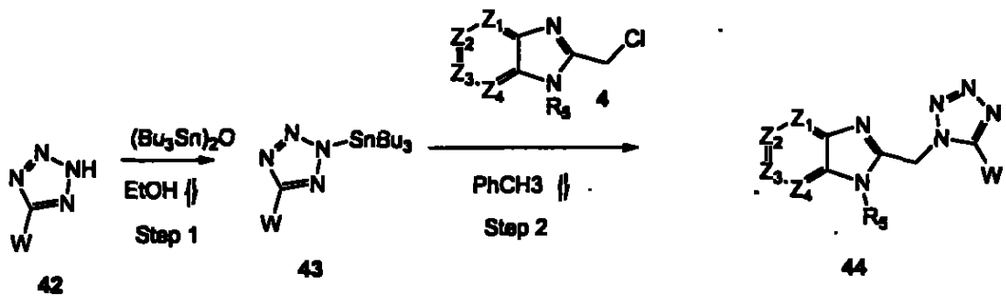
Scheme VII



Scheme VII provides routes to several heterocyclic systems via common intermediate 35. In Step 1, compounds of formula 34 are reacted with compounds of formula 4 at low temperature in the presence of a suitable base such as lithium diisopropylamide to form compounds of formula 35. Rxn 1 illustrates conversion of ketones of formula 35 to isoxazole

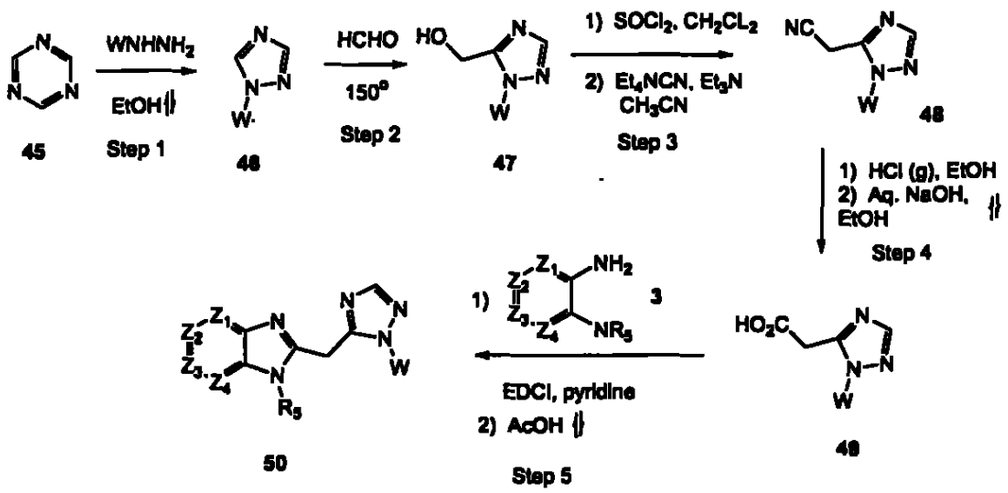
derivatives of formula 36 by reaction of compounds of formula 35 with tris(dimethylamino)methane followed by treatement with hydroxylamine. In Rxn 2, compounds of formula 35 are reacted with tris(dimethylamino)methane followed by treatment with hydrazine acetate to obtain pyrazoles 37. In Rxn 3 and 4, compounds of formula 35 are brominated to form α-bromoketones 38 that are subsequently reacted with thioformamide to obtain thiazoles of formula 39. Rxn 5 illustrates the synthesis of pyrazoles of formulas 40 and 41 by reaction of compounds of formula 35 with tris(dimethylamino)methane followed by treatment with methyl hydrazine.

Scheme VIII



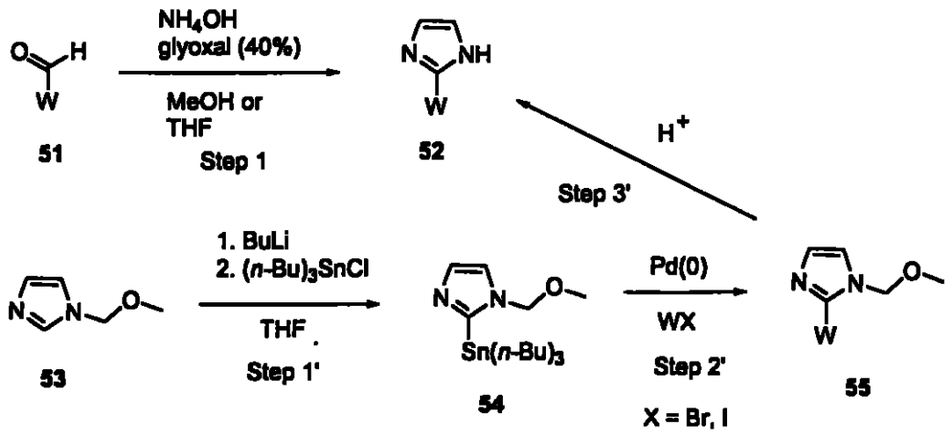
Scheme VIII provides a route for preparation of tetrazoles of formula 44. In Step 1, aryl and heteroaryl tetrazoles of formula 42 are heated with bis(tributyltin) oxide to form stananes of formula 43. In Step 2, heating compounds of formula 43 with compounds of formula 4 in a suitable solvent such as toluene gives compounds of formula 44.

Scheme IX



Scheme IX illustrates the synthesis of triazoles of formula 50. In Step 1, aryl and heterdaryl hydrazines are reacted with 1,3,5-triazine 45 to obtain triazoles of formula 46. In Step 2, heating compounds of formula 46 with formaldehyde provides alcohols of formula 47. In Step 3, alcohols of formula 47 are converted to the corresponding chlorides by treatment with thionyl chloride and the chlorides are subsequently converted to nitriles 48 by the action of tetraethyl ammonium cyanide. Cyanides 48 are hydrolyzed in Step 4 to carboxylic acids 49. In Step 5, carboxylic acids of formula 49 are coupled with diamines 3 in the presence of EDCI [1-(3-dimethylaminopropryl)-3-ethylcarbodiimide hydrochloride] or other suitable coupling reagents followed by heating in acetic acid to complete cyclization of the intermediate amino amides to compounds of formula 50.

Scheme X



Scheme X illustrates two routes for the synthesis of imidazoles of formula 52 which are intermediates in the synthesis of selected compounds of Formula I. In Step 1, aryl and heteroaryl aldehydes are treated with glyoxal and ammonium hydroxide to form imidazoles of formula 52. In Step 1', imidazole 53 is treated with butyl lithium followed by tri-*n*-butyltin chloride to obtain compounds of formula 54 which must be handled with care to avoid decomposition. In Step 2', compounds of formula 54 are utilized in palladium cross-coupling reactions with aryl and heteroaryl halides to obtain compounds of formula 55. Subsequent treatment of compounds of formula 55 with acid in Step 3' provides compounds of formula 52.

The invention is illustrated further by the following examples, which are not to be construed as limiting the invention in scope or spirit to the specific procedures described in them. Additional compounds encompassed by this invention beyond the accompanying Examples may be prepared using methods known to those skilled in the art of chemical synthesis. Those having skill in the art will recognize that the starting materials may be varied and additional steps employed to produce compounds encompassed by the present inventions, as demonstrated by the following examples. In

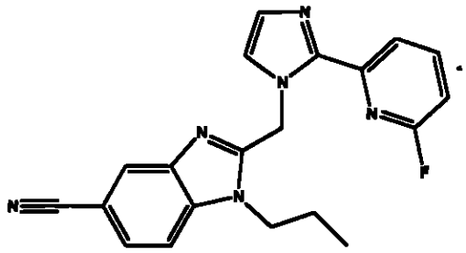
some cases, protection of reactive functionalities may be necessary to achieve some the desired transformations. In general, such need for protecting groups, as well as the conditions necessary to attach and remove such groups, will be apparent to those skilled in the art of organic synthesis.

Preparation of starting materials and intermediates

The starting materials and various intermediates may be obtained from commercial sources, prepared from commercially available organic compounds, or prepared using known synthetic methods. Representative examples of methods suitable for preparing intermediates of the invention are set forth below.

Example 1

Synthesis of 1-Propyl-2-{[2-(2-fluoropyrid-6-yl)-1H-imidazol-1-yl]methyl}-5-cyano-1H-benzimidazole



1. Preparation of 4-n-Propylamino-3-nitrobenzonitrile

To a stirring suspension of 4-chloro-3-nitrobenzonitrile (7.30g, 40 mmol) in isopropanol (30 mL) is added n-propylamine (9.87 mL, 120 mmol). The mixture is stirred at room temperature for 5 h, and the solid is then collected by filtration to give 4-n-propylamino-3-nitrobenzonitrile as a yellow solid. ^{1}H NMR ($CDCl_3$) 8.51 (1H, q), 8.42(1H, br s), 7.60(1H, m), 6.91(1H, d), 3.33(2H, q), 1.84-1.74(2H, m), 1.07(3H, t). LRMS 206.3 (MH+).

2. Preparation of 3-Amino-4-n-propylaminobenzonitrile

To a Parr bottle containing 4-n-propylamino-3-nitrobenzonitrile (7.63 g, 37.2 mmol) in ethyl acetate (38 mL)

is added 5% Pd/C (50% wet, 633 mg). The Parr bottle is sealed in a mechanical shaker, evacuated, and then purged with nitrogen followed by hydrogen. The system is pressurized to 50 PSI of hydrogen at room temperature and mechanical shaking engaged. After 2 hours, shaking is stopped, and the system purged with nitrogen prior to opening the vessel. The reaction mixture is filtered through celite, concentrated in vacuo, and the obtained solid recrystallized by dissolving in ethyl acetate (15 mL), heating, and adding hexanes (15 mL), to give 3-Amino-4-n-propylaminobenzonitrile as gray crystals. ^1H NMR ($CDCl_3$) 7.14(1H, dd), 6.92(1H, d), 6.56(1H, d), 3.98(1H, br s), 3.30(2H, br s), 3.12(2H, t), 1.75-1.65(2H, m), 1.03(3H, t). LRMS calcd 175.23, found 176.2 (MH+).

3. Preparation of 1-Propyl-2-{[2-(2-fluoropyrid-6-yl)-1H-imidazol-1-yl]methyl}-5-cyano-1H-benzimidazole

Method A

(A) Preparation of 1-n-Propyl-2-chloromethyl-5-cyanobenzimidazole hydrochloride

i) A solution of 3-amino-4-n-propylaminobenzonitrile (7.38g, 42.1 mmol) and ethyl chloroacetimidate hydrochloride (9.92 g, 63.2 mmol) in ethanol (100 mL) is heated at reflux for 17 h, then cooled and concentrated to give 1-n-Propyl-2-chloromethyl-5-cyanobenzimidazole hydrochloride. Prior to use in the next step, this material is converted to free base by adding aqueous bicarbonate and extracting with dichloromethane, drying (Na_2SO_4), and concentrating.

ii) Alternatively, chloroacetylchloride rather than ethyl chloroacetimidate can by used: To a solution of 3-amino-4-n-propylaminobenzonitrile (5.15 g, 29.4 mmol) and triethylamine (4.51 mL) in ethyl acetate (52 mL) at room temperature, chloroacetyl chloride (2.57 mL) is added slowly. After stirring the reaction mixture for 30 minutes at room temperature, acetic acid (5 mL) is added and the reaction mixture heated to reflux. After heating for 20 h, the reaction mixture is cooled to room temperature and diluted

with water (50 mL). The organic solution is washed twice with 1.0 M sodium hydroxide (2 x 50 mL), then washed with an aqueous solution of 0.25 M KH_2PO_4 (50 mL), followed by brine (50 mL). The organic layer is dried (sodium sulfate), concentrated in vacuo, and the solid recrystallized by heating in ethyl acetate (20 mL), adding hexane (40 mL) and cooling to room temperature with stirring to afford 1-n-Propyl-2-chloromethyl-5-cyanobenzimidazole as brown crystals. ^1H NMR ($CDCl_3$): 8.08 (d, J = 0.8 Hz, 1H), 7.57 (dd, J = 1.65, 8.52 Hz, 1H), 7.45 (d, J = 8.24 Hz, 1H), 7.26 (s, 1H), 4.84 (s, 2H), 4.24 (t, J = 7.6 Hz, 2H), 1.94 (pentet, J = 7.4. 7.6 Hz, 2H), 1.03 (t, J = 7.4 Hz, 3H).

(B) Preparation of 1-Propyl-2-{[2-(2-fluoropyrid-6-yl)-1H-imidazol-1-yl]methyl}-5-cyano-1H-benzimidazole

To a stirring suspension of sodium hydride (2.25g of 60% in oil) in DMF (10 mL) at 0° a solution of 2-Fluoro-6-(1H-imidazol-2-yl)-pyridine (7.7 g, 47.2 mmol) in DMF (20 mL) is added. After stirring for 5 minutes, a solution of 1-n-Propyl-2-chloromethyl-5-cyanobenzimidazole (11 g, 47.2 mmol) and sodium iodide (20 mg) in DMF (80 mL) is added. The reaction mixture is stirred for 6 h, gradually warmed to room temperature. The reaction mixture is cooled, water added, the solid collected, rinsed with water and dried to afford the title compound, 1-Propyl-2-{[2-(2-fluoropyrid-6-yl)-1H-imidazol-1-yl]methyl}-5-cyano-1H-benzimidazole.

Method B

Trimethylaluminum (0.54mL of 2.0M in toluene, 1.09mmol) is added dropwise to a solution of 3-Amino-4-propylaminobenzonitrile (152mg; 0.87mmol) in dichloromethane (10mL), and the mixture was stirred at room temperature for 1hr. A solution of [2-(2-Fluoropyridin-6-yl)-imidazol-1-yl] acetic acid methyl ester (102mg; 0.43mmol) in dichloromethane (5mL) is added all at once, and the mixture heated at reflux for 16 hr. The brown solution is cooled to room temperature and treated dropwise with methanol (1mL) then water (2mL) and stirred at room temperature for 15 min. Anhydrous sodium

sulfate is added until the gel becomes solid, the mixture is diluted with dichloromethane (100mL) and filtered through celite. The filtrate is concentrated to give a brown oil which is dissolved in acetic acid (7 mL) and heated at 100° for 72 hr. The mixture is cooled to room temperature and concentrated. The residue is dissolved in ethyl acetate (15mL), washed with saturated aqueous $NaHCO_3$ (1 x 50mL), then brine (1 x 50mL), dried ($MgSO_4$), and concentrated, and the residue purified by preparative thin layer chromatography to give 1-n-Propyl-2-{[2-(2-fluoropyrid-6-yl)-1H-imidazol-1-yl]methyl}-5-cyano-1H-benzimidazole as a light brown semi-solid (57mg).

Method C

A solution of [2-(6-Fluoropyridin-2-yl)-imidazol-1-yl]acetic acid hydrochloride (274mg; 1.06mmol) and triethylamine (0.15mL; 1.06mmol) in dichloromethane (10mL) is treated dropwise with oxalyl chloride (0.64mL of a 2M solution in dichloromethane; 1.27mmol), and the resulting suspension stirred at room temperature for 2 hr.

The mixture is concentrated and the residue suspended in dichloromethane (10mL). A solution of 3-Amino-4-propylaminobenzonitrile (185mg; 1.06mmol) in dichloromethane (5mL) is added and the mixture stirred at room temperature for 16hr, then concentrated. The residue is dissolved in acetic acid (10mL) and heated at 100° for 1hr. The mixture is cooled to room temperature, concentrated, taken up in ethyl acetate (150mL), washed with saturated aqueous $NaHCO_3$ (50mL)and then washed with brine (50mL), dried ($MgSO_4$), and concentrated to give the crude product as a waxy brown solid (338mg). This crude product is slurried with diethyl ether (*ca.* 4mL) and a few drops of methanol, then filtered to give 1-n-Propyl-2-{[2-(2-fluoropyrid-6-yl)-1H-imidazol-1-yl]methyl}-5-cyano-1H-benzimidazole as a pale brown solid (230mg).

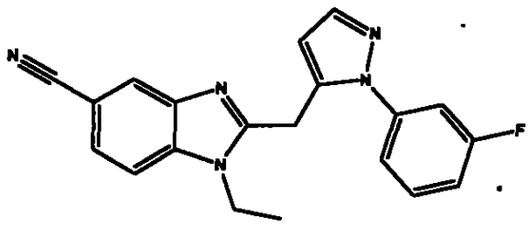
^{1}H NMR (399.96MHz, $CDCl_3$): δ 8.17(dd, J = 2.0, 7.6Hz, 1H, H-18), 8.05(s, 1H, H-4), 7.88(q, J = 8.0Hz, 1H, H-19), 7.52(d, J = 8.4Hz, 1H, H-6), 7.41(d, J = 8.4Hz, 1H, H-7), 7.21(s, 1H, H-

14), 7.18(s, 1H, H-15), 6.28(s, 2H, H-13), 4.28(t, J = 7.6Hz, 2H, H-10), 1.68(dt, J = 7.6Hz, 2H, H-11), 0.84(t, J = 7.6Hz, 3H, H-12).

^{13}C NMR (100.57MHz, $CDCl_3$, ^1H decoupled at 399.957MHz): δ, 162.36(d, J_{C-F} = 239.6Hz), 152.53, 148.69(d, J_{C-F} = 13.0Hz), 142.36(d, J_{C-F} = 7.6Hz), 142.31, 142.28, 138.42, 129.96, 126.55, 125.31, 124.23, 120.27(d, J_{C-F} = 3.8Hz), 119.96, 111.23, 108.52(d, J_{C-F} = 35.9Hz), 105.70, 46.10, 44.57, 23.43, 11.27.

Example 2

Synthesis of 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-cyano-1H-benzimidazole



1. Preparation of 1-(3-Fluorophenyl)-5-carboxymethylpyrazole

To a stirring solution of ethyl vinyl ether (340 mL, 3.55 mol) in diethyl ether (200 mL), cooled in an ice bath, is added dropwise a solution of malonyl dichloride (69 mL, 0.71 mol) in ether (20 mL). Stirring is continued at 0°C for 2h, then a solution of triethylamine (196 mL) and ethanol (350 mL) in ether (210 mL) is added with cooling. More ether is added to further precipitate triethylamine hydrochloride, the mixture is then filtered, and the filtrate concentrated. The residue is taken up in ethanol (710 mL), then triethyl orthoformate (177 mL, 1.07 mol) and concentrated HCl (5 mL) is added. The mixture is stirred overnight then concentrated. To the residue is added ethanol (500 mL) and 3-Fluorophenylhydrazine hydrochloride (27.6 g, 0.17 mol). The mixture is heated at reflux for 2 h, then cooled and concentrated. Ethyl acetate is added, the mixture is washed with aqueous bicarbonate, then with water, dried (Na_2SO_4), concentrated, and the residue purified by silica gel

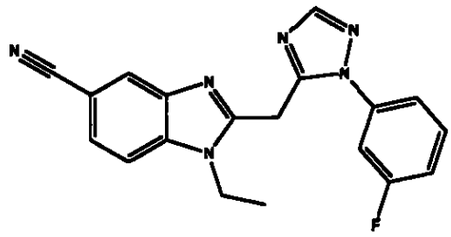
chromatography. Ethanol (20mL) and 1 N NaOH (100 mL) are added, and heated at reflux for 1 h. The mixture is cooled and washed with ethyl acetate. The aqueous layer is cooled and acidified, the solid collected by filtration, rinsed well with water and dried to give 1-(3-Fluorophenyl)-5-carboxymethylpyrazole as a gold solid. ^{1}H NMR ($CDCl_3$): 7.68 (d, J = 1.8 Hz, 1H), 7.41-7.48 (m, 1H), 7.10-7.26 (m, 3H), 6.44 (d, J = 2.1 Hz, 1H), 3.77 (s, 2H). LCMS: 221.2 (MH^+), 219.2(MH^-).

2. Preparation of 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-cyano-1H-benzimidazole

To a stirring solution of 3-amino-4-ethylaminobenzonitrile (887 mg, 5.5 mmol) and 1-(3-Fluorophenyl)-5-carboxymethylpyrazole (1.10 g, 5 mmol) in pyridine (5 mL) is added 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride (1.15 g, 6 mmol). The mixture is stirred at room temperature for 17.5 h, then concentrated. The residue is cooled in an ice bath, aqueous HCl is added with stirring, the precipitate is collected by filtration, rinsed well with water and dried. The solid is added to acetic acid (75 mL) and heated at reflux for 5.5 h. The mixture is cooled, concentrated, and purified by silica gel chromatography to give 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-cyano-1H-benzimidazole. The product is converted to the mesylate salt in acetone. ^{1}H NMR ($CDCl_3$): 8.17 (s, 1H), 7.89 (d, J = 8.52 Hz, 1H), 7.68-7.75 (m 1H), 7.44-7.54 (m, 2H), 7.37-7.40 (m, 1H), 7.21-7.28 (m, 1H), 6.35 (d, J = 1.65 Hz, 1H), 4.65 (s, 2H), 4.29 (q, J = 7.14 Hz, 2H), 2.34 (s, 3H), 1.19 (t, J = 7.14 Hz, 3H). LCMS 346.0 (MH^+), 344.4 (MH^-).

Example 3

Synthesis of 1-Ethyl-2-{[1-(3-fluorophenyl)-1,2,4-triazol-5-yl]methyl}-5-cyano-1H-benzimidazole



1. Preparation of 1-(3-Fluorophenyl)-1,2,4-triazole

A mixture of 1,3,5-triazine (1 g, 12.3 mmol) and 3-Fluorophenylhydrazine hydrochloride (2 g, 12.3 mmol) in ethanol (20 mL) is heated at reflux overnight. After concentrating, ethyl acetate is added, the mixture is washed with aqueous bicarbonate followed by saturated aqueous sodium chloride, dried ($MgSO_4$), and concentrated to give 1.8 g of crude 1-(3-Fluorophenyl)-1,2,4-triazole. ^1H NMR ($CDCl_3$): 8.57 (s, 1H), 8.12 (s, 1H), 7.46-7.51 (m, 3H), 7.08-7.15 (m, 1H). LCMS 164.1 (MH^+).

2. Preparation of 1-(3-Fluorophenyl)-5-hydroxymethyl-1,2,4-triazole

A mixture of the crude 1-(3-Fluorophenyl)-1,2,4-triazole and formaldehyde (10 mL of 37 wt % in water) is heated at 150°C in a sealed tube for 48 h. After cooling the reaction vessel, the reaction mixture is extracted with dichloromethane, dried ($MgSO_4$), concentrated, and the residue purified using silica gel chromatography to afford 1-(3-Fluorophenyl)-5-hydroxymethyl-1,2,4-triazole. ^1H NMR ($CDCl_3$): 8.02 (s, 1H), 7.42-7.53 (m, 3H), 7.22-7.29 (m, 1H), 4.81 (s, 2H). LCMS 194.2 (MH^-).

3. Preparation of 1-(3-Fluorophenyl)-5-cyanomethyl-1,2,4-triazole

1-(3-Fluorophenyl)-5-hydroxymethyl-1,2,4-triazole (1.7 g) is treated with thionyl chloride (10 mL) in dichloromethane (20 mL) at room temperature overnight. The solvent is then removed. To the residue is added acetonitrile (20 mL), tetraethylammonium cyanide (2.75 g, 17.6 mmol), and triethylamine (2.5 mL, 17.6 mmol). The mixture is stirred at room temperature for 2 h. The mixture is diluted with ethyl acetate, washed with aqueous bicarbonate, and then with

saturated aqueous sodium chloride, dried (Na_2SO_4), concentrated and the residue purified by silica gel chromatography to give crude 1-(3-Fluorophenyl)-5-cyanomethyl-1,2,4-triazole. ^1H NMR ($CDCl_3$): 8.06 (s, 1H), 7.52-7.62 (m, 1H), 7.20-7.30 (m, 3H), 3.98 (s, 2H). LCMS 203.0 (MH^+), 201.2 (MH^-).

4. Preparation of 1-(3-Fluorophenyl)-5-carboxymethyl-1,2,4-triazole

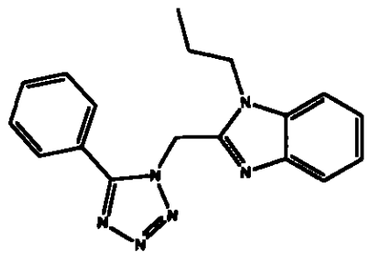
Crude 1-(3-Fluorophenyl)-5-cyanomethyl-1,2,4-triazole (0.9 g) is taken up in ethanol (50 mL) and cooled in an ice bath. HCl gas is bubbled through for 0.5 h. Water (10 mL) is added and the mixture heated at 65°C for 2 h. After cooling, most of the ethanol is removed on a roto-evaporator, 3 N NaOH (25 mL) and ethanol (25 mL) are then added. The solution is heated at reflux for 2 h, cooled, and then extracted with diethyl ether (3X). The aqueous layer is acidified to pH 2, extracted with ethyl acetate. The organic layer is washed with saturated aqueous sodium chloride, dried (Na_2SO_4), and concentrated to give 1-(3-Fluorophenyl)-5-carboxymethyl-1,2,4-triazole. ^1H NMR ($CDCl_3$): 8.08 (s, 1H), 7.50-7.57 (m, 1H), 7.22-7.32 (m, 3H), 4.01 (s, 2H).

5. Preparation of 1-Ethyl-2-{[1(3-fluorophenyl)-1,2,4-triazol-5-yl]methyl}-5-cyano-1H-benzimidazole

Using the procedure described in Example 2, Step 2, 1-(3-fluorophenyl)-5-carboxymethyl-1,2,4-triazole is converted to 1-Ethyl-2-{[1-(3-fluorophenyl)-1,2,4-triazol-5-yl]methyl}-5-cyano-1H-benzimidazole. ^1H NMR ($CDCl_3$): 8.03 (s, 1H); 8.01 (s, 1H); 7.42-7.56 (m, 5H); 7.22 (m, 1H); 4.51 (s, 2H); 4.43 (q, 2H); 1.45 (t, 3H). LCMS 347.3 (MH^+).

Example 4

Synthesis of 1-Propyl-2-[(5-phenyl-1H-tetrazol-1-yl)methyl]-1H-benzimidazole



1. Preparation of 2-(Tri-n-butyltin)-5-phenyl -1H-tetrazole

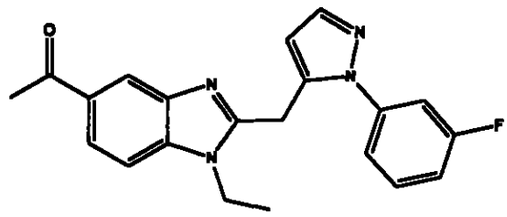
A mixture of 5-phenyl-1H-tetrazole (200 mg, 1.22 mmol) and bis(tri-n-butyltin)oxide (0.31 mL, 0.61 mmol) in ethanol (2 mL) is heated at reflux for 10 minutes. The mixture is cooled, concentrated, and the crude 2-(Tri-n-butyltin)-5-phenyl -1H-tetrazole used directly.

2. Preparation of 1-Propyl-2-[5-phenyl-1H-tetrazol-1-yl)methyl]-1H-benzimidazole

Crude 2-(tri-n-butyltin)-5-phenyl-1H-tetrazole (2.09 g, 4.8 mmol) and 1-propyl-2-chloromethylbenzimidazole (1.0 g, 4.8 mmol) are heated in toluene (5 mL) at reflux overnight. The solvent is removed in vacuo, the residue washed with hexane, and then purified by preparative chromatography to give 1-Propyl-2-[(5-phenyl-1H-tetrazol-1-yl)methyl]-1H-benzimidazole as the minor isomer. ^{1}H NMR ($CDCl_3$): 8.05-8.12 (m, 2H); 7.77 (m, 1H); 7.58-7.62 (m, 2H); 7.29-7.43 (m, 3H); 5.86 (5, 2H); 4.40 (t, 2h); 1.85 (m, 2H); 1.01 (t, 3H).

Example 5

Synthesis of 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-acetyl-1H-benzimidazole

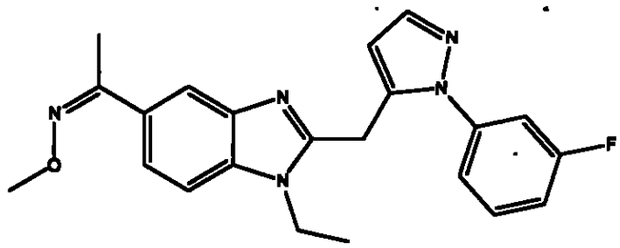


A mixture of 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-bromo-1H-benzimidazole (200mg, 0.5 mmol), tributyl(1-ethoxyvinyl)tin (0.34 ml, 1.0 mmol), and

tetrakis(triphenylphosphine)palladium(0) (29 mg) in toluene (10 mL) is heated at reflux for 1 h under argon. The solvent is removed in vacuo, the residue is then dissolved in 10% HCl (5 mL) and THF (5 mL). The mixture is stirred at room temperature for 0.5 h, then extracted with ethyl acetate. The aqueous layer is adjusted to pH 9, extracted with dichloromethane, and the organic layer dried (Na_2SO_4), concentrated, and the residue purified by preparative silica gel chromatography to give 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-acetyl-1H-benzimidazole. ^1H NMR ($CDCl_3$): 8.36 (d, 1H); 7.99 (dd, 1H); 7.645 (d, 1H); 7.25-7.49 (m, 4H); 7.14 (m, 1H); 6.21 (d, 1h); 4.36 (s, 2H); 4.02 (g, 2H); 2.68 (s, 3H); 1.24 (t, 3H).

Example 6

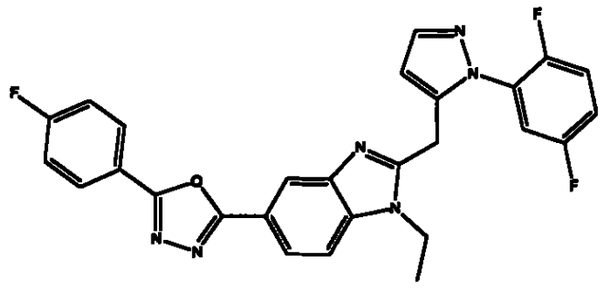
Synthesis of 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-[1-(methoxyimino)ethyl]-1H-benzimidazole



A mixture of 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-acetyl-1H-benzimidazole (23 mg), methoxylamine hydrochloride (15 mg, 3 eq.), and sodium acetate (15 mg, 3 eq.) in methanol (1 mL) is stirred at room temperature overnight. The solvent is removed in vacuo and aqueous sodium bicarbonate added to pH 9, then extracted with ethyl acetate. The organic layer is dried (Na_2SO_4) and concentrated to give 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-[1-(methoxyimino)ethyl]-1H-benzimidazole. ^1H NMR ($CDCl_3$): 7.94 (d, 1H); 7.73 (dd, 1H); 7.73 (dd, 1H); 7.63 (d, 1H); 7.52 (m, 1H); 7.38-7.40 (m, 3H); 7.27 (m ,1H); 6.19 (d, 1H); 4.32 (s, 2H); 3.87-4.10 (m, 5H); 2.30 (s, 3H); 1.22 (t, 3H).

Example 7

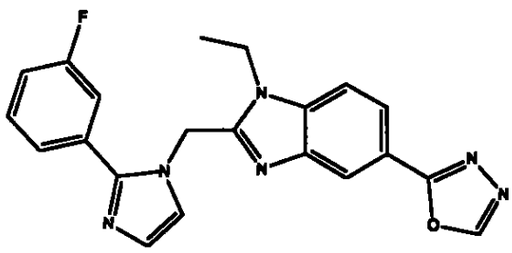
Synthesis of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl}-5-[5-(4-fluorophenyl)-1,3,4-oxadiazol-2-yl]-1H-benzimidazole



A mixture of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl}-1H-benzimadol-5-carboxylate (152 mg) and 4-fluorobenzhydrazide (1.05 eq.) in phosphorous oxychloride (6 mL) is heated at reflux for 1.5 h. The mixture is cooled and concentrated, and then water (5 mL) is added to the residue. After adjusting to pH >7 with saturated aqueous bicarbonate, the solution is extracted with ethyl acetate (3X), and the combined organic layers are washed with water (2X) then with saturated aqueous sodium chloride, dried ($MgSO_4$), concentrated, and the residue purified by preparative silica gel chromatography to give 1-Ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl}-5-[5-(4-fluorophenyl)-1,3,4-oxadiazol-2-yl]-1H-benzimidazole. LCMS MH^+ 501.068.

Example 8

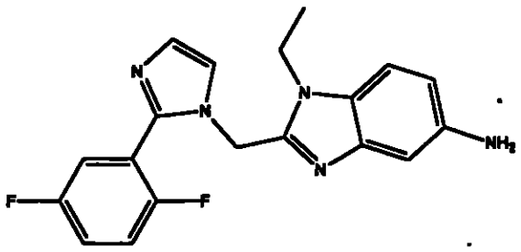
Synthesis of 1-Ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-5-(1,3,4-oxadiazol-2-yl) -1H-benzimidazole



A mixture of 1-ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-1H-benzimadol-5-hydrazide (177 mg), triethylorthoformate (8 mL) and acetic acid (2 mL) is heated at reflux for 5 h. The reaction is cooled, concentrated, and the residue purified by preparative silica gel chromatography to give 1-Ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-5-(1,3,4-oxadiazol-2-yl)-1H-benzimidazole, which was converted to the hydrochloride salt in ethyl acetate. ^{1}H NMR (d6 DMSO): 9.32(s,1H), 8.19(s,1H), 8.03(d,1H), 7.97-7.95(m,2Hm), 7.87(d,1H), 7.72(m,1H), 7.66-7.60(m,2H), 7.54-7.50(m,1H), 5.99(s,2H), 4.34(q,2H), 1.31(t,3H), LCMS MH$^+$ 389.4

Example 9

Synthesis of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl} -5-amino-1H-benzimidazole



1. Preparation of 4-Fluoro-3-nitroacetanilide

4-Fluoro-3-nitroaniline (5.2 g) is treated with acetic anhydride (1.1 eq.) in dichloromethane at room temperature for 1 h. The reaction is concentrated, the residue taken up in dichloromethane and washed with aqueous sodium bicarbonate (2X) then with saturated aqueous sodium chloride, dried ($MgSO_4$), and concentrated to give 4.7 g of crude 4-Fluoro-3-nitroacetanilide.

2. Preparation of 3-Nitro-4-(ethylamino)acetanilide

A mixture of crude 4-Fluoro-3-nitroacetanilide (4.6 g), ethylamine (23 mL of 2M in THF), and potassium carbonate (3.5 g) in DMF (100 mL) is stirred at room temperature for 4 h, then heated at 60°C for 5 h. The reaction is allowed to cool, water (150 mL) is added, and extracted with ethyl acetate (3X). The combined organic extracts are washed with water

(3X), then washed with saturated aqueous sodium chloride, dried ($MgSO_4$), and concentrated to give crude 3-Nitro-4-(ethylamino)acetanilide.

3. Preparation of N-[3-Amino-4-(ethylamino)phenyl] acetamide

Crude 3-Nitro-4-(ethylamino)acetanilide (4.8 g), 10% Pd/C (0.5 g), methanol (50 mL) and ethyl acetate (200 mL) are placed in a Paar apparatus under hydrogen at 50 psi for 5 h. The mixture is filtered through Celite and concentrated to give 4 g of crude N-[3-Amino-4-(ethylamino)phenyl] acetamide

4. Preparation of N-{2-{[2-(2,5-Difluorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl -1H-benzimidazol-5-yl} acetamide

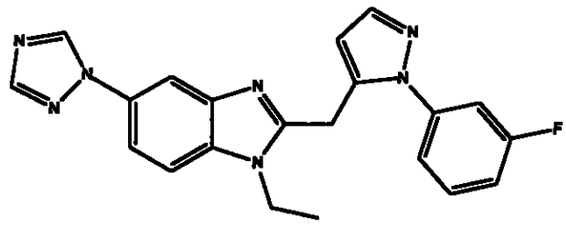
Using the procedure described in Example 1 Method A, crude N-[3-amino-4-(ethylamino)phenyl] acetamide is converted to N-{2-{[2-(2,5-Difluorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl -1H-benzimidazol-5-yl} acetamide.

5. Preparation of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl} -5-amino-1H-benzimidazole

Crude N-{1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl} acetamide is treated with 10% aqueous HCl (20 mL) in methanol (10 mL) at reflux for 1.5 h. After cooling, the methanol is removed in vacuo, and the aqueous layer washed with ethyl acetate. The aqueous layer is adjusted to pH 10 with 3 N NaOH, then extracted with ethyl acetate (3X), and the combined organic extracts washed with water (2X) then saturated aqueous sodium chloride, dried ($MgSO_4$), and concentrated to give 1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl} -5-amino-1H-benzimidazole. LCMS MH^+ 354.4.

Example 10

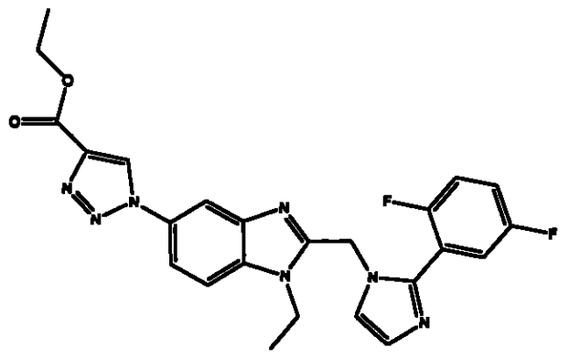
Synthesis of 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-(1,2,4-triazol-1-yl)-1H-benzimidazole



1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-amino-1H-benzimidazole (274 mg) is treated with N,N-dimethylformamide azine hydrochloride (1 eq) in toluene (10 mL) and methoxyethanol (10 mL) and refluxed for 6 h. After cooling and concentrating, the residue is treated with water and extracted with dichloromethane (2X). The aqueous layer is adjusted to pH 8 with aqueous sodium bicarbonate and extracted with dichloromethane (2X). The combined organic extracts are washed with saturated aqueous sodium chloride, dried ($MgSO_4$), concentrated, purified by preparative silica gel chromatography, and triturated with ether to afford 1-Ethyl-2-{[2-(3-fluorophenyl)-pyrazol-3-yl]methyl}-5-(1,2,4-triazol-1-yl)-1H-benzimidazole, which is converted to the hydrochloride salt in ethyl acetate. LCMS MH^+ 406.2.

Example 11

Synthesis of 1-ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl}-5-(1,2,3-triazol-1-yl-4-carboxylate)-1H-benzimidazole



1. Preparation of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl}-5-azido-1H-benzimidazole

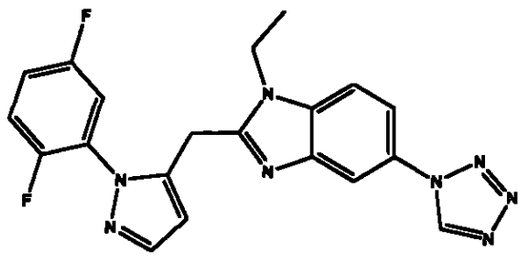
To an ice-cold solution of 1-ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl} -5-amino-1H-benzimidazole (466 mg) in acetic acid (8 mL) a solution of sodium nitrite (1.1 eq) in water (4 mL) is added dropwise. After stirring at 0°C for 1 h, a solution of sodium azide (1.3 eq) in water (5 mL) is added dropwise. Stirring is continued for 0.5 h at 0°C, and then at room temperature for 0.5 h. The reaction mixture is concentrated to 1/3 volume, water (10 mL) is added and then mixture is then extracted with ethyl acetate (3X). The combined organic layers are washed with aqueous sodium bicarbonate (2X), then washed with saturated aqueous sodium chloride, dried ($MgSO_4$), and concentrated to give 641 mg of crude 1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl} -5-azido-1H-benzimidazole.

2. Preparation of 1-{2-[2-(2,5-Difluoro-phenyl)-imidazol-1-ylmethyl]-1-ethyl-1H-benzoimidazol-5-yl}-1H-[1,2,3]triazole-4-carboxylic acid ethyl ester

A mixture of crude 1-ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl} -5-azido-1H-benzimidazole (143 mg) and ethyl propiolate (1 eq.) in ethanol (10 mL) is heated at reflux for 6 h. The mixture is cooled, concentrated, and the residue purified by preparative silica gel chromatography to give 1-{2-[2-(2,5-Difluoro-phenyl)-imidazol-1-ylmethyl]-1-ethyl-1H-benzoimidazol-5-yl}-1H-[1,2,3]triazole-4-carboxylic acid ethyl ester. ^1H NMR ($CDCl_3$): 8.51s,(1H), 8.05(s, 1H), 7.74(m,1H), 7.50-7.39(m,4H), 7.21-7.17(m,2H), 7.06(s,1H), 5.54(s,2H), 4.47(q,2H), 3.86(q,2H), 1.43(t,3H), 1.04(t,3H), LCMS MH^+ 460.6.

Example 12

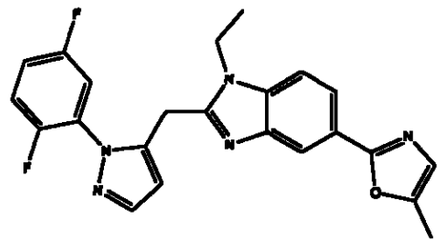
Synthesis of 1-ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl}-5-(1,2,3,4-tetrazol-1-yl)-1H-benzimidazole



1-Ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl}-5-amino-1H-benzimidazole (104 mg) is treated with triethylorthoformate (4 eq) in acetic acid (10 mL) at reflux for 4 h. After concentrating the solution, acetic acid is re-added, sodium azide (4 eq) added, and the mixture heated at 70°C for 3 h. After cooling, water (15 mL) is added and the mixture concentrated. The residue is taken up in ethyl acetate, washed with aqueous sodium bicarbonate (2X) then saturated aqueous sodium chloride, dried ($MgSO_4$), concentrated, and purified by preparative silica gel chromatography to give 1-ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl}-5-(1,2,3,4-tetrazol-1-yl)-1H-benzimidazole, which is converted to the hydrochloride salt in ethyl acetate. LCMS MH^+ 395.018 .

Example 13

Synthesis of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl}-5-(5-methyl-oxazol-2-yl)-1H-benzimidazole



1. Preparation of N-propargyl 1-ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl} -1H-benzimidazole-5-carboxamide

Oxalyl chloride (2.5 eq of 2M in dichloromethane) is added dropwise to a solution of 1-ethyl-2-{[2-(2,5-difluorophenyl)-

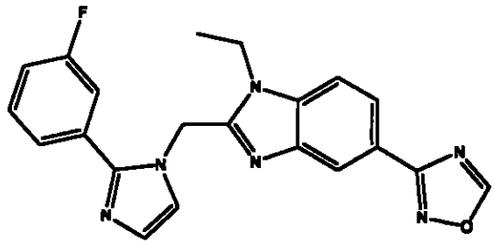
pyrazol-3-yl]methyl} -1H-benzimidazole-5-carboxylate (368 mg) in DMF (5 drops) and dichlormethane (30 mL) at 0°C. The mixture is stirred at 0°C for 0.5 h, then at room temperature for 1 h. The solution is concentrated, the residue taken up in DMF (30 ml), excess propargylamine added, and the mixture stirred for 6 h. Dilute aqueous sodium bicarbonate is added then extracted with dichloromethane (3X), the combined organic layers washed with saturated aqueous sodium chloride, dried ($MgSO_4$), and concentrated to give 462 mg of crude N-propargyl 1-ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl} -1H-benzimidazole-5-carboxamide.

2. Preparation of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl}-5-(5-methyl-oxazol-2-yl)-1H-benzimidazole

A mixture of crude N-propargyl 1-ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl} -1H-benzimidazole-5-carboxamide (450 mg) and mercury(II) acetate (1 eq) is heated at reflux in acetic acid (15 mL) for 6 h. The mixture is concentrated, saturated aqueous potassium carbonate added and extracted with ethyl acetate (3X). The combined organic layers were washed with water then with saturated aqueous sodium chloride, dried ($MgSO_4$), concentrated, and triturated with ether to give 1-ethyl-2-{[2-(2,5-difluorophenyl)-pyrazol-3-yl]methyl}-5-(5-methyl-oxazol-2-yl)-1H-benzimidazole, which is converted to the hydrochloride salt in ethyl acetate. ^1H NMR (d6 DMSO): 8.16(s,1H), 8.09-9.01m.(2H), 7.78(m,1H), 7.62(m,1H), 7.49-7.45(m,3H), 7.04(m,1H), 6.56(s,1H), 4.70(s,2H), 4.36(q,2H), 2.41(s,3H), 1.21(t,3H). LCMS MH^+ 420.5.

Example 14

Synthesis of 2-{[2-(3-Fluorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-5-(1,2,4-oxadiazol-3-yl) -1H-benzimidazole



1. Preparation of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methy-1H-benzimidazol}-5-carboxamide oxime

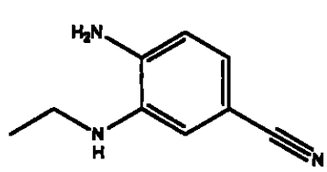
1-Ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-5-cyano-1H-benzimidazole (340 mg) is added to a solution of hydroxylamine hydrochloride (137 mg, 2eq) and triethylamine (0.3 mL, 2.2 eq) in methanol (3 mL), then heated at reflux for 2.5 h. The reaction is cooled, concentrated, water added, the solid collected and rinsed well with water and dried to give 305 mg of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methy-1H-benzimidazol}-5-carboxamide oxime.

2. Preparation of 1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methy-1H-benzimidazol}-5-carboxamide oxime

1-Ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methy-1H-benzimidazol}-5-carboxamide oxime (161 mg) is treated with triethylorthoformate (3 mL) and boron trifluoride-THF complex (0.1 mL) at 100°C for 2.5 h. 1N HCl (0.5 mL) is added to the hot mixture; the reaction is then cooled and concentrated. After cooling in an ice bath, aqueous sodium hydroxide is added. The solid is collected, rinsed with water, then ether and dried to give 1-Ethyl-2-{[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methy-1H-benzimidazol}-5-carboxamide oxime, which is converted to the methanesulfonate salt in acetone. Mp 183-186°C.

Example 15

Synthesis of 4-amino-3-ethylaminobenzonitrile



1. 4-nitro-3-chlorobenzonitrile

To an ice cold solution of 4-amino-3-chlorobenzonitrile (1 g, 6.6 mmol) in concentrated HCl (2.5 mL) plus water (2.5 mL) a chilled solution of sodium nitrite (0.74 g, 1.62 eq) in water (3.6 mL) is added dropwise to maintain the reaction temperature <0°C. After stirring at 0°C for 10 min, the mixture is added portion-wise to an ice cold solution of sodium nitrite (3.29 g, 7.22 eq) and copper(I) oxide (349 mg, 0.37 eq) in water 14.5 mL). Stirring is continued at 0°C for 40 min, and then at room temperature for 0.5 h. The reaction mixture is extracted with dichloromethane (2X), the combined organic layers washed with saturated aqueous sodium chloride, dried ($MgSO_4$), concentrated, and purified by silica gel chromatography to give 4-nitro-3-chlorobenzonitrile. ^1H NMR ($CDCl_3$): 7.96 (d, J = 8.24 Hz, 1h), 7.88 (d, J = 1.65 Hz, 1H), 7.63 (dd, J = 1.65, 8.24 Hz, 1H.

2. Preparation of 4-Ethylamino-3-chloro benzonitrile

A mixture of 4-nitro-3-chlorobenzonitrile (0.74 g, 4.1 mmol), potassium carbonate (1.68 g, 12.2 mmol), and ethylamine(4 mL, 2M in THF) in DMF (2 mL) is stirred at ambient temperature for 3 h. Additional ethylamine (2.1 mL, 2M in THF) is added, the flask stoppered, and stirring continued an additional 15.5 h. Water (50 mL) is added and extracted 2X with ethyl acetate (50 mL), and the combined organic layers are washed with water, then brine, dried ($MgSO_4$), and concentrated to give a mixture of 3-Ethylamine-4-nitrobenzonitrile and 4-Ethylamino-3-chloro benzonitrile which was carried forward without purification.

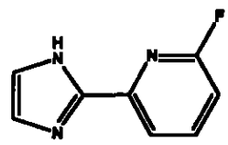
3. Preparation of 4-Amino-3-ethylaminobenzonitrile

To a suspension of crude 4-ethylamino-3-chloro benzonitrile (above) in conc. HCl (4 mL) tin(II) chloride dihydrate (3.16 g) is added. After stirring at ambient temperature for 1.5 h, the mixture is poured onto ice and the solution mad alkaline with 10 N aq. NaOH. The aqueous solution is extracted 2X with dichloromethane, and the combined organic layers washed with brine, dried ($MgSO_4$), and concentrated. Trituration with ether affords 4-Amino-3-ethylaminobenzonitrile as a white solid. ^1H

NMR ($CDCl_3$): 7.00 (dd, J = 1.65, 7.97 Hz, 1H), 6.83 (d, J = 1.65 Hz, 1H), 6.67 (d, J = 7.97 Hz, 1h), 3.13 (q, J = 7.14 Hz, 1.31 (t, J = 7.14 Hz, 3H).

Example 16

Synthesis of 2-Fluoro-6-(1H-imidazol-2-yl)-pyridine



1. Preparation of 2-Fluoropyridine-6-carboxaldehyde

Method A

2-Fluoro-6-methylpyridine (14.4 g, 0.13 mol) and tert-butoxybis(dimethylamino)methane (Bredereck's reagent; 34.9 g, 0.20 mol) are heated at 140 °C for 24 h. The reaction is cooled and diluted with THF (100 mL). Sodium periodate (75 g) in water (400 mL) is added at 0-5 °C, and the reaction mixture is then stirred for 24 h at room temperature. The precipitate is filtered through celite, and the filtrate extracted 5X with diethyl ether. The combined ether layers are washed with water, brine, and dried ($MgSO_4$). Most of the solvent is removed by concentration at 0 °C (by keeping ice in the bath) to provide 2-Fluoropyridine-6-carboxaldehyde.

Method B

2-Fluoropyridine-6-carboxaldehyde can also be prepared as follows: To a solution of diisopropylamine (6.54 mL, 1.2 equiv) in 30 mL of THF at 0 °C a solution of n-butyllithium (17.1 mL, 2.5M in hexanes) is added dropwise. Stirring is continued for 15 minutes at 0 °C, the reaction is then cooled to -78 °C. 2-Fluoro-6-methylpyridine (4.00 mL, 38.9 mmol) is added dropwise to the cold solution. The reaction mixture is stirred at -78 °C for 1 h and then quenched with DMF (4.52 mL, 1.5 equiv). The reaction is maintained at -78 °C for 30 minutes and then warmed to 0 °C. The cold solution is added to

a mixture of sodium periodate (24.9 g) in 120 mL of water at 0 °C. The reaction mixture is allowed to gradually warm to room temperature over 1 h and then stirred at room temperature for 24 h. The reaction mixture is filtered through a plug of celite to remove the precipitate and the plug is washed with ether. The organic layer is separated, washed with aqueous sodium bicarbonate (1 x 40 mL), then with 0.25M KH_2PO_4 (1 x 40 mL) and then brine (1 x 40 mL). The organic solution is dried ($NaSO_4$) and concentrated in vacuo.

2. Preparation of 2-Fluoro-6-(1H-imidazol-2-yl)-pyridine

To a solution of the crude aldehyde from step 1, Method B (above) in methanol (12 mL) aqueous glyoxal (6.21 mL, 40 wt.% in water) is added dropwise. The solution is cooled to 0 °C and aqueous ammonium hydroxide (6.0 mL, 28 wt.% in water) is added. The reaction is allowed to warm to room temperature gradually over about an hour and then stirred another 3 h at room temperature. Most of the methanol is removed in vacuo, the reaction mixture diluted with water (10 mL) and extracted with ethyl acetate (30 mL). The organic layer is washed with brine (20 mL), diluted with hexanes (15 mL), passed through a plug of silica gel (1/4 inch deep x 1 ¼ inch diameter), and the plug washed with more 2:1 ethyl acetate/hexanes (20 mL). The combined eluents are concentrated in vacuo to yield crude 2-Fluoro-6-(1H-imidazol-2-yl)-pyridine.

Example 17

Synthesis of 2-Fluoro-6-(1H-imidazol-2-yl)-pyridine acetic acid

1. Preparation of [2-(6-fluoropyridin-2-yl)-imidazol-1-yl]acetic acid *tert*-butyl ester

A mixture of 2-Fluoro-6-(1*H*-imidazol-2-yl)pyridine (410mg; 2.51mmol), *tert*-butyl bromoacetate (539mg; 2.76mmol), potassium carbonate (520mg; 3.77mmol), and *N,N*-dimethylformamide (20mL) is stirred at room temperature for 16h. Water (60mL) is added and the mixture extracted with

ethyl acetate (3 x 70mL). The organic extracts are washed with water (3 x 40mL) and brine (1 x 40mL), dried ($MgSO_4$), and concentrated to give [2-(6-Fluoropyridin-2-yl)-imidazol-1-yl]acetic acid *tert*-butyl ester as an orange oil (630mg). ^1H NMR ($CDCl_3$) 8.12 (dd,1H), 7.82(q,1H), 7.16(s,1H), 6.98(s,1H), 6.81(dd,1H), 5.14(s,2H), 1.44s,(9H),

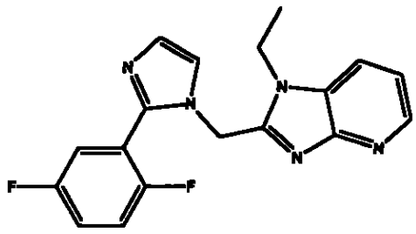
LCMS: 276.1(M^+).

2. Preparation of 2-Fluoro-6-(1H-imidazol-2-yl)-pyridine acetic acid

A solution of [2-(6-fluoropyridin-2-yl)-imidazol-1-yl]acetic acid tert-butyl ester (630mg; 2.27mmol) and trifluoroacetic acid (4mL) in dichloromethane (4mL) is stirred at room temperature for 5hr. The reaction mixture is concentrated. The residue is treated with 3M HCl in ethyl acetate (10mL) and the suspension stirred at room temperature for 1hr. The precipitate is collected, washed with ethyl acetate, and dried to give 2-Fluoro-6-(1H-imidazol-2-yl)-pyridine acetic acid as a tan solid (581mg), ^1H NMR (d_6DMSO) 8.35-8.26(m,2H), 7.83(s,1H), 7.76(s,1H), 7.44-7.41(m.1H), 5.40(s,2H). LCMS: 222.1(MH^+).

Example 18

Synthesis of 2-{[2-(2,5-di-fluorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-1H-imidazo[4,5-b]pyridine



1. Preparation of 3-ethylamino-2-nitro-pyridine

Ice cold ethylamine (0.55 mL) was added to a solution of 3-fluoro-2-nitropyridine (400 mg, 2.8 mmol; prepared according to N. Plé and G. Quéguiner, *J. Heterocyclic Chem*, 1989, 26, 475-476) in 2:1 DMF:THF (6mL) at ambient temperature, and the mixture stirred for 0.75 h. Water was added, then extracted

2X with ethyl acetate. The combined organic layers were washed with water then with saturated aqueous sodium chloride, dried ($MgSO_4$), and concentrated to give 3-ethylamino-2-nitro-pyridine as a gold solid. ^1H NMR ($CDCl_3$): 7.87 (d, 1h0, 7.43 (dd, 1H), 7.35 (d, 1H), 3.38 (pentet, 2H), 1.4 (t, 3H). LCMS: 121.1(MH^+-NO_2).

2. Preparation of 2-Amino-3-ethylaminopyridine

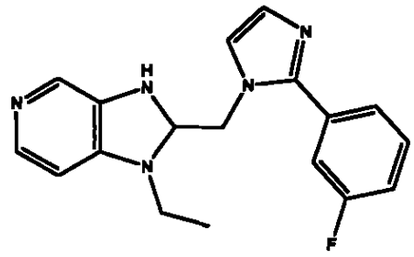
A mixture of 3-ethylamino-2-nitro-pyridine (400 mg), 10% palladium on carbon (40 mg) and 1:1 ethyl acetate:methanol (30 mL) were placed in a Parr apparatus under hydrogen (50 psi) for 50 min. The mixture was filtered through Celite, concentrated, and the product triturated with hexane to give 2-Amino-3-ethylaminopyridine as a brown solid. More material was recovered from the filtrate. ^1H NMR ($CDCl_3$): 7.59 (d, J = 4.94 Hz, 1H), 6.81 (d, J = 6.32 Hz, 1H), 6.71 (dd, J = 4.94, 7.69 Hz, 1H), 3.12 (q, J = 7.14 Hz, 2h), 1.31 (t, J = 7.14 Hz, 3H).

3. Preparation of 2-{[2-(2,5-Difluorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-1H-imidazo[4,5-b]pyridine

2-Amino-3-ethylaminopyridine (60 mg, 0.43 mmol) and methyl 1-carboxymethyl-2-(2,5-difluorophenyl)-imidazole (193 mg, 0.76 mmol) were used according to Example 1 Method B to prepare 2-{[2-(2,5-Difluorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-1H-imidazo[4,5-b]pyridine, which is converted to the hydrochloride salt in ethyl acetate. m.p. 214-216 °C. LCMS MH^+ 322.2, MH^- 320.3.

Example 19

Synthesis of 2-{[2-(3-Fluorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-3H-imidazo[4,5-c]pyridine



1. Preparation of 3-Chloro-4-nitropyridine N-oxide

Aqueous hydrogen peroxide (30 mL of 30%) is added dropwise to an ice cold mixture of 3-chloropyridine (6.0 g, 53 mmol) in acetic anhydride (30 mL). The mixture is allowed to stir at ambient temperature for 24 h, water is then added and the mixture concentrated. The residue is taken up in concentrated sulfuric acid (10 mL) and fuming sulfuric acid (5 mL), and then cooled to 0°C. Concentrated nitric acid (24 mL) is added slowly, and the ice bath removed. The reaction is then heated at reflux for 2 h, cooled, and poured into ice water. Ammonium bicarbonate is added carefully until pH 8 is achieved, the solution is then extracted with dichloromethane. The organic layer is washed with water, dried ($NaSO_4$), and concentrated to give 3-Chloro-4-nitropyridine N-oxide as a yellow solid. ^1H NMR ($CDCl_3$): 8.47 (d, J = 4 Hz, H), 8.35 (dd, J = 5, 12 Hz, 1H), 7.73 (ddd, J = 4, 9, 12 Hz, 1H).

2. Preparation of 3-Ethylamino-4-nitro-3-pyridine N-oxide

To an ice cold solution of 3-chloro-4-nitropyridine N-oxide (2.93 g, 16.8 mmol) in ethanol (30 mL) ethylamine (25 mL of 2M in THF) is added. The mixture is allowed to stir overnight at ambient temperature, then concentrated in vacuo to afford crude 3-Ethylamino-4-nitro-3-pyridine N-oxide as a yellow oil. ^1H NMR ($CDCl_3$): 8.01 (d, J = 7 Hz, H), 7.91 (s, 1H), 7.45 (d, J = 7 Hz, 1H), 3.31 (q, J = 7 Hz, 2H), 1.40 (t, J =7 Hz, 3H).

3. Preparation of 3-Ethylamino-4-aminopyridine

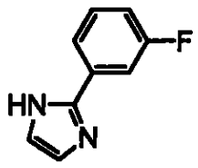
Crude 3-ethylamino-4-nitro-3-pyridine N-oxide and 10% palladium on carbon (1 g) in methanol (30 mL) are placed in a Parr apparatus under hydrogen (60 psi) for 2 days. Additional 10% palladium on carbon (880 mg) is added and returned under hydrogen (60 psi) for 2 days. The mixture was filtered through Celite, concentrated, and the product triturated with hexane-ether to afford 1.3 g of 3-Ethylamino-4-aminopyridine. ^1H NMR (d6-DMSO): 7.63 (d, J = 6 Hz, 1H), 7.47 (s, 1H), 6.57 (d, J = 6 Hz, 1H), 3.05 (q, J = 7 Hz, 2H), 1.21 (t, J = 7 Hz, 3H).

4. Preparation of 2-{[2-(3-Fluorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-3H-imidazo[4,5-c]pyridine

3-Ethylamino-4-aminopyridine (548 mg, 3.99 mmol) and methyl 1-carboxymethyl-2-(3-fluorophenyl)-imidazole (467 mg, 1.99 mmol) were used according to Example 1 Method B to prepare 2-{[2-(3-Fluorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-3H-imidazo[4,5-c]pyridine. ^{1}H NMR ($CDCl_3$): 1.08(t, J = 7 Hz, 3H), 3.89(q, J = 7 Hz, 2H), 5.52(s, 2H), 7.04(s, 1H), 7.16-7.20(m, 2H), 7.37-7.50(m, 3H), 7.68(d, J = 6 Hz, 1H), 8.47(d, J = 6 Hz, 1H), 8.78(s, 1H).

Example 20

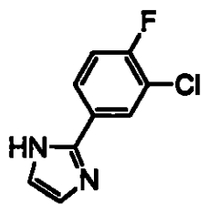
Synthesis of 3-fluoro-(1*H*-imidazol-2-yl)benzene



Saturated ammonium hydroxide solution (30 mL) is slowly added to a solution of 3-fluorobenzaldehyde (12.4 g, 100 mmol) and glyoxal (17.5 mL of 40% wt in water, 120 mmol) in methanol (100 mL) at ambient temperature. After stirring for 24 h, most of the solvent is removed at reduced pressure. Benzene is added and evaporated to remove residual water. The resulting dark oil is purified by chromatography on silica gel (2% MeOH/CH_2Cl_2) to obtain a tan solid. Trituration with ether/hexane provides 3-fluoro-(1*H*-imidazol-2-yl)benzene as a white solid. LRMS *m/z* (M+1) 163.2.

Example 21

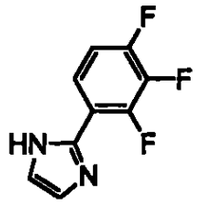
Synthesis of 3-chloro-4-fluoro-(1*H*-imidazol-2-yl)benzene



A mixture of 3-chloro-4-fluoro-benzaldehyde (0.032 mol), glyoxal (40% in water, 0.038 mol) and ammonium hydroxide (28% in water, 0.16 mol) in MeOH (60 mL) is stirred at room temperature overnight. Solvent is removed in vacuo and the residue is partitioned between water and CH_2Cl_2. The organic layer is washed with brine, dried (Na_2SO_4), and concentrated. The residue is purified by column chromatography on silica gel eluting with CH_2Cl_2/MeOH (95/5) to afford 3-chloro-4-fluoro-(1*H*-imidazol-2-yl)benzene as a yellow solid. ^1H NMR ($CDCl_3$) δ 7.88 (dd, 1H), 7.70 (m, 1H), 7.19 (t, 1H), 7.17 (s, 2H). LRMS *m/z* (M+1) 197.0.

Example 22

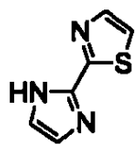
Synthesis of 2,3,4-trifluoro-(1*H*-imidazol-2-yl)benzene



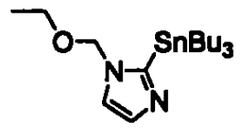
Saturated ammonium hydroxide solution (26 mL) is slowly added to a solution of 2,3,4-trifluorobenzaldehyde (5.0 g, 31.2 mmol) and glyoxal (10.75 mL of 40% wt in water, 93.7 mmol) in methanol (100 mL) at ambient temperature. After stirring for 24 h, most of the solvent is removed at reduced pressure. Benzene is added and evaporated to remove residual water. The resulting dark oil is purified by chromatography on silica gel (5% MeOH/CH_2Cl_2) to obtain a tan solid. Trituration with ether/hexane provides 2,3,4-trifluoro-(1*H*-imidazol-2-yl)benzene as a white solid. LRMS *m/z* (M+1) 199.10.

Example 23

Synthesis of 2-(1*H*-imidazol-2-yl)-thiazole

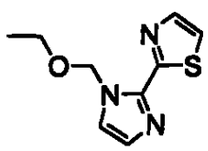


1. Preparation of 1-ethoxymethyl-2-tributylstannanyl-1*H*-imidazole



1.6 *M* *n*-BuLi (12.0 mL, 19.2 mmol) is slowly added to a solution of 1-ethoxymethyl-1*H*-imidazole [available via the procedure outlined in Tang, C. C.; Davalian, D.; Huang, P.; Breslow, R. *J. Am. Chem. Soc.* 1978, *100*, 3918] (2.20 g, 17.4 mmol) in THF (30 mL) at -78 °C under N_2. The reaction mixture is stirred at -78 °C for 20 min. whereupon tributyltin chloride (5.7 mL, 20.9 mmol) is slowly added. The reaction mixture is stirred at -78 °C for 10 min. and then warmed to room temperature. After stirring at room temperature for 1.5 h, the reaction mixture is concentrated in vacuo. The residue is triturated with hexanes and filtered, and the filtrate is concentrated in vacuo. The residue is again triturated with hexanes and filtered, and the filtrate concentrated in vacuo. The ^{1}H NMR of the resulting oil indicates a 2:1 mixture of 1-ethoxymethyl-2-tributylstannanyl-1*H*-imidazole: 1-ethoxymethyl-1*H*-imidazole. This material is used in the next reaction without further purification. Selected ^{1}H NMR resonances (400 MHz, $CDCl_3$) δ 7.21 (*s*, 1H), 7.14 (*s*, 1H), 5.24 (*s*, 2H) ppm.

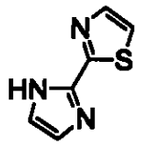
2. Preparation of 2-(1-ethoxymethyl-1*H*-imidazol-2-yl)-thiazole



A solution of crude 1-ethoxymethyl-2-tributylstannanyl-1*H*-imidazole (previous experimental), 2-bromothiazole (1.05

mL, 11.6 mmol, 1.0 eq based on integration of ^{1}H NMR of crude 1-ethoxymethyl-2-tributylstannanyl-1*H*-imidazole), and $Pd(PPh_3)_4$ (0.67 g, 0.58 mmol) in toluene (20 mL) is stirred at 80 °C for 18 h. After cooling to room temperature, the reaction mixture is poured into saturated aqueous $NaHCO_3$ and extracted twice with CH_2Cl_2. The combined extracts are dried over Na_2SO_4 and concentrated in vacuo. The residue is purified by flash chromatography on silica gel, eluting with 2:1 hexanes-EtOAc (+ 0.5% Et_3N). Fractions containing product are concentrated and resubjected to flash chromatography on silica gel. Elution with 2:1 hexanes-EtOAc (+ 0.5% Et_3N) affords (26%) of 2-(1-ethoxymethyl-1*H*-imidazol-2-yl)-thiazole as a bright yellow oil. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.82 (d, J = 3.2 Hz, 1H), 7.33 (d, J = 3.2 Hz, 1H), 7.20 (d, J = 1.2 Hz, 1H), 7.15 (d, J = 1.2 Hz, 1H), 6.03 (s, 2H), 3.56 (q, J = 7.2 Hz, 2H), 1.17 (t, J = 7.2 Hz, 3H) ppm.

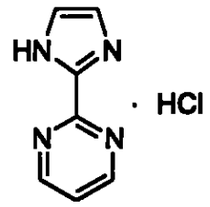
3. Preparation of 2-(1*H*-imidazol-2-yl)-thiazole



Concentrated HCl (10 ml) is added to a solution of 2-(1-ethoxymethyl-1*H*-imidazol-2-yl)-thiazole (940 mg, 4.49 mmol) in 24 mL of 1:1 EtOH-H_2O at room temperature. The solution is stirred at reflux for 3 h. The reaction mixture is then cooled to 0 °C and made basic by the addition of about 12 mL of 10 *N* aqueous NaOH. The mixture is back titrated to approximately pH 4 using concentrated HCl. Solid $NaHCO_3$ is added to the point of saturation and approximately pH 8. The mixture is then extracted twice using a mixture of THF and EtOAc. The combined extracts are dried over Na_2SO_4 and concentrated to an oily solid, which is triturated with a small amount of CH_2Cl_2. The solid is collected by filtration. The filtrate is concentrated, and the oily solid triturated once more with CH_2Cl_2. The second resultant solid is collected

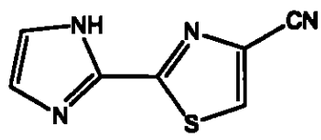
by filtration and combined with the solid first obtained. The product, 2-(1*H*-imidazol-2-yl)-thiazole, is obtained as a slightly off-white solid. ^{1}H NMR (400 MHz, DMSO-d_6) δ 13.04 (br, 1H), 7.87 (d, J = 3.2 Hz, 1H), 7.70 (d, J = 3.2 Hz, 1H), 7.14 (br, 2H) ppm.

Example 24
Synthesis of 2-(1H-Imidazol-2-yl)-pyrimidine hydrochloride



A mixture of 2-Cyanopyrimidine (8.0 g, 76 mmol, prepared according to *Liebigs Ann.Chem.* 2, 1981, 333-341) and Aminoacetaldehyde dimethyl acetal (8 g, 76 mmol) is heated at 100 °C for 4 hours, cooled, and 100 mL of MeOH and 5 mL of concentrated HCl are added. The mixture is heated at reflux with stirring for 30 hours, cooled and evaporated to dryness in vacuo. 50 mL of i-PrOH is added to the residue and the mixture is heated at reflux with stirring for 30 minutes and cooled. The crystals are collected by filtration, washed with ether, and dried to give the titled compound (11.5 g). ^{1}H NMR (DMSO): 9.08 (d, 2H), 7.87 (s, 2H), 7.75 (t, 1H). LRMS calcd 146, found 147 (MH+).

Example 25
Synthesis of 2-(1H-Imidazol-2-yl)-thiazole-4-carbonitrile



1) Preparation of 1-Dimethylsulfamoyl-1H-imidazole-2-carbothioic acid methoxymethyl-amide

To a solution of 1-Dimethylsulfamoyl-1-imidazole (2.0 g, 11.4 mmol) in 10 mL of anhydrous THF at -78 °C is added a solution of n-BuLi in Hexane (2.5 M, 4.6 mL) dropwise under N_2. After the mixture is stirred at the same temperature for about one hour, Methoxymethyl isocyanate (1.2 g, 11.4 mmol) is added dropwise at -78 °C. The reaction mixture is stirred at -78 °C for about 6 hours and slowly warmed to room temperature. After quenched with a saturated aqueous NH_4Cl solution (20 mL), the mixture is extracted with Ethyl acetate (20 mL x2). The extract is washed with water, dried and concentrated. The residue is purified on a silica gel column with 3 % MeOH in CH_2Cl_2 as eluent to give 1.2 g of the titled compound. ^1H NMR ($CDCl_3$): 8.60 (br, 1H), 7.32 (d, 1H), 7.01 (d, 1H), 5.22 (d, 2H), 3.51 (s, 3H), 3.00 (d, 6H). LRMS calcd 278, found 279 (MH+).

2) Preparation of 1H-Imidazole-2-carbothioic acid amide

A solution of 1-Dimethylsulfamoyl-1H-imidazole-2-carbothioic acid methoxymethyl-amide (1.0 g, 3.6 mmol) in Acetic acid (10 mL) and water (2 mL) is stirred at 50 °C overnight. After the volatiles are evaporated in vacuo, the residue is partitioned between Ethyl acetate (40 mL) and aqueous $NaHCO_3$ (10 ML). The organic layer is separated, washed with water, dried and concentrated in vacuo to a solid (250 mg). ^1H NMR (DMSO): 12.7 (s, 1H), 9.65 (s, 1H), 9.42 (s, 1H), 7.24 (s, 1H), 7.15 (s, 1H).

3) Preparation of 2-(1H-Imidazole-2-yl)-thiazole-4-carboxylic acid ethyl ester

A mixture of 1H-Imidazole-2-carbothioic acid amide (200 mg, 1.57 mmol) and Ethyl bromopyruvate (340 mg, 1.57 mmol) is heated at 75 °C for about 5 hours. After the volatiles are evaporated in vacuo, the residue is partitioned between Ethyl acetate (40 mL) and aqueous $NaHCO_3$ (10 ML). The organic layer

is separated, washed with water, dried and concentrated. The residue is purified on a silica gel column with 3 % MeOH in CH_2Cl_2 as eluent to give 200 mg of the titled compound. ^1H NMR ($CDCl_3$): 8.15 (s, 1H), 7.20 (br, 1H), 7.10 (br, 1H), 4.33 (q, 2H), 1.23 (t, 3H). LRMS calcd 223, found 224 (MH+).

4) Preparation of 2-(1H-Imidazole-2-yl)-thiazole-4-carboxylic acid amide

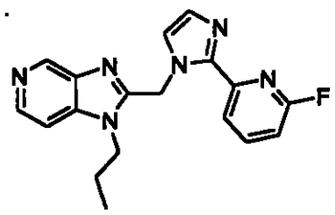
A solution of 2-(1H-Imidazole-2-yl)-thiazole-4-carboxylic acid ethyl ester (190 mg) in 5 mL of MeOH is saturated with NH_3 gas, and heated at 60 °C in a sealed tube overnight. After cooled, the reaction mixture is transferred to a round bottle flask and evaporated in vacuo to a solid (150 mg). LRMS calcd 194, found 195 (MH+).

5) Preparation of 2-(1H-Imidazole-2-yl)-thiazole-4-carbonitrile

To a solution of 2-(1H-Imidazole-2-yl)-thiazole-4-carboxylic acid amide (120 mg) in 2 mL of anhydrous pyridine is added 0.25 mL of $POCl_3$ dropwise at 0 °C. The reaction mixture is stirred at the same temperature for 2 hours, poured into ice water, neutralized with solid $NaHCO_3$, and extracted with 5% MeOH in CH_2Cl_2. The extract is washed with brine, dried and concentrated to a solid (70 mg). ^1H NMR (DMSO): 13.45 (br, 1H), 8.82 (s, 1H), 7.38 (s, 1H), 7.12 (s, 1H). LRMS calcd 176, found 177 (MH+).

Example 26

Synthesis of 2-[2-(6-fluoro-pyridin-2-yl)-imidazol-1-ylmethyl]-1-propyl-1-*H*-imidazo[4,5-*c*]pyridine



1. Preparation of (3-nitro-pyridin-4-yl)-propyl-amine

To a solution of 4-chloro-3-nitro-pyridine(18.0g, 114mmol) in EtOH(300ml) is added *n*-propylamine(46.9ml, 568mmol) slowly at 0°C and the resulting yellow mixture is warmed to room temp. After stirring for 2h, the reaction is concentrated in vacuo. The residue is purified by flash chromatography (eluent 50% Hex/EtOAc) to give 19.7g(95%) of (3-nitro-pyridin-4-yl)-propyl-amine as a yellow solid. ^{1}H NMR ($CDCl_3$) 9.16 (s, 1H), 8.25(d, J = 6 Hz, 1H), 8.15(br s, 1H), 6.68(d, J = 6 Hz, 1H), 3.29(q, J = 6.8 Hz, 2H), 1.74(sextet, J = 7.2 Hz, 2H), 1.02(t, J = 7.6 Hz, 3H). LRMS calcd 181.19, found 182.5 (MH+).

2. Preparation of N-propyl-pyridine-3,4-diamine

A solution of (3-nitro-pyridin-4-yl)-propyl-amine(19.7g, 109mmol) in abs. MeOH(150ml) is hydrogenated at room temp. and 50 psi in the presence of 10% palladium on carbon(1.9g) for 15h. Removal of catalyst,concentration of filtrate, and recrystallization the residue in dichloromethae-hexane yielded 15.1g(92%) of N-propyl-pyridine-3,4-diamine as a tan solid. ^{1}H NMR (DMSO-d_6) 7.59(s, 1H), 7.55(d, J = 5.4 Hz, 1H), 6.30(d, J = 5.4 Hz, 1H), 5.26(br s, 1H), 4.55(br s, 2H), 3.02(q, J = 6.6 Hz, 2H), 1.56(sextet, J = 7.1 Hz, 2H), 0.92(t, 7.2 Hz, 3H). LRMS calcd 151.21; found 152.4 (MH+).

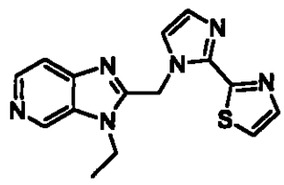
3. Preparation of 2-[2-(6-fluoro-pyridin-2-yl)-imidazol-1-ylmethyl]-1-propyl-1-*H*-imidazo[4,5-*c*]pyridine

Trimethylaluminum (11ml of 2.0M in toluene, 22.4mmol) is added dropwise to a solution of N-propyl-pyridine-3,4-diamine(1.70g, 11.2mmol) in dichloromethane(50ml), and the mixture is stirred for 30min at room temperature. To this is added a solution of [2-(6-fluoro-pyridin-2-yl)-imidazol-1-yl]-acetic acid methyl ester(1.32g, 5.61mmol) in dichloromethane(10ml) and the mixture is heated at reflux for 18h. The resulting brown mixture is poured into ice-water and

fitered through celite. The filtrate is extracted with dichloromethane and the combined extracts are washed with saturated brine, dried over anhydrous Na_2SO_4, filtered, concentrated in vacuo, and chromatographed on silica gel to afford 1.22g(65%) of 2-[2-(6-fluoro-pyridin-2-yl)-imidazol-1-ylmethyl]-1-propyl-1-*H*-imidazo[4,5-c]pyridine as a pale yellow solid. ^1H NMR ($CDCl_3$) 9.06(s, 1H), 8.42(d, *J* = 5.6 Hz, 1H), 8.18(dd, *J* = 2.1, 7.6 Hz, 1H), 7.88(dd, *J* = 7.6, 8.4 Hz, 1H), 7.29(d, *J* = 5.6 Hz, 1H), 7.22(s, 1H), 7.18(s, 1H), 6.88(dd, *J* = 2.4, 8.4 Hz, 1H), 6.29(s, 2H), 4.26(t, *J* = 7.6 Hz, 2H), 1.68(sextet, *J* = 7.2 Hz, 2H), 0.84(t, *J* = 7.2 Hz, 3H). LRMS calcd 336.37, found 337.6 (MH+).

Example 27

Synthesis of 3-Ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-c]pyridine



1. Preparation of 3-Chloro-4-nitro-pyridine-1-oxide

Aqueous 30% H_2O_2 (60 mL) was added dropwise to a magnetically stirred solution of 3-chloro-pyridine (12 g, 105 mmol) in acetic anhydride (60 mL) under cold conditions (0 to 10 °C). The resulting mixture was allowed to warm up to room temperature slowly and stirred overnight at room temperature. The reaction mixture was quenched with water (50 mL), diluted with toluene and concentrated to obtain the crude N-oxide as an oil in near quantitative yield.

Fuming H_2SO_4 (25 mL) was added dropwise to a solution of the crude 3-chloro-pyridine-1-oxide in concentrated H_2SO_4 (25 mL) under cold conditions (0 °C) with stirring. HNO_3 (fuming, 90%, 60 mL) was added carefully to the above mixture with caution to keep the offset of any exotherm under control, and then

allowed to warm up to room temperature slowly. The resulting mixture was then heated at 120 °C for 4 h with stirring, cooled, and poured into ice-cold water, and extracted with $CHCl_3$. The combined organic phase was washed successively with saturated aqueous $NaHCO_3$, water, brine, dried over Na_2SO_4, and concentrated in vacuo to afford 3-Chloro-4-nitro-pyridine-1-oxide as an yellow solid (10 g, 55%); ^1H NMR (300 MHz, $CDCl_3$): ^1H NMR (300 MHz, $CDCl_3$): δ 8.31 (d, *J* = 1.5 Hz, 1H), 8.13 (dd, *J* = 1.5, 5.4 Hz, 1H), 7.95 (d, *J* = 7.2 Hz, 1H).

2. Preparation of 3-Ethylamino-4-nitro-pyridine-1-oxide

Anhydrous K_2CO_3 (19 g, 144.5 mmol) was suspended in a solution of 3-Chloro-4-nitro-pyridine-1-oxide (10 g, 57.8 mmol) in anhydrous acetonitrle (100 mL). Excess diethyl amine (2.0 M) in THF was added to the above suspension under cold conditions (ice-bath). After complete addition of diethyl amine, the reaction mixture was allowed to warm up to room temperature and left overnight with stirring. The reaction mixture was filtered to remove K_2CO_3 and the filtrate was evaporated under reduced pressure to remove volatile solvents. The organic residue was subjected to chromatography eluting with 30% EtOAc-hexanes to afford 3-Ethylamino-4-nitro-pyridine-1-oxide as an orange solid (8.2 g, 78%); ^1H NMR (300 MHz, $CDCl_3$): δ 8.0 1 (d, *J* =7.5 Hz, 1H), 7.91(s, 1H), 7.8 (brs, NH), 7.44 (d, *J* = 7.2 Hz, 1H), 3.30 (t, *J* = 7.2 Hz, 2H), 1.39 (t, *J* = 7.2 Hz, 3H), m/z 184 [M+1]

3. Preparation of N^3-Ethyl-pyridine-3,4-diamine

A solution of 3-ethylamino-4-nitro-pyridine 1-oxide (1.5 g, 8.19 mmol), in methanol (30 mL) was hydrogenated over 10% Pd-C (1.5 g) at 50-60 psi for 48 h. The catalyst was removed by filtration through a pad of celite, and the solvent was evaporated under vacuum to afford N^3-Ethyl-pyridine-3,4-diamine as an white solid (1 g; 89 %); ^1H NMR (300 MHz, $CDCl_3$): δ 7.59 (s, 1H), 7.57 (d, *J* = 2.4 Hz, 1H), 6.56 (d, *J* = 5.4 Hz, 1H),

3.20 (t, J = 7.2 Hz, 2H), 1.29 (t, J = 7.2 Hz, 3H), m/z 138 [M+1]

4. Preparation of *N*-(3-Ethylamino-pyridin-4-yl)-2-(2-thiazol-2-yl-imidazol-1-yl)-acetamide

To a solution of the N^3-ethyl-pyridine-3,4-diamine (1.06 g, 7.70 mmol) in anhydrous dichloromethane (40 mL) was added a solution (2.0 M) of Me_3Al (4.8 mL, 9.6 mmol) in toluene slowly under nitrogen; and the resulting mixture was stirred at room temperature for 1 h. (2-Thiazol-2-yl-imidazol-1-yl)-acetic acid methyl ester (860 mg, 3.85 mmol) was added to the above reaction mixture. The resulting suspension was refluxed overnight and then cooled to room temperature. The reaction mixture was decomposed with a few drops of MeOH. The resulting brown precipitate was suspended in 15% MeOH in CH_2Cl_2 (200 mL), subjected to sonication for 25 min, filtered through a pad of celite, and concentrated to afford a mixture of 3-Ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-c]pyridine and *N*-(3-ethylamino-pyridin-4-yl)-2-(2-thiazol-2-yl-imidazol-1-yl)-acetamide in a 2:1 ratio which was carried over to the next step without further purification. A portion of the crude residue was chromatographed over silica gel eluting with 7% MeOH-CH_2Cl_2 containing few drops of NH_4OH to obtain an analytical sample of N-(3-ethylamino-pyridin-4-yl)-2-(2-thiazol-2-yl-imidazol-1-yl)-acetamide for characterization purposes; ^1H NMR (300 MHz, CD_3OD): δ 7.95 (s,1H), 7.87 (d, J = 3.3 Hz, 1H), 7.79 (d, J = 5.4 Hz, 1H), 7.61 (d, J = 3.3 Hz, 1H), 7.42 (d, J = 5.1 Hz, 1H), 7.33 (d, J = 1.5 Hz, 1H), 7.12 (d, J = 1.2 Hz, 1H), 5.51 (s, 2H), 3.2o (t, J = 6.9 Hz, 2H), 1.23 (t, J = 6.9 Hz, 3H); LRMS Calcd 328.38; found 329

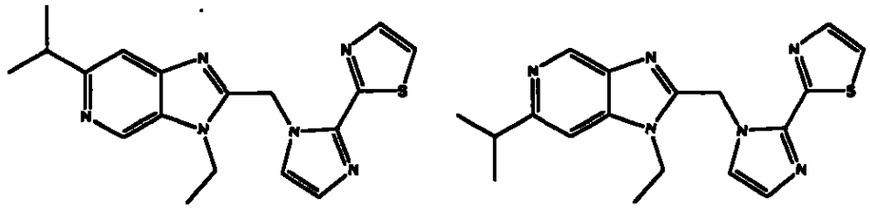
5. Preparation of 3-Ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-c]pyridine

The mixture (2:1) of the cyclized 3-Ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-

c]pyridine and the intermediate *N*-(3-ethylamino-pyridin-4-yl)-2-(2-thiazol-2-yl-imidazol-1-yl)-acetamide obtained from the above Me_3Al-mediated coupling conditions was dissolved in 30 mL of acetic acid and was heated at 115 °C overnight with stirring. Next day, most of the AcOH was evaporated off under reduced pressure. The residue was diluted with 100 mL of CH_2Cl_2, washed with $NaHCO_3$, water, brine, dried over Na_2SO_4, and concentrated. The crude product was purified by chromatography eluting with 3% MeOH-CH_2Cl_2 containing few drops of NH_4OH to afford 3-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-c]pyridine as an white solid (860 mg, 73%); ^1H NMR (300 MHz, CD_3OD): δ 8.87 (s, 1H), 8.30 (d, *J* = 5.7 Hz, 1H), 7.75 (d, *J* = 3.3 Hz, 1H), 7.57 (d, *J* = 4.8 Hz, 1H), 7.52 (d, *J* = 3.3 Hz, 1H), 7.39 (d, *J* = 1.5 Hz, 1H), 7.18 (d, *J* = 1.5 Hz, 1H), 6.29 (s, 2H), 4.52 (q, *J* = 7.5 Hz, 2H), 1.44 (t, *J* = 7.5 Hz, 3H); LRMS Calcd 310.38 found 311; Anal. Calcd for CHNS: C, 58.05, H 4.55, N 27.08. Found C 57.79 ; H, 4.38; N, 27.04.

Example 28

Synthesis of 3-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-3*H*-imidazo[4,5-*c*]pyridine and 1-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-*c*]pyridine



1. Preparation of isobutyrylacetic acid

A mixture of ethyl isobutyrylacetate (20.47 g, 129 mmol) and 1.5 *M* aq NaOH (250 mL) is stirred at rt overnight. The solution is then cooled to 0 °C and acidified to pH 1-2 by the slow addition of conc. HCl (~35 mL). The solution is then saturated with NaCl and extracted thrice with EtOAc and once with $CHCl_3$. The combined extracts are dried over Na_2SO_4 and

concentrated to 14.46 g (86%) of isobutyrylacetic acid as an oil. ^{1}H NMR ($CDCl_3$, 300 MHz) reveals a mixture of keto and enol forms (~4:1), in favor of the keto form. Keto form: 3.57 (s, 2H), 2.73 (sept, J = 6.9 Hz, 1H), 1.16 (d, J = 6.9 Hz, 6H) ppm. Enol form: 11.85 (s, 1H), 5.03 (s, 1H), 2.44 (sept, J = 6.9 Hz, 1H), 1.10 (d, J = 6.9 Hz, 6H) ppm.

2. Preparation of 4-hydroxy-3-isobutyryl-6-isopropyl-pyran-2-one

To a solution of the isobutyrylacetic acid (14.45 g, 111 mmol) in THF (200 mL) at rt under N_2 is added CDI (19.8 g, 122 mmol) in one portion. The yellow solution is stirred at rt for 20 h and then concentrated in vacuo. The residue is dissolved in CH_2Cl_2 and washed with 10% aq HCl (100 mL) followed by H_2O (50 mL). The aqueous washes are reextracted once with CH_2Cl_2, and the combined extracts are dried over Na_2SO_4 and concentrated to 10.27 g (83%) of 4-hydroxy-3-isobutyryl-6-isopropyl-pyran-2-one as a yellow oil. This material is sufficiently pure to be used without further purification in the next reaction. ^{1}H NMR ($CDCl_3$, 300 MHz) 17.02 (s, 1H), 5.92 (s, 1H), 3.94 (sept, J = 6.9 Hz, 1H), 2.72 (sept, J = 6.9 Hz, 1H), 1.25 (d, J = 6.9 Hz, 6H), 1.16 (d, J = 6.9 Hz, 6H) ppm.

3. Preparation of 4-hydroxy-6-isopropyl-pyran-2-one

A solution of 4-hydroxy-3-isobutyryl-6-isopropyl-pyran-2-one (10.26 g, 45.8 mmol) in conc. H_2SO_4 (40 mL) is stirred at 130 °C for 15 min. The dark reaction mixture is then cooled to 0 °C, and crushed ice (~200 g) is added with stirring. The resulting solution is extracted thrice with Et_2O, and the combined extracts are dried over Na_2SO_4 and concentrated. The crude material is purified by flash chromatography on silica gel. Gradient elution with 3:2 hexanes-EtOAc, 1:1 EtOAc-hexanes, 2:1 EtOAc-hexanes, and 3:1 EtOAc-hexanes affords 5.42 g (77%)of 4-hydroxy-6-isopropyl-pyran-2-one as a light yellow solid. ^{1}H NMR ($CDCl_3$, 300 MHz) 11.2 (br, 1H), 6.00 (d, J = 1.8

Hz, 1H), 5.58 (d, J = 1.8 Hz, 1H), 2.73 (sept, J = 6.9 Hz, 1H), 1.22 (d, J = 6.9 Hz, 1H) ppm.

4. Preparation of 4-hydroxy-6-isopropyl-1*H*-pyridin-2-one

A mixture of 4-hydroxy-6-isopropyl-pyran-2-one (4.82 g, 31.3 mmol) in conc. NH_4OH (15 mL) is stirred at 100 °C in a sealed tube for 4 h. The solution is then transferred to a recovery flask and concentrated in vacuo. Toluene is used to azeotropically remove any remaining water. 4-Hydroxy-6-isopropyl-1*H*-pyridin-2-one is obtained as a tan powder (4.73 g, 99%). ^{1}H NMR (DMSO-d_6, 300 MHz) 10.96 (br s, 1H), 10.36 (br s, 1H), 5.59 (d, J = 2.1 Hz, 1H), 5.33 (d, J = 2.1 Hz, 1H), 2.64 (sept, J = 6.9 Hz, 1H), 1.11 (d, J = 6.9 Hz, 6H) ppm.

5. Preparation of 4-hydroxy-6-isopropyl-3-nitro-1*H*-pyridin-2-one

A solution of 4-hydroxy-6-isopropyl-1*H*-pyridin-2-one (1.76 g, 11.5 mmol) in 55-60 mL of 50% aq HNO_3 is stirred at 70 °C for 2.5 h. After cooling, the reaction mixture is poured into ice-cold H_2O (~100 mL). The resulting solution is allowed to sit in the refrigerator for 3.5 days. The solid that precipitates is collected by filtration, washed with water, and dried to afford 1.28 g (56%) of 4-hydroxy-6-isopropyl-3-nitro-1*H*-pyridin-2-one as yellow crystals. ^{1}H NMR (DMSO-d_6, 300 MHz) 12.30 (br s, 1H), 11.82 (br s, 1H), 5.82 (d, J = 1.2 Hz, 1H), 2.71 (sept, J = 6.9 Hz, 1H), 1.13 (d, J = 6.9 Hz, 6H) ppm.

6. Preparation of 4-chloro-6-isopropyl-3-nitro-1*H*-pyridin-2-one

To a suspension of 4-hydroxy-6-isopropyl-3-nitro-1*H*-pyridin-2-one (3.02 g, 15.2 mmol) in CH_3CN (60 mL) at rt is added benzyltriethylammonium chloride (13.88 g, 61.0 mmol). The mixture is stirred at rt for 5-10 min, and then $POCl_3$ (6.25 mL, 67.1 mmol) is added. The reaction mixture is stirred at rt for 15 min and then at reflux for 1 h. After cooling, the

reaction mixture is concentrated in vacuo. The flask is then placed in an ice bath, and the residue treated with H_2O (~60 mL). The mixture is stirred for 4 h while slowly warming to rt. The solid that forms over this period of time is collected by filtration and then washed with H_2O and a small amount of hexanes. 4-Chloro-6-isopropyl-3-nitro-1*H*-pyridin-2-one is obtained as a yellow solid (2.23 g, 68%). ^1H NMR ($CDCl_3$, 300 MHz) 13.13 (br s, 1H), 6.24 (s, 1H), 2.89 (sept, J = 6.9 Hz, 1H), 1.31 (d, J = 6.9 Hz, 6H) ppm.

7. Preparation of 4-amino-6-isopropyl-3-nitro-1*H*-pyridin-2-one

A mixture of 4-chloro-6-isopropyl-3-nitro-1*H*-pyridin-2-one (700 mg, 3.23 mmol) in 6-7 mL of 7 *N* NH_3 in MeOH is stirred at 100 °C in a sealed tube for 1.5 h. . After cooling, the reaction mixture is concentrated in vacuo. The residue is suspended in H_2O, filtered, washed with H_2O, and dried, yielding 528 mg (83%) of 4-amino-6-isopropyl-3-nitro-1*H*-pyridin-2-one. ^1H NMR (DMSO-d_6, 300 MHz) 10.96 (br s, 1H), 8.15 (br s, 2H), 5.70 (d, J = 0.9 Hz, 1H), 2.58 (sept, J = 6.9 Hz, 1H), 1.11 (d, J = 6.9 Hz, 6H) ppm.

8. Preparation of 2-chloro-6-isopropyl-pyridin-4-ylamine

A mixture of 4-amino-6-isopropyl-3-nitro-1*H*-pyridin-2-one (555 mg, 2.81 mmol) in $POCl_3$ (10 mL) is stirred at reflux under N_2 for 1.5 h. After cooling, the solution is concentrated in vacuo. The reaction flask is then placed in an ice bath, and crushed ice (~20 g) is added to the residue. The mixture is swirled vigorously for several minutes and then stirred at rt for 30 min. The mixture is then extracted with EtOAc. The extract is washed with an additional 20 mL of H_2O. The aqueous washes are reextracted once with EtOAc, and the combined extracts are dried over Na_2SO_4 and concentrated, yielding 2-chloro-6-isopropyl-pyridin-4-ylamine as an orange oil (685 mg, >100%). This material was used without further purification. ^1H NMR (DMSO-d_6, 300 MHz) 7.27 (br s, 2H), 6.65 (s, 1H), 2.77 (sept, J = 6.9 Hz, 1H), 1.13 (d, J = 6.9 Hz, 6H) ppm.

9. Preparation of 6-isopropyl-pyridine-3,4-diamine hydrochloride

A solution of 2-chloro-6-isopropyl-pyridin-4-ylamine (684 mg, 3.17 mmol) in MeOH (10-15 mL) containing 10% Pd/C (~70 mg) is stirred under an atmosphere of H_2 (double stuffed balloon) for 5 h. The reaction mixture is then filtered through a pad of Celite using MeOH, and the filtrate is concentrated in vacuo. The residue is dissolved in a small amount of MeOH and further diluted with toluene. The solution is then concentrated in vacuo. This is repeated once more, affording 6-isopropyl-pyridine-3,4-diamine hydrochloride as an orange-yellow solid (629 mg, >100%). ^{1}H NMR (DMSO-d_6, 300 MHz) 13.26 (br, 1H), 7.45, 7.40 (br m, 3H), 6.59 (s, 1H), 5.48 (br, 2H), 2.94 (sept, J = 6.9 Hz, 1H), 1.19 (d, J = 6.9 Hz, 6H) ppm.

10. Preparation of 6-isopropyl-2-(2-thiazol-2-yl-imidazol-1-ylmethyl)-1*H*-imidazo[4,5-*c*]pyridine

To a mixture of 6-isopropyl-pyridine-3,4-diamine hydrochloride (265 mg, 1.41 mmol) in 1,2-dichloroethane (10 mL) at rt under N_2 is added 2.0 *M* $AlMe_3$ in toluene (2.12 mL, 4.24 mmol). The mixture is stirred at rt for 45 min and then treated with a solution of (2-thiazol-2-yl-imidazol-1-yl)-acetic acid methyl ester (252 mg, 1.13 mmol) in 1,2-dichloroethane (2 mL) via cannula, followed by a 1 mL rinse. The reaction mixture is then stirred at reflux for 20 h. After cooling, the reaction mixture is diluted with some MeOH (~2 mL), followed by some water and then satd aq $NaHCO_3$. The resulting mixture is stirred vigorously for 15 min. The mixture is then extracted thrice with $CHCl_3$ containing some (~5%) MeOH. The combined extracts are dried over Na_2SO_4 and concentrated. The crude residue is then triturated with $CHCl_3$, and the resulting mixture filtered. The solid is washed with a small amount of $CHCl_3$ and dried, affording *N*-(4-amino-6-isopropyl-pyridin-3-yl)-2-(2-thiazol-2-yl-imidazol-1-yl)-acetamide (173 mg, 45%) as an off-white solid. ^{1}H NMR (DMSO-

d_6, 300 MHz) 9.52 (s, 1H), 7.86 (s, 1H), 7.85 (d, J = 3.3 Hz, 1H), 7.75 (d, J = 3.6 Hz, 1H), 7.39 (s, 1H), 7.04 (d, J = 0.9 Hz, 1H), 6.45 (s, 1H), 5.65 (s, 2H), 5.38 (s, 2H), 2.74 (sept, J = 6.9 Hz, 1H), 1.13 (d, J = 6.9 Hz, 6H) ppm. The filtrate is concentrated and further purified by flash chromatography on silica gel. Elution with 20:1 $CHCl_3$-MeOH followed by 15:1 $CHCl_3$-MeOH affords 6-isopropyl-2-(2-thiazol-2-yl-imidazol-1-ylmethyl)-1*H*-imidazo[4,5-*c*]pyridine (160 mg, 44%). ^1H NMR ($CDCl_3$, 300 MHz) 12.23 (br, 1H), 8.97 (br, 1H), 7.94 (d, J = 2.7 Hz, 1H), 7.43 (d, J = 3.3 Hz, 1H), 7.23 (br, 1H), 7.20 (d, J = 0.9 Hz, 1H), 7.04 (s, 1H), 5.82 (s, 2H), 3.14 (sept, J = 6.9 Hz, 1H), 1.30 (d, J = 6.9 Hz, 6H) ppm.

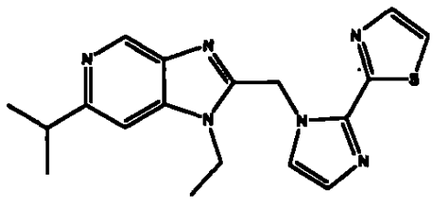
11. Preparation of 3-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-3*H*-imidazo[4,5-*c*]pyridine and 1-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-*c*]pyridine

To a solution of 6-isopropyl-2-(2-thiazol-2-yl-imidazol-1-ylmethyl)-1*H*-imidazo[4,5-*c*]pyridine (160 mg, 0.493 mmol) in DMF (1.0 mL) at rt under N_2 is added Cs_2CO_3 (168 mg, 0.518 mmol) followed by iodoethane (0.047 mL, 0.592 mmol). The mixture is stirred at rt for 1 h and then diluted with water and extracted twice with CH_2Cl_2. The combined extracts are dried over K_2CO_3 and concentrated. The residue is purified by preparative TLC, developing with 15:1 $CHCl_3$-MeOH (+0.5% Et_3N). The less polar (top) band affords 45 mg (26%) of 3-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-3*H*-imidazo[4,5-*c*]pyridine. ^1H NMR ($CDCl_3$, 300 MHz) 8.70 (d, J = 1.2 Hz, 1H), 7.83 (d, J = 3.0 Hz, 1H), 7.53 (d, J = 0.9 Hz, 1H), 7.39 (d, J = 3.0 Hz, 1H), 7.18 (d, J = 0.9 Hz, 1H), 7.14 (d, J = 0.9 Hz, 1H), 6.32 (s, 2H), 4.32 (q, J = 7.2 Hz, 2H), 3.18 (sept, J = 6.9 Hz, 1H), 1.34 (d, J = 6.9 Hz, 6H), 1.17 (t, J = 7.2 Hz, 3H) ppm. The more polar (bottom) band affords 74 mg (43%) of 1-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-*c*]pyridine. ^1H NMR ($CDCl_3$, 300 MHz) 9.01 (s, 1H), 7.83 (d, J = 3.2 Hz, 1H), 7.38

(d, J = 3.2 Hz, 1H), 7.15 (s, 1H), 7.12 (s, 1H), 7.09 (s, 1H), 6.32 (s, 2H), 4.21 (q, J = 7.2 Hz, 2H), 3.17 (sept, J = 6.9 Hz, 1H), 1.34 (d, J = 6.8 Hz, 6H), 1.10 (t, J = 7.2 Hz, 3H) ppm.

Example 29

Synthesis of 1-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-*c*]pyridine



1. Preparation of 4-ethylamino-6-isopropyl-3-nitro-1*H*-pyridin-2-one

To a mixture of 4-chloro-6-isopropyl-3-nitro-1*H*-pyridin-2-one (**Example 28**, step 6) (500 mg, 2.31 mmol) in CH_3CN at rt is added $EtNH_2 \cdot HCl$ (565 mg, 6.92 mmol) followed by Et_3N (1.29 mL, 9.23 mmol). The reaction mixture is then stirred in a sealed tube at 100 °C for 1.5 h. After cooling, the reaction mixture is diluted with CH_2Cl_2 and washed with H_2O (2 x 25 mL). The aqueous washes are reextracted once with CH_2Cl_2, and the combined extracts are dried over Na_2SO_4 and concentrated to 527 mg (100%) of 4-ethylamino-6-isopropyl-3-nitro-1*H*-pyridin-2-one as a yellow-orange solid. The material is sufficiently pure to be used without further purification. ^1H NMR (DMSO-d_6, 400 MHz) 11.1 (br, 1H), 8.93 (m, 1H), 5.73 (s, 1H), 3.37 (dq, J = 7.4, 6.8 Hz, 2H), 2.67 (sept, J = 6.8 Hz, 1H), 1.17 (t, J = 7.4 Hz, 3H), 1.15 (d, J = 6.8 Hz, 6H) ppm.

2. Preparation of (2-chloro-6-isopropyl-3-nitro-pyridin-4-yl)-ethyl-amine

A mixture of 4-ethylamino-6-isopropyl-3-nitro-1*H*-pyridin-2-one (520 mg, 2.31 mmol) in $POCl_3$ is stirred at reflux for 1.5 h. After cooling, the solution is concentrated in vacuo. The reaction flask is then placed in an ice bath and crushed ice

is added to the residue. The mixture is swirled vigorously for a few minutes and then stirred at 0 °C for 1 h. The mixture is then extracted with EtOAc. The extract is washed with additional H_2O (20 mL) and brine (20 mL). The extract is dried over Na_2SO_4 and concentrated to 0.57 g (>100%) of (2-chloro-6-isopropyl-3-nitro-pyridin-4-yl)-ethyl-amine as a yellow solid. The material is sufficiently pure to be used without further purification. ^1H NMR ($CDCl_3$, 400 MHz) 6.62 (br, 1H), 6.44 (s, 1H), 3.31 (m, 2H), 2.91 (sept, J = 6.8 Hz, 1H), 1.33 (t, J = 7.4 Hz, 3H), 1.26 (d, J = 6.8 Hz, 6H) ppm.

3. Preparation of *N*⁴-ethyl-6-isopropyl-pyridine-3,4-diamine hydrochloride

A solution of (2-chloro-6-isopropyl-3-nitro-pyridin-4-yl)-ethyl-amine (0.56 g, 2.30 mmol) in MeOH (20 mL) containing 10% Pd/C (~50 mg) is stirred under and atmosphere of H_2 for 3.5 h. The reaction mixture is then filtered through a pad of Celite using MeOH. The filtrate is concentrated in vacuo. Toluene is added to the residue and then removed in vacuo. This is repeated once more, yielding 0.46 g (93%) of *N*⁴-ethyl-6-isopropyl-pyridine-3,4-diamine hydrochloride as a dark solid. ^1H NMR (CD_3OD, 400 MHz)
7.46 (s, 1H), 6.60 (s, 1H), 3.43 (q, J = 7.4 Hz, 2H), 3.03 (sept, J = 6.8 Hz, 1H), 1.35 (t, J = 7.4 Hz, 3H), 1.33 (d, J = 6.8 Hz, 6H) ppm.

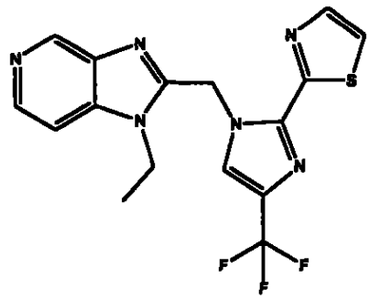
4. Preparation of 1-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-*c*]pyridine

To a suspension of *N*⁴-ethyl-6-isopropyl-pyridine-3,4-diamine hydrochloride (126 mg, 0.582 mmol) in CH_2Cl_2 (5 mL) at rt under N_2 is added 2.0 *M* $AlMe_3$ in toluene (0.35 mL, 0.728 mmol). The dark solution is then stirred at rt for 45 min. Next, a solution of (2-Thiazol-2-yl-imidazol-1-yl)-acetic acid methyl ester (65 mg, 0.291 mmol) in CH_2Cl_2 (2 mL) is added via cannula followed by a 1 mL rinse. The reaction mixture is stirred at reflux overnight. After cooling, it is treated

with MeOH (~0.5 mL) and then diluted with 0.5 *N* NaOH and additional CH_2Cl_2. The mixture is stirred vigorously for 15 min and then extracted thrice with CH_2Cl_2 containing some (~5%) MeOH. The combined extracts are dried over K_2CO_3 and concentrated to 156 mg of a crude mixture of the desired 1-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-*c*]pyridine and *N*-(4-amino-6-isopropyl-pyridin-3-yl)-2-(2-thiazol-2-yl-imidazol-1-yl)-acetamide. This material is then dissolved in AcOH (6 mL), and the resulting solution is stirred at reflux for 5 h. After cooling, the reaction mixture is concentrated in vacuo. The residue is dissolved in CH_2Cl_2 and washed with 0.5 *N* NaOH. The aqueous layer is reextracted twice with CH_2Cl_2, and the combined extracts are dried over K_2CO_3 and concentrated. The crude material is purified by preparative TLC. Developing with 15:1 $CHCl_3$ yields 78 mg (76%) of 1-ethyl-6-isopropyl-2-{[2-(1,3-thiazol-2-yl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-*c*]pyridine. ^1H NMR ($CDCl_3$, 400 MHz) 9.01 (s, 1H), 7.83 (d, J = 3.2 Hz, 1H), 7.38 (d, J = 3.2 Hz, 1H), 7.15 (s, 1H), 7.12 (s, 1H), 7.09 (s, 1H), 6.32 (s, 2H), 4.21 (q, J = 7.2 Hz, 2H), 3.17 (sept, J = 6.8 Hz, 1H), 1.34 (d, J = 6.8 Hz, 6H), 1.10 (t, J = 7.2 Hz, 3H) ppm.

Example 30

Synthesis of 1-ethyl-2-{[2-(1,3-thiazol-2-yl)-4-(trifluoromethyl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-*c*]pyridine



1. Preparation of 2-(4-trifluoromethyl-1*H*-imidazol-2-yl)-thiazole

Analogous to the published procedure (*J. Med. Chem.* 2000, 43, 2165-2175), 1,1-dibromo-3,3,3-trifluoroacetone (4.47 g, 16.6 mmol) is added to a solution of NaOAc (2.72 g, 33.1 mmol) in H_2O (15 mL). The resulting solution is stirred at 100 °C for 30 min and then allowed to cool to rt. Next, a solution of 2-thiazolecarboxaldehyde (1.5 g, 13.3 mmol) in MeOH (15 mL), containing conc. NH_4OH (5 mL), is added. The reaction mixture is then stirred at rt for 20 h. It is then filtered and the solid washed with H_2O and dried. 2-(4-Trifluoromethyl-1*H*-imidazol-2-yl)-thiazole (1.1 g, 38%) is obtained as an off-white fluffy solid. ^1H NMR (DMSO-d_6, 400 MHz) 13.81 (br, 1H), 7.97 (d, J = 3.2 Hz, 1H), 7.94 (s, 1H), 7.87 (d, J = 3.2 Hz, 1H) ppm.

2. Preparation of (2-thiazol-2-yl-4-trifluoromethyl-imidazol-1-yl)-acetic acid methyl ester

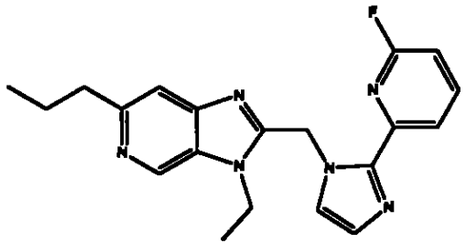
To a suspension of NaH (109 mg of a 60% dispersion in mineral oil, 2.74 mmol) in THF (10 mL) at 0 °C under N_2 is added a solution of 2-(4-trifluoromethyl-1*H*-imidazol-2-yl)-thiazole (500 mg, 2.28 mmol) in THF (4 mL) via cannula, followed by a 1 mL rinse. The mixture is stirred at 0 °C for 30 min and then treated with methyl bromoacetate (0.28 mL, 2.97 mmol). The reaction mixture is stirred overnight while slowly warming to rt. It is then diluted with H_2O (10 mL) and the resulting mixture stirred vigorously for 5 min. The mixture is further diluted with some brine and then extracted twice with EtOAc. The combined extracts are dried over Na_2SO_4 and concentrated. The crude material is purified by flash chromatography on silica gel. Elution with 4:1 hexanes-EtOAc followed by 3:1 hexanes-EtOAc affords 31 mg (6%) of unreacted 2-(4-trifluoromethyl-1*H*-imidazol-2-yl)-thiazole as well as 539 mg (81%) of (2-thiazol-2-yl-4-trifluoromethyl-imidazol-1-yl)-acetic acid methyl ester. ^1H NMR ($CDCl_3$, 400 MHz) 7.82 (d, J = 3.2 Hz, 1H), 7.40 (d, J = 3.2 Hz, 1H), 7.35 (s, 1H), 5.41 (s, 2H), 3.77 (s, 3H) ppm.

3. Preparation of 1-ethyl-2-{[2-(1,3-thiazol-2-yl)-4-(trifluoromethyl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-c]pyridine

To a mixture of *N*⁴-ethyl-pyridine-3,4-diamine (94 mg, 0.687 mmol) in CH_2Cl_2 (5 mL) at rt under N_2 is added 2.0 *M* $AlMe_3$ in toluene (0.43 mL, 0.858 mmol), and the resulting mixture is stirred at rt for 1 h. Next, a solution of (2-thiazol-2-yl-4-trifluoromethyl-imidazol-1-yl)-acetic acid methyl ester (100 mg, 0.343 mmol) in CH_2Cl_2 is added via cannula. The reaction mixture is then stirred at reflux overnight. After cooling to rt, it is treated with MeOH (~1 mL). The mixture is further diluted with 0.5 *N* aq NaOH (10 mL) and then stirred vigorously for 30 min. The mixture is then extracted thrice with CH_2Cl_2 containing some (~5%) MeOH, and the combined extracts are dried over K_2CO_3 and concentrated. The crude mixture of 1-ethyl-2-{[2-(1,3-thiazol-2-yl)-4-(trifluoromethyl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-c]pyridine and *N*-(4-amino-pyridin-3-yl)-2-(2-thiazol-2-yl-4-trifluoromethyl-imidazol-1-yl)-acetamide is dissolved in AcOH (6 mL), and the resulting solution stirred at reflux overnight. The reaction mixture is then concentrated, and the residue is dissolved in CH_2Cl_2 and washed with 0.5 *N* aq NaOH. The aqueous layer is reextracted once with CH_2Cl_2, and the combined extracts are dried over K_2CO_3 and concentrated. The crude residue is purified by preparative TLC. Developing with 15:1 $CHCl_3$-MeOH affords 110 mg (85%) of 1-ethyl-2-{[2-(1,3-thiazol-2-yl)-4-(trifluoromethyl)-1*H*-imidazol-1-yl]methyl}-1*H*-imidazo[4,5-c]pyridine. ^1H NMR ($CDCl_3$, 400 MHz) 9.10 (s, 1H), 8.47 (d, J = 6.0 Hz, 1H), 7.88 (d, J = 3.2 Hz, 1H), 7.58 (s, 1H), 7.48 (d, J = 3.2 Hz, 1H), 7.31 (d, J = 5.6 Hz, 1H), 6.37 (s, 2H), 4.31 (q, J = 7.2 Hz, 2H), 1.24 (t, J = 7.2 Hz, 3H) ppm.

Example 31

Synthesis of 3-ethyl-2-{[2-(6-fluoropyridin-2-yl)-1*H*-imidazol-1-yl]methyl}-6-propyl-3*H*-imidazo[4,5-c]pyridine



1. Preparation of *N*-(4-amino-6-propyl-pyridin-3-yl)-acetamide

To a mixture of 6-propyl-pyridine-3,4-diamine hydrochloride (prepared from ethyl butyrylacetate as described in **Example 28**, steps 1-9) (187 mg, 1.00 mmol) in CH_2Cl_2 (4 mL) at 0 °C under N_2 is added pyridine (0.24 mL, 3.00 mmol) followed by DMF (2 mL) (for solubility). Next, Ac_2O (0.104 mL, 1.1 mmol) is added. The reaction mixture is stirred for 3 h while slowly warming to rt. It is then poured into satd aq $NaHCO_3$ and extracted thrice with CH_2Cl_2. The combined extracts are dried over K_2CO_3 and concentrated to 114 mg of crude *N*-(4-amino-6-propyl-pyridin-3-yl)-acetamide, which was used without further purification. ^1H NMR ($CDCl_3$, 300 MHz) 8.73 (br, 1H), 8.00 (s, 1H), 8.43 (s, 1H), 4.63 (br, 2H), 2.54 (m, 2H), 2.13 (s, 3H), 1.63 (sextet, J = 7.2 Hz, 2H), 0.89 (t, J = 7.2 Hz, 3H) ppm. Electrospray MS: m/z 194 [M + 1].

2. Preparation of N^3-ethyl-6-propyl-pyridine-3,4-diamine

A solution of the crude *N*-(4-amino-6-propyl-pyridin-3-yl)-acetamide (114 mg, 0.59 mmol) in THF (2.5 mL) at 0 °C under N_2 is treated with 0.5 *M* $EtNMe_2 \cdot AlH_3$ in toluene (2.4 mL, 1.18 mmol). The reaction mixture is stirred for 4 h while slowly warming to rt, whereupon it is treated with additional 0.5 *M* $EtNMe_2 \cdot AlH_3$ in toluene (2.4 mL, 1.18 mmol). After stirring at rt overnight, the reaction mixture is cooled to 0 °C and treated with moist Na_2CO_3. The mixture is diluted with CH_2Cl_2 and stirred vigorously for 15 min. It is then filtered through a pad of Celite, and the filtrate concentrated. The crude material is partially purified by preparative thin layer chromatography, developing with 15:1 $CHCl_3$-MeOH (+1% Et_3N). The band containing the desired N^3-ethyl-6-propyl-pyridine-3,4-

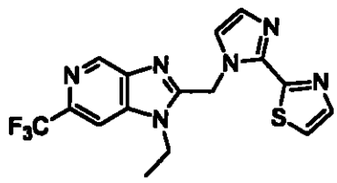
diamine does not separate well from the approximately 10% of the slightly more polar, unreacted *N*-(4-amino-6-propyl-pyridin-3-yl)-acetamide. Both bands are collected, and the mixture (82 mg) is carried into the next reaction. ^{1}H NMR ($CDCl_3$, 300 MHz) 7.74 (s, 1H), 6.42 (s, 1H), 4.10 (br, 1H), 3.67 (m, 1H), 3.10 (q, J = 7.2 Hz, 2H), 2.56 (m, 2H), 1.67 (sextet, J = 7.2 Hz, 2H), 1.25 (t, J = 7.2 Hz, 3H), 0.91 (t, J = 7.2 Hz, 3H) ppm. Electrospray MS: *m/z* 180 [M + 1].

3. Preparation of 3-ethyl-2-{[2-(6-fluoropyridin-2-yl)-1*H*-imidazol-1-yl]methyl}-6-propyl-3*H*-imidazo[4,5-*c*]pyridine

A solution of N^3-ethyl-6-propyl-pyridine-3,4-diamine (82 mg, ~0.45 mmol, contaminated with ~10% of *N*-(4-amino-6-propyl-pyridin-3-yl)-acetamide) in 1,2-dichloroethane (4 mL) at rt under N_2 is treated with 2.0 *M* $AlMe_3$ (0.69 mL, 1.37 mmol). The resulting solution is stirred at rt for 30 min and then treated with a solution of [2-(6-fluoro-pyridin-2-yl)-imidazol-1-yl]-acetic acid methyl ester (97 mg, 0.41 mmol) in 1,2-dichloroethane via cannula, followed by a 1 mL rinse. The reaction mixture is then stirred at reflux overnight. After cooling, it is treated with MeOH (~2 mL) and then further diluted with satd aq $NaHCO_3$ (~10 mL) and some H_2O. The mixture is stirred vigorously for 15 min and then extracted thrice with $CHCl_3$ containing some (~5%) MeOH. The combined extracts are dried over K_2CO_3 and concentrated. The crude material is purified by preparative thin layer chromatography. Developing with 15:1 $CHCl_3$-MeOH yields 77 mg of 3-ethyl-2-{[2-(6-fluoropyridin-2-yl)-1*H*-imidazol-1-yl]methyl}-6-propyl-3*H*-imidazo[4,5-*c*]pyridine as an off-white solid. ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.70 (d, J = 0.9 Hz, 1H), 8.17 (dd, J = 8.0, 2.6 Hz, 1H), 7.89 (q, J = 7.8 Hz, 1H), 7.47 (s, 1H), 7.22 (d, J = 0.9 Hz, 1H), 7.18 (d, J = 1.5 Hz, 1H), 6.88 (dd, J = 8.6, 2.9 Hz, 1H), 6.27 (s, 2H), 4.42 (q, J = 7.2 Hz, 2H), 2.86 (m, 2H), 1.78 (sextet, J = 7.2 Hz, 2H), 1.30 (t, J = 7.2 Hz, 3H), 0.97 (t, J = 7.2 Hz, 3H) ppm. Electrospray MS: *m/z* 365 [M + 1].

Example 32

Synthesis of 1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-6-(trifluoromethyl)-1H-imidazo[4,5-c]pyridine



1. Preparation of 5-Nitro-2-trifluoromethyl-pyridin-4-ol

To a stirred solution of 4-hydroxy-2-trifluoromethylpyridine [*Chemistry of Heterocyclic Compounds* 1997, *33*, 995-996] (4g, 24.5 mmol) in concentrated H_2SO_4 (10 mL) was added dropwise 25 mL of fuming H_2SO_4 under cold conditions (0 °C). HNO_3 (fuming, 90%, 25 mL) was added carefully to the above mixture with caution to keep the offset of any exotherm under control, and the reaction was allowed to warm up to room temperature slowly. After heating at 120 °C for 6 h with stirring, the resulting mixture was cooled to room temperature, poured into ice-cold water maintaining the pH around 1 with the addition of 10N NaOH solution, and then extracted with $CHCl_3$. The combined organic phase was washed successively with saturated aqueous $NaHCO_3$, water, brine, dried over Na_2SO_4, and concentrated in vacuo to afford 5-nitro-2-trifluoromethyl-pyridin-4-ol as an yellow solid (3.4 g, 66 %); ^1H NMR (300 MHz, $CDCl_3$): δ 9.33 (s, 1H), 7.50 (s, 1H).

2. Preparation of 4-Chloro-5-nitro-2-trifluoromethyl-pyridine

The crude 5-nitro-2-trifluoromethyl-pyridin-4-ol (3.4 g, 16.3 mmmol) was treated with PCl_5 (5.2 g, 24.97 mmol) and $POCl_3$ (7 mL, 24.49 mmol). The resulting mixture was heated at 80 °C for 18 h, cooled and poured into ice-cold water, and extracted with CH_2Cl_2. The combined organic phase was washed successively with saturated aqueous $NaHCO_3$, water, brine, dried over Na_2SO_4, and concentrated in vacuo to afford 4-Chloro-5-nitro-2-

trifluoromethyl-pyridine as an yellow oil (3.71 g, 99%); ^{1}H NMR (300 MHz, $CDCl_3$): δ 9.17 (s, 1H), 7.9 (s, 1H).

3. Preparation of Ethyl-(5-nitro-2-trifluoromethyl-pyridin-4-yl)-amine

To a solution of 4-chloro-5-nitro-2-trifluoromethyl-pyridine (3.4 g, 15.0 mmol) in acetonitrile (30 mL) were added K_2CO_3 (4.15 g, 30.01 mmol), and 2.0 M solution of $EtNH_2$ (15 mL, 30.01mmol) in THF under cold conditions. The reaction was complete after stirring at 0°C for 2h. Usual work up afforded ethyl-(5-nitro-2-trifluoromethyl-pyridin-4-yl)-amine as an yellow-orange viscous oil (3.5 g, 100 %); ^{1}H NMR (300 MHz, $CDCl_3$): δ 9.24 (s, 1H), 7.09 (s, 1H), 3.45 (t, J = 7.2 Hz, 2H), 1.42 (t, J = 7.2 Hz, 3H) .

4. Preparation of N^4-Ethyl-6-trifluoromethyl-pyridine-3,4-diamine

Ethyl-(5-nitro-2-trifluoromethyl-pyridin-4-yl)-amine was hydrogenated under usual conditions to afford N^4-ethyl-6-trifluoromethyl-pyridine-3,4-diamine; ^{1}H NMR (300 MHz, CD_3OD): δ 7.71 (s, 1H), 6.75 (s,1H), 3.28 (t, J = 6.9 Hz, 2H), 1.31 (t, J = 6.9 Hz, 3H).

5. Preparation of 2-Chloromethyl-1-ethyl-6-trifluoromethyl-1*H*-imidazo[4,5-c]pyridine

To a solution of N^4-ethyl-6-trifluoromethyl-pyridine-3,4-diamine (1.44 g, 7.02 mmol) in EtOH (20 mL) was added HCl salt of ethyl 2-chloro-acetimidate (3.90 g, 24.58 mmol) and refluxed for 3 h. The reaction mixture was cooled to room temperature and concentrated under reduced pressure. The residue was diluted with CH_2Cl_2, washed with $NaHCO_3$ solution, dried over Na_2SO_4, and concentrated to obtain 2-chloromethyl-1-ethyl-6-trifluoromethyl-1*H*-imidazo[4,5-c]pyridine (1.6g, 95%); ^{1}H NMR (300 MHz, $CDCl_3$): δ 9.14(s, 1H), 7.66 (s,1H), 7.26 (s,

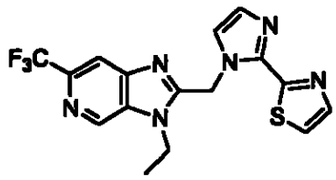
1H), 4.87 (s, 2H), 4.40 (t, J = 7.5 Hz, 2H), 1.58 (t, J = 7.5 Hz, 3H).

6. Preparation of 1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-6-(trifluoromethyl)-1H-imidazo[4,5-c]pyridine

A solution of 2-Chloromethyl-1-ethyl-6-trifluoromethyl-1*H*-imidazo[4,5-c]pyridine (1 g , 3.8 mmol) in anhydrous DMF (15 mL) were added K_2CO_3 (2.68 g, 19 mmol), and 2-(1H-imidazol-2-yl)-thiazole (555mg, 3.8 mmol) and stirred at room temperature for 48 h. The crude residue after usual work up was purified eluting with 5% MeOH-CH_2Cl_2 containing few drops of NH_4OH to afford1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-6-(trifluoromethyl)-1H-imidazo[4,5-c]pyridine (800 mg, 80 %); ^{1}H NMR (CD_3OD): δ 8.83 (s, 1H), 8.14 (s, 1H), 7.71 (d, J = 2.7 Hz, 1H), 7.53 (d, J = 2.7 Hz, 1H), 7.45 (d, J = 0.9 Hz, 1H), 7.19 (d, J = 0.9 Hz, 1H), 6.30 (s, 2H), 4.54 (q, J = 5.4 Hz, 2H), 1.46 (t, J = 5.4 Hz, 3H); m/z 379 [M+1]

Example 33

Synthesis of 3-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-6-(trifluoromethyl)-3H-imidazo[4,5-c]pyridine



1. Preparation of 5-Nitro-2-trifluoromethyl-pyridin-4-ylamine

Ammonia gas was bubbled through a solution of 2-trifluoromethyl-4-chloro-5-nitro-pyridine (4.12 g,18.23 mmol) in anhydrous THF at room temperature for 3 h. Removal of solvent under reduced pressure afforded 5-nitro-2-trifluoromethyl-pyridin-4-ylamine (3.6 g, 96%); ^{1}H NMR (300 MHz, $CDCl_3$): δ 7.15 (s, 1H), 9.15 (s,1H).

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2. Preparation of 6-Trifluoromethyl-pyridine-3,4-diamine

Hyrogenation as described in the previous examples provided 6-trifluoromethyl-pyridine-3,4-diamine. ^{1}H NMR (300 MHz, $CDCl_3$): δ 6.95 (s, 1H), 8.01 (s,1H).

3. Preparation of N^3-ethyl-6-trifluoromethyl-pyridine-3,4-diamine

Cesium carbonate (3.1 g, 26.88 mmol) and ethyl iodide (1.76 g, 10.75 mmol) were added to a solution of 6-trifluoromethyl-pyridine-3,4-diamine (1.05 g, 8.96 mmol) in anhydrous DMF (12 mL). The mixture was heated in a sealed tube for 18 h, then cooled to room temperature, and diluted with EtOAc and water. Usual work up and purification by column chromatography eluting with EtOAc-hexanes provided pure N^3-Ethyl-6-trifluoromethyl-pyridine-3,4-diamine (600 mg, 45 %); ^{1}H NMR (300 MHz, $CDCl_3$): δ 7.95 (s, 1H); 6.95 (s, 1H), 3.21 (q, J = 5.4 Hz, 2H), 1.35 (t, J = 5.4 Hz, 3H).

4. Preparation of 2-Chloromethyl-3-ethyl-6-trifluoromethyl-3*H*-imidazo[4,5-c]pyridine

2-Chloromethyl-3-ethyl-6-trifluoromethyl-3*H*-imidazo[4,5-c]pyridine was made from N^3-Ethyl 6-Trifluoromethyl-pyridine-3,4-diamine following the procedure described previously for the preparation of 2-Chloromethyl-1-ethyl-6-trifluoromethyl-1*H*-imidazo[4,5-c]pyridine; ^{1}H NMR (300 MHz, $CDCl_3$): δ 8.89 (s, 1H), 8.04 (s,1H), 4.87 (s, 2H), 4.45 (t, J = 7.2 Hz, 2H), 1.59 (t, J = 7.2 Hz, 3H)

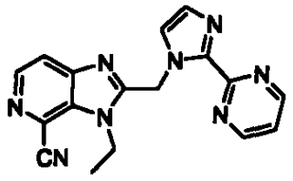
5. Preparation of 3-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-6-(trifluoromethyl)-3H-imidazo[4,5-c]pyridine

As described previously for the preparation of 1-Ethyl-2-(2-thiazol-2-yl-imidazol-1-ylmethyl)-6-trifluoromethyl-1*H*-imidazo[4,5-c]pyridine, nucleophilic displacement of the 2-

chloromethyl-3-ethyl-6-trifluoromethyl-3*H*-imidazo[4,5-c]pyridine with the same 2-(1*H*-imidazol-2-yl)-thiazole followed by usual work provided 3-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-6-(trifluoromethyl)-3H-imidazo[4,5-c]pyridine; ^{1}H NMR (CD_3OD) 9.02 (s, 1H), 7.89 (s, 1H), 7.70 (d, J = 3 Hz, 1H), 7.52 (d, J = 3.3 Hz, 1H), 7.46 (d, J = 1.5 Hz, 1H), 7.19 (d, J = 1.5 Hz, 1H), 6.29 (s, 2H), 4.56 (q, J = 7.5 Hz, 2H), 1.52 (t, J = 7.5 Hz, 3H) m/z 379 [M+1]

Example 34

Synthesis of 3-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-c]pyridine-4-carbonitrile



1. Preparation of 3-Ethylamino-4-nitro-pyridine-2-carbonitrile

To a solution of 3-ethylamino-4-nitro-pyridine-1-oxide (1 g, 6.94 mmol) in anhydrous DMF (10 mL) were added TMSCN (1.1 ml, 8.33 mmol) and dimethyl amino carbamoyl chloride (0.76 mL, 8.33 mmoL). The reaction mixture was stirred overnight at 80 °C, cooled to room temperature, and diluted with CH_2Cl_2 and water. The combined organic layer was washed with water, brine, dried over Na_2SO_4, and concentrated. The residue was chromatographed eluting with 40% EtOAc-hexanes to afford 3-ethylamino-4-nitro-pyridine-2-carbonitrile as an yellow solid (314 mg, 30%); ^{1}H NMR (300 MHz, CD_3OD): □ 7.82 (d, *J* = 4.5 Hz, 1H), 7.50 (d, *J* = 4.5 Hz, 1H), 3.70 (q, *J* = 7.2 Hz, 2H), 1.39 (t, *J* = 7.2 Hz, 3H).

2. Preparation of 4-Amino-3-ethylamino-pyridine-2-carbonitrile

Hydrogenaton of 3-Ethylamino-4-nitro-pyridine-2-carbonitrile under conditions previously described provided 4-Amino-3-ethylamino-pyridine-2-carbonitrile. ^{1}H NMR (300 MHz, CD_3OD): □ 7.75 (d, *J* = 5.4 Hz, 1H), 6.66 (d, *J* = 5.4Hz, 1H), 3.35 (q, *J* = 7.2 Hz, 2H), 1.29 (t, *J* = 7.2 Hz, 3H).

3. Preparation of 2-Chloromethyl-3-ethyl-3*H*-imidazo[4,5-c]pyridine-4-carbonitrile

2-Chloromethyl-3-ethyl-3*H*-imidazo[4,5-c]pyridine-4-carbonitrile was prepared from the reaction of 4-amino-3-ethylamino-pyridine-2-carbonitrile and 2-chloro acetimidate following the previously described procedure; ^{1}H NMR (300 MHz, $CDCl_3$): □ 8.55 (d, *J* = 5.4 Hz, 1H), 7.84 (d, *J* = 5.4 Hz, 1H), 4.98 (s, 2H), 3.41 (q, *J* = 7.5 Hz, 2H), 1.23 (t, *J* = 7.5 Hz, 3H).

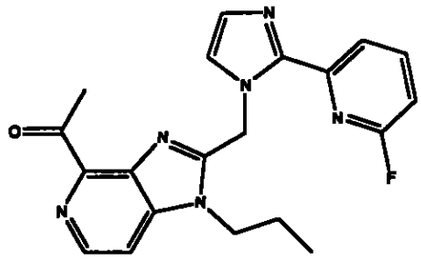
4. Preparation of 3-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-c]pyridine-4-carbonitrile

3-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-c]pyridine-4-carbonitrile was obtained from 2-chloromethyl-3-ethyl-3*H*-imidazo[4,5-c]pyridine-4-carbonitrile by nucleophilic displacement with 2-(1*H*-Imidazol-2-yl)-pyrimidine as described previously followed by usual work up; ^{1}H NMR (300 MHz, CD_3OD): □ 8.70 (d, *J* = 5.1 Hz, 2H), 8.41 (d, *J* = 5.4 Hz, 1H), 7.73 (d, *J* = 5.1 Hz, 1H), 7.52 (d, *J* = 1.2 Hz, 1H), 7.31 (d, *J* = 1.2 Hz, 1H), 7.27 (t, *J* = 4.5 Hz, 1H), 6.35 (s, 2H), 4.75 (q, *J* = 7.5 Hz, 2H), 1.63 (t, *J* = 7.2 Hz, 3H); m/z 331 [M+1].

Example 35

Synthesis of 1-(2-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-1-propyl-1H-imidazo[4,5-c]pyridin-4-yl)ethanone

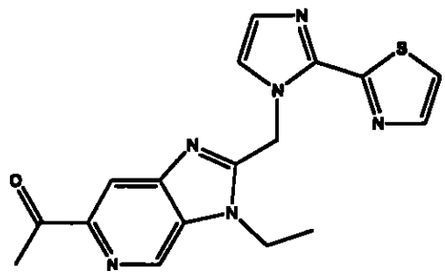
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To the mixture of H_2O (5 mL) and CH_2Cl_2 (5 mL) is added 1-Propyl-2- {[2-(2-fluoropyrid-6-yl)-1H-imidazol-1-yl]methyl}-5-aza-1H-benzimidazole (168 mg, 0.5 mmol), pyruvic acid (132 mg, 1.5 mmol), silver nitrate (7 mg, 0.04 mmol), $(NH_4)_2S_2O_8$ (342 mg, 1.5 mmol), and sulfuric acid (98%, 100 mg, 1.0 mmol). The mixture is heated to 40 °C for 2 hr, then cooled down to room temperature. The aqueous solution is neutralized to pH 8 with saturated sodium bicarbonate solution and extracted with CH_2Cl_2. The combined organic layers are dried over Na_2SO_4 and solvent is removed to give 150 mg of brown solid. Purification by preparative TLC provides 65 mg of '1-(2-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-1-propyl-1H-imidazo[4,5-c]pyridin-4-yl)ethanone as white solid. ^1H NMR ($CDCl_3$) 8.48 (d, 1H), 8.12 (dd, 1H), 7.88 (q, 1H), 7.44 (d, 1H), 7.23 (d, 1H), 7.11 (d, 1H), 6.88 (dd, 1H), 6.40 (s, 2H), 4.22 (q, 2H), 2.84 (s, 3H), 1.58 (m, 2H), 0.74 (t, 3H).

Example 36

Synthesis of 1-(3-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-c]pyridin-6-yl)ethanone



1. Preparation of 2,5-Dichloro-pyridine 1-oxide

A mixture of 2,5-Dichlropyridine (30g, 0.2 mmol) and 3-Chloroperoxybenzoic acid (70%, 50g, 0.2 mmol) in 500 mL of Dichloroethane is heated at 50 °C overnight. After cooled to -30 °C, NH_3 gas is bubbled into the reaction mixture for 5 minutes. The mixture is filtered, the solid is washed with Dichloroethane (50 mL), and the filtrate is concentrated to a solid. The solid is mixed with 200 mL of Hexane and heated at reflux for 30 minutes. After cooled, the precipitate is collected by filtration, and dried to give the titled compound (19 g) as a tan solid. ^1H NMR ($CDCl_3$): 8.40 (d, 1H), 7.44 (d, 1H), 7.22 (t, 1H).

2. Preparation of 2,5-dichloro-4-nitro-pyridine 1-oxide

At 0°C, 30% oleum (13 mL) is added slowly to fuming HNO_3 (22 mL) and the resulting mixture is added slowly to the solution of 2,5-dichloro-pyridine 1-oxide (5.2 g, 31 mmol) in concentrated H_2SO_4. After addition, the reaction mixture is warmed to room temperature over 1 hr, then heated to 80 °C for 2 hr. After cooled down to room temperature, the mixture is poured into ice (120 g) and precipitate is formed gradually. The solid is collected by filtration and washed with water. 3.8 g of product is obtained as yellow solid. ^1H NMR (CDCl3) 8.46 (s, 1H), 8.25 (s, 1H).

3. Preparation of (6-Chloro-4-nitro-1-oxy-pyridin-3-yl)-ethylamine

To a solution of 2,5-Dichloro-4-nitro-pyridine 1-oxide (7 g, 33mmol) in 100 mL of THF is added a solution of Ethylamine (2M, 50 mL) dropwise at °C. The reaction mixture is warmed to room temperature and stirred overnight. The volatiles are evaporated in vacuo. The residue is purified on a silica gel column with 1% CH_2Cl_2 as eluent to give 6.5 g of the titled compound as an orange solid. ^1H NMR ($CDCl_3$): 8.24 (s, 1H), 8.06 (s, 1H), 7.62 (br, 1H), 3.25 (q, 2H), 1.38 (t, 3H).

4. Preparation of 1-(5-ethylamino-4-nitro-pyridin-2-yl)-ethanone

To a sealed tube is added (6-chloro-4-nitro-1-oxy-pyridin-3-yl)ethyl-amine (700 mg, 3.2 mmol), tributyl-(1-ethoxy-vinyl)-stannane (1.75 g, 4.9 mmol), $PdCl_2(PPh_3)_2$ (350 mg, 0.5 mmol), and toluene (35 mL) and the mixture is degassed for 30 min. The reaction is heated to 75 °C for 16 hr and then cooled down to room temperature. To the mixture is added 6N HCl solution (20 mL) and the reaction is stirred at room temperature for 1 hr. The reaction mixture is filtered through celite and the aqueous is neutralized to basic with saturated $NaHCO_3$. The aqueous layer is extracted with ethyl acetate and the combined organic layers are dried over Na_2SO_4. The solvent is removed in vacuo and purification by flash column provides 310 mg of product as orange solid. ^1H NMR (CDCl3) 8.70 (s, 1H), 8.48 (s, 1H), 7.96 (br, 1H), 3.55 (m, 2H), 2.65 (s, 3H), 0.92 (t, 3H). LRMS 210.1 (MH+).

5. Preparation of 1-(4-amino-5-ethylamino-pyridin-2-yl)-ethanone

A mixture of 1-(5-ethylamino-4-nitro-pyridin-2-yl)-ethanone (310 mg, 1.5 mmol) and 10% Pd/C (50 mg) in ethanol (10 mL) is stirred under hydrogen for 1 hr. The mixture is filtered through Celite and concentrated in vacuo to give 65 mg of product as yellow solid. ^1H NMR (CD3OD) 7.61 (s, 1H), 7.30 (s, 1H), 3.26 (q, 2H), 2.53 (s, 3H), 0.90 (t, 3H). LRMS 180.5 (MH+).

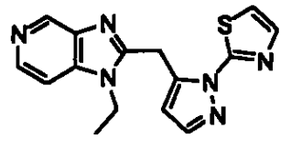
6. Preparation of 1-(3-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-c]pyridin-6-yl)ethanone

A mixture of 1-(4-amino-5-ethylamino-pyridin-2-yl)-ethanone (54 mg, 0.3 mmol), (2-thiazol-2-yl-imidazol-1-yl)-acetic acid (61 mg, 0.3 mmol), EDCI (60 mg, 0.3 mmol), and pyridine (2 mL) is stirred at room temperature for 72 hr and then poured into water. The aqueous layer is extracted with ethyl acetate and the combined organic layers are dried over

Na_2SO_4. Solvent is evaporated in vacuo and the residue is taken up in acetic acid (5 mL). The mixture is heated to reflux for 16 hr and saturated $NaHCO_3$ solution is added to neutralize the reaction. The aqueous solution is extracted with ethyl acetate and the combined organic layers are dried over Na_2SO_4. Solvent is removed in vacuo and purification by preparative TLC provides 25 mg of product as white solid. ^1H NMR (CDCl3) 8.79 (d, 2H), 8.47 (d, 1H), 7.83 (d, 1H), 7.40 (d, 1H), 7.19 (d, 1H), 7.15 (d, 1H), 6.39 (s, 2H), 4.02 (q, 2H), 2.77 (s, 3H), 1.86 (t, 3H). LRMS 353.2 (MH+).

Example 37

Synthesis of 1-Ethyl-2-(2-thiazol-2-yl-2H-pyrazol-3-ylmethyl)-1H-imidazo[4,5-c]pyridine



1. Preparation of (2-Thiazol-2-yl-2H-pyrazol-3-yl)-acetic acid ethyl ester

A mixture of thiazol-2-ylhydrazine (2.2 g, 19.1 mmol) and 3,5,5-triethoxy-pent-2-enoic acid ethyl ester (70% purity, 7.1 g, 19.1 mmol) is refluxed in acetic acid overnight. Acetic acid is removed. To the residue is added $NaHCO_3$ (aq.) (40 mL) and ethyl acetate (100 mL). The insoluble material is filtered. The organic layer is dried and solvent removed. The crude is subjected to column separation (hexane/ethyl acetate 3:1) to give 0.83 g of (2-thiazol-2-yl-2H-pyrazol-3-yl)-acetic acid ethyl ester as an oil.

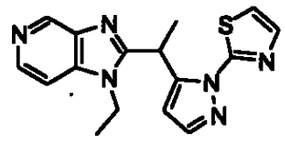
2. Preparation of 1-Ethyl-2-(2-thiazol-2-yl-2H-pyrazol-3-ylmethyl)-1H-imidazo[4,5-c]pyridine

To a solution of N^4-Ethyl-pyridine-3,4-diamine (156 mg, 1.14 mmol) in DCM (5 mL) is added dropwise trimethylaluminum (2M in toluene)(1.4 mL, 2.85 mmol) under N_2. The mixture is

stirred at room temperature for 1 hour. A solution of thiazol-2-yl-2H-pyrazol-3-yl)-acetic acid ethyl ester (270 mg, 1.14 mmol) in DCM (2 mL) is added. The mixture is reluxed for 25 hours. On cooling, the reaction is quenched with water dropwise and DCM (20 mL) is added. The organic layer is separated and the aqueous layer is extracted with DCM (3 x 30 mL). The combined organic layers are dried and solvent removed. To the residue is added acetic acid (10 mL). The solution is refluxed for 3.5 h. Acetic acid is removed in vacuo and the residue is purified by PTLC (10% methanol in DCM) to give 45 mg of 1-Ethyl-2-(2-thiazol-2-yl-2H-pyrazol-3-ylmethyl)-1H-imidazo[4,5-c]pyridine as a solid. ^{1}H NMR ($CDCl_3$) 9.00 (s, 1H), 8.43 (d, 1H), 7.63 (d, 1H), 7.43 (d, 1H), 7.15 (d, 1H), 7.06 (d, 1H), 6.25 (d, 1H), 4.99 (s, 2H), 4.25 (q, 2H), 1.36 (t, 3H).

Example 38

Synthesis of 1-Ethyl-2-[1-(2-thiazol-2-yl-2H-pyrazol-3-yl)-ethyl]-1H-imidazo[4,5-c]pyridine



1. Preparation of 2-(2-Thiazol-2-yl-2H-pyrazol-3-yl)-propionic acid ethyl ester

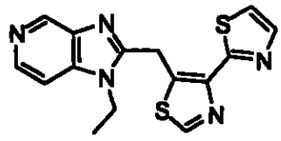
A mixture of (2-thiazol-2-yl-2H-pyrazol-3-yl)-acetic acid ethyl ester (100 mg, 0.42 mmol) , methyl iodide (66 mg, 0.46 mmol) and cesium carbonate (151 mg, 0.46 mmol) in DMF (6 mL) is stirred at room temperature overnight. The reaction is quenched with NH_4Cl (aq.) (6 mL) and ethyl acetate (30 mL). The organic layer is separated and the aqueous layer is extracted with ethyl acetate (3 x 30 mL). The combined organic layers are dried and solvent removed. The crude is purified by PTLC (hexane/ethyl acetate 3:1) to give 90 mg of 2-(2-thiazol-2-yl-2H-pyrazol-3-yl)-propionic acid ethyl ester as an oil.

2. Preparation of 1-Ethyl-2-[1-(2-thiazol-2-yl-2H-pyrazol-3-yl)-ethyl]-1H-imidazo[4,5-c]pyridine

To a solution of N^4-Ethyl-pyridine-3,4-diamine (44 mg, 0.32 mmol) in DCM (5 mL) is added dropwise trimethylaluminum (2M in toluene)(0.5 mL, 1 mmol)) under N_2. The mixture is stirred at room temperature for 1 hour. A solution of thiazol-2-yl-2H-pyrazol-3-yl)-propionic acid ethyl ester (80 mg, 0.32 mmol) in DCM (2 mL) is added. The mixture is reluxed for 3 days. On cooling, the reaction is quenched with water dropwise and DCM (20 mL) is added. The organic layer is separated and the aqueous layer is extracted with DCM (3 x 30 mL). The combined organic layers are dried and solvent removed. The residue is purified by PTLC (10% methanol in DCM) to give 49 mg of 1-ethyl-2-[1-(2-thiazol-2-yl-2H-pyrazol-3-yl)-ethyl]-1H-imidazo[4,5-c]pyridine as a solid. ^{1}H NMR ($CDCl_3$) 9.05 (s, 1H), 8.39 (d, 1H), 7.59 (d, 1H), 7.49 (d, 1H), 7.25 (d, 1H), 7.09 (d, 1H), 6.28 (d, 1H), 5.85 (q, 1H), 4.19 (q, 2H), 1.85 (d, 3H), 1.29 (t, 3H).

Example 39

Synthesis of 2-[2,4']Bithiazolyl-5'-ylmethyl-1-ethyl-1H-imidazo[4,5-c]pyridine



1. Preparation of 4-Oxo-4-thiazol-2-yl-butyric acid ethyl ester

To a stirred solution of 2-trimethylsilanyl-thiazole (2.6 g, 16.53 mmol) in DCM (30 mL) is added a solution of 3-chlorocarbonyl-propionic acid ethyl ester (5.4 g, 32.81 mmol)in DCM (10 mL). The misture is stirred at room temperature overnight. To the mixture is added 5% $NaHCO_3$ (30 mL) and mixture is stirred at room temperature for 20 minutes.

The organic layer is separated and the aqueous lay is extracted with DCM (2 x 50 mL). The combined organic layers are dried and solvent removed. The residue is separated by column (methylene chloride) to give 1.9 g of 4-oxo-4-thiazol-2-yl-butyric acid ethyl ester.

2. Preparation of 3-Bromo-4-oxo-4-thiazol-2-yl-butyric acid ethyl ester

To a solution of 4-oxo-4-thiazol-2-yl-butyric acid ethyl ester (1.9 g, 8.91 mmol) in DCM (30 mL) is added a solution of phenyltrimethylammonium tribromide (3.4 g, 8.91 mmol) in DCM (20 mL) dropwise. The mixture is stirred at room temperature overnight. To the mixture is added 5% $NaHCO_3$ (40 mL). The organic layer is separated and the aqueous layer is extracted with DCM (2 x 40 mL). The combined organic layers are dried and solvent removed. The residue is purified by column (hexanes/ethyl acetate 3:1) to give 2.2 g of 3-bromo-4-oxo-4-thiazol-2-yl-butyric acid ethyl ester.

3. Preparation of [2,4']Bithiazolyl-5'-yl-acetic acid ethyl ester

To a solution of 3-bromo-4-oxo-4-thiazol-2-yl-butyric acid ethyl ester (2.2 g, 7.53 mmol) in 1,4-dioxane (40 mL) is added thioformamide (freshly made from formamide and P_2S_5 in 1,4-dioxane) (22.59 mmol). The mixture is refluxed overnight. The solvent is removed and to the residue is added $NaHCO_3$ (aq.) (40 mL) and DCM (100 mL). The organic layer is separated and the aqueous layer is extracted with DCM (2 x 40 mL). The combined organic layers are dried and solvent removed. The crude is purified by column (1% methanol n DCM) to give 0.45 g of [2,4']bithiazolyl-5'-yl-acetic acid ethyl ester.

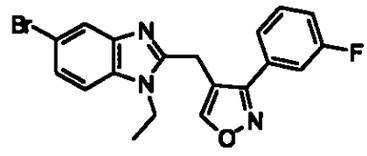
4. Preparation of 2-[2,4']Bithiazolyl-5'-ylmethyl-1-ethyl-1H-imidazo[4,5-c]pyridine

To a solution of N^4-Ethyl-pyridine-3,4-diamine (237 mg, 1.73 mmol) in DCM (5 mL) is added dropwise trimethylaluminum

(2M in toluene)(2.2 mL, 4.4 mmol) under N_2. The mixture is stirred at room temperature for 1 hour. A solution of [2,4']bithiazolyl-5'-yl-acetic acid ethyl ester (440 mg, 1.73 mmol mmol) in DCM (2 mL) is added. The mixture is reluxed for 3 days. On cooling, the reaction is quenched with water dropwise and DCM (40 mL) is added. The organic layer is separated and the aqueous layer is extracted with DCM (3 x 30 mL). The combined organic layers are dried and solvent removed. The residue is purified by PTLC (10% methanol in DCM) to give 80 mg of 2-[2,4']bithiazolyl-5'-ylmethyl-1-ethyl-1H-imidazo[4,5-c]pyridine as a solid. ^{1}H NMR ($CDCl_3$) 9.05 (s, 1H0, 8.76 (s, 1H), 8.41 (d, 1H), 7.88 (d, 1H), 7.41 (d, 1H), 7.25 (d, 1H), 5.35 (s, 2H), 4.26 (q, 2H), 1.25 (t, 3H).

Example 40

Synthesis of 5-Bromo-1-ethyl-2-[3-(3-fluoro-phenyl)-isoxazol-4-ylmethyl]-1H-benzoimidazole



1. Preparation of 3-(5-Bromo-1-ethyl-1H-benzoimidazol-2-yl)-1-(3-fluoro-phenyl)-propan-1-one

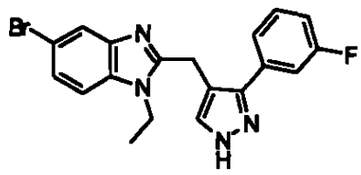
To a solution of 1-(3-fluoro-phenyl)-ethanone (0.55 g, 4.0 mmol) in THF (30 mL) at -78°C under N_2 is added LDA (2M in hexanes, 2.0 mL, 4.0 mmol). After 10 minutes, 5-bromo-2-chloromethyl-1-ethyl-1H-benzoimidazole (1 g, 3.65 mmol) in THF (5 mL) is added. The mixture is stirred at this temperature for an additional 1 hour and is gradually warmed to room temperature. The reaction is then quenched with saturated NH_4Cl. The mixture is extracted with ethyl acetate (3 x 50 mL). Upon drying, the organic solvent is removed to give 1.2 g of 3-(5-Bromo-1-ethyl-1H-benzoimidazol-2-yl)-1-(3-fluoro-phenyl)-propan-1-one as a yellow oil.

2. Preparation of 5-Bromo-1-ethyl-2-[3-(3-fluoro-phenyl)-isoxazol-4-ylmethyl]-1H-benzoimidazole

A mixture of 3-(5-Bromo-1-ethyl-1H-benzoimidazol-2-yl)-1-(3-fluoro-phenyl)-propan-1-one (0.1 g, 0.27 mmol) and tris(dimethylamino)methane (0.077g, 0.54 mmol) is heated at 60 °C in a sealed tube for 6 hours. The volatile material is removed in vacuo. To the residue is added EtOH (5 mL) and hydroxylamine (1.1 mmol). The mixture is heated at 120 °C for 2 hours. The solvent is removed. To the residue is added $NaHCO_3$ (aq.) (10 mL) and DCM (30 mL). The organic layer is separated and the aqueous layer is extracted with DCM (2 x 15 mL). The combined organic layers are dried and the solvent removed. The crude is purified by PTLC (ethyl acetate/Hexanes 1:1) to give 62 mg of 5-Bromo-1-ethyl-2-[3-(3-fluoro-phenyl)-isoxazol-4-ylmethyl]-1H-benzoimidazole as a solid. ^1H NMR ($CDCl_3$) 8.40 (s, 1H), 7.88 (s, 1H), 7.31-7.52 (m, 4H), 7.18-7.22 (m, 2H), 4.14 (s, 2H), 4.04 (q, 2H), 1.18 (t, 3H).

Example 41

Synthesis of 5-Bromo-1-ethyl-2-[3-(3-fluoro-phenyl)-1H-pyrazol-4-ylmethyl]-1H-benzoimidazole

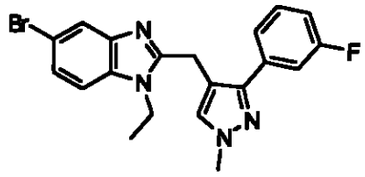


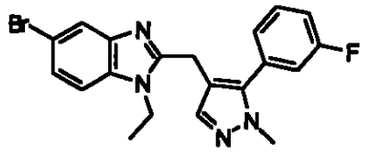
A mixture of 3-(5-Bromo-1-ethyl-1H-benzoimidazol-2-yl)-1-(3-fluoro-phenyl)-propan-1-one (0.1 g, 0.27 mmol) and tris(dimethylamino)methane (0.077g, 0.54 mmol) is heated at 60 °C in a sealed tube for 6 hours. The volatile material is removed in vacuo. To the residue is added EtOH (5 mL) and hydrazine acetate (1.1 mmol). The mixture is heated at 120 °C for 2 hours. The solvent is removed. To the residue is added $NaHCO_3$ (aq.) (10 mL) and DCM (30 mL). The organic layer is separated and the aqueous layer is extracted with DCM (2 x 15 mL). The combined organic layers are dried and the solvent

removed. The crude is purified by PTLC (ethyl acetate/Hexanes 1:1) to give 71 mg of 5-bromo-1-ethyl-2-[3-(3-fluoro-phenyl)-1H-pyrazol-4-ylmethyl]-1H-benzoimidazole as a solid. LRMS: calcd 399.3, found [M+1] 401.0.

Example 42

Synthesis of 5-Bromo-1-ethyl-2-[3-(3-fluoro-phenyl)-1-methyl-1H-pyrazol-4-ylmethyl]-1H-benzoimidazole and 5-Bromo-1-ethyl-2-[5-(3-fluoro-phenyl)-1-methyl-1H-pyrazol-4-ylmethyl]-1H-benzoimidazole



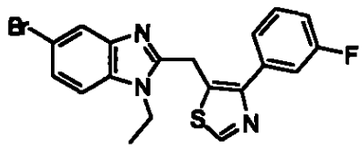


A mixture of 3-(5-Bromo-1-ethyl-1H-benzoimidazol-2-yl)-1-(3-fluoro-phenyl)-propan-1-one (0.1 g, 0.27 mmol) and tris(dimethylamino)methane (0.077g, 0.54 mmol) is heated at 60 °C in a sealed tube for 6 hours. The volatile material is removed in vacuo. To the residue is added EtOH (5 mL) and methyl hydrazine (1.1 mmol). The mixture is heated at 120 °C for 2 hours. The solvent is removed. To the residue is added $NaHCO_3$ (aq.) (10 mL) and DCM (30 mL). The organic layer is separated and the aqueous layer is extracted with DCM (2 x 15 mL). The combined organic layers are dried and the solvent removed. The crude is purified by PTLC (ethyl acetate/Hexanes 1:1) to give 41 mg of 5-bromo-1-ethyl-2-[3-(3-fluoro-phenyl)-1-methyl-1H-pyrazol-4-ylmethyl]-1H-benzoimidazole and 18 mg of 5-bromo-1-ethyl-2-[5-(3-fluoro-phenyl)-1-methyl-1H-pyrazol-4-ylmethyl]-1H-benzoimidazole. 5-bromo-1-ethyl-2-[3-(3-fluoro-phenyl)-1-methyl-1H-pyrazol-4-ylmethyl]-1H-benzoimidazole: ^1H

NMR ($CDCl_3$) 7.88 (s, 1H), 7.27-7.42 (m, 4H), 7.00-7.20 (m, 3H), 4.21 (s, 2H), 3.95 (t, 2H), 3.83 (s, 3H), 1.15 (t, 3H). 5-bromo-1-ethyl-2-[5-(3-fluoro-phenyl)-1-methyl-1H-pyrazol-4-ylmethyl]-1H-benzoimidazole: ^1H NMR ($CDCl_3$) 7.81 (s, 1H), 7.38-7.45 (m, 2H), 7.32 (dd, 1H), 7.00-7.18 (m, 4H), 4.00 (s, 2H), 3.90 (q, 2H), 3.78 (s, 3H), 1.15 (t, 3H).

Example 43

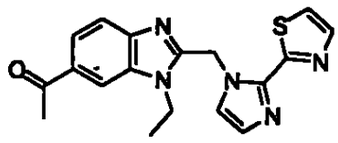
Synthesis of 5-Bromo-1-ethyl-2-[4-(3-fluoro-phenyl)-thiazol-5-ylmethyl]-1H-benzoimidazole



A mixture of 3-(5-bromo-1-ethyl-1H-benzoimidazol-2-yl)-1-(3-fluoro-phenyl)-propan-1-one (0.2 g, 0.53 mmol) and bromine (0.1 g, 0.62 mmol) is refluxed in 1,4-dioxane for 2 hours. To the solution is added thioformamide (freshly made from formamide and P_2S_5 in 1,4-dioxane) (1.3 mmol). The mixture is refluxed overnight. The solvent is removed and to the residue is added $NaHCO_3$ (aq.) (15 mL) and DCM (40 mL). The organic layer is separated and the aqueous layer is extracted with DCM (2 x 30 mL). The combined organic layers are dried and solvent removed. The crude is purified by PTLC (5% methanol in DCM) to give 26 mg of 5-bromo-1-ethyl-2-[4-(3-fluoro-phenyl)-thiazol-5-ylmethyl]-1H-benzoimidazole. ^1H NMR ($CDCl_3$) 8.78 (s, 1H), 7.91 (s, 1H), 7.38-7.48 (m, 4H), 7.11-7.19 (m, 2H), 4.59 (s, 2H), 3.90 (q, 2H), 1.12 (t, 3H).

Example 44

Synthesis of 1-[3-Ethyl-2-(2-thiazol-2-yl-imidazol-1-ylmethyl)-3H-benzoimidazol-5-yl]-ethanone



1. Preparation of (5-Chloro-2-nitro-phenyl)-ethyl-amine

A mixture of 4-cloro-2-fluoronitrobenzene (5 g, 28.48 mmol), ethylamine (2M in THF, 24 mL, 48 mmol), and K_2CO_3 (7.9 g, 57 mmol) in acetonitrile (30 mL) is stirred at room temperature overnight. Solvent is removed. To the residue is added ethyl acetate (80 mL) and brine (40 mL). The organic layer is separated and the aqueous layer is extracted with ethyl acetate (2 x 50 mL). The combined organic layers are dried and solvent removed to give 5 g of 5-chloro-2-nitro-phenyl)-ethyl-amine.

2. Preparation of 1-(3-Ethylamino-4-nitro-phenyl)-ethanone

A mixture of 5-chloro-2-nitro-phenyl)-ethyl-amine (1 g, 4.98 mmol), tributyl-(1-ethoxyvinyl)stannane (2.7 g, 7.48 mmol) and dichlorobis(triphenylphosphine)palladium (II) (175 mg, 0.25 mmol) in toluene (80 mL) is heated at 100°C in a sealed tube for 5 hours. On cooling, water (30 mL) and HCl (con. 30 mL) are added and the mixture is stirred at room temperature for 2 hours. The mixture is neutralized with NaOH (2 N) and extracted with DCM (3 x 50 mL). The combined organic layers are dried and solvent removed. The residue is purified by column (hexanes / ethyl acetate 3:1) to give 0.98 g of 1-(3-ethylamino-4-nitro-phenyl)-ethanone.

3. Preparation of 1-(4-Amino-3-ethylamino-phenyl)-ethanone

To a Parr bottle containing 1-(3-ethylamino-4-nitro-phenyl)-ethanone (0.98 g, 4.7 mmol) in ethanol (40 mL) is added 10% Pd/C (100 mg). The Parr bottle is sealed in a mechanical shaker, evacuated, and then purged with nitrogen followed by hydrogen. The system is pressurized to 50 PSI of hydrogen at room temperature and mechanical shaking engaged.

After 2 hours, shaking is stopped, and the system purged with nitrogen prior to opening the vessel. The reaction mixture is filtered through celite, concentrated in vacuo, to give 0.76 g of 1-(4-amino-3-ethylamino-phenyl)-ethanone.

4. Preparation of 1-(2-Chloromethyl-3-ethyl-3H-benzoimidazol-5-yl)-ethanone

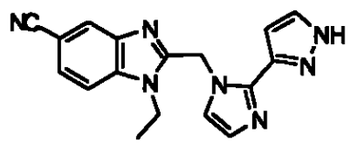
A mixture of 1-(4-amino-3-ethylamino-phenyl)-ethanone (300 mg, 1.69 mmol) and 2-chloroacetamidine hydrochloride (804 mg, 5.1 mmol) in acetonitrile (20 mL) is refluxed for 3 hours. Solvent is removed and the residue is treated with $NaHCO_3$ (5%, 20 mL) and DCM (50 mL). The organic layer is separated and the aqueous layer is extracted with DCM (2 x 40 mL). The combined organic layers are dried and solvent removed to give 389 mg of 1-(2-Chloromethyl-3-ethyl-3H-benzoimidazol-5-yl)-ethanone.

5. Preparation of 1-[3-Ethyl-2-(2-thiazol-2-yl-imidazol-1-ylmethyl)-3H-benzoimidazol-5-yl]-ethanone

A mixture of 1-(2-Chloromethyl-3-ethyl-3H-benzoimidazol-5-yl)-ethanone (150 mg, 0.63 mmol), 2-(1H-Imidazol-2-yl)-thiazole (95 mg, 0.63 mmol) and K_2CO_3 (262 mg, 1.9 mmol) in DMF (10 mL) is stirred at room temperature for 48 hours. Brine (6 mL) and DCM (20 mL) are added. The organic layer is separated and the aqueous layer is extracted with DCM (3 x 29 mL). The combined organic layers are dried and solvent removed. The residue is purified by PTLC (10% methanol in DCM) to give 90 mg of 1-[3-Ethyl-2-(2-thiazol-2-yl-imidazol-1-ylmethyl)-3H-benzoimidazol-5-yl]-ethanone as a solid. ^1H NMR ($CDCl_3$) 8.05 (d, 1H), 7.92 (dd, 1H), 7.87 (dd, 1H), 7.81 (dd, 1H), 7.40 (d, 1H), 7.20 (d, 1H), 7.14 (d, 1H), 6.17 (s, 2H), 4.33 (q, 2H), 2.67 (s, 3H), 1.13 (t, 3H).

Example 45

Synthesis of 1-Ethyl-2-[2-(1H-pyrazol-3-yl)-imidazol-1-ylmethyl]-1H-benzoimidazole-5-carbonitrile



1. Preparation of 3-(1H-Imidazol-2-yl)-pyrazole-1-carboxylic acid tert-butyl ester

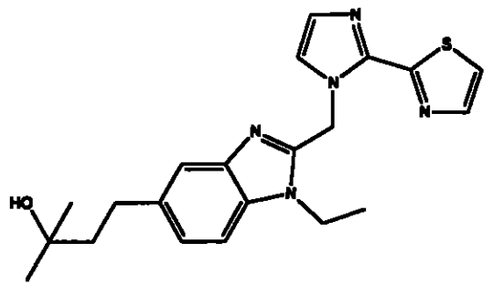
A mixture of 1H-Pyrazole-3-carbaldehyde (1 g, 10.4 mmol), di-tert-butyl dicarbonate (11.4 mmol) and N,N-dimethylpyridine (20 mg) in DCM (15 mL) and methanol (5 mL) is stirred at room temperature overnight. Solvent is removed. To the residue is added glyoxal (6 mL) and ammonium hydroxie (8 mL) and the mixture is stirred at room temperature for 1.5 hours. To the mixture is added acetic acid dropwise to pH ~ 7. Solvent is removed and DCM (50 mL) and brine (30 mL) are added to the residue. The organic layer is separated and the aqueous layer is extracted with DCM (2 x 40 mL). The combined organic layers are dried and solvent removed to give 1.8 g of 3-(1H-imidazol-2-yl)-pyrazole-1-carboxylic acid tert-butyl ester.

2. Preparation of 1-Ethyl-2-[2-(1*H*-pyrazol-3-yl)-imidazol-1-ylmethyl]-1*H*-benzoimidazole-5-carbonitrile

As described previously, nucleophilic displacement of 2-Chloromethyl-1-ethyl-1*H*-benzoimidazole-5-carbonitrile with 3-(1*H*-Imidazol-2-yl)-pyrazole-1-carboxylic acid tert-butyl ester followed by usual work provided 1-Ethyl-2-[2-(1*H*-pyrazol-3-yl)-imidazol-1-ylmethyl]-1*H*-benzoimidazole-5-carbonitrile; ^{1}H NMR (CD_3OD) δ 7.97 (s, 1H), 7.53 (brs, 1H), 7.46 (d, J = 8.7 Hz, 1H), 7.35 (d, J = 8.1 Hz, 1H), 6.97 (d, J = 6.3 Hz, 2H), 6.79 (br s, 1H), 6.10 (s, 2H), 4.22 (q, J = 7.2 Hz, 2H), 0.88 (t, J = 7.2 Hz, 3H); m/z 318 [M+1].

Example 46

Synthesis of 4-(1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)-2-methylbutan-2-ol



1. Preparation of 4-(1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)-2-methyl-1-but-3-yn-2-ol

To the solution of 1-ethyl-5-bromo-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazole (100 mg, 0.26 mmol) in *i*-Pr_2NH (5 mL) is added Pd $(PPh_3)_4$ (15 mg, 0.013 mmol), CuI (5 mg, 0.026 mmol), and 2-methyl-but-3-yn-2-ol (250 μL, 2.6 mmol). The resulting mixture is heated to 100 °C for 20 hr, and then diluted with water. The aqueous layer is extracted with ethyl acetate. The combined organic layers are dried over Na_2SO_4 and solvent is removed to give 76 mg of brown oil. Purification by preparative TLC provides 40 mg of product as yellow solid. LCMS 392.37 (MH+).

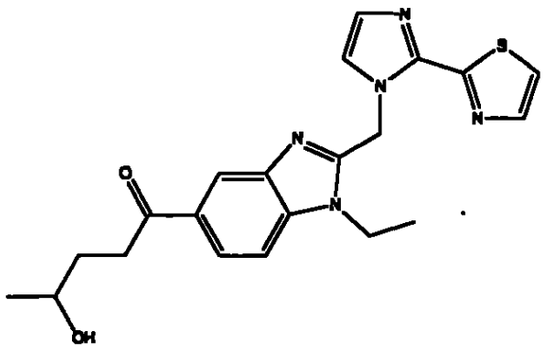
2. Preparation of 4-(1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)-2-methylbutan-2-ol

To a Parr bottle containing 4-(1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)-2-methyl-1-but-3-yn-2-ol (40 mg, 0.1 mmol) in ethanol (10 mL) is added 10% Pd/C (50 mg). The Parr bottle is sealed in a mechanical shaker, evacuated, and then purged with nitrogen followed by hydrogen. The system is pressurized to 40 PSI of hydrogen at room temperature and mechanical shaking engaged. After 2 hours, shaking is stopped, and the system purged with nitrogen prior to opening the vessel. The reaction mixture is filtered through celite and concentrated in vacuo. 25 mg of

product is obtained as white solid. ^{1}H NMR (CDCl3) 7.85 (d, 1H), 7.60 (s, 1H), 7.38 (d, 1H), 7.22 (m, 1H), 7.15 (m, 2H), 7.09 (s, 1H), 6.31 (s, 2H), 4.17 (q, 2H), 2.80 (m, 2H), 1.81 (m, 2H), 1.22 (d, 6H), 1.01 (t, 3H). LCMS 396.38 (MH+).

Example 47

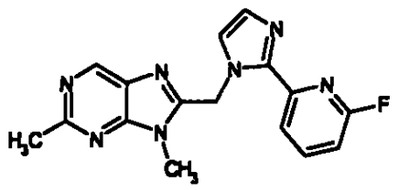
Synthesis of 1-(1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)-4-hydroxypentan-1-one



To the bi-layer system of 3 N HCl (5 mL) and CH_2Cl_2 is added 5-(1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)-pent-4-yn-2-ol (107 mg, 0.27 mmol), $PdCl_2$ (5 mg, 0.028 mmol), and *n*-Bu_4NCl (17 mg, 0.056 mmol). The resulting mixture is stirred at room temperature for 72 hr, and then poured into saturated $NaHCO_3$ solution. The aqueous layer is extracted with CH_2Cl_2 and the combined organic layers are dried over Na_2SO_4. Solvent is removed and purification by preparative TLC provides 61 mg of product as white solid. ^{1}H NMR (CDCl3) 8.44 (d, 1H), 7.80 (dd, 1H), 7.85 (d, 1H), 7.40 (d, 1H), 7.36 (d, 1H), 7.18 (d, 1H), 7.14 (d, 1H), 6.36 (s, 2H), 4.27 (q, 2H), 3.86 (m, 1H), 3.19 (t, 2H), 1.93 (m, 2H), 1.25 (d, 3H), 1.09 (t, 3H). LCMS 410.2 (MH+).

Example 48

Synthesis of 8-{[2-(6-Fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-2,9-dimethyl-9H-purine



1) Preparation of 6-Amino-4-chloro-2,N-dimethyl-5-nitropyrimidine

To a solution of 4,6-Dichloro-2-methyl-5-nitropyrimidine (3.2 g, 15.4 mmol) in Hexane (30 mL) is added dropwise a solution of Methylamine (15.4 mL 1M in THF, diluted with 10 mL of hexane). After addition, the reaction mixture is stirred at room temperature for one hour, and concentrated in vacuo to a solid. After the solid is dissolved in 50 mL of CH_2Cl_2, the resultant solution is washed with 0.1 N HCl (20 mL) and water (20 mL), dried over Na_2SO_4 and concentrated to a yellow solid (3.0g). ^1H NMR ($CDCl_3$): 7.7 (bs, 1H), 3.10 (d, 3H), 2.55 (s, 3H).

2) Preparation of 2,N-Dimethyl-4,5-diaminopyrimidine

A mixture of 6-Amino-4-chloro-2,N-dimethyl-5-nitropyrimidine (1.0 g, 0.5 mmol), NaOH (40 mg, 1 mmol) and 1.0 g 10% Pd/C in 50 mL of 2% aqueous THF is hydrogenated at 50 PSI of hydrogen at room temperature overnight. The reaction mixture is filtered through celite, concentrated in vacuo, and the obtained solid is purified on a silica gel column eluting with 10/1/0.1 CH_2Cl_2/MeOH/NH_4OH to give the titled compound. ^1H NMR ($CDCl_3$) 7.64(s, 1H), 4.95 (bs, 1H), 3.02 (d, 3H), 2.45 (s, 3H), 1.90 (bs, 2H).

3) Preparation of 8-chloromethyl-2,9-dimethyl-9H-purine

A solution of 2,N-Dimethyl-4,5-diaminopyrimidine (180 mg, , 1.3 mmol) and Ethyl chloroacetimidate hydrochloride (310 g, 2.0 mmol) in Dichloroethane (10 mL) is heated at reflux for 17 h and cooled. The mixture is washed with aqueous $NaHCO_3$,

water, dried and concentrated to give 8-Chloromethyl-2,9-dimethyl-9H-purine.

4) Preparation 8-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-2,9-dimethyl-9H-purine

A mixture of 8-Chloromethyl-2,9-dimethyl-9H-purine (40 mg, 0.2 mmol), 2-Fluoro-6-(1H-imidazol-2-yl)-pyridine (40 mg, 0.25 mmol) and K_2CO_3 (55 mg, 0.4 mmol) in 2 mL of DMF is stirred at room temperature for four hours. The mixture is diluted with water (10 mL), and extracted with Ethyl acetate three times. The combined extract is washed with brine, dried and concentrated. The residue is purified by preparative thin layer chromatography to give the titled compound. ^1H NMR($CDCl_3$): 8.92 (s, 1H), 8.18 (dd, 1H), 7.88 (q, 1H), 7.25 (s, 1H), 7.20 (s, 1H), 7.11 (s, 1H), 6.83 (dd, 1H), 6.22 (s, 2H), 3.89 (s, 3H), 2.8 (s, 3H). LRMS calcd 323, found 324 (MH+).

Example 49

The following compounds are prepared essentially according to the procedures in the previous examples.

a) 3-Methyl-2-(2-oxazol-2-yl-imidazol-1-ylmethyl)-3H-imidazo[4,5-c]pyridine

b) 3-Ethyl-2-(2-[1,3,4]oxadiazol-2-yl-imidazol-1-ylmethyl)-3H-imidazo[4,5-c]pyridine

c) 3-Ethyl-2-[2-(3-methyl-pyridin-2-yl)-imidazol-1-ylmethyl]-3H-imidazo[4,5-c]pyridine

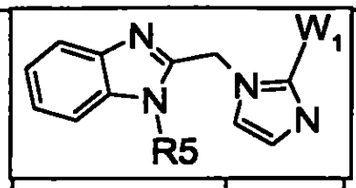
Example 50

The compounds listed in tables 1 - 8 are prepared essentially according to the procedures set forth above in Schemes I-X and the preceding examples.

In the following tables the designations X_1, X_2, W_1, X_5, W_6, etc., on the substituents W_1, R_5, etc., indicate the point

of attachment of the substituent to the parent structural formula. For example, R_5 in compound number (hereinafter "Cmp. #") 112 is an ethyl group; R_5 in compound 134 is a cyclopropylmethyl group; and W_1 in compound 132 is a 3-chlorophenyl group.

TABLE 1



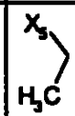
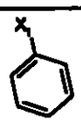
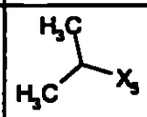
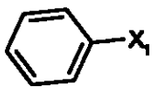
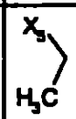
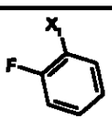
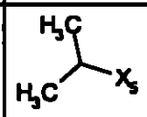
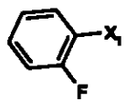
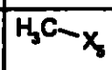
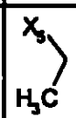
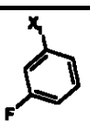
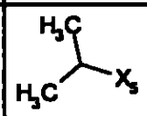
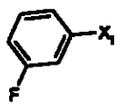
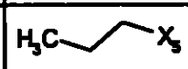
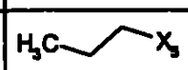
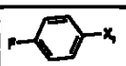
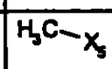
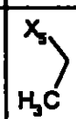
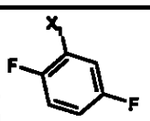
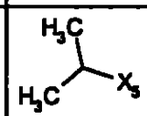
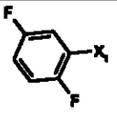
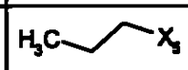
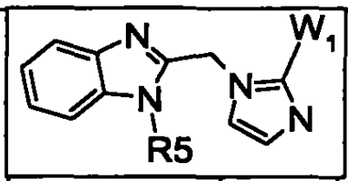
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102			316.406	1.80	317.1	LC/MS
103			320.3693	5.06		GC/FID
104			334.3961	5.07		GC/FID
105			334.3961	5.17		GC/FID
106			306.3425	5.12		GC/FID
107			320.3693	5.11		GC/FID
108			334.3961	5.10		GC/FID
109			334.3961	5.20		GC/FID
110			334.3961	5.21		GC/FID
111			324.3326	4.95		GC/FID
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TABLE 1



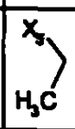
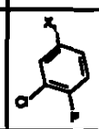
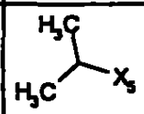
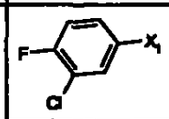
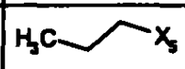
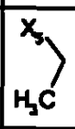
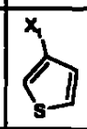
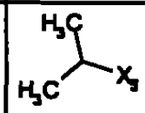
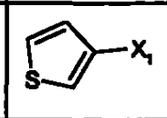
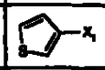
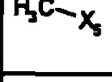
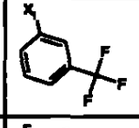
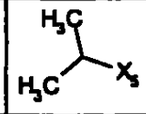
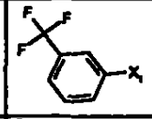
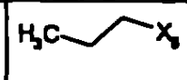
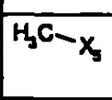
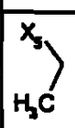
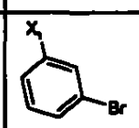
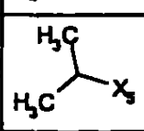
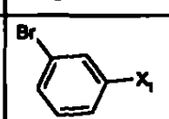
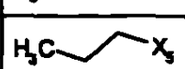
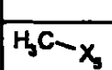
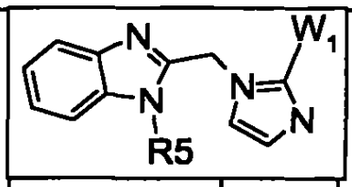
Cmp. #	R5	W1	MW	RT	Mass	GC/FID or LC/MS
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116			368.8412	5.42		GC/FID
117			368.8412	5.51		GC/FID
118			308.4074	5.27		GC/FID
119			322.4342	5.26		GC/FID
120			322.4342	5.37		GC/FID
121			356.3495	4.99		GC/FID
122			370.3763	4.98		GC/FID
123			384.4031	4.98		GC/FID
124			384.4031	5.07		GC/FID
125			367.2485	5.68		GC/FID
126			381.2753	5.67		GC/FID
127			395.3021	5.65		GC/FID
128			395.3021	5.74		GC/FID
129			322.7975	1.67	323.1	LC/MS

TABLE 1



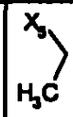
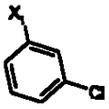
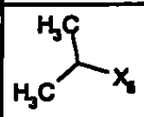
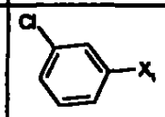
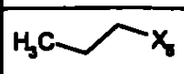
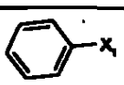
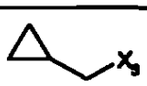
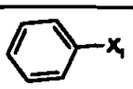
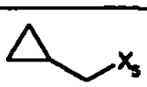
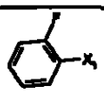
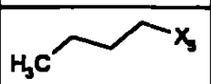
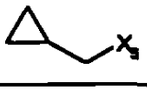
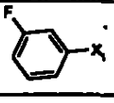
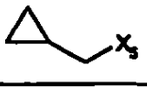
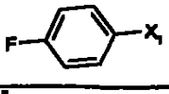
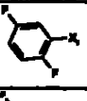
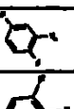
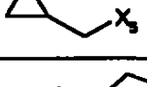
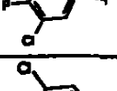
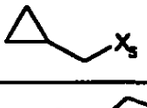
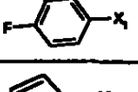
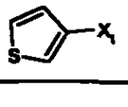
Cmp. #	R5	W1	MW	RT	Mass	GC/FID or LC/MS
130			336.8243	1.87	337.3	LC/MS
131			350.8511	2.00	351.1	LC/MS
132			350.8511	2.07	351.3	LC/MS
133			330.4328	2.00	331.3	LC/MS
134			328.417	1.87	329.2	LC/MS
135			348.4229	5.15		GC/FID
136			346.4071	5.28		GC/FID
137			348.4229	5.18		GC/FID
138			362.4497	5.32		GC/FID
139			346.4071	5.31		GC/FID
140			346.4071	5.31		GC/FID
141			366.413	5.04		GC/FID
142			380.4398	5.18		GC/FID
143			364.3972	5.16		GC/FID
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145			380.8522	5.59		GC/FID
146			336.461	5.33		GC/FID

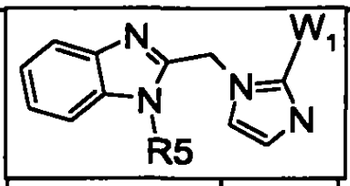
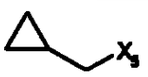
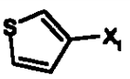
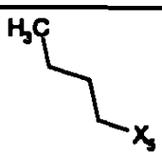
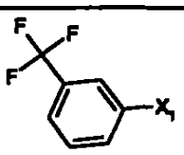
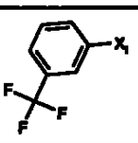
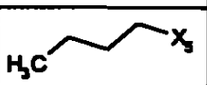
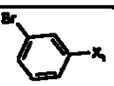
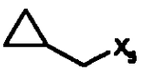
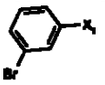
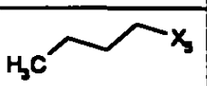
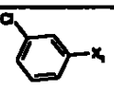
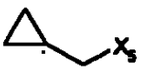
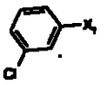
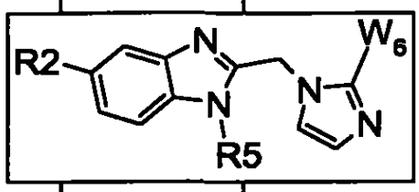
TABLE 1						
Cmp. #	R5	W1	MW	RT	Mass	GC/FID or LC/MS
147			334.4452	5.46		GC/FID
148			398.4299	5.04		GC/FID
149			398.4141	5.17		GC/FID
150			409.3289	5.68		GC/FID
151			423.3557	5.80		GC/FID
152			407.3131	5.81		GC/FID
153			364.8779	2.20	365.2	LC/MS
154			378.9047	2.40	379.3	LC/MS
155			362.8621	2.07	363.3	LC/MS

TABLE 2



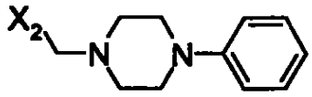
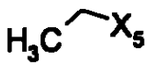
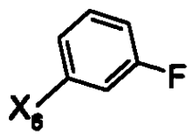
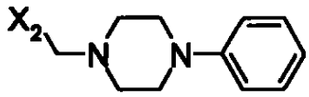
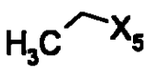
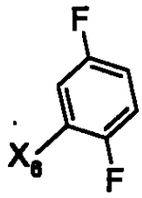
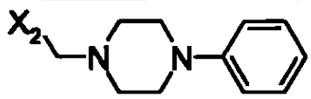
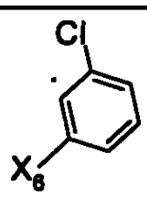
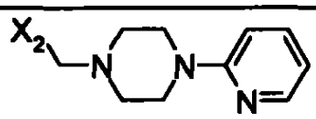
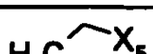
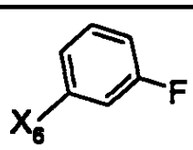
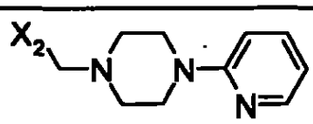
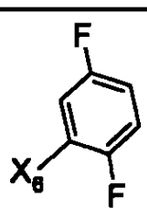
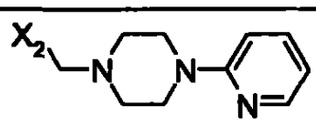
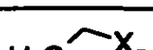
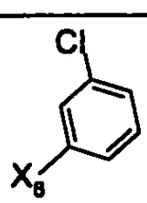
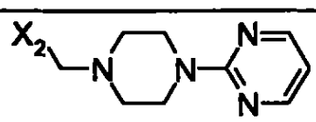
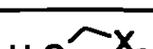
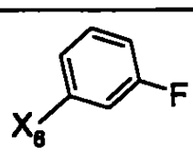
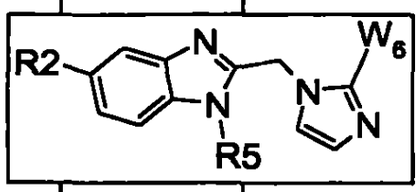
Cmp. #	R2	R5	W6	RT	GC/FID or LC/MS
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157				8.67	GC/FID
158				10.56	GC/FID
159				9.39	GC/FID
160				8.87	GC/FID
161				10.91	GC/FID
162				9.12	GC/FID

TABLE 2



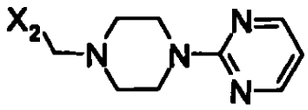
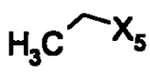
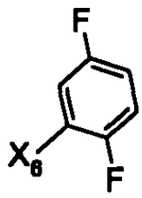
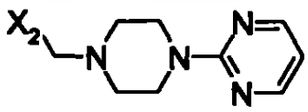
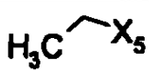
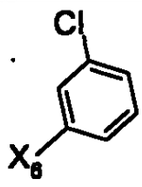
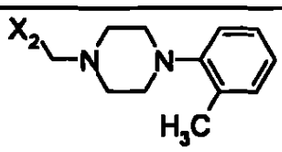
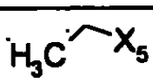
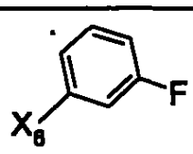
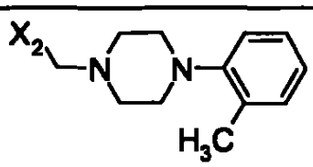
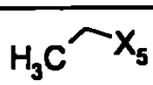
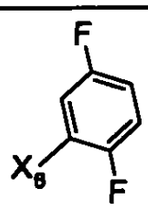
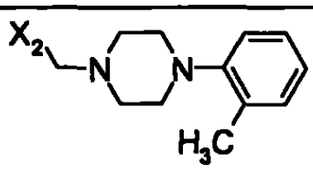
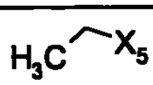
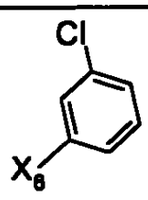
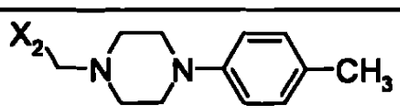
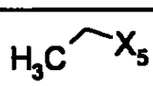
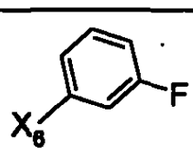
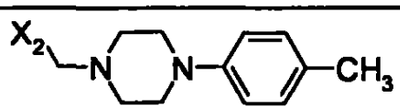
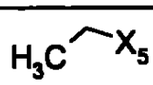
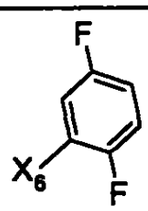
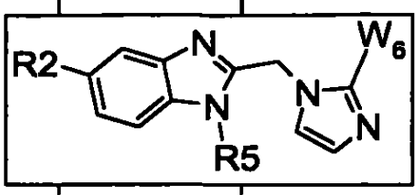
Cmp. #	R2	R5	W6	RT	GC/FID or LC/MS
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164				10.46	GC/FID
165				8.98	GC/FID
166				8.49	GC/FID
167				10.28	GC/FID
168				9.77	GC/FID
169				9.17	GC/FID

TABLE 2



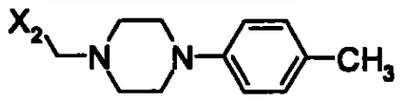
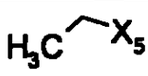
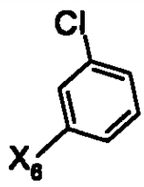
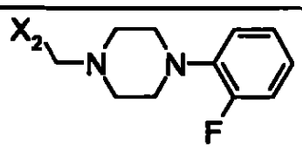
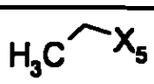
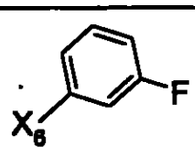
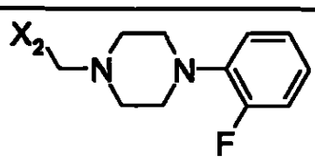
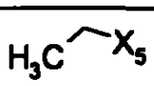
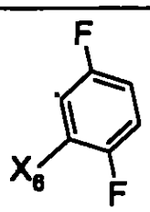
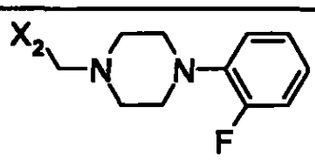
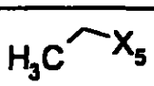
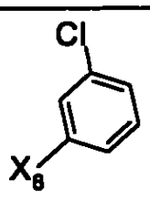
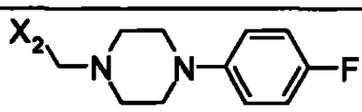
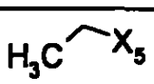
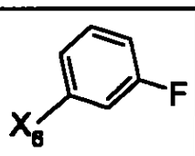
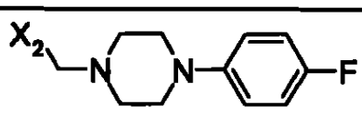
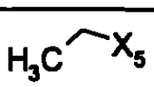
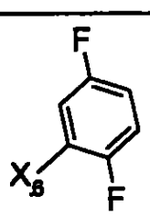
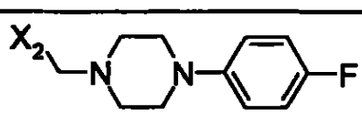
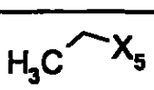
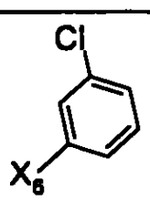
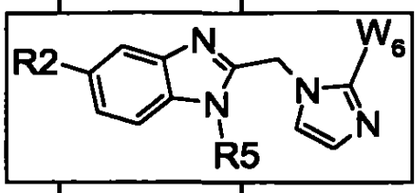
Cmp. #	R2	R5	W6	RT	GC/FID or LC/MS
170				11.41	LC/MS
171				8.75	GC/FID
172				8.31	GC/FID
173				9.97	GC/FID
174				9.04	GC/FID
175				8.55	GC/FID
176				10.36	GC/FID

TABLE 2



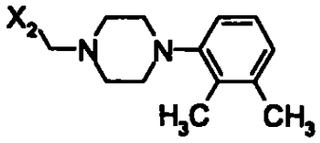
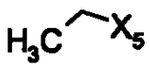
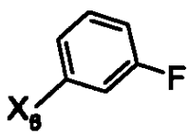
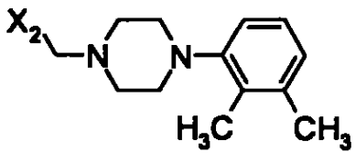
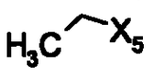
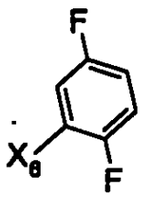
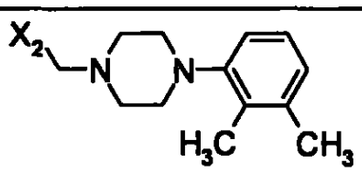
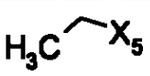
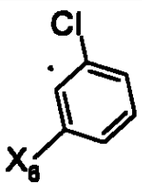
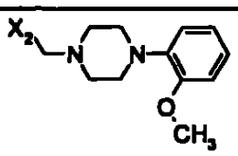
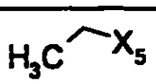
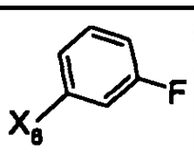
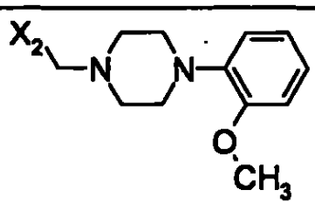
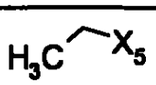
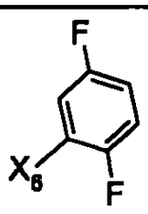
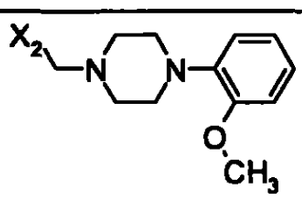
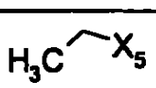
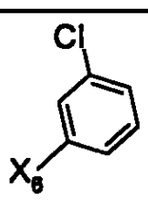
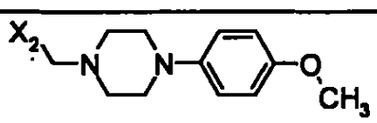
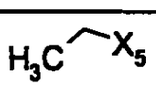
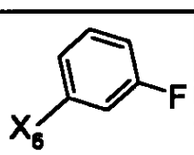
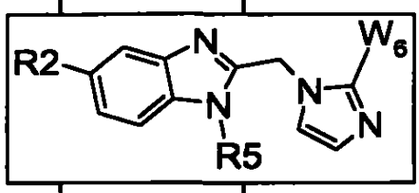
Cmp. #	R2	R5	W6	RT	GC/FID or LC/MS
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178				9.21	GC/FID
179				11.49	GC/FID
180				9.64	GC/FID
181				9.05	GC/FID
182				11.22	LC/MS
183				10.86	GC/FID

TABLE 2



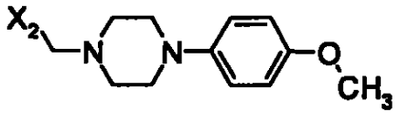
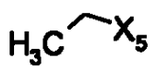
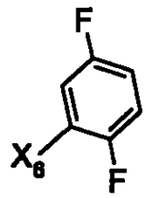
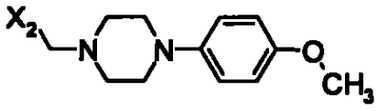
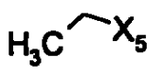
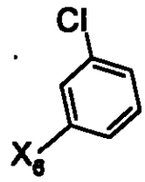
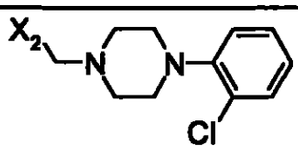
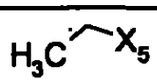
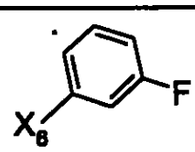
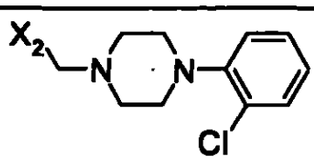
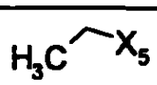
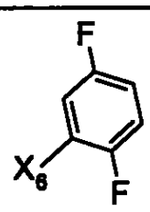
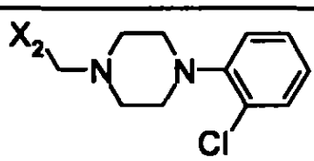
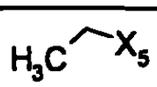
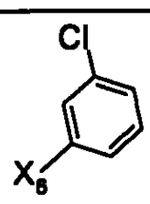
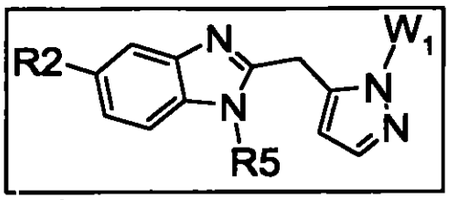
Cmp. #	R2	R5	W6	RT	GC/FID or LC/MS
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185				12.97	GC/FID
186				9.85	GC/FID
187				9.23	GC/FID
188				11.52	GC/FID

TABLE 3



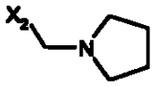
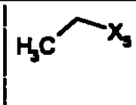
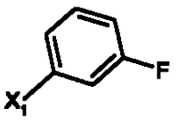
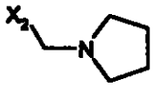
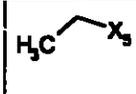
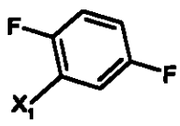
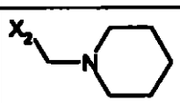
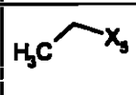
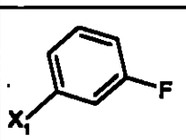
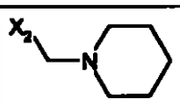
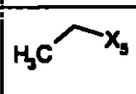
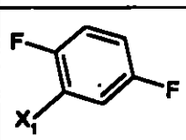
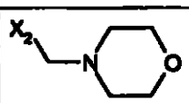
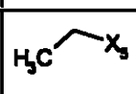
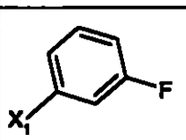
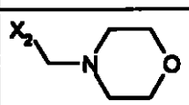
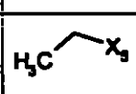
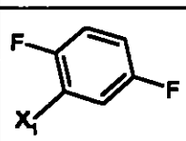
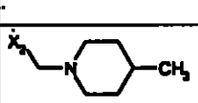
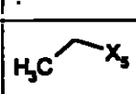
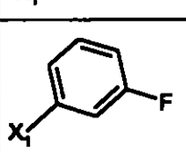
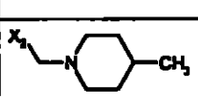
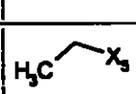
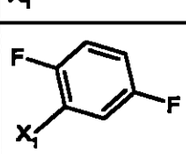
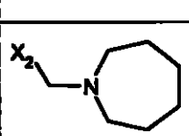
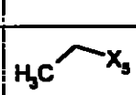
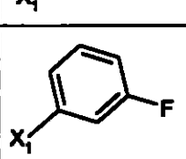
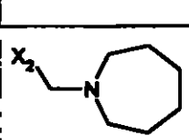
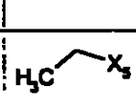
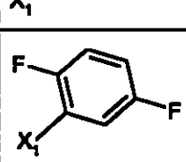
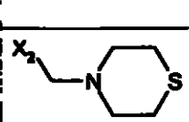
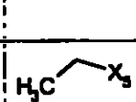
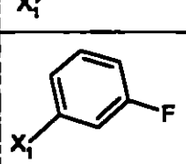
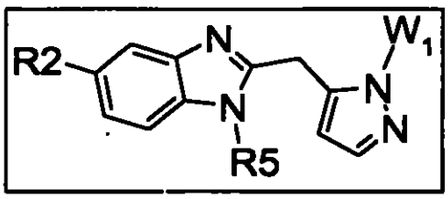
Cpd. #	R2	R5	W1	RT	GC/FID or LC/MS
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190				6.02	GC/FID
191				6.32	GC/FID
192				6.15	GC/FID
193				6.37	GC/FID
194				6.20	GC/FID
195				6.40	GC/FID
196				1.32	LC/MS
197				6.52	GC/FID
198				6.36	GC/FID
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TABLE 3



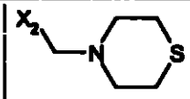
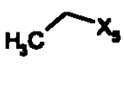
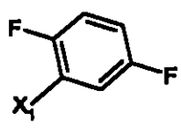
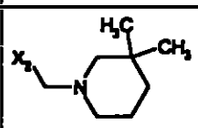
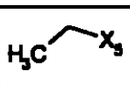
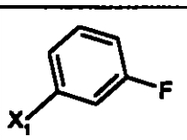
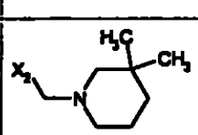
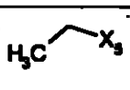
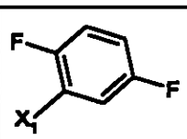
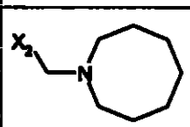
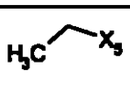
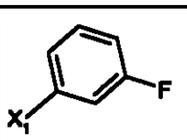
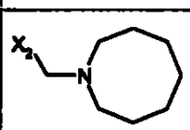
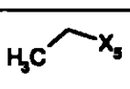
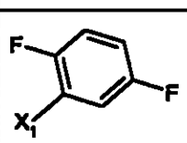
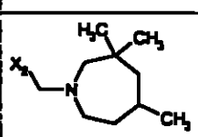
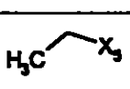
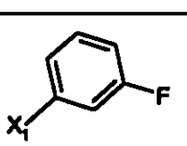
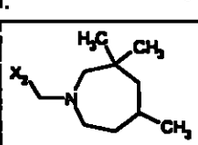
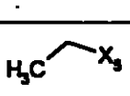
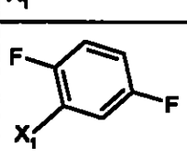
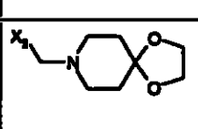
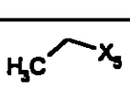
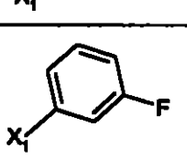
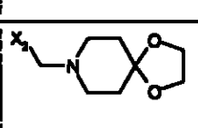
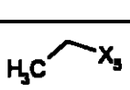
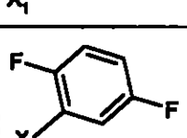
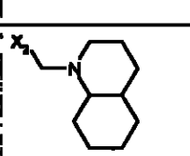
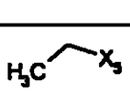
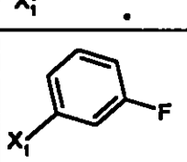
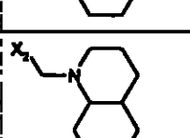
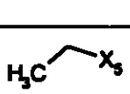
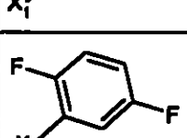
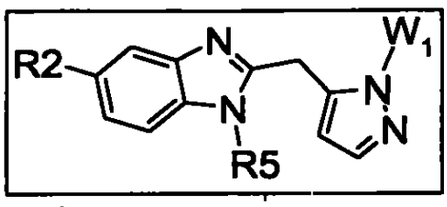
Cpd. #	R2	R5	W1	RT	GC/FID or LC/MS
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201				6.37	GC/FID
202				6.22	GC/FID
203				1.40	LC/MS
204				6.50	GC/FID
205				6.66	GC/FID
206				6.51	GC/FID
207				7.15	GC/FID
208				6.91	GC/FID
209				7.13	GC/FID
210				6.91	GC/FID

TABLE 3



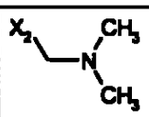
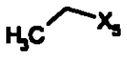
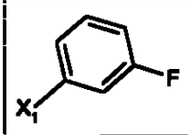
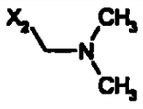
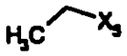
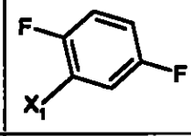
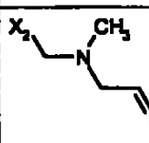
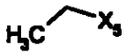
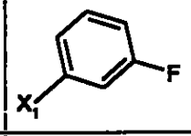
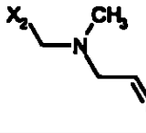
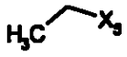
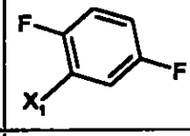
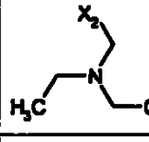
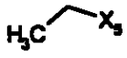
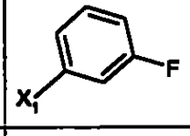
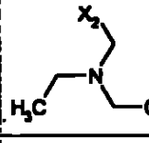
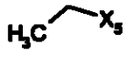
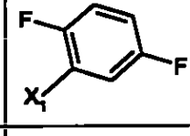
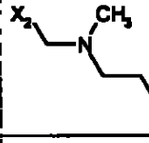
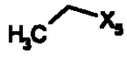
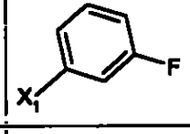
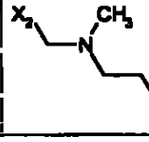
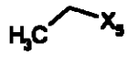
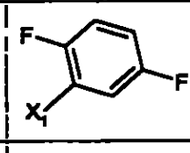
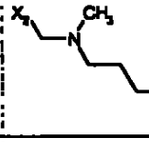
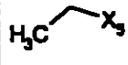
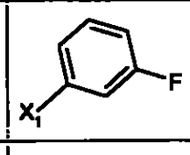
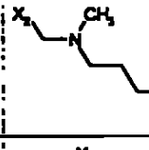
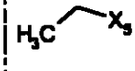
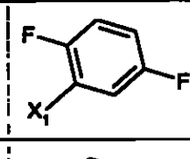
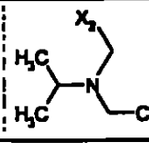
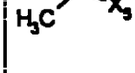
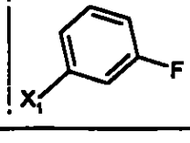
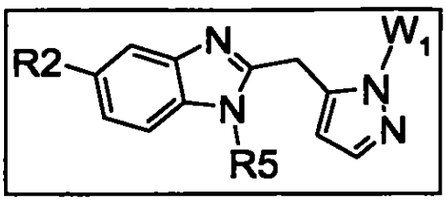
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212				5.47	GC/FID
213				5.92	GC/FID
214				5.75	GC/FID
215				1.13	LC/MS
216				5.71	GC/FID
217				5.91	GC/FID
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219				6.05	GC/FID
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221				5.99	GC/FID

TABLE 3



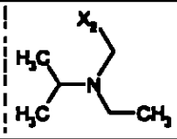
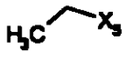
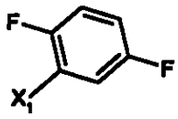
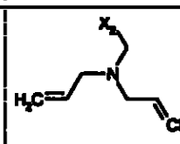
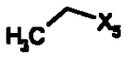
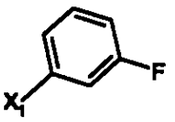
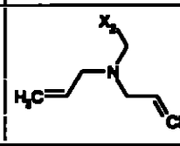
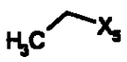
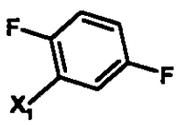
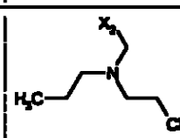
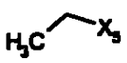
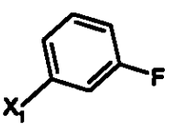
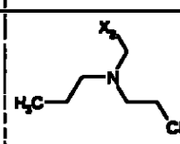
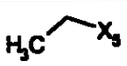
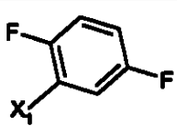
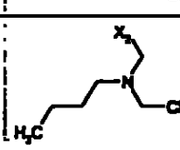
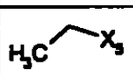
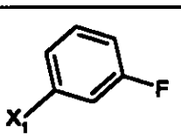
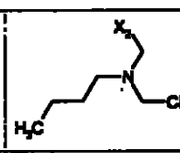
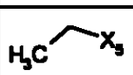
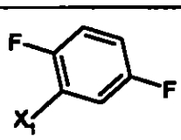
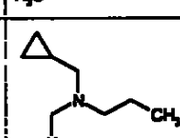
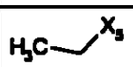
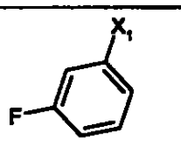
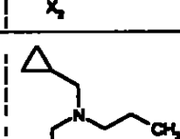
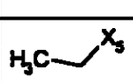
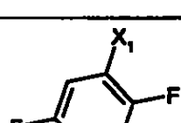
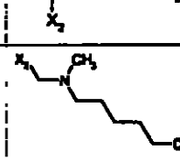
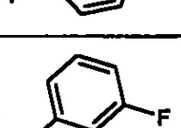
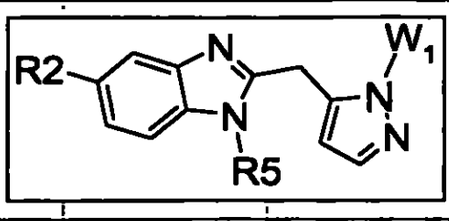
Cpd. #	R2	R5	W1	RT	GC/FID or LC/MS
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224				5.96	GC/FID
225				6.09	GC/FID
226				5.94	GC/FID
227				6.11	GC/FID
228				5.96	GC/FID
229				6.33	GC/FID
230				6.18	GC/FID
231				6.33	GC/FID

TABLE 3



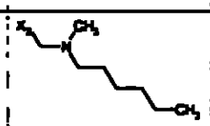
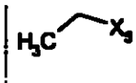
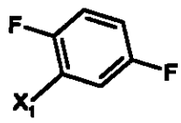
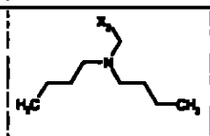
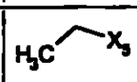
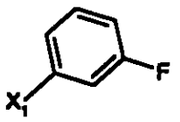
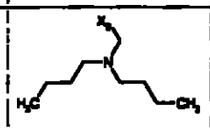
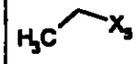
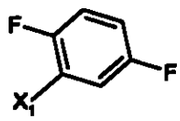
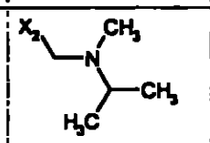
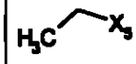
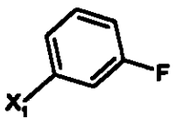
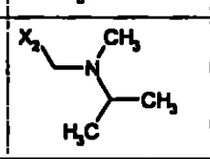
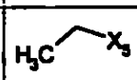
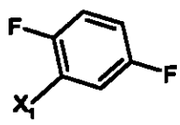
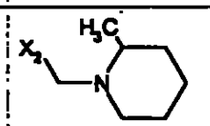
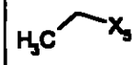
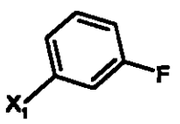
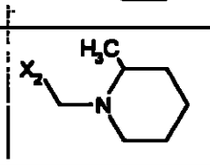
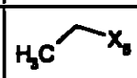
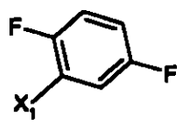
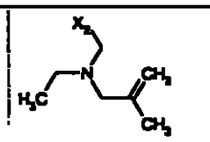
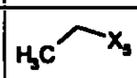
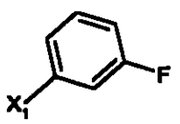
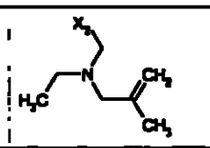
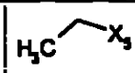
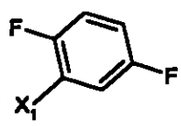
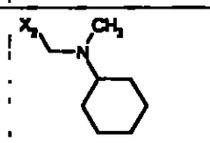
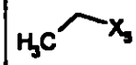
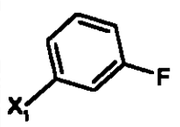
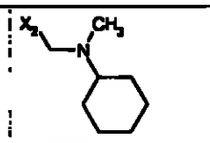
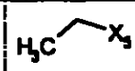
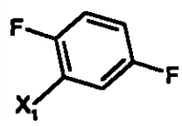
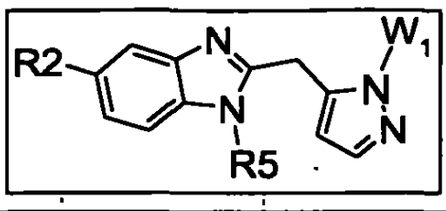
Cpd. #	R2	R5	W1	RT	GC/FID or LC/MS
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234				6.07	GC/FID
235				5.81	GC/FID
236				5.64	GC/FID
237				6.29	GC/FID
238				6.13	GC/FID
239				5.97	GC/FID
240				5.82	GC/FID
241				6.51	GC/FID
242				6.36	GC/FID

TABLE 3



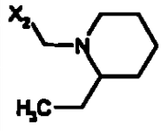
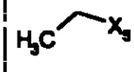
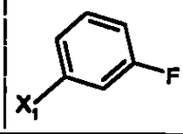
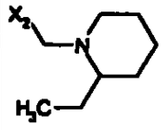
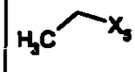
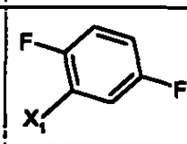
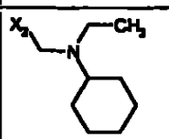
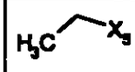
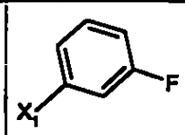
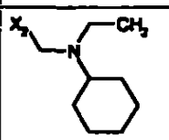
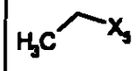
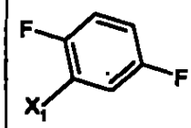
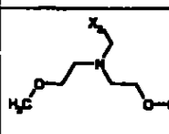
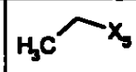
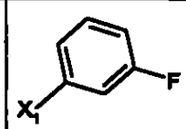
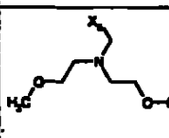
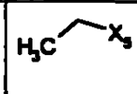
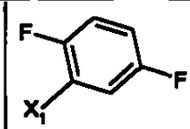
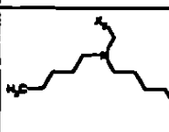
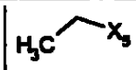
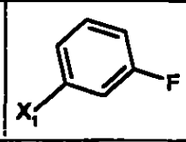
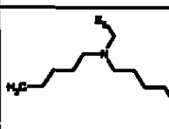
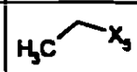
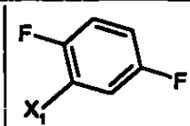
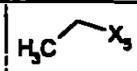
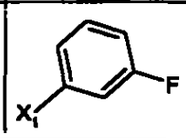
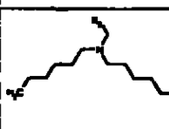
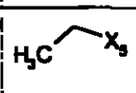
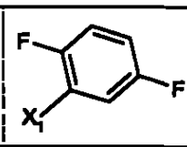
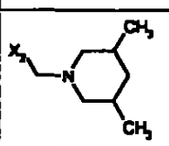
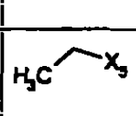
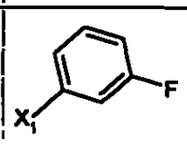
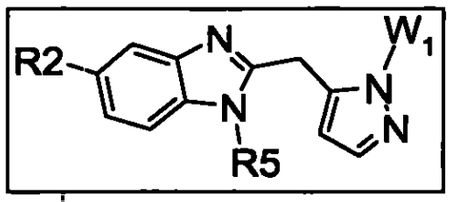
Cpd. #	R2	R5	W1	RT	GC/FID or LC/MS
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244				6.26	GC/FID
245				6.52	GC/FID
246				6.38	GC/FID
247				6.34	GC/FID
248				6.19	GC/FID
249				6.45	GC/FID
250				6.32	GC/FID
251				6.71	GC/FID
252				2.18	LC/MS
253				6.28	GC/FID

TABLE 3



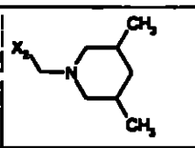
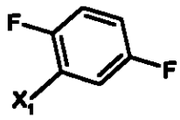
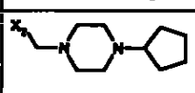
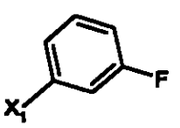
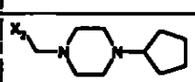
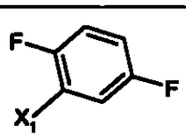
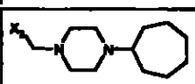
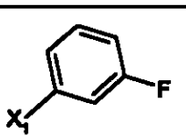
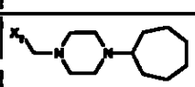
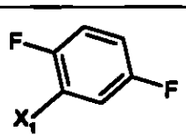
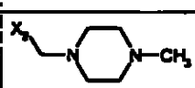
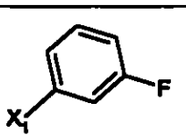
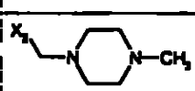
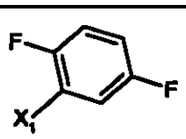
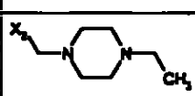
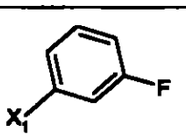
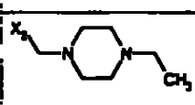
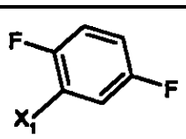
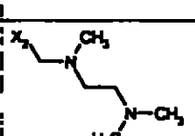
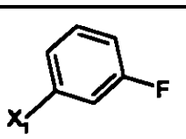
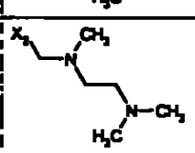
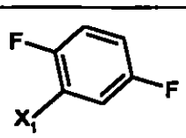
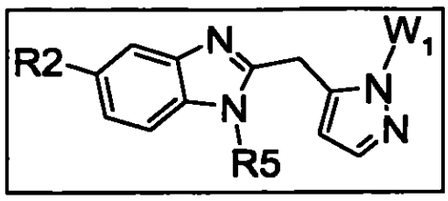
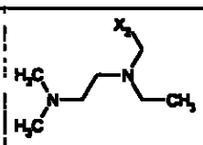
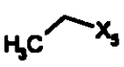
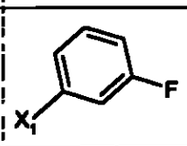
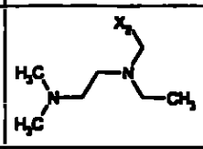
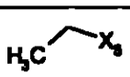
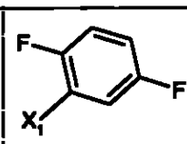
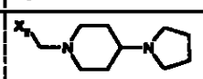
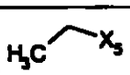
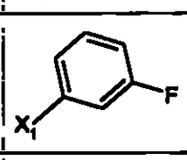
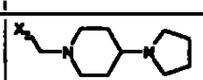
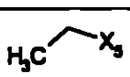
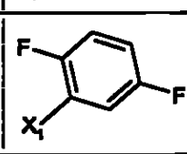
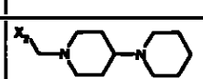
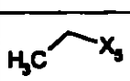
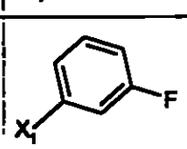
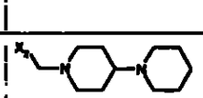
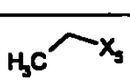
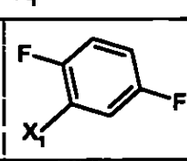
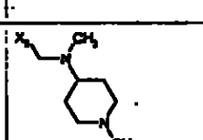
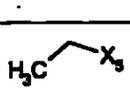
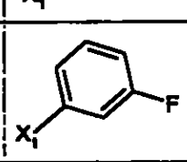
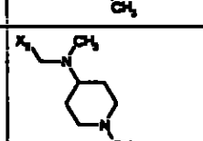
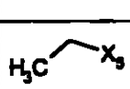
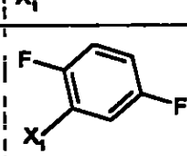
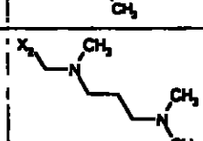
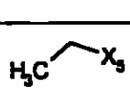
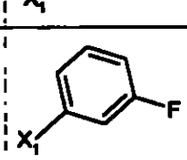
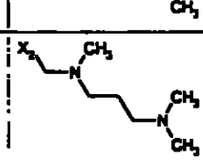
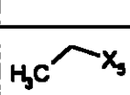
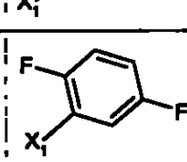
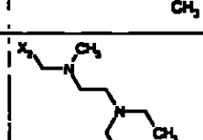
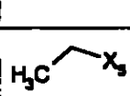
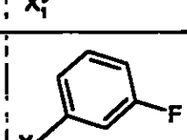
Cpd. #	R2	R5	W1	RT	GC/FID or LC/MS
254				6.12	GC/FID
255				7.38	GC/FID
256				7.11	GC/FID
257				1.48	LC/MS
258				7.95	GC/FID
259				6.34	GC/FID
260				6.18	GC/FID
261				6.47	GC/FID
262				6.32	GC/FID
263				6.10	GC/FID
264				5.95	GC/FID

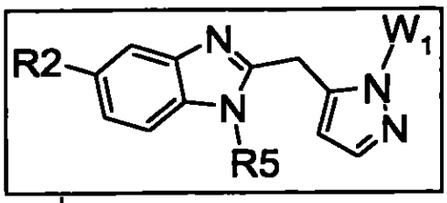
TABLE 3



Cpd. #	R2	R5	W1	RT	GC/FID or LC/MS
265				6.15	GC/FID
266				6.00	GC/FID
267				7.43	GC/FID
268				7.15	GC/FID
269				7.74	GC/FID
270				7.41	GC/FID
271				6.65	GC/FID
272				6.50	GC/FID
273				6.23	GC/FID
274				6.08	GC/FID
275				6.30	GC/FID

149

TABLE 3



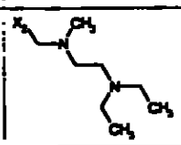
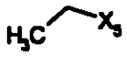
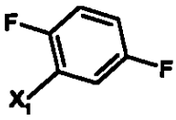
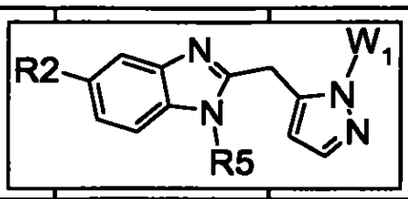
Cpd. #	R2	R5	W1	RT	GC/FID or LC/MS
276				6.15	GC/FID

TABLE 4



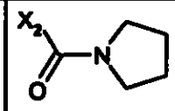
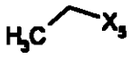
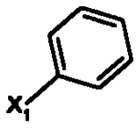
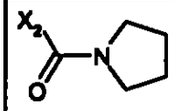
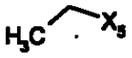
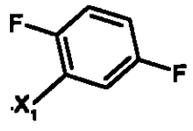
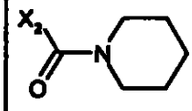
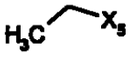
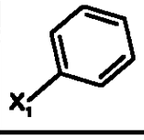
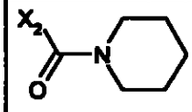
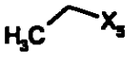
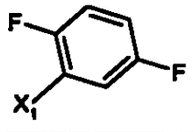
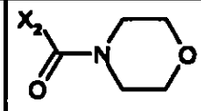
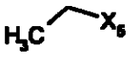
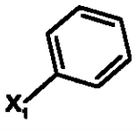
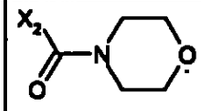
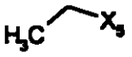
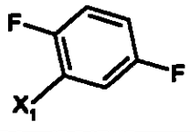
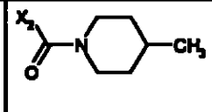
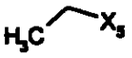
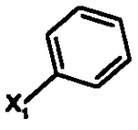
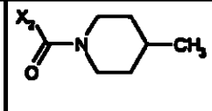
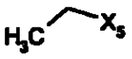
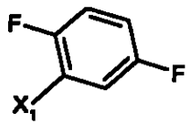
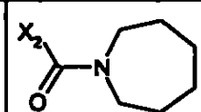
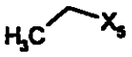
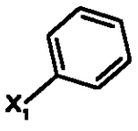
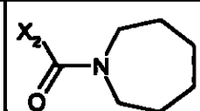
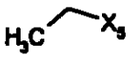
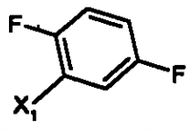
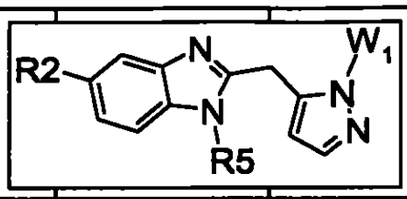
Cmp. #	R2	R5	W1	RT	Mass	GC/FID or LC/MS
277				7.12		GC/FID
278				6.77		GC/FID
279				7.17		GC/FID
280				6.82		GC/FID
281				7.10		GC/FID
282				6.77		GC/FID
283				7.30		GC/FID
284				6.92		GC/FID
285				7.53		GC/FID
286				7.07		GC/FID

TABLE 4



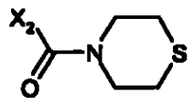
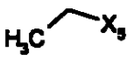
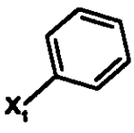
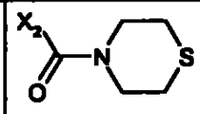
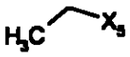
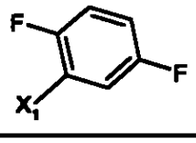
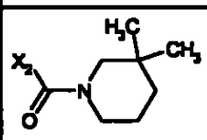
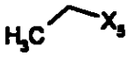
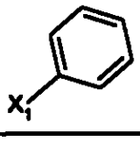
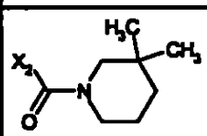
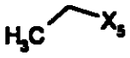
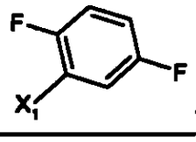
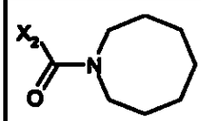
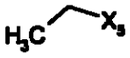
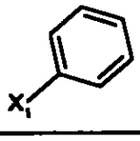
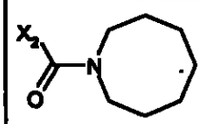
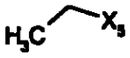
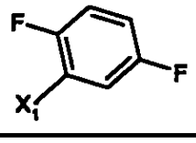
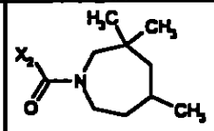
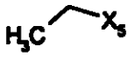
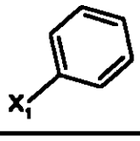
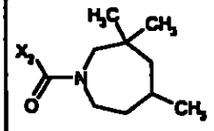
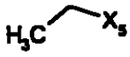
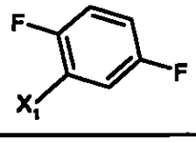
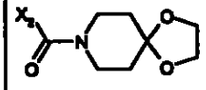
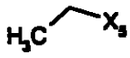
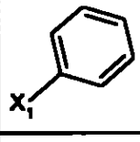
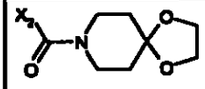
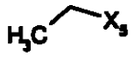
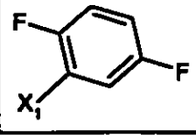
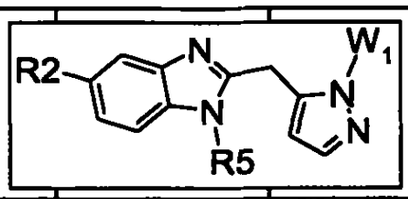
Cmp. #	R2	R5	W1	RT	Mass	GC/FID or LC/MS
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290				6.92		GC/FID
291				7.86		GC/FID
292				7.34		GC/FID
293				7.77		GC/FID
294				7.29		GC/FID
295				1.44	472.4	LC/MS
296				1.56	508.4	LC/MS

TABLE 4



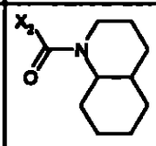
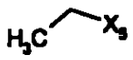
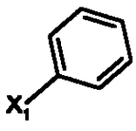
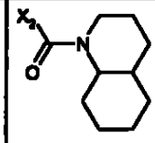
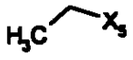
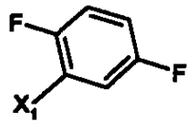
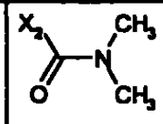
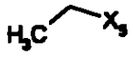
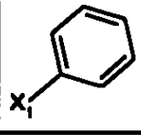
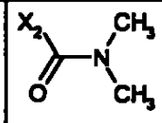
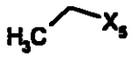
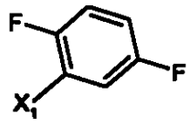
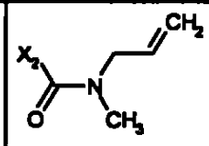
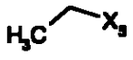
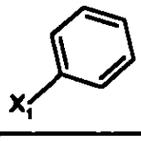
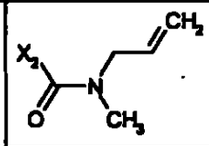
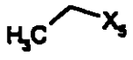
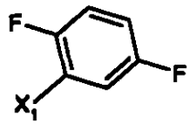
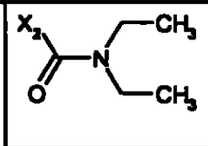
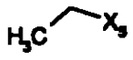
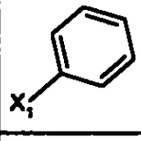
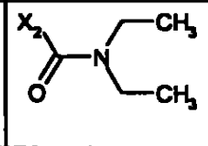
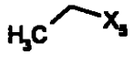
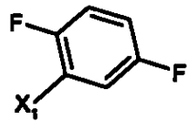
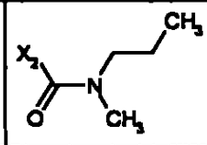
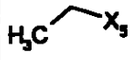
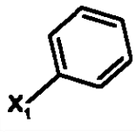
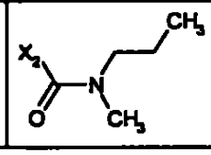
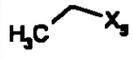
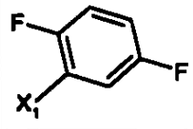
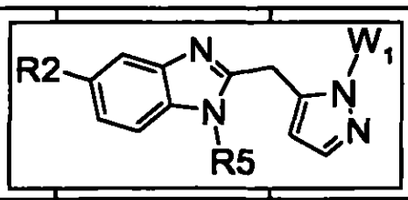
Cmp. #	R2	R5	W1	RT	Mass	GC/FID or LC/MS
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298				7.84		GC/FID
299				6.41		GC/FID
300				1.32	410.3	LC/MS
301				6.59		GC/FID
302				6.35		GC/FID
303				6.54		GC/FID
304				6.29		GC/FID
305				6.61		GC/FID
306				6.37		GC/FID

TABLE 4



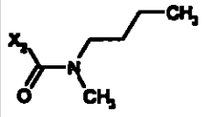
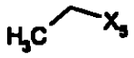
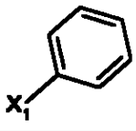
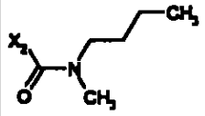
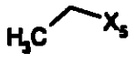
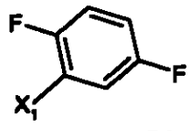
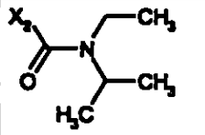
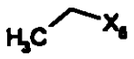
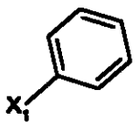
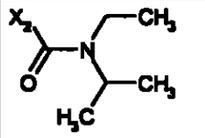
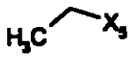
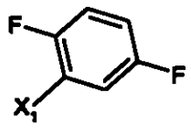
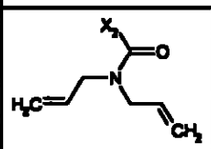
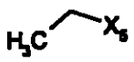
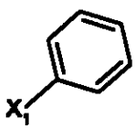
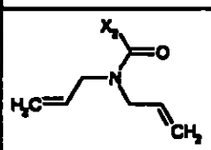
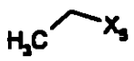
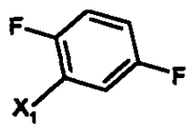
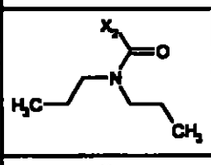
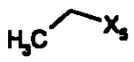
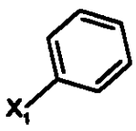
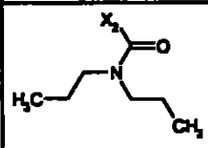
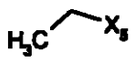
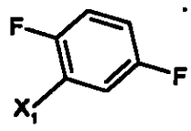
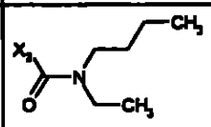
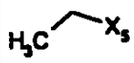
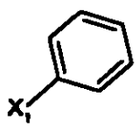
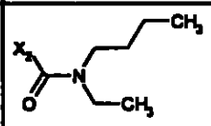
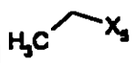
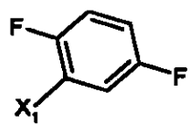
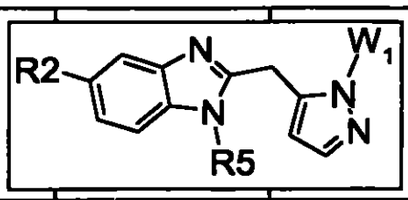
Cmp. #	R2	R5	W1	RT	Mass	GC/FID or LC/MS
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310				6.34		GC/FID
311				6.72		GC/FID
312				6.47		GC/FID
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TABLE 4



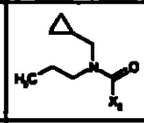
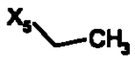
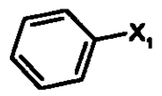
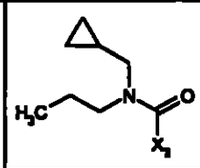
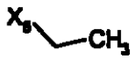
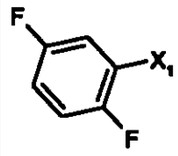
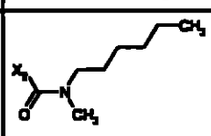
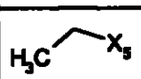
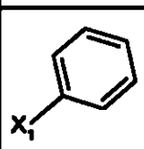
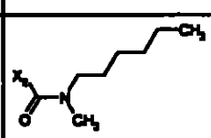
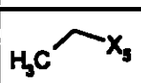
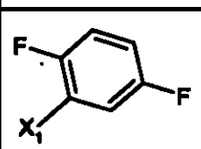
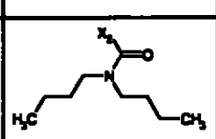
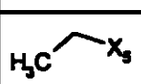
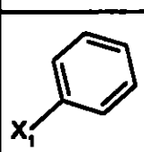
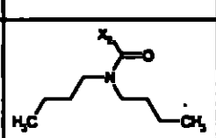
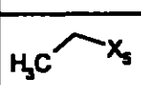
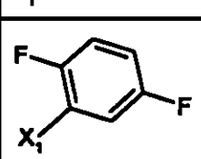
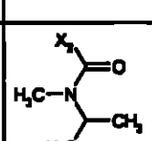
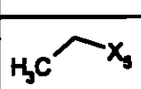
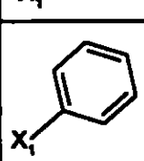
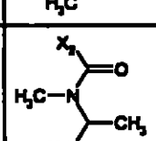
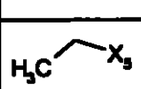
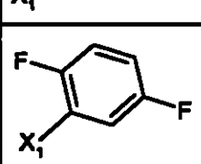
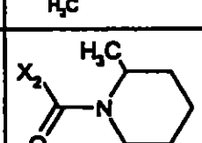
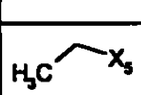
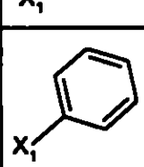
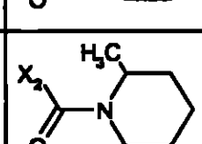
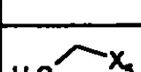
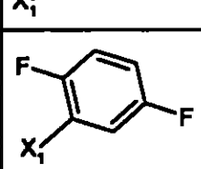
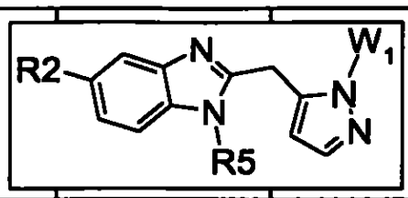
Cmp. #	R2	R5	W1	RT	Mass	GC/FID or LC/MS
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320				2.14	480.5	LC/MS
321				6.96		GC/FID
322				6.67		GC/FID
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324				6.26		GC/FID
325				7.13		GC/FID
326				6.77		GC/FID

TABLE 4



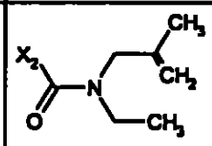
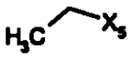
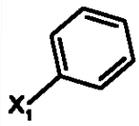
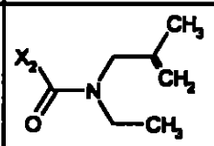
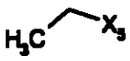
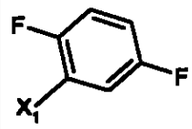
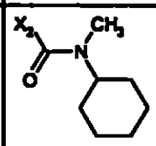
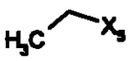
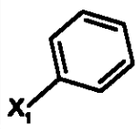
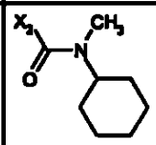
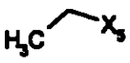
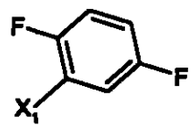
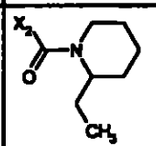
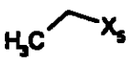
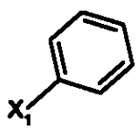
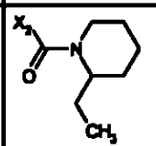
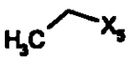
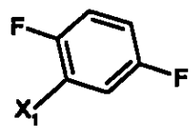
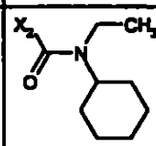
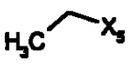
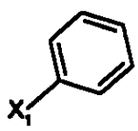
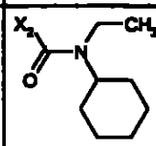
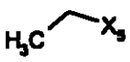
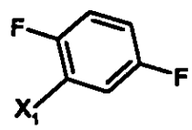
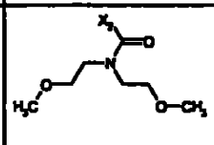
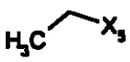
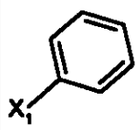
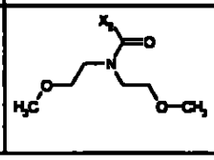
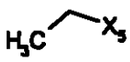
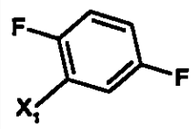
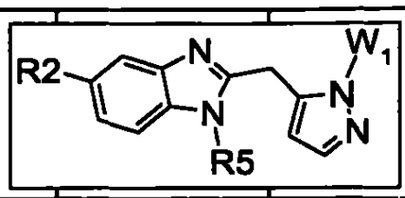
Cmp. #	R2	R5	W1	RT	Mass	GC/FID or LC/MS
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328				6.42		GC/FID
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330				7.00		GC/FID
331				7.26		GC/FID
332				6.90		GC/FID
333				1.99	456.5	LC/MS
334				2.06	492.5	LC/MS
335				7.00		GC/FID
336				6.71		GC/FID

TABLE 4



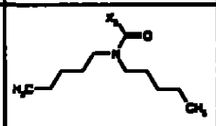
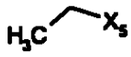
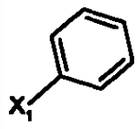
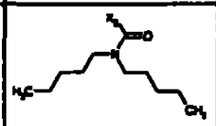
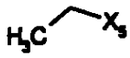
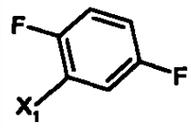
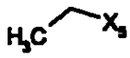
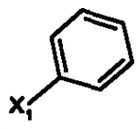
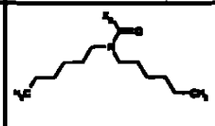
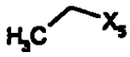
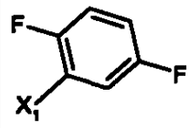
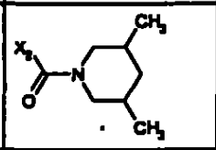
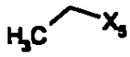
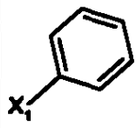
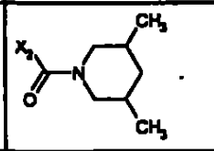
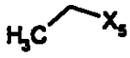
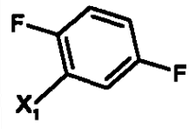
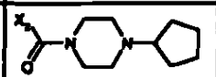
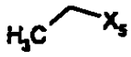
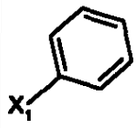
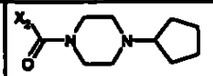
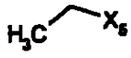
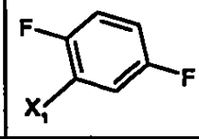
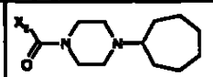
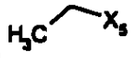
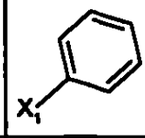
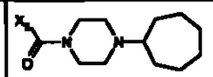
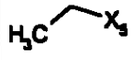
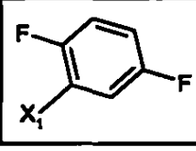
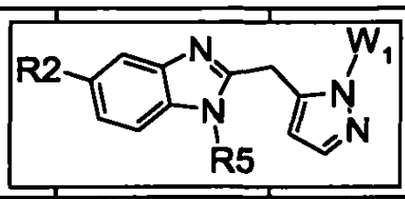
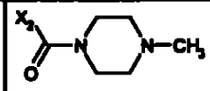
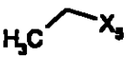
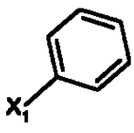
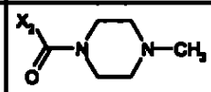
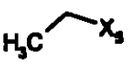
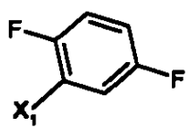
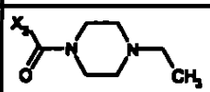
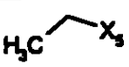
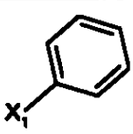
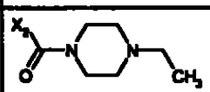
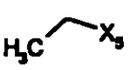
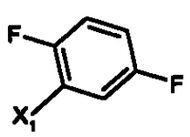
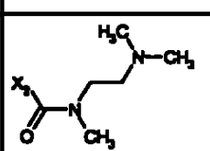
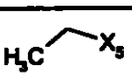
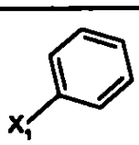
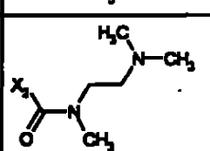
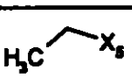
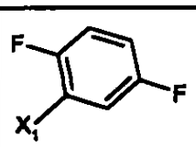
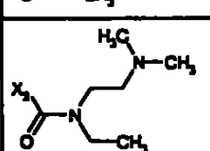
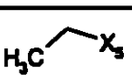
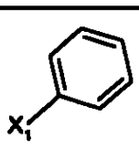
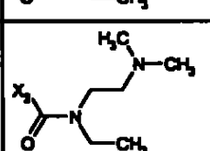
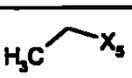
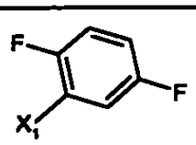
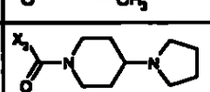
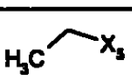
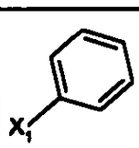
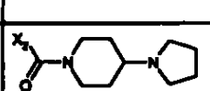
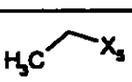
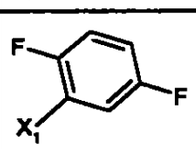
Cmp. #	R2	R5	W1	RT	Mass	GC/FID or LC/MS
337				7.31		GC/FID
338				2.45	545.6	LC/MS
339				7.86		GC/FID
340				2.65	550.7	LC/MS
341				7.14		GC/FID
342				6.81		GC/FID
343				9.51		GC/FID
344				8.54		GC/FID
345				11.94		GC/FID
346				1.48	547.7	LC/MS

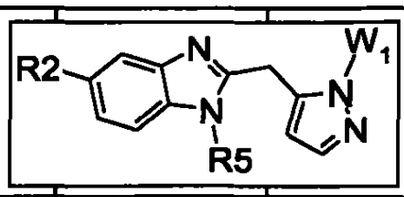
TABLE 4



Cmp. #	R2	R5	W1	RT	Mass	GC/FID or LC/MS
347				7.22		GC/FID
348				6.83		GC/FID
349				7.44		GC/FID
350				7.04		GC/FID
351				6.83		GC/FID
352				6.56		GC/FID
353				6.84		GC/FID
354				6.58		GC/FID
355				9.63		GC/FID
356				8.64		GC/FID

JB

TABLE 4



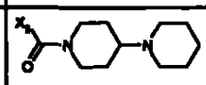
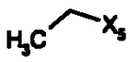
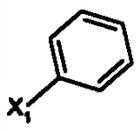
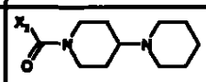
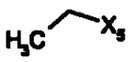
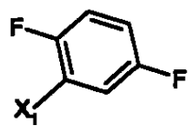
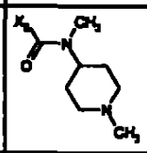
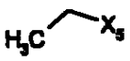
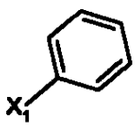
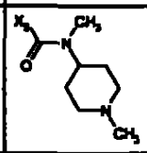
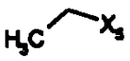
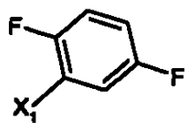
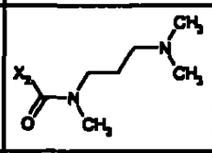
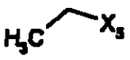
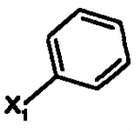
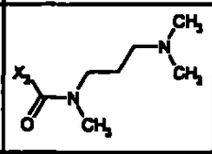
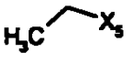
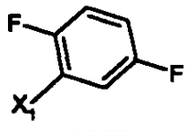
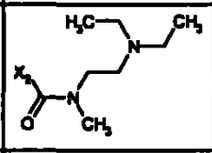
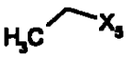
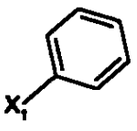
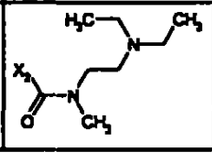
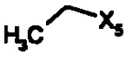
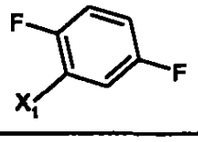
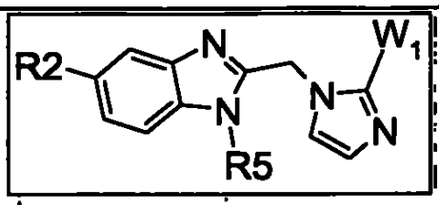
Cmp. #	R2	R5	W1	RT	Mass	GC/FID or LC/MS
357				1.05	497.6	LC/MS
358				9.16		GC/FID
359				7.61		GC/FID
360				7.17		GC/FID
361				7.02		GC/FID
362				6.72		GC/FID
363				1.05	459.5	LC/MS
364				6.79		GC/FID

TABLE 5



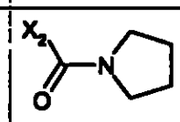
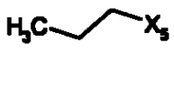
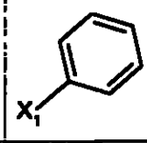
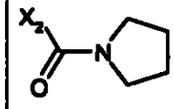
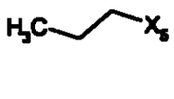
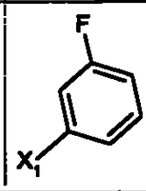
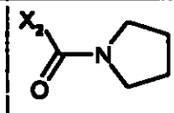
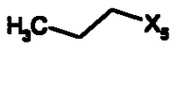
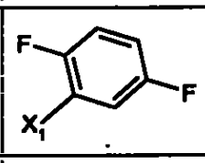
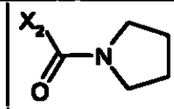
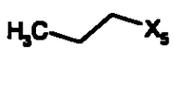
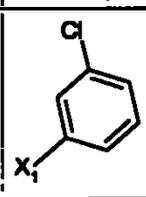
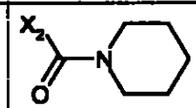
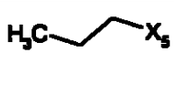
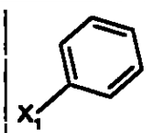
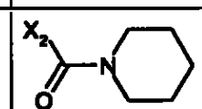
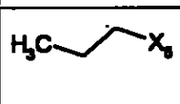
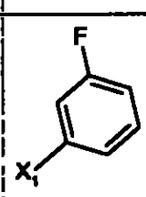
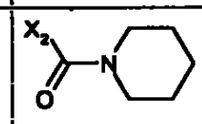
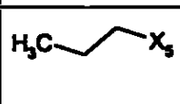
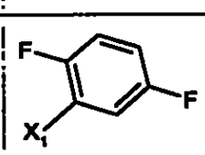
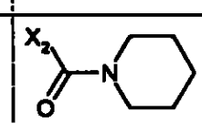
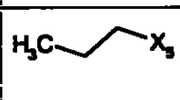
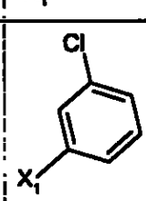
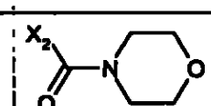
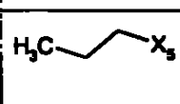
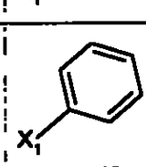
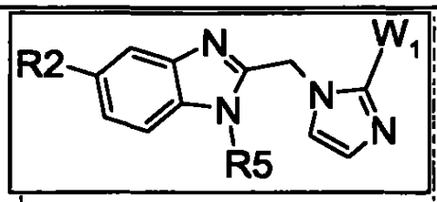
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
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366				431.5124	1.73	432.1	LC/MS
367				449.5025	1.67	450.4	LC/MS
368				447.9674	1.87	448.3	LC/MS
369				427.5491	1.87	428.4	LC/MS
370				445.5392	1.94	446.4	LC/MS
371				463.5293	1.87	464.4	LC/MS
372				461.9942	2.07	462.4	LC/MS
373				429.5213	2.87	430	LC/MS

TABLE 5



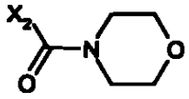
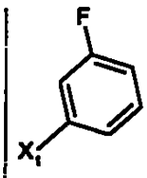
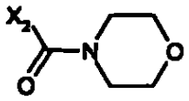
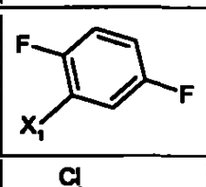
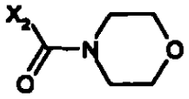
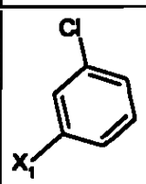
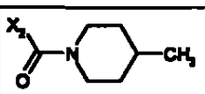
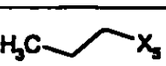
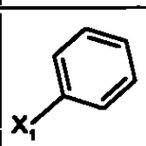
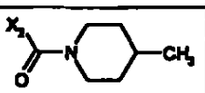
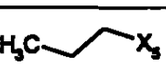
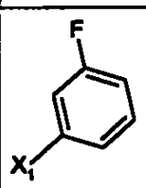
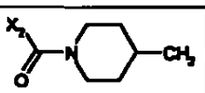
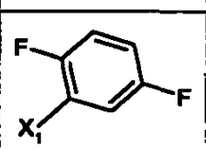
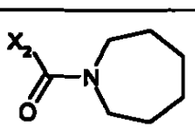
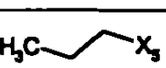
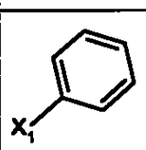
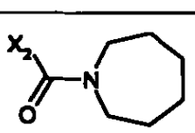
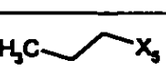
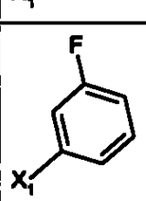
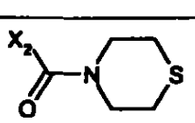
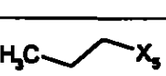
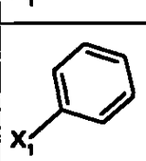
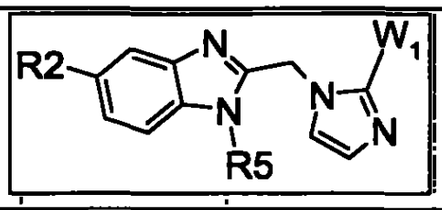
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
374				447.5114	1.53	448.3	LC/MS
375				465.5015	1.47	466.5	LC/MS
376				463.9664	1.67	464.4	LC/MS
377				441.5759	2.07	442.6	LC/MS
378				459.566	2.13	460.3	LC/MS
379				477.5561	NA		
380				441.5759	2.00	442.6	LC/MS
381				459.566	2.07	460.3	LC/MS
382				445.5883	1.73	446.4	LC/MS

TABLE 5



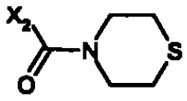
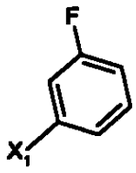
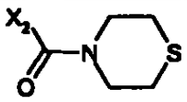
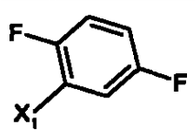
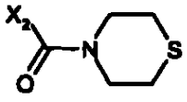
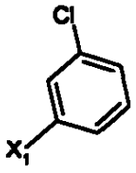
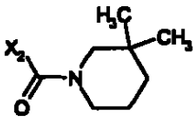
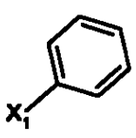
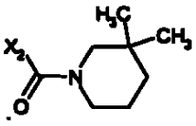
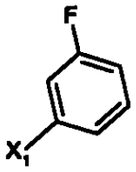
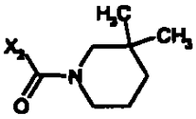
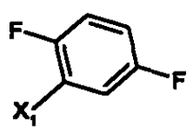
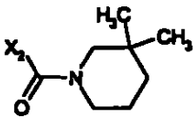
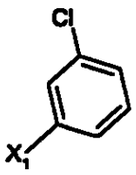
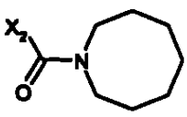
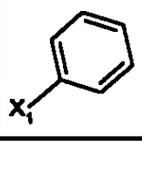
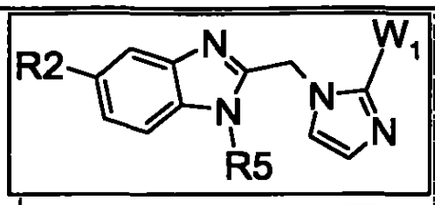
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
383				483.5784	1.80	464.4	LC/MS
384				481.5685	1.73	482.2	LC/MS
385				480.0334	NA		
386				455.6027	2.13	456.4	LC/MS
387				473.5928	NA		
388				491.5829	2.13	492.4	LC/MS
389				490.0478	2.27	490.3	LC/MS
390				455.6027	2.13	456.4	LC/MS

TABLE 5



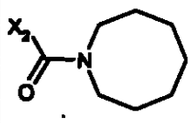
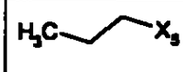
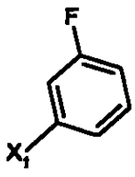
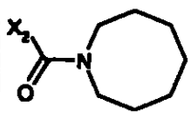
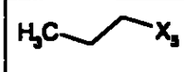
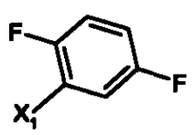
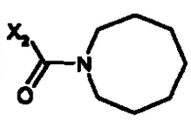
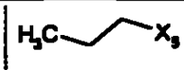
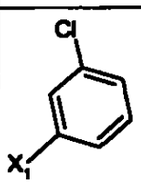
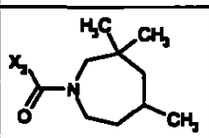
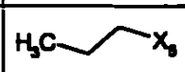
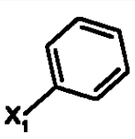
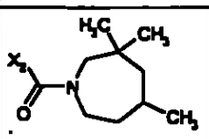
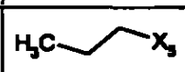
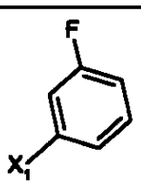
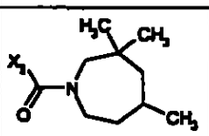
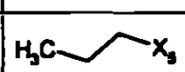
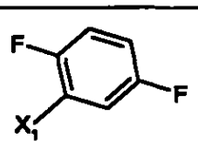
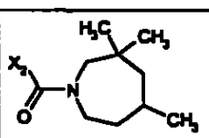
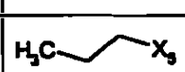
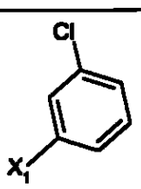
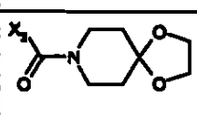
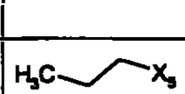
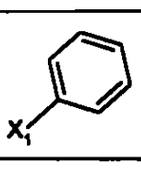
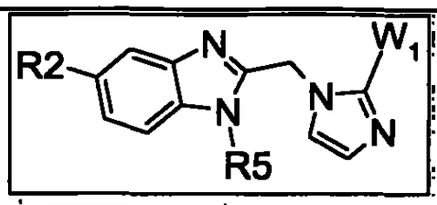
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
391				473.5928	NA		
392				491.5829	2.13	492.4	LC/MS
393				490.0478	2.27	490.5	LC/MS
394				483.6563	2.40	484.5	LC/MS
395				501.6464	2.47	502.3	LC/MS
396				519.6365	NA		
397				518.1014	NA		
398				485.5849	1.73	486.3	LC/MS

TABLE 5



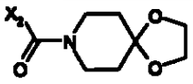
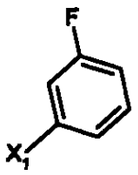
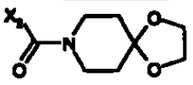
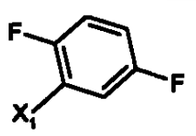
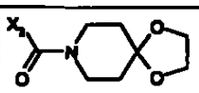
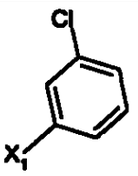
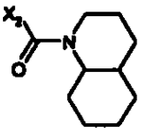
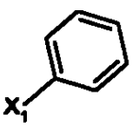
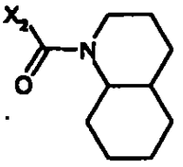
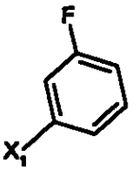
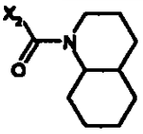
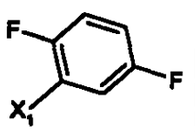
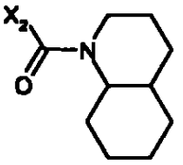
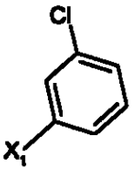
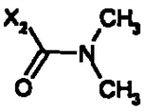
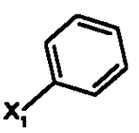
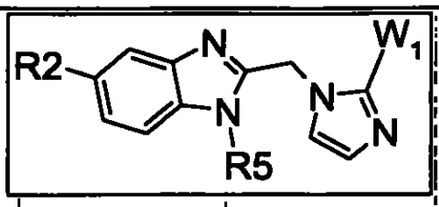
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
399				503.575	1.73	504.3	LC/MS
400				521.5651	NA		
401				520.03	1.87	520.2	LC/MS
402				481.6405	2.34	482.5	LC/MS
403				499.6306	2.40	500.4	LC/MS
404				517.6207	2.34	518	LC/MS
405				516.0856	2.47	516.4	LC/MS
406				387.4845	1.47	388.5	LC/MS

TABLE 5



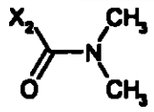
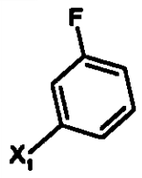
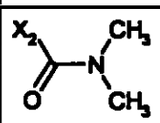
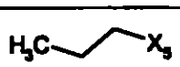
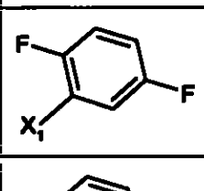
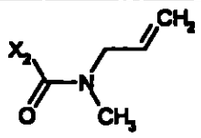
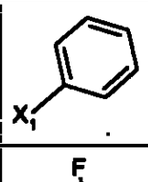
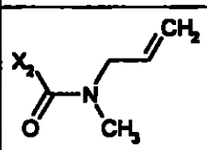
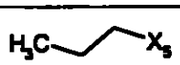
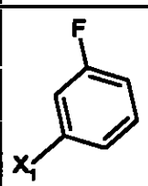
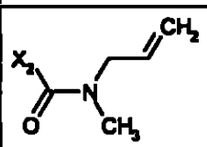
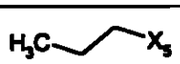
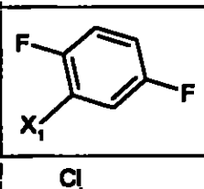
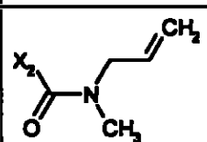
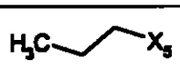
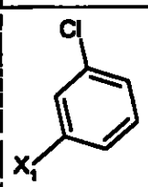
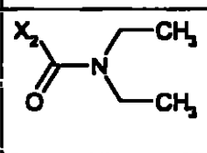
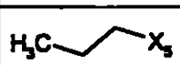
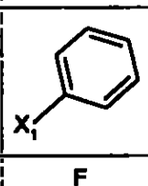
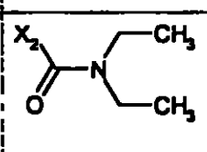
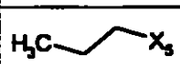
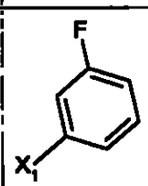
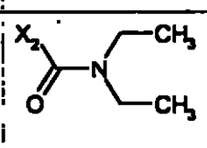
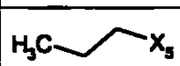
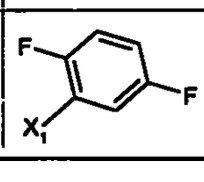
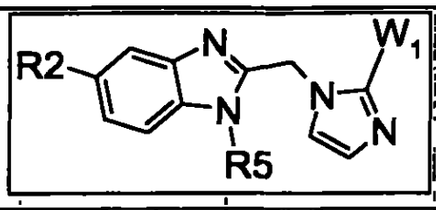
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
407				405.4746	1.53	406.3	LC/MS
408				423.4647	1.47	424.2	LC/MS
409				413.5223	1.80	414.4	LC/MS
410				431.5124	1.87	432.1	LC/MS
411				449.5025	1.73	450.3	LC/MS
412				447.9674	1.93	448.5	LC/MS
413				415.5381	1.80	416.4	LC/MS
414				433.5282	1.87	434.5	LC/MS
415				451.5183	1.80	452.4	LC/MS

TABLE 5



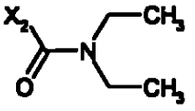
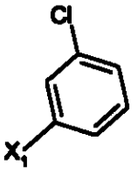
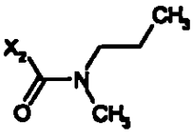
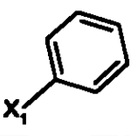
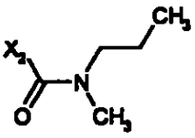
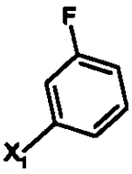
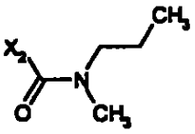
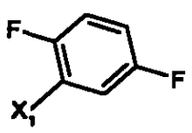
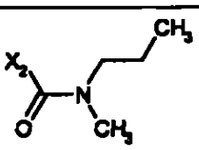
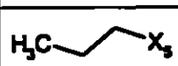
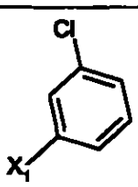
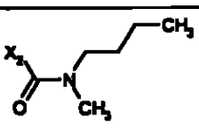
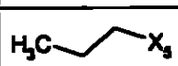
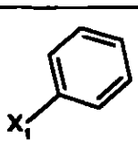
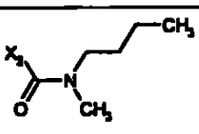
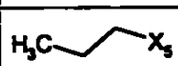
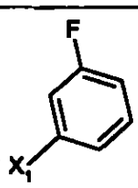
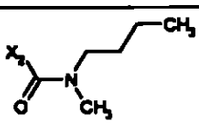
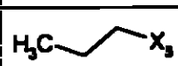
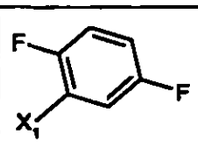
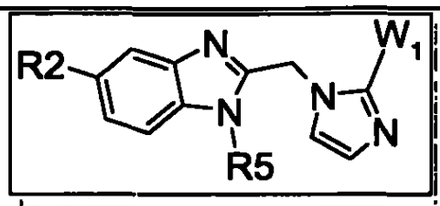
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
416				449.9832	2.00	450.3	LC/MS
417				415.5381	1.80	416.4	LC/MS
418				433.5282	1.87	434.5	LC/MS
419				451.5183	1.80	452.4	LC/MS
420				449.9832	2.00	450.3	LC/MS
421				429.5649	2.00	430.2	LC/MS
422				447.555	2.07	448.6	LC/MS
423				465.5451	2.00	466.3	LC/MS

TABLE 5



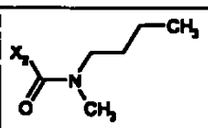
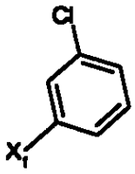
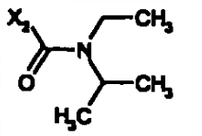
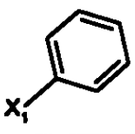
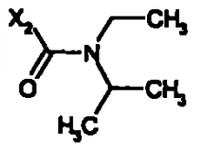
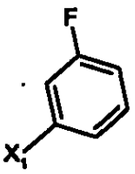
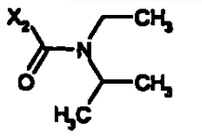
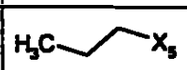
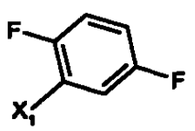
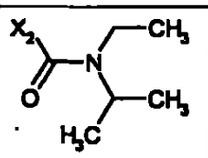
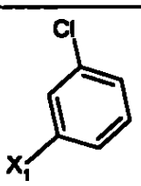
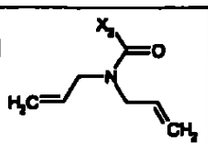
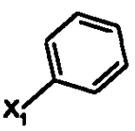
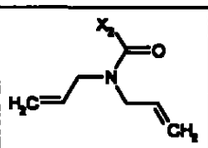
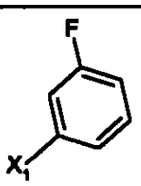
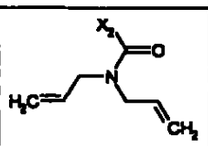
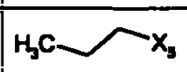
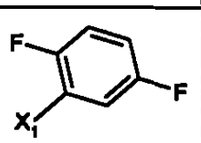
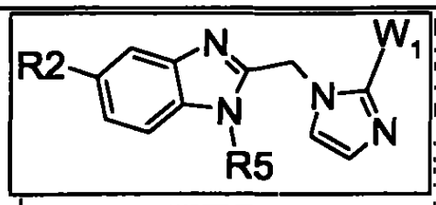
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
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425				429.5649	1.93	430.2	LC/MS
426				447.555	2.00	448.6	LC/MS
427				465.5451	1.93	466.3	LC/MS
428				464.01	2.13	464.4	LC/MS
429				439.5601	2.00	440.7	LC/MS
430				457.5502	2.07	458.4	LC/MS
431				475.5403	NA		

TABLE 5



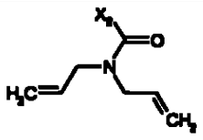
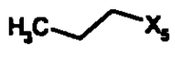
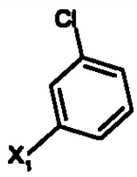
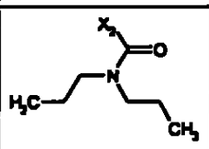
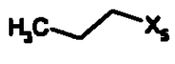
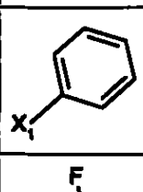
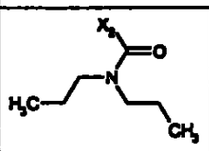
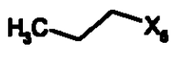
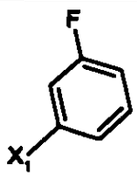
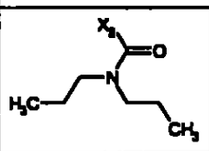
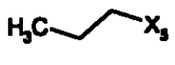
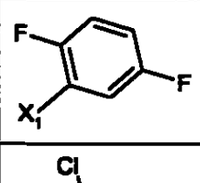
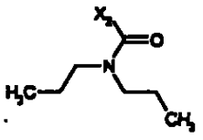
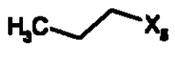
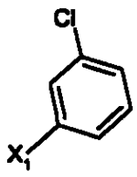
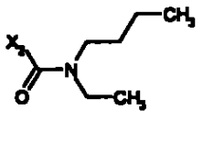
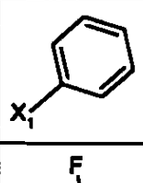
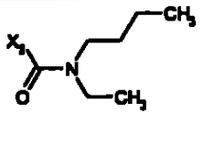
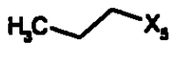
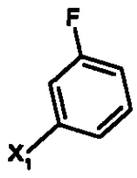
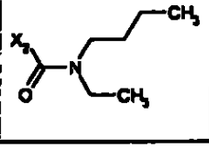
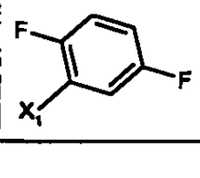
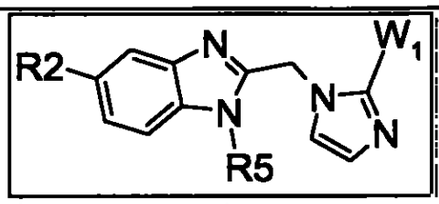
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
432				474.0052	NA		
433				443.5917	2.13	444.6	LC/MS
434				461.5818	2.20	462.4	LC/MS
435				479.5719	NA		
436				478.0368	NA		
437				443.5917	2.13	444.6	LC/MS
438				461.5818	2.20	462.4	LC/MS
439				479.5719	NA		

TABLE 5



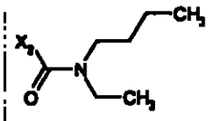
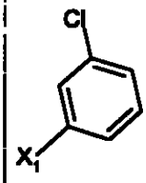
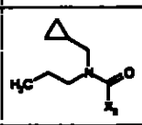
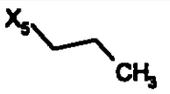
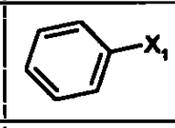
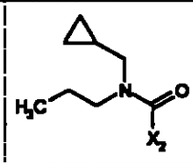
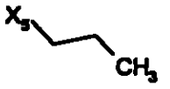
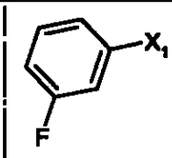
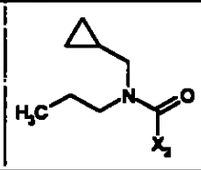
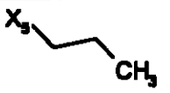
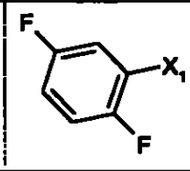
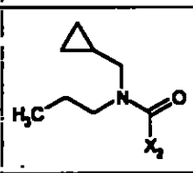
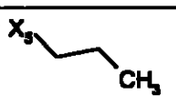
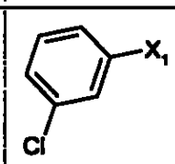
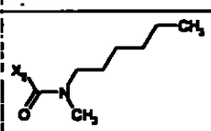
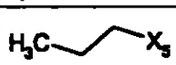
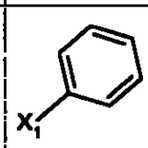
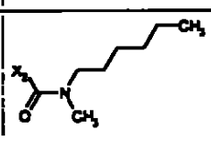
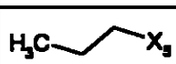
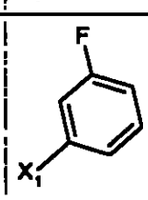
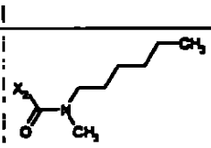
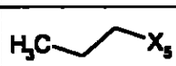
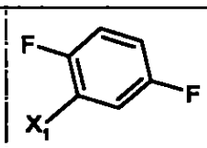
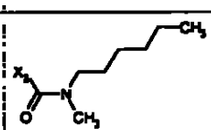
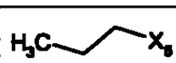
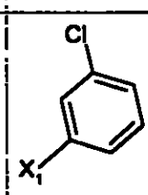
Cpd. #	R2	R5	W1	MW	RT	Mass	GC/FID or LC/MS
440				478.0368	NA		
441				455.6027	2.20	456.4	LC/MS
442				473.5928	NA		
443				491.5829	NA		
444				490.0478	2.34	490.3	LC/MS
445				457.6185	2.34	458.4	LC/MS
446				475.6086	NA		
447				493.5987	2.34	494.5	LC/MS
448				492.0636	2.47	492.4	LC/MS

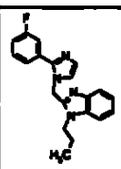
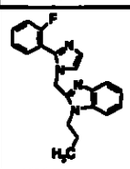
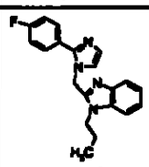
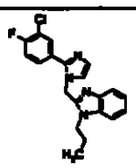
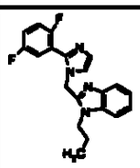
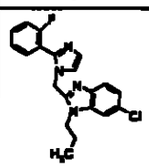
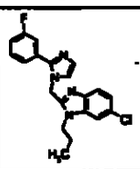
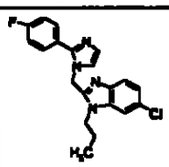
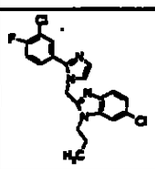
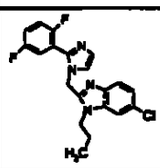
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
449		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.80 (m, 1H), 7.41-7.53 (m, 3H), 7.29-7.31 (m, 3H), 7.14-7.22 (m, 2H), 7.06 (d, 1H), 5.51 (s, 2H), 3.69 (t, 2H,), 1.43 (m, 2H), 0.74 (t, 3H)	
450		2-[[2-(2-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	7.78 (m, 1H), 7.66 (m, 1H), 7.51 (m, 1H), 7.23-7.37 (m, 5H), 7.17 (d, 1H), 7.03 (d, 1H), 5.35 (s, 2H), 3.68 (t, 2H,), 1.40 (m, 2H), 0.72 (t, 3H)	
451		2-[[2-(4-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.80 (m, 1H), 7.65-7.69 (m, 2H), 7.18-7.32 (m, 5H), 7.13 (d, 1H), 7.04 (d, 1H), 5.47 (s, 2H), 3.68 (t, 2H,), 1.42 (m, 2H), 0.74 (t, 3H)	
452		2-[[2-(3-chloro-4-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.76-7.81 (m, 2H), 7.56 (m, 1H), 7.25-7.32 (m, 4H), 7.14 (d, 1H), 7.05 (d,1H), 5.46 (s, 2H), 3.74 (t, 2H,), 1.47 (m, 2H), 0.78 (t, 3H)	
453		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	7.78 (m, 1H), 7.38 (m, 1H), 7.17-7.31 (m, 6H), 7.03 (d, 1H), 5.36 (s, 2H), 3.73 (t, 2H,), 1.44 (m, 2H), 0.76 (t, 3H)	
454		6-chloro-2-[[2-(2-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.62-7.69 (m, 2H), 7.51 (m, 1H), 7.22-7.34 (m, 4H), 7.18 (d, 1H), 7.02 (d, 1H), 5.34 (s, 2H), 3.64 (t, 2H,), 1.40 (m, 2H), 0.73 (t, 3H)	
455		6-chloro-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.69 (d, 1H), 7.38-7.52 (m, 3H), 7.15-7.29 (m, 4H), 7.04 (d, 1H), 5.48 (s, 2H), 3.65 (t, 2H), 1.42 (m, 2H), 0.75 (t, 3H)	
456		6-chloro-2-[[2-(4-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.62-7.70 (m, 3H), 7.13-7.28 (m, 5H), 7.02 (d, 1H), 3.64 (t, 2H), 1.41 (m, 2H), 0.75 (t, 3H)	
457		6-chloro-2-[[2-(3-chloro-4-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.75 (dd, 1H), 7.69 (dd, 1H), 7.55 (m, 1H), 7.24-7.30 (m, 3H), 7.15 (d, 1H), 7.03 (d, 1H), 5.43 (s, 2H,), 3.71 (t, 2H), 1.47 (m, 2H), 0.79 (t, 3H)	
458		6-chloro-2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.67 (d, 1H), 7.37 (m, 1H), 7.17-7.29 (m, 5H), 7.02 (d, 1H), 5.34 (s, 2H), 3.69 (t, 2H), 1.43 (m, 2H), 0.77 (t, 3H)	

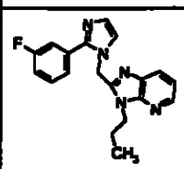
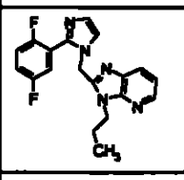
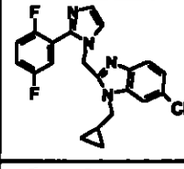
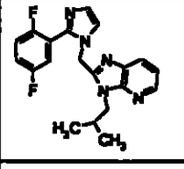
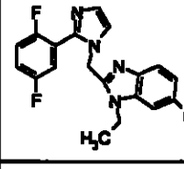
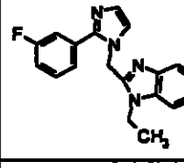
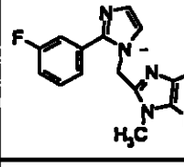
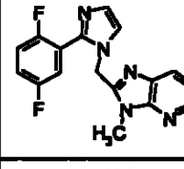
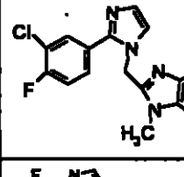
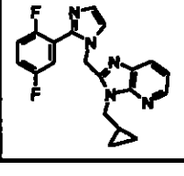
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
459		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.40 (dd, 1H), 8.06 (dd, 1H), 7.39-7.50 (m, 3H), 7.15-7.29 (m, 3H), 7.08 (d, 1H), 5.52 (s, 2H), 3.88 (t, 2H,), 1.51 (m, 2H), 0.77 (t, 3H)	
460		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.40 (dd, 1H), 8.05 (dd, 1H), 7.38 (m, 1H), 7.17-7.28 (m, 4H), 7.08 (d, 1H), 5.39 (s, 2H), 3.89 (t, 2H), 1.50 (m, 2H), 0.79 (t, 3H)	
461		6-chloro-1-(cyclopropylmethyl)-2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.66 (d, 1H), 7.38 (m, 1H), 7.32 (d, 1H), 7.19-7.28 (m, 4H), 7.04 (d, 1H), 5.36 (d, 2H), 3.82 (d, 2H), 0.65 (m, 1H), 0.46-0.51 (m, 2H), 0.07-0.11 (m, 2H)	
462		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-isobutyl-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.38 (dd, 1H), 8.04 (dd, 1H), 7.38 (m, 1H), 7.16-7.27 (m, 4H), 7.09 (d, 1H), 5.38 (s, 2H), 3.73 (d, 2H), 1.98 (m, 1H), 0.72 (d, 6H)	
463		6-chloro-2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole	1H NMR (CDCl3): 7.67 (d, 1H), 7.37 (m, 1H), 7.17-7.30 (m, 5H), 7.01 (d, 1H), 5.35 (s, 2H), 3.79 (q, 2H), 0.99 (t, 3H)	
464		6-chloro-1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.69 (d, 1H), 7.39-7.51 (m, 3H), 7.16-7.30 (m, 4H), 7.03 (d, 1H), 5.49 (s, 2H), 3.75 (q, 2H), 0.98 (t, 3H)	
465		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-3-methyl-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.40 (dd, 1H), 8.05 (dd, 1H), 7.40-7.51 (m, 3H), 7.13-7.29 (m, 3H), 7.02 (d, 1H), 5.53 (s, 2H), 3.51 (s, 3H)	
466		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-methyl-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.40 (dd, 1H), 8.03 (dd, 1H), 7.38 (m, 1H), 7.15-7.27 (m, 4H), 7.03 (d, 1H), 5.41 (s, 2H), 3.51 (s, 3H)	
467		2-[[2-(3-chloro-4-fluorophenyl)-1H-imidazol-1-yl]methyl]-3-methyl-3H-imidazo[4,5-b]pyridine		
468		3-(cyclopropylmethyl)-2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.37 (dd, 1H), 8.04 (dd, 1H), 7.38 (m, 1H), 7.09-7.28 (m, 4H), 7.09 (d, 1H), 5.42 (s, 2H), 3.83 (d, 2H), 0.68 (m, 1H), 0.38-0.43 (m, 2H), 0.24-0.29 (m, 2H)	

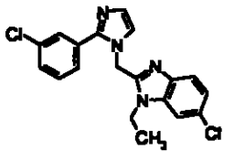
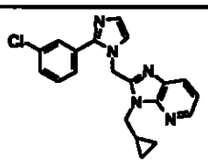
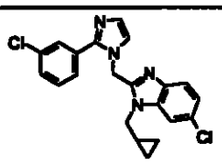
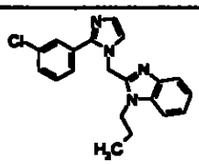
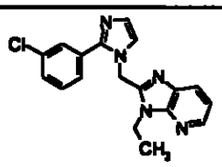
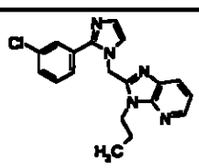
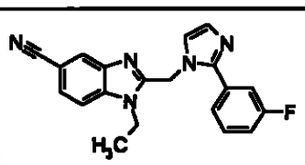
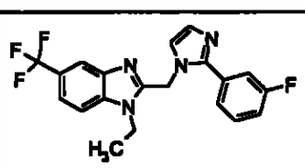
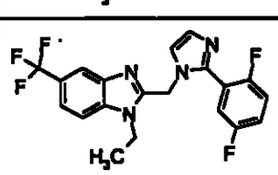
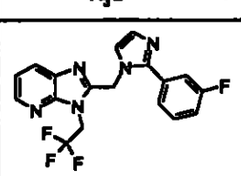
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
469		6-chloro-2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole	1H NMR (CDCl3): 7.67-7.71 (m, 2H), 7.45-7.56 (m, 3H), 7.24-7.30 (m, 2H), 7.16 (d, 2H), 7.04 (d, 1H), 5.47 (s, 2H), 3.76 (q, 2H), 0.99 (t, 3H)	
470		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-3-(cyclopropylmethyl)-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.39 (dd, 1H), 8.06 (dd, 1H), 7.68 (m, 1H), 7.40-7.68 (m, 3H), 7.27 (m, 1H), 7.18 (d, 1H), 7.10 (d, 1H), 5.53 (s, 2H), 3.83 (d, 2H), 0.73 (m, 1H), 0.40-0.46 (m, 2H), 0.24-0.28 (m, 2H)	
471		6-chloro-2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-(cyclopropylmethyl)-1H-benzimidazole	1H NMR (CDCl3): 7.67-7.71 (m, 2H), 7.42-7.56 (m, 3H), 7.24-7.33 (m, 2H), 7.15 (d, 1H), 7.06 (d, 1H), 5.47 (s, 2H), 3.58 (d, 2H), 0.69 (m, 1H), 0.47-0.53 (m, 2H), 0.03-0.09 (m, 2H)	
472		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.79 (m, 1H), 7.69 (m, 1H), 7.44-7.58 (m, 3H), 7.27-7.30 (m, 3H), 7.14 (d, 1H), 7.07 (d, 1H), 5.49 (s, 2H), 3.69 (t, 2H), 1.42 (m, 2H), 0.75 (t, 3H)	
473		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.40 (dd, 1H), 8.06 (dd, 1H), 7.67 (m, 1H), 7.43-7.57 (m, 3H), 7.26 (m, 1H), 7.19 (d, 1H), 7.08 (d, 1H), 5.51 (s, 2H), 4.00 (q, 2H), 1.09 (t, 3H)	
474		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.40 (dd, 1H), 8.06 (dd, 1H), 7.68 (m, 1H), 7.43-7.56 (m, 3H), 7.26 (m, 1H), 7.18 (d, 1H), 7.09 (d, 1H), 5.50 (s, 2H), 3.89 (t, 2H), 1.52 (m, 2H), 0.79 (t, 3H)	
475		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile		MH+ 346.3, MH- 344.2
476		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-5-(trifluoromethyl)-1H-benzimidazole		MH+ 389.2
477		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-(trifluoromethyl)-1H-benzimidazole		MH+ 407.3
478		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-3-(2,2,2-trifluoroethyl)-3H-imidazo[4,5-b]pyridine		MH+ 376.2

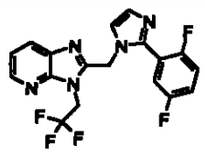
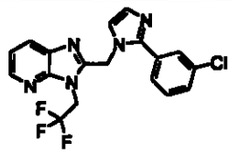
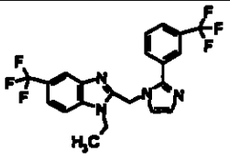
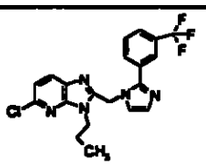
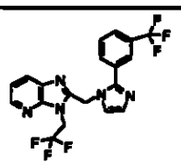
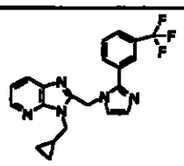
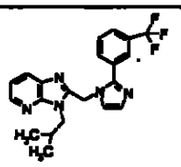
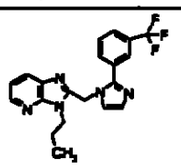
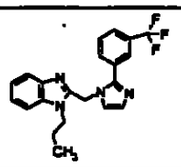
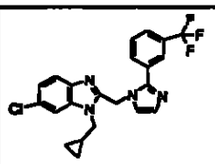
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
479		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-(2,2,2-trifluoroethyl)-3H-imidazo[4,5-b]pyridine		MH+ 394.2
480		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-3-(2,2,2-trifluoroethyl)-3H-imidazo[4,5-b]pyridine		MH+ 392.2
481		1-ethyl-5-(trifluoromethyl)-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-1H-benzimidazole	1H NMR (CDCl3): 8.09 (d, 1H), 7.37-7.95 (m, 6H), 7.19 (d, 1H), 7.05 (d, 1H), 5.49 (s, 2H), 3.85 (q, 2H), 1.02 (t, 3H)	
482		5-chloro-3-propyl-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 7.60-7.97 (m, 5H), 7.22-7.27 (m, 2H), 7.09 (d, 1H), 5.45 (s, 2H), 3.85 (t, 2H), 1.51 (m, 2H), 0.76 (t, 3H)	
483		3-(2,2,2-trifluoroethyl)-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.44 (dd, 1H), 8.07 (dd, 1H), 7.54-7.89 (m, 4H), 7.24-7.34 (m, 2H), 7.12 (d, 1H), 5.51 (s, 2H), 4.51 (q, 2H)	
484		3-(cyclopropylmethyl)-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.39 (dd, 1H), 7.60-8.03 (m, 5H), 7.21-7.26 (m, 2H), 7.11 (d, 1H), 5.51 (s, 2H), 3.84 (d, 2H), 0.70 (m, 1H), 0.44 (m, 2H), 0.24 (m, 2H)	
485		3-isobutyl-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.39 (dd, 1H), 7.60-8.07 (m, 5H), 7.21-7.26 (m, 2H), 7.12 (d, 1H), 5.49 (s, 2H), 3.71 (d, 2H), 1.98 (m, 1H), 0.89 (d, 6H)	
486		3-propyl-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.40 (dd, 1H), 7.60-8.07 (m, 5H), 7.21-7.26 (m, 2H), 7.11 (d, 1H), 5.49 (s, 2H), 3.89 (t, 2H), 1.51 (m, 2H), 0.76 (t, 3H)	
487		1-propyl-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-1H-benzimidazole	1H NMR (CDCl3): 7.61-8.00 (m, 5H), 7.09-7.31 (m, 5H), 5.47 (s, 2H), 3.69 (t, 2H), 1.43 (m, 2H), 0.73 (t, 3H)	
488		6-chloro-1-(cyclopropylmethyl)-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-1H-benzimidazole	1H NMR (CDCl3): 7.60-7.96 (m, 5H), 7.05-7.31 (m, 4H), 5.45 (s, 2H), 3.58 (d, 2H), 0.65 (m, 1H), 0.47 (m, 2H), 0.05 (m, 2H)	

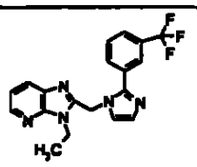
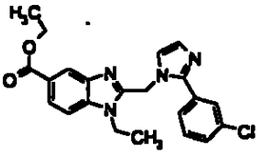
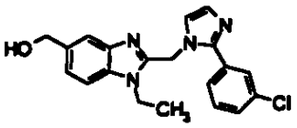
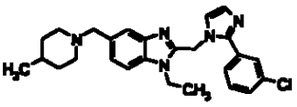
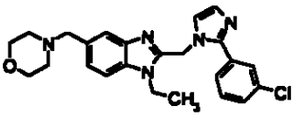
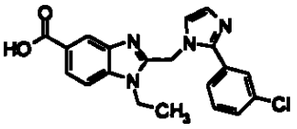
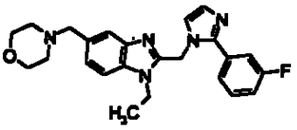
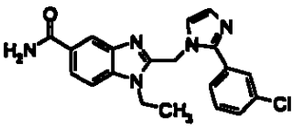
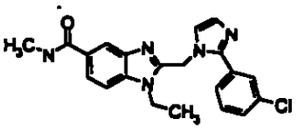
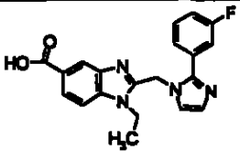
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
489		3-ethyl-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.40 (dd, 1H), 7.60-8.06 (m 5H), 7.21-7.28 (m, 2H), 7.09 (d, 1H), 5.49 (s, 2H), 4.01 (q, 2H), 1.09 (t, 3H)	
490		ethyl 2-{[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-1H-benzimidazole-5-carboxylate		
491		(2-{[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-1H-benzimidazol-5-yl)methanol		
492		2-{[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-5-[(4-methylpiperidin-1-yl)methyl]-1H-benzimidazole		
493		2-{[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-5-(morpholin-4-ylmethyl)-1H-benzimidazole		
494		2-{[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-1H-benzimidazole-5-carboxylic acid		
495		1-ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-5-(morpholin-4-ylmethyl)-1H-benzimidazole		MH+ 420.4, MH- 418.2
496		2-{[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-1H-benzimidazole-5-carboxamide		
497		2-{[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-N-methyl-1H-benzimidazole-5-carboxamide		
498		1-ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-1H-benzimidazole-5-carboxylic acid		MH+ 365.1

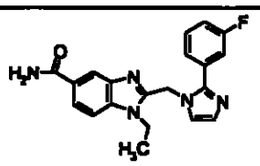
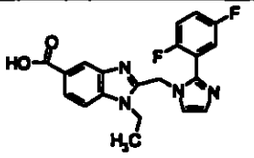
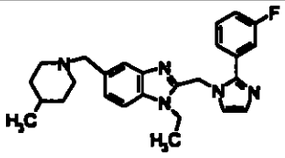
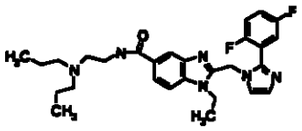
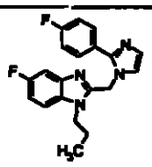
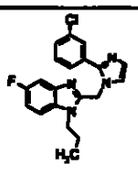
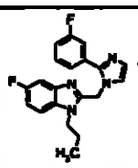
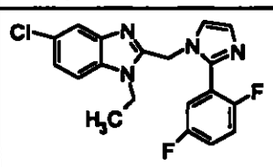
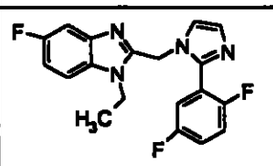
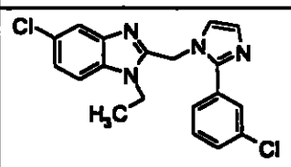
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
499		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carboxamide		
500		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carboxylic acid		MH+ 383.2
501		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-5-[(4-methylpiperidin-1-yl)methyl]-1H-benzimidazole		MH+ 432.4
502		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-N-[2-(dipropylamino)ethyl]-1-ethyl-1H-benzimidazole-5-carboxamide		MH+ 509.5
503		5-fluoro-2-[[2-(4-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR(CDCl3): 7.65-7.71 (m, 2H), 7.47 (d, 1H), 7.03-7.23 (m, 6H), 5.47 (s, 2H), 3.65 (t, 2H), 1.41 (h, 2H), 0.71 (t, 3H)	
504		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-5-fluoro-1-propyl-1H-benzimidazole	1H NMR(CDCl3): 7.65 (s, 1H), 7.41-7.53 (m, 3H), 7.08-7.24 (m, 5H), 5.47 (s, 2H), 3.65 (t, 2H), 1.47 (h, 2H), 0.71 (t, 3H)	
505		5-fluoro-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR(CDCl3): 7.35-7.47 (m, 4H), 7.0-7.1 (m, 5H), 5.47 (s, 2H), 3.65 (t, 2H), 1.35 (h, 2H), 0.71 (t, 3H)	
506		5-chloro-2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole	1H NMR (CDCl3): 7.75 (d, 1H), 7.37 (m, 1H), 7.20-7.27 (m, 5H), 7.02 (d, 1H), 5.36 (s, 2H), [0.99 T, 3H), 3.82 (q, 2H)	
507		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-fluoro-1H-benzimidazole	1H NMR (CDCl3): 7.43 (m, 1H), 7.37 (m, 1H), 7.19-7.25 (m, 4H), 7.03-7.10 (m, 2H), 5.35 (s, 2H), 3.82 (q, 2H), 1.00 (t, 3H)	
508		5-chloro-2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole	(L)-Tartrate salt 1H NMR (CD3OD): 7.24-7.59 (m, 9H), 5.66 (s, 2H), 4.51 (s, 2H), 4.12 (q, 2H), 1.26 (t, 3H)	

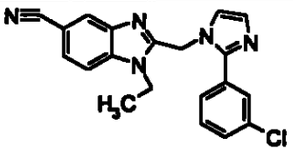
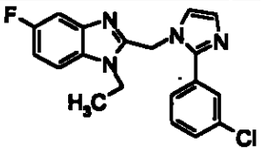
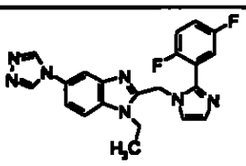
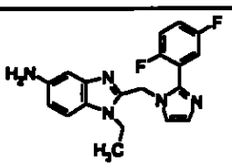
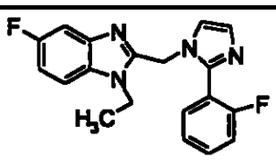
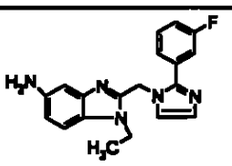
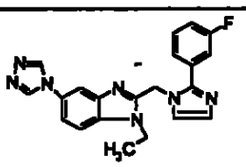
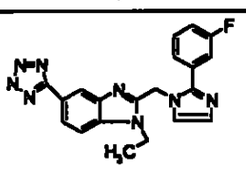
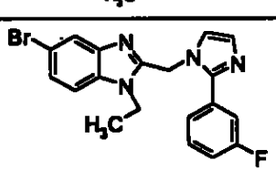
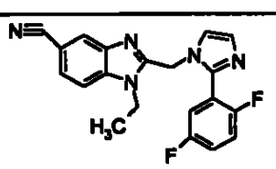
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
509		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile	8.00 (s, 1H), 7.38-7.72 (m, 7H), 7.24 (s, 1H), 5.71 (s, 2H), 4.50 (s, 2H), 4.20 (q, 2H), 1.22 (t, 3H)	
510		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-fluoro-1H-benzimidazole	(L)-Tartrate salt 1H NMR (CD3OD): 7.08-7.60 (m, 9H), 5.66 (s, 2H), 4.51 (s, 2H), 4.12 (s, 2H), 1.18 (t, 3H)	
511		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-(4H-1,2,4-triazol-4-yl)-1H-benzimidazole	Hydrochloride 1H NMR (d6 DMSO): 9.57(2H, s), 8.11(1H, m), 8.01-7.99(1H, m), 7.86(1H, d), 7.78-7.74(1H, m), 7.66-7.52(3H, m), 5.95(2H, s), 4.31(2H, q), 1.26(3H, t)	MH+ 406.5
512		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazol-5-amine		MH+ 354.4
513		1-ethyl-5-fluoro-2-[[2-(2-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	(L)-Tartrate salt 1H NMR (CD3OD): 7.07-7.58 (m, 9H), 5.53 (s, 2H), 4.51 (s, 2H), 4.03 (q, 2H), 1.07 (t, 3H)	
514		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-amine	1H NMR(CDCl3): 7.38-7.5 (m, 4h), 7.15 (t, 3H), 7.1 (s, 1H), 7.05 (t, 2H), 6.7 (d, 1H), 5.4 (s, 2H), 3.70 (q, 2H), 0.9 (t, 3H)	
515		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-5-(4H-1,2,4-triazol-4-yl)-1H-benzimidazole		MH+ 388.2
516		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-5-(2H-tetrazol-5-yl)-1H-benzimidazole		MH+ 389.2
517		5-bromo-1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.93 (d, 1H), 7.39-7.52 (m, 4H), 7.15-7.22 (m, 3H), 7.025 (d, 1H), 5.49 (s, 2H), 3.76 (q, 2H), 0.97 (t, 3H)	
518		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile	1H NMR (CDCl3): 8.09 (d, 1H), 7.56 (m, 1H), 7.33-7.40 (m, 2H), 7.16-7.24 (m, 3H), 7.04 (d, 1H), 5.41 (s, 2H), 3.89 (q, 2H), 1.03 (t, 3H)	

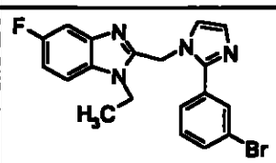
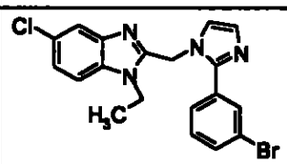
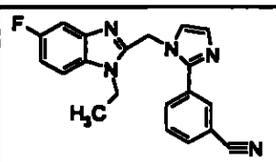
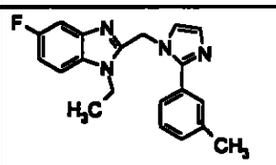
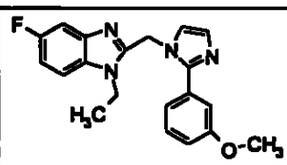
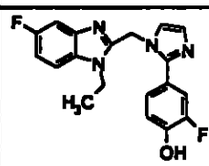
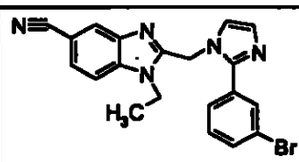
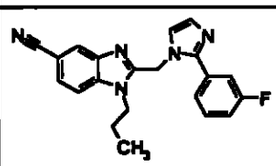
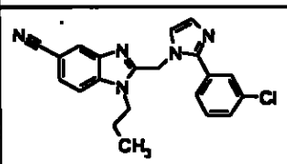
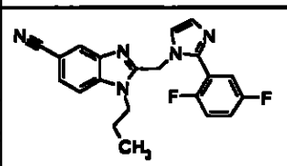
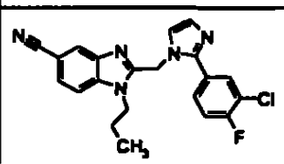
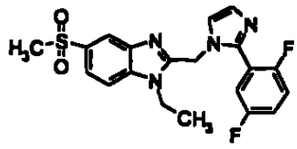
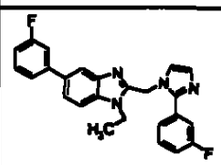
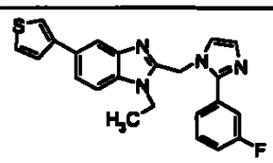
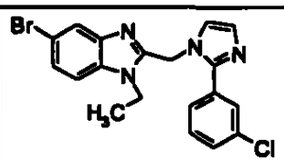
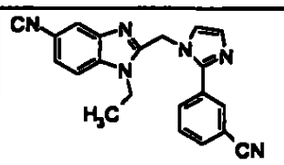
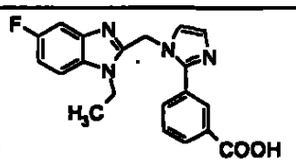
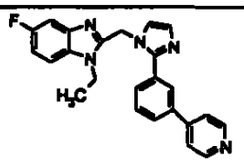
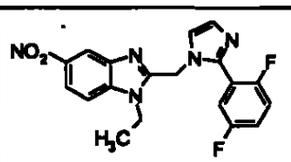
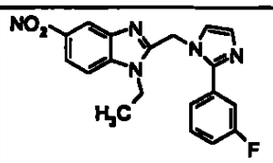
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
519		2-[[2-(3-bromophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-fluoro-1H-benzimidazole	Hydrochloride 1H NMR (d6-DMSO): 7.41-8.00 (m, 8H), 7.18 (m, 1H), 5.92 (s, 2H), 4.28 (q, 2H), 1.27 (t, 3H)	
520		2-[[2-(3-bromophenyl)-1H-imidazol-1-yl]methyl]-5-chloro-1-ethyl-1H-benzimidazole	Hydrochloride 1H NMR (d6-DMSO): 7.32-8.00 (m, 9H), 5.95 (s, 2H), 4.29 (q, 2H), 1.27 (t, 3H)	
521		3-[1-[(1-ethyl-5-fluoro-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl]benzonitrile		LCMS MH+ 348.11
522		1-ethyl-5-fluoro-2-[[2-(3-methylphenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		
523		1-ethyl-5-fluoro-2-[[2-(3-methoxyphenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		MH+ 351.15
524		4-[1-[(1-ethyl-5-fluoro-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl]-2-fluorophenol		MH+ 355.12
525		2-[[2-(3-bromophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile	1H NMR (CDCl3): 8.11 (d, 1H), 7.81 (s, 1H), 7.55-7.67 (m, 3H), 7.35 –7.41 (m, 2H), 7.19 (m, 1H), 7.04 (d, 1H), 5.51 (s, 2H), 3.84 (q, 2H), 1.04 (t, 3H)	
526		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-5-carbonitrile		MH+ 360.2, MH- 358.2
527		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-5-carbonitrile		MH+ 376.2, MH- 374.2
528		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-5-carbonitrile		MH+ 378.2

	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
529		2-[[2-(3-chloro-4-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-5-carbonitrile		MH+ 394.4, MH- 392.1
530		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-(methylsulfonyl)-1H-benzimidazole		
531		1-ethyl-5-(3-fluorophenyl)-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.96 (m, 1H), 7.27-7.54 (m, 8H), 7.16-7.22 (m, 2H), 7.01-7.07 (m, 2H), 5.53 (s, 2H), 3.82 (q, 2H), 1.02 (t, 3H)	
532		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-5-thien-3-yl-1H-benzimidazole	1H NMR (CDCl3): 8.0 (m, 1H), 7.16-7.59 (m, 10H), 7.07 (d, 1H), 5.52 (s, 2H), 3.81 (q 2H), 1.01 (t, 3H)	
533		5-bromo-2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole	1H NMR (CDCl3): 7.93 (d, 1H), 7.68 (m, 1H), 7.40-7.57 (m, 2H), 7.15-7.19 (m, 2H), 7.03 (d, 1H), 5.48 (s, 2H), 3.77 (q, 2H), 0.98 (t, 3H)	
534		2-[[2-(3-cyanophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile		MH+ 353.15
535		3-(1-[(1-ethyl-5-fluoro-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl)benzoic acid		MH+ 364.10
536		1-ethyl-5-fluoro-2-[[2-(3-pyridin-4-ylphenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		MH+ 396.18
537		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-nitro-1H-benzimidazole	Hydrochloride 1H NMR (d6 DMSO): 8.42(1H, d), 8.17(1H, dd), 8.00(1H, s), 7.90(1H, s), 7.85(1H, d), 7.70(1H, m), 7.56-7.51(2H, m), 5.90 (2H, s), 4.31(2H, q), 1.24(3H, t)	MH+ 384.1
538		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-5-nitro-1H-benzimidazole	1H NMR (d6 DMSO): 8.47(1H, d), 8.19(1H, dd), 8.00(1H, m), 7.96(1H, m), 7.88(1H, d), 7.71-7.50(4H, m), 5.98(2H, s), 4.35(2H, q), 1.30(3H, t)	MH+ 368.2

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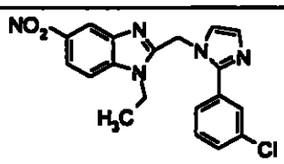
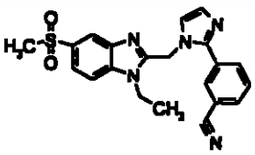
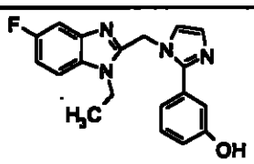
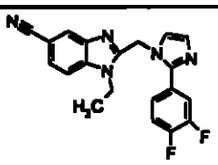
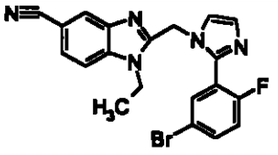
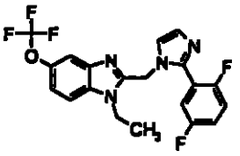
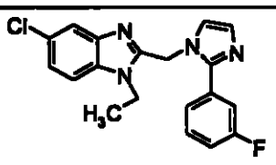
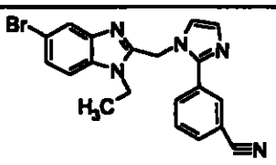
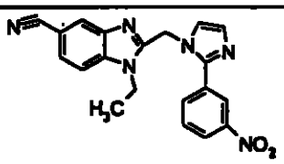
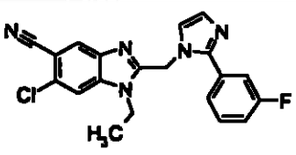
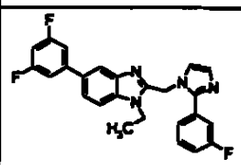
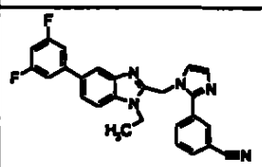
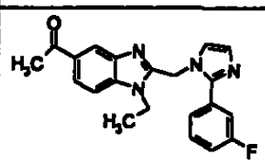
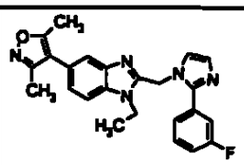
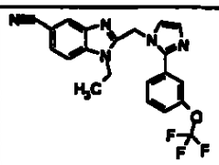
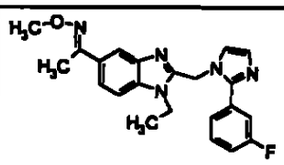
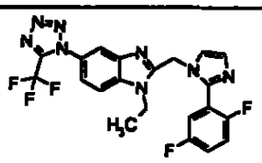
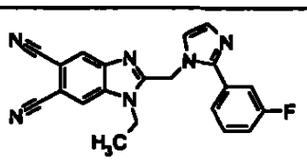
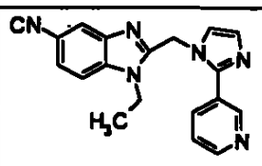
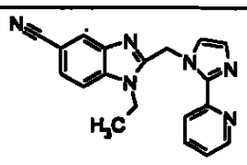
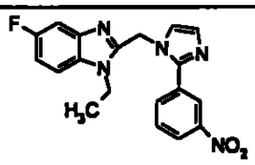
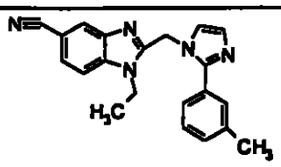
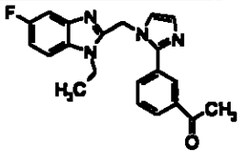
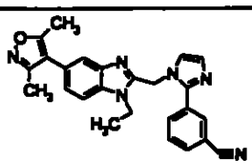
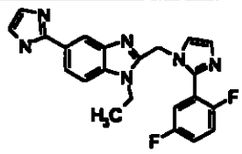
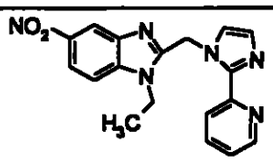
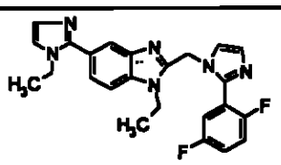
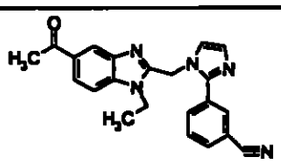
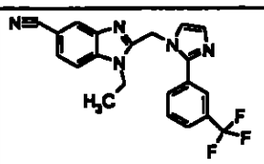
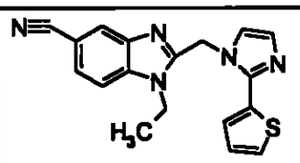
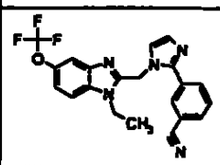
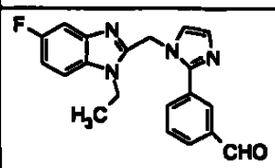
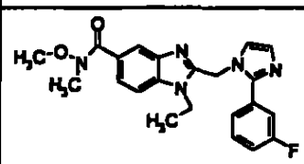
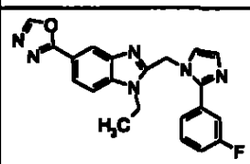
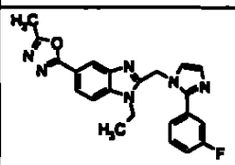
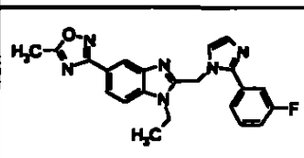
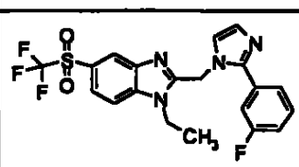
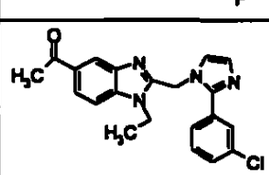
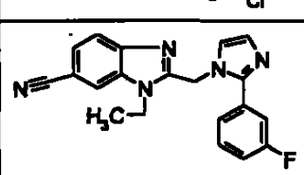
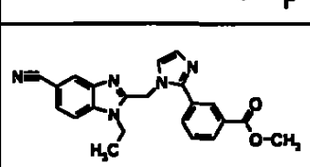
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
539		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-nitro-1H-benzimidazole		MH+ 381.95
540		3-(1-[[1-ethyl-5-(methylsulfonyl)-1H-benzimidazol-2-yl]methyl]-1H-imidazol-2-yl)benzonitrile		MH+ 406.3, MH- 404.3
541		3-(1-[(1-ethyl-5-fluoro-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl)phenol		MH+ 337.01
542		2-[[2-(3,4-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile		MH+ 379.11
543		2-[[2-(5-bromo-2-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile		MH+ 425.98
544		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-(trifluoromethoxy)-1H-benzimidazole	1H NMR (CDCl3): 7.65 (s, 1H), 7.18-7.41 (m, 6H), 7.06 (s, 1H), 5.35 (s, 2H), 3.82 (q, 2H), 1.0 (t, 3H)	
545		5-chloro-1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.22-7.60 (m, 9H), 5.87 (s, 2H), 4.49 (s, 2H), 4.11 (q, 2H), 1.16 (t, 3H)	
546		3-(1-[(5-bromo-1-ethyl-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl)benzonitrile	Hydrochloride 1H NMR (CD3OD): 7.71-8.25 (m, 9H), 6.18 (s, 2H), 4.50 (br s, 2H), 1.50 (br s, 3H)	
547		1-ethyl-2-[[2-(3-nitrophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile		MH+ 373.15
548		6-chloro-1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile		MH+ 380.4, MH- 378.2

	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
549		5-(3,5-difluorophenyl)-1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.96 (d, 1H), 7.35-7.70 (m, 6H), 7.08-7.23 (m, 4H), 6.78 (m, 1H), 5.52 (s, 2H), 3.81 (q, 2H), 1.00 (t, 3H)	
550		3-(1-[[5-(3,5-difluorophenyl)-1-ethyl-1H-benzimidazol-2-yl]methyl]-1H-imidazol-2-yl)benzonitrile	1H NMR (CDCl3): 7.93-8.02 (m, 2H), 7.37-7.77 (m, 6H), 7.08-7.19 (m, 3H), 6.77 (m, 1H), 5.49 (s, 2H), 3.89 (q, 2H), 1.10 (t, 3H)	
551		1-(1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-yl)ethanone	1H NMR (CDCl3): 8.40 (s, 1H), 8.00 (dd, 1H), 7.33-7.53 (m, 4H), 7.17-7.22 (m, 2H), 7.05 (d, 1H), 5.53 (s, 2H), 3.82 (q, 2H), 2.67 (s, 3H), 1.01 (t, 3H)	
552		5-(3,5-dimethylisoxazol-4-yl)-1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.66 (d, 1H), 7.34-7.54 (m, 4H), 7.15-7.22 (m, 3H), 7.06 (d, 1H), 5.52 (s, 2H), 3.83 (q, 2H), 2.41 (s, 3H), 2.28 (s, 3H), 1.02 (s, 3H)	
553		1-ethyl-2-((2-[3-(trifluoromethoxy)phenyl]-1H-imidazol-1-yl]methyl)-1H-benzimidazole-5-carbonitrile		MH+ 411.96
554		(1E)-1-(1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-yl)ethanone O-methyloxime	Syn and anti 1H NMR (CDCl3): 7.98 (d, 1H), 7.94 (d, 1H1), 7.75 (dd, 1H+H1), 7.14-7.22 (m, 2H+H1), 7.32-7.52 (m, 4H+H1), [7.03 (d, 1H), 7.01 (d, 1H1)], 5.49 (s, 2H+H1), [4.00 (s, 2H), 3.86 (s, 2H1)], 3.79 (q, 2H+H1), [2.30 (s, 3H), 2.28 (s, 3H1), 0.98 (t,	
555		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-[5-(trifluoromethyl)-1H-tetraazol-1-yl]-1H-benzimidazole		MH+ 475.1
556		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5,6-dicarbonitrile		MH+ 371.0
557		1-ethyl-2-[(2-pyridin-3-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole-5-carbonitrile	Dihydrochloride 1H NMR (d6 DMSO): 8.96(1H, s), 8.82 (1H, d), 8.24(1H, d), 8.14(1H, s), 8.05(1H, d), 7.98(1H, d), 7.85(1H, d), 7.69-7.65(2H, m), 6.01(2H, s), 4.33(2H, q), 1.29(3H, t)	
558		1-ethyl-2-[(2-pyridin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole-5-carbonitrile	Dihydrochloride 1H NMR (d6 DMSO): 8.55(1H, d), 8.41 (1H, d), 8.10-7.98(4H, m), 7.85(1H, d), 7.84(1H, d), 7.54-7.51(1H, m), 6.39 (2H, s), 4.45(2H, q), 1.41(3H, t)	MH+ 329.4

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	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
559		1-ethyl-5-fluoro-2-[[2-(3-nitrophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		MH+ 365.99
560		1-ethyl-2-[[2-(3-methylphenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile		MH+ 343.08
561		1-(3-(1-[(1-ethyl-5-fluoro-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl)phenyl)ethanone		MH+ 383.05
562		3-(1-[[5-(3,5-dimethylisoxazol-4-yl)-1-ethyl-1H-benzimidazol-2-yl]methyl]-1H-imidazol-2-yl)benzonitrile	1H NMR (CDCl3): 7.94-8.01 (m, 2H), 7.75 (m, 1H), 7.61-7.66 (m, 2H), 7.38 (dd,1H), 7.18-7.22 (m, 2H), 7.10 (d, 1H), 5.49 (s, 2H), 3.90 (q, 2H),2.42 (s, 3H), 2.29 (s, 3H), 1.12 (t, 3H)	
563		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-(1H-imidazol-2-yl)-1H-benzimidazole	. Dihydrochloride 1H NMR (d6 DMSO): 8.43(1H, s), 8.13-8.11(2H, m), 7.99(1H, d), 7.89(1H, d), 7.79-7.75(3H, m), 7.60-7.51(3H, m), 5.95(2H, s), 4.31(2H, q), 1.26 (3H, t)	MH+ 405.3
564		1-ethyl-5-nitro-2-[(2-pyridin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole		MH+ 349.1
565		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-(1-ethyl-1H-imidazol-2-yl)-1H-benzimidazole		MH+ 433.2
566		3-(1-[(5-acetyl-1-ethyl-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl)benzonitrile	1H NMR (CDCl3): 8.40 (d,1H), 7.93-8.05 (m, 3H), 7.76 (m, 1H), 7.63 (m, 1H), 7.37 (dd, 1H), 7.21 (d, 1H), 7.09 (d, 1H), 5.50 (s, 2H), 3.91 (q, 2H), 2.68 (s, 3H), 1.11 (t, 3H)	
567		1-ethyl-2-((2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl)methyl)-1H-benzimidazole-5-carbonitrile		MH+ 396.08
568		1-ethyl-2-[(2-thien-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole-5-carbonitrile		MH+ 334.04

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	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
569		3-(1-[(1-ethyl-5-(trifluoromethoxy)-1H-benzimidazol-2-yl]methyl}-1H-imidazol-2-yl)benzonitrile		MH+ 412.2, MH- 410.2
570		3-(1-[(1-ethyl-5-fluoro-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl)benzaldehyde		MH+ 349.17
571		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-N-methoxy-N-methyl-1H-benzimidazole-5-carboxamide	1H NMR (CDCl3): 8.19 (d, 1H), 7.71 (dd, 1H), 7.40-7.55 (m, 3H), 7.32 (dd, 1H), 7.18-7.23 (m, 2H), 7.05 (d, 1H), 5.53 (s, 2H), 3.80 (q, 2H), 3.58 (s, 3H), 3.41 (s, 3H), 1.00 (t, 3H)	
572		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-5-(1,3,4-oxadiazol-2-yl)-1H-benzimidazole		
573		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-5-(5-methyl-1,3,4-oxadiazol-2-yl)-1H-benzimidazole	Hydrochloride 1H NMR (d6 DMSO): 8.11 (1H, s), 8.00(1H, d), 7.95(1H, d), 7.80-7.82(2H, m), 7.74-7.72(1H,m), 7.64-7.58(2H, m), 7.53-7.49(1H, m), 5.96(2H, s), 4.329(2H, q), 2.56(3H, s), 1.30(3H, t)	MH+ 403.3
574		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-5-(5-methyl-1,2,4-oxadiazol-3-yl)-1H-benzimidazole		MH+ 403.8, MH- 401.4
575		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-5-[(trifluoromethyl)sulfonyl]-1H-benzimidazole		MH+ 453.8, MH- 451.2
576		1-(2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl}-1-ethyl-1H-benzimidazol-5-yl)ethanone	1H NMR (CDCl3): (8.40 (d, 1H), 8.01 (dd, 1H), 7.88 (m, 1H), 7.55 (m, 1H), 7.45-7.52 (m, 2H), 7.35 (d, 1H), 7.17 (d, 1H), 7.06 (d,1H), 5.52 (s, 2H), 3.85 (q, 2H), 2.68 (s, 3H), 1.03 (t, 3H)	
577		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-1H-benzimidazole-6-carbonitrile		MH+ 348.2, MH- 344.3
578		methyl 3-(1-[(5-cyano-1-ethyl-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl)benzoate		MH+ 386.17

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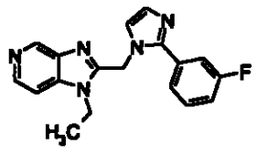
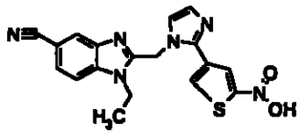
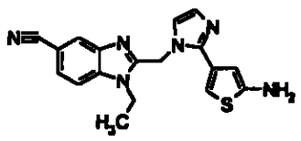
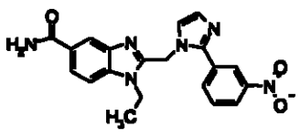
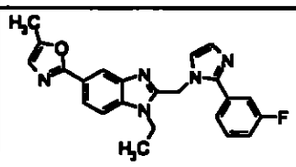
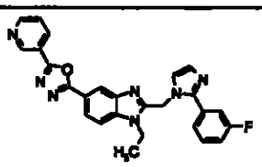
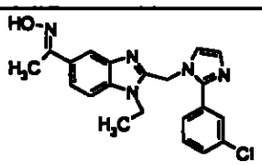
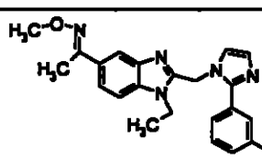
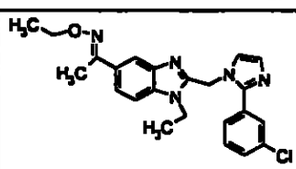
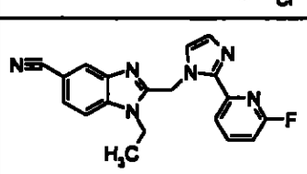
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
579		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	1H NMR (CDCl3): 9.10 (s, 1H), 8.44 (d, 1H), 7.38-7.52 (m, 3H), 7.18-7.20 (m, 2H), 7.16 (s, 1 H), 7.04 (d, 1H), 5.53 (s, 2H), 3.79 (q, 2H), 1.00 (t, 3H)	
580				MH+ 379.05
581		2-[[2-(5-aminothien-3-yl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile		MH+ 397.12
582		1-ethyl-2-[[2-(3-nitrophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carboxamide		MH+ 391.17
583		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-5-(5-methyl-1,3-oxazol-2-yl)-1H-benzimidazole	Hydrochloride 1H NMR (d6 DMSO): 8.05(1H, s), 7.99(1H, d), 7.97(1H, s), 7.88-7.88(1H, m), 7.76-7.72(2H, m), 7.65-7.59(2H, m), 7.54-7.51(1H, m), 6.99(IH, s), 5.9392H, s), 4.31(2H, q), 2.36(3H, s), 1.20(3H, t)	MH+ 402.5
584		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-5-(5-pyridin-3-yl-1,3,4-oxadiazol-2-yl)-1H-benzimidazole	Hydrochloride 1H NMR (d6 DMSO): 9.36(1H, d), 8.84(1H, dd), 8.57(1H, m), 8.44(1H, s), 8.10(1H, dd), 8.03(1H, d), 7.98(1H, d), 7.90(1H, d), 7.75-7.51(5H, m), 5.99(2H, s), 4.35(2H, q), 1.33(3H, t).	MH+ 466.5
585		(1E)-1-(2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone oxime	1H NMR (CDCl3): 11.03 (s, 1H), 7.81 (s, 1H), 7.52-7.67 (m, 4H), 7.40-7.45 (m, 2H), 7.31 (s, 1H), 7.07 (s, 1H), 5.67 (s, 2H,), 4.17 (q, 2H), 2.18 (s, 3H), 1.16 (t, 3H)	
586		(1E)-1-(2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone O-methyloxime	Syn and anti 1H NMR (CDCl3): 7.99 (dd,1H), 7.85 (dd, 1H1), 7.76 (dd, 1H+H1), 7.65 (m, 1H+H1), 7.44-7.57 (m, 3H+H1), 7.27 (d, 1H+H1), 7.15 (d, 1H+H1), 7.04 (d, 1H+H1), 5.49 (s, 2H+H1), 4.01 (s, 3H), 3.87 (s, 3H), 3.80 (q, 2H+H1), 2.30 (s, 3H), 1.20 (t, 3H)	
587		(1E)-1-(2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone O-ethyloxime	Syn and anti 1H NMR (CDCl3): 8.00 (dd, 1H+H1), 7.76 (dd, 1H+H1), 7.69 (m, 1H+H1), 7.44-7.57 (m, 3H+H1), 7.27 (dd, 1H+H1), 7.15 (d, 1H+H1), 7.04 (d, 1H), 7.03 (d, 1H1), 5.49 (s, 2H+H1), 4.28 (q, 2H), 4.13 (q, 2H1), 3.80 (q, 2H+H1), 2.27 (s, 3H), 1.42 (t, 3H), 1.20 (t, 3H)	
588		1-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile		MH+ 347.07

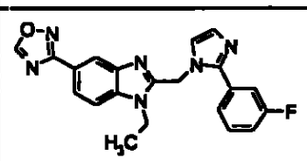
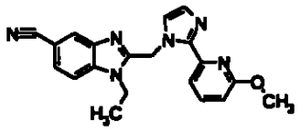
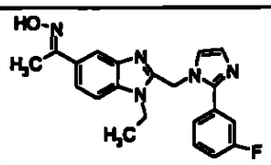
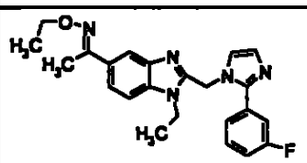
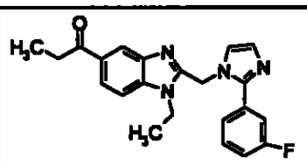
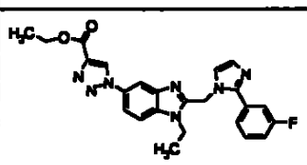
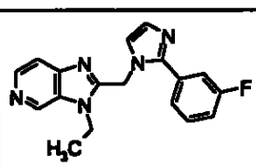
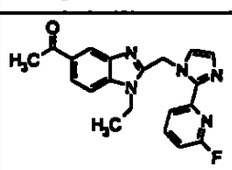
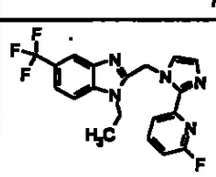
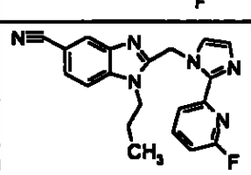
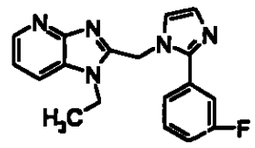
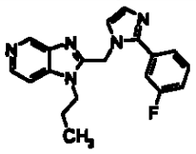
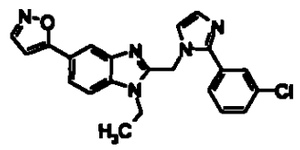
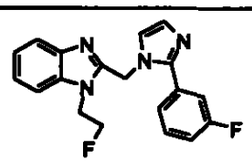
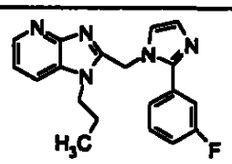
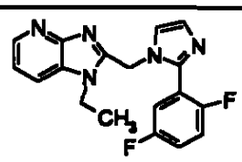
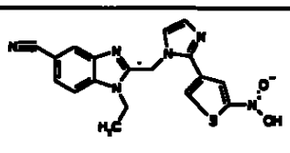
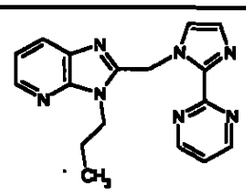
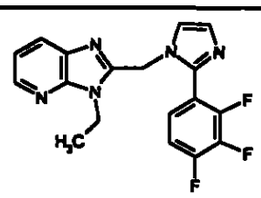
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
589		1-ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-5-(1,2,4-oxadiazol-3-yl)-1H-benzimidazole		
590		1-ethyl-2-{[2-(6-methoxypyridin-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazole-5-carbonitrile		MH+ 359.08
591		(1E)-1-(1-ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)ethanone oxime	Hydrochloride 1H NMR (d6-DMSO): 11.10 s, 1H), 7.52-7.99 (m, 9H+H1), 5.923 (s, 2H+H1): 4.30 (q, 2H+H1), 2.16 (s, 3H), 2.14 (s, 3H1), 1.29 (t, 3H+H1)	
592		(1E)-1-(1-ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)ethanone O-ethyloxime	Hydrochloride 1H NMR (d6-DMSO): 7.52-7.99 (m, 9H), 5.93 (s, 2H), 4.28 (q, 2H), 4.14 (q, 2H), 2.20 (s, 3H), 1.23-1.29 (m, 6H)	
593		1-(1-ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)propan-1-one	1H NMR (CDCl3): 8.42 (d, 1H), 8.02 (dd, 1H), 7.32-7:54 (m, 4H), 7.17-7.24 (m, 2H), 7.06 (d, 1H), 5.53 (s, 2H), 3.83 (q, 2H), 3.09 (q, 2H), 1.27 (t, 3H), 1.02 (t, 3H)	
594		ethyl 1-(1-ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)-1H-1,2,3-triazole-4-carboxylate		
595		3-ethyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-c]pyridine		
596		1-(1-ethyl-2-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl)ethanone		MH+ 364.2, MH- 362.6
597		1-ethyl-2-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-5-(trifluoromethyl)-1H-benzimidazole		MH+ 390.2, MH- 388.2.
598		2-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-1-propyl-1H-benzimidazole-5-carbonitrile	1H NMR (399.96MHz, CDCl3): d 8.17 (dd, J = 2.0, 7.6 Hz, 1H), 8.05 (s, 1H), 7.88 (q, J = 8.0 Hz, 1H,), 7.52 (d, J = 8.4 Hz, 1H), 7.41(d, J = 8.4 Hz, 1H), 7.21 (s, 1H), 7.18 (s, 1H), 6.28 (s, 2H), 4.28 (t, J = 7.6 Hz, 2H), 1.68 (dt, J = 7.6 Hz, 2H), 0.84 (t, J = 7.6	MH+ 361.2, MH- 359.2

	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
599		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-b]pyridine		MH+ 322.2, MH- 320.3
600		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-c]pyridine	1H NMR (CDCl3): 9.11 (s, 1H), 8.45 (d, 1H), 7.38-7.52 (m, 3H), 7.16-7.26 (m, 3H) 7.06 (s, 1H), 5.53 (s, 2H), 3.71 (t, 2H), 1.43 (q 2H), 0.75 (t, 3H)	
601		2-[[2-(3-chlorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-5-isoxazol-5-yl-1H-benzimidazole	1H NMR (CDCl3): 8.30 (d, 1H), 8.21 (dd, 1H), 7.78 (dd, 1H), 7.69 (m, 1H), 7.58 (m, 1H), 7.45-7.48 (m, 2H), 7.39 (dd, 1H), 7.17 (d, 1H), 7.07 (d, 1H), 6.53 (d, 1HP, 5.52 (s, 2H), 3.83 (q, 2H), 1.03 (t, 3H)	
602		1-(2-fluoroethyl)-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		MH+ 339.2
603		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-b]pyridine		MH+ 336.2, MH- 334.2
604		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-imidazo[4,5-b]pyridine		
605		1-ethyl-2-[(2-[5-[hydroxy(oxido)amino]thien-3-yl]-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile		
606		3-propyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.46 (d, 1H), 8.39 (dd, 1H), 8.03 (dd, 1H), 7.27 (m, 5H), 6.37 (s, 2H), 4.27 (t, 2H), 1.70 (p, 2H), 0.82 (t, 3H)	*m/z* 320.4 [M+1]
607		3-ethyl-2-[[2-(2,3,4-trifluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.40 (dd, 1H), 8.02 (dd, 1H), 7.36 (dq, 1H), 7.25 (dd, 1H), 7.22 (d, 1H), 7.01 (m, 2H), 5.38 (s, 2H), 4.03 (q, 2H), 1.10 (t, 3H)	*m/z* 358.2 [M+1]

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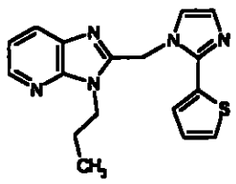
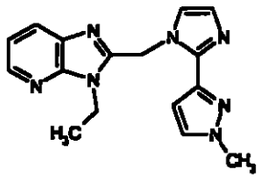
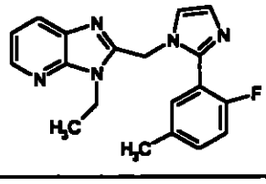
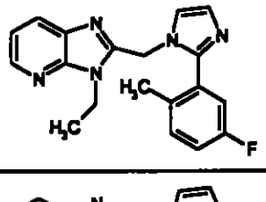
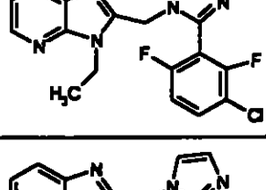
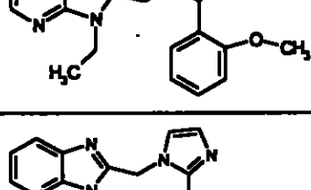
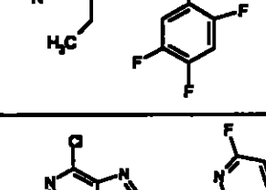
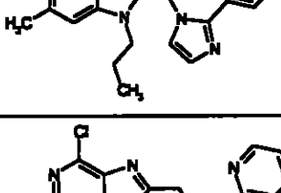
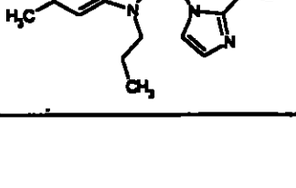
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
608		3-propyl-2-[(2-thien-2-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.40 (dd, 1H), 8.05 (dd, 1H), 7.46 (dd, 1H), 7.25 (dd, 1H), 7.15 (m, 2H), 7.03 (d, 1H), 5.61 (s, 2H), 3.96 (t, 2H), 1.55 (p, 2H), 0.80 (t, 3H)	*m/z* 324.3 [M+1]
609		3-ethyl-2-[[2-(1-methyl-1H-pyrazol-3-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.39 (dd, 1H), 8.05 (dd, 1H), 7.43 (dd, 1H), 7.23 (dd, 1H), 7.10 (dd, 1H), 7.04 (dd, 1H), 6.91 (dd, 1H), 6.21 (s, 2H), 4.33 (q, 2H), 3.97 (3, 3H), 1.13 (t, 3H)	*m/z* 308.3 [M+1]
610		3-ethyl-2-[[2-(2-fluoro-5-methylphenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.39 (dd, J = 4.8, 1.5 Hz, 1H), 8.05 (dd, J = 8.4, 1.5 Hz, 1H), 7.44 (dd, J = 6.8, 2.1 Hz, 1H), 7.25-7.30 (m, 2H), 7.19 (d, J = 1.5 Hz, 1H), 7.12 (dd, J = 9.9, 8.7 Hz, 1H), 7.04 (d, J = 1.5 Hz, 1H), 5.38 (s, 2H), 3.98 (q, J = 7.2 Hz, 2H), 2.37 (s, 3H), 1.03 (t, J = 7.2 Hz, 3H)	*m/z* 336.2 [M+1]
611		3-ethyl-2-[[2-(5-fluoro-2-methylphenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.39 (dd, J = 4.8, 1.5 Hz, 1H), 8.04 (dd, J = 8.0, 1.5 Hz, 1H), 7.19-7.32 (m, 3H), 7.07-7.13 (m, 3H), 5.26 (s, 2H), 3.98 (q, J = 7.2 Hz, 2H), 2.24 (s, 3H), 1.11 (t, J = 7.2 Hz, 3H)	*m/z* 336.2 [M+1]
612		2-[[2-(3-chloro-2,6-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.40 (dd, J = 4.7, 1.5 Hz, 1H), 8.01 (dd, J = 8.0, 1.5 Hz, 1H), 7.52 (m, 1H), 7.23-7.30 (m, 2H), 7.11 (d, J = 1.5 Hz, 1H), 7.03 (m, 1H), 5.34 (s, 2H), 4.03 (q, J = 7.2 Hz, 2H), 1.10 (t, J = 7.2 Hz, 3H)	*m/z* 374.2 [M+1]
613		3-ethyl-2-[[2-(2-methoxyphenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.38 (dd, J = 4.8, 1.5 Hz, 1H), 8.03 (dd, J = 8.1, 1.5 Hz, 1H), 7.46-7.57 (m, 2H), 7.25 (m, 1H), 7.16 (d, J = 1.2 Hz, 1H), 7.13 (dt, J = 7.5, 1.2 Hz, 1H), 7.04 (d, J = 8.4 Hz, 1H), 7.00 (d, J = 1.2 Hz, 1H), 5.29 (s, 2H), 3.90 (q, J = 7.2 Hz, 2H), 3.84 (s,	*m/z* 334.2 [M+1]
614		3-ethyl-2-[[2-(2,4,5-trifluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.40 (dd, J = 4.8, 1.4 Hz, 1H), 8.04 (dd, J = 8.2, 1.5 Hz, 1H), 7.50 (m, 1H), 7.25 (dd, J = 7.8, 5.1 Hz, 1H), 7.21 (d, J = 1.5 Hz, 1H), 7.14 (m, 1H), 7.06 (d, J = 1.5 Hz, 1H), 5.37 (s, 2H), 4.02 (q, J = 7.2 Hz, 2H), 1.11 (t, J = 7.2 Hz, 3H)	*m/z* 358.2 [M+1]
615		4-chloro-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-methyl-1-propyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.19(dd, J = 8, 1.2 Hz, 1H), 7.93(q, J = 8 Hz, 1H), 7.21(d, J = 1 Hz, 1H), 7.14(d, J = 1 Hz, 1H), 7.05(s, 1H), 6.93(dd, J = 8, 2 Hz, 1H), 6.38(s, 2H), 4.18(t, J = 5.6 Hz, 2H), 2.63(s, 3H), 1.57(sextet, J = 5.4 Hz, 2H), 0.77(t, J = 5.4 Hz, 3H)	*m/z* 385 [M+1]
616		4-chloro-6-methyl-1-propyl-2-[(2-pyridin-2-yl-1H-imidazol-1-yl)methyl]-1H-imidazo[4,5-c]pyridine	(CD3OD) 8.02-7.98(m, 3H), 7.34(d, J = 2 Hz, 1H), 7.14(d, J = 1.8 Hz, 1H), 7.01(d, J = 2 Hz, 1H), 6.47(s, 1H), 6.12(s, 2H), 4.21(t, J = 5.2 Hz, 2H), 2.33(s, 3H), 1.68(sextet, J = 5.4 Hz, 2H), 0.88(t, J = 5.4 Hz, 3H)	*m/z* 367 [M+1]

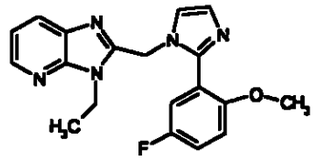
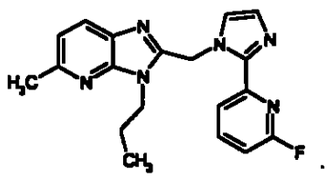
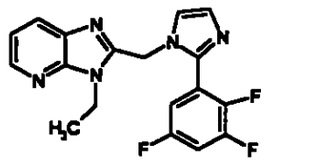
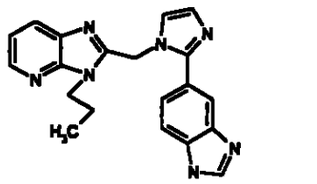
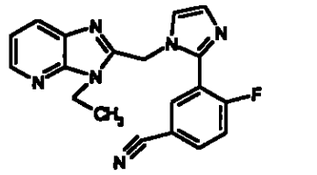
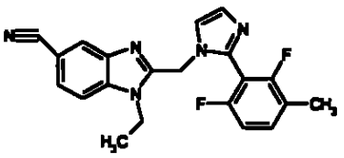
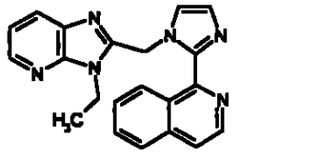
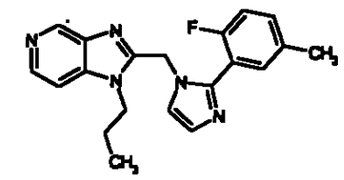
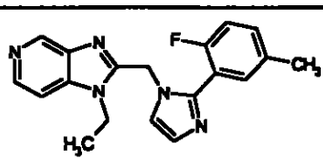
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
617		3-ethyl-2-[[2-(5-fluoro-2-methoxyphenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.39 (dd, J = 4.6, 1.4 Hz, 1H), 8.04 (dd, J = 8.0, 1.4 Hz, 1H), 7.15-7.32 (m, 4H), 7.01 (d, J = 1.5 Hz, 1H), 6.96 (dd, J = 9.0, 4.5 Hz, 1H), 5.30 (s, 2H), 3.95 (q, J = 7.2 Hz, 2H), 3.80 (s, 3H), 1.02 (t, J = 7.2 Hz, 3H)	*m/z* 352.3 [M+1]
618		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-5-methyl-3-propyl-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.18 (dd, J = 7.8, 2.1 Hz, 1H), 7.84-7.92 (m, 2H), 7.21 (d, J = 1.2 Hz, 1H), 7.18 (d, J = 1.2 Hz, 1H), 7.06 (d, J = 7.8 Hz, 1H), 6.89 (dd, J = 8.1, 2.7 Hz, 1H), 6.29 (s, 2H), 4.29 (t, J = 7.5 Hz, 2H), 2.64 (s, 3H), 1.72 (m, 2H), 0.83 (t, J = 7.5 Hz, 3H)	
619		3-ethyl-2-[[2-(2,3,5-trifluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.40 (dd, J = 4.8, 1.2 Hz, 1H), 8.04 (dd, J = 7.8, 1.2 Hz, 1H), 7.05-7.28 (m, 5H), 5.40 (s, 2H), 4.04 (q, J = 7.3 Hz, 2H), 1.10 (t, J = 7.3 Hz, 3H)	
620		2-[[2-(1H-benzimidazol-5-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	(CDCl3): 8.38 (d, 1H), 8.02 (m, 2H), 7.96 (s, 1H), 7.66 (s, 1H), 7.42 (d, 1H), 7.25 (m, 2H), 5.56 (s, 2H), 5.29 (1H), 3.87 (t, 2H), 1.48 (m, 2H), 0.68 (t, 3H)	m/z 358 [M+1]
621		3-(1-[(3-ethyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl]-4-fluorobenzonitrile	(CDCl3): 8.40 (d, 1H), 7.96 (m, 2H), 7.75 (m, 1H), 7.31 (m, 3H), 7.10 (s, 1H), 5.38 (s, 2H), 4.03 (q, 2H), 1.11 (t, 3H)	
622		2-[[2-(2,6-difluoro-3-methylphenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile	(CDCl3) 8.06 (s,1H), 7.55 (m, 1H), 7.37 (dd, J=8.0, 1.2 Hz, 1H), 7.32-7.26 (m, 2H), 7.04 (s, 1H), 6.94 (t, J=8.8 Hz, 1H), 5.34 (s, 2H), 3.88 (q, J=7.1Hz, 2H), 2.25 (S, 3H), 1.03 (t, J=7.1Hz, 3H)	m/z 378 [M+1]
623		1-(1-[(3-ethyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl]isoquinoline	(CDCl3) 9.11 (d, 1H), 8.58 (d, 1H), 8.37 (dd, 1H), 8.02 (dd, 1H), 7.86 (dd, 1H), 7.51 (m, 3H), 7.32 (d, 1H), 7.22 (m, 2H), 6.11 (s, 2H), 4.36 (q, 2H), 1.11 (t, 3H)	*m/z* 355.2 [M+1]
624		2-[[2-(2-fluoro-5-methylphenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.07(s, 1H), 8.41(d, J = 4.5 Hz, 1H), 8.12(dd, J = 5.1, 1.5 Hz, 1H), 7.28-7.24(m, 2H), 7.21(d, J = 4.2 Hz, 1H), 7.10(t, J = 6.6 Hz, 1H), 7.01(s, 1H), 5.37(s, 2H), 3.69(t, J = 5.7 Hz, 2H), 2.34(s, 3H), 1.40(sextet, J = 5.7 Hz, 2H), 0.74(t, J = 5.7 Hz, 3H)	*m/z* 350 [M+1]
625		1-ethyl-2-[[2-(2-fluoro-5-methylphenyl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.09(s, 1H), 8.44(d, J = 4.8 Hz, 1H), 7.42(d, J = 5.0 Hz, 1H), 7.29-7.23(m, 3H), 7.12(t, J = 6.3 Hz, 1H), 7.00(s, 1H), 5.39(s, 2H), 3.81(q, J = 5.4 Hz, 2H), 2.36(s, 3H), 0.99(t, J = 5.1 Hz, 3H)	*m/z* 336 [M+1]

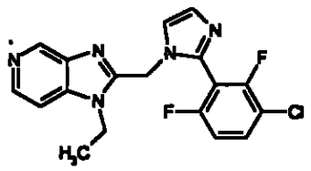
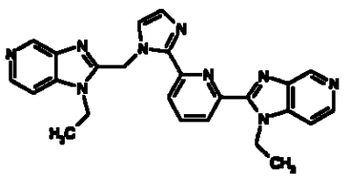
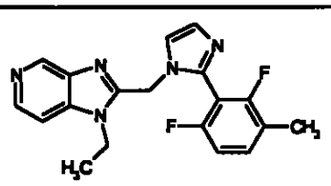
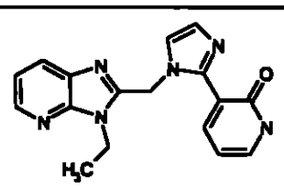
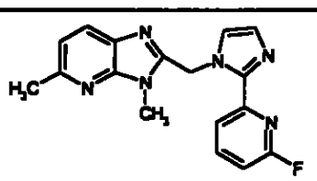
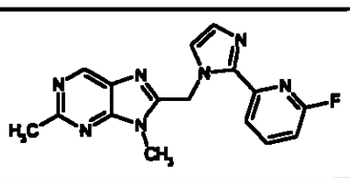
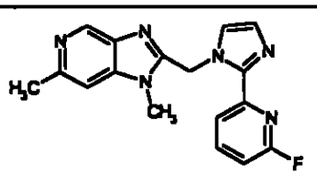
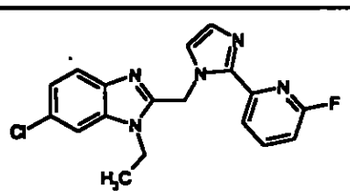
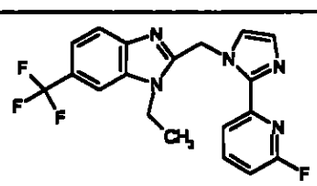
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
626		2-[[2-(3-chloro-2,6-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-imidazo[4,5-c]pyridine	D6dmso) 9.42 (s, 1H), 8.69 (d, J=6.4Hz, 1H), 8.36 (d, J=6.4Hz, 1H), 7.99-7.91 (m, 2H), 7.75 (s, 1H), 7.39 (t, J=8Hz, 1H), 5.95 (s, 2H), 4.43 (q, J=7.2Hz, 2H), 1.25 (t, J=7.2Hz, 3H)	m/z 374 [M+1]
627		1-ethyl-2-(6-(1-[(1-ethyl-1H-imidazo[4,5-c]pyridin-2-yl)methyl]-1H-imidazol-2-yl)pyridin-2-yl)-1H-imidazo[4,5-c]pyridine	(D6dmso) 9.57 (s, 1H), 9.34 (s, 1H), 8.74 (d, J=6.8Hz, 1H), 8.63 (d, J=6.4Hz, 1H), 8.42 (d, J=6.8Hz, 1H), 8.33 (d, J=6.4Hz, 1H), 8.25 (t, J=8Hz, 1H), 8.17 (d, J=6.8Hz, 1H), 8.07 (d, J=7.6Hz, 1H), 7.70 (s, 1H), 7.46 (s, 1H), 6.32 (s, 2H), 4.24-4.16 (m, 4H), 0.97 (t, J=7.2Hz, 3H), 0.89 (t,	
628		2-[[2-(2,6-difluoro-3-methylphenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-imidazo[4,5-c]pyridine	(d6 DMSO) 9.42 (s, 1H), 8.69 (d, J=6.4Hz, 1H), 8.37 (d, J=6.8Hz, 1H), 8.08 (s, 1H), 7.90 (s, 1H), 7.67-7.61 (m, 1H), 7.24 (t, J=8.8Hz, 1H), 5.98 (s, 2H), 4.44 (q, J=7.2Hz, 2H), 2.19 (s, 3H), 1.27(t, J=7.2Hz, 3H)	
629		3-{1-[(3-ethyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl}pyridin-2(1H)-one	(d6 DMSO) 12.00 (br s, 1H), 8.28 (dd, J=5.2, 1.2Hz, 1H), 7.93 (dd, J=8, 1.2Hz, 1H), 7.56 (dd, J=6.8, 2Hz, 1H), 7.45 (dd, J=6.8, 2Hz, 1H), 7.25 (s, 1H), 7.20 (dd, J=8, 4.8Hz, 1H), 6.96 (s, 1H), 6.19 (t, J=5.2Hz, 1H), 5.64 (s, 2H), 4.14 (q, J=7.2Hz, 2H), 1.07 (t, J=7.2Hz, 3H)	m/z 319 [M - H]
630		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3,5-dimethyl-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.16 (dd, 1H), 7.86(m, 2H), 7.16 (m, 2H), 7.06 (d, 1H), 6.85 (dd, 1H), 6.24 (s, 2H), 3.85 (s, 3H), 2.62 (s, 3H)	
631		6-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-2,9-dimethyl-9H-purine	(CDCl3) 8.92 (s, 1H), 8.18 (dd, 1H), 7.88 (q, 1H), 7.25 (s, 1H), 7.20 (s, 1H), 7.11 (s, 1H), 6.83 (dd, 1H), 6.22 (s, 2H), 3.89 (s, 3H), 2.8 (s, 3H)	m/z 324 [M+1]
632		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1,6-dimethyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.91 (s, 1H), 8.16 (dd, J = 7.6, 2.0 Hz, 1H), 7.85 (q, J = 8.0 Hz, 1H), 7.20 (s, 1H), 7.18 (s, 1H), 7.11 (s, 1H), 6.84 (dd, J = 8.0, 2.8 Hz, 1H), 6.22 (s, 2H), 3.80 (s, 3H), 2.66 (s, 3H)	m/z 323 [M+1]
633		6-chloro-1-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	(CDCl3) 8.17 (dd, 1H), 7.89 (q, 1H), 7.25 (s, 1H), 7.75 (s, 1H), 7.26 (m, 2H), 7.19 (s, 1H), 7.17 (s, 1H), 6.89 (dd, 1H), 6.28 (s, 2H), 4.33 (q, 2H), 1.20 (s, 3H)	m/z 356 [M+1]
634		1-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-(trifluoromethyl)-1H-benzimidazole	(CDCl3) 8.20 (m, 1H), 7.87(m, 2H), 7.83 (s, 1H), 7.48 (d, 1H), 7.20 (d, 2H), 6.85 (dd, 1H), 6.25 (s, 2H), 4.38 (q, 2H), 1.24 (t, 3H)	

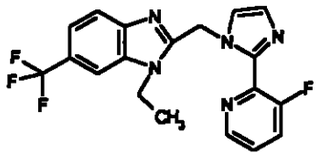
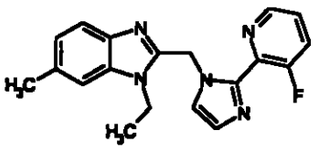
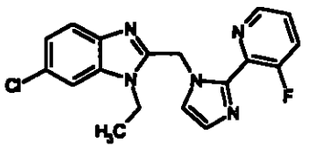
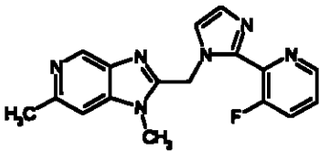
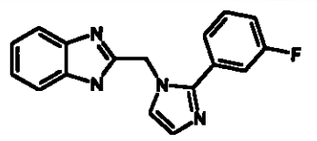
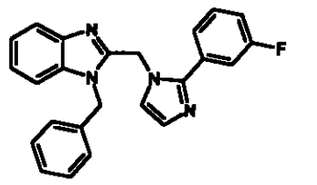
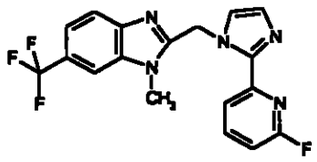
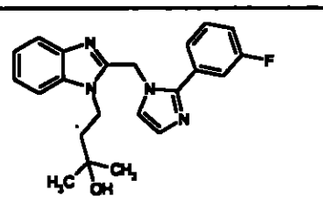
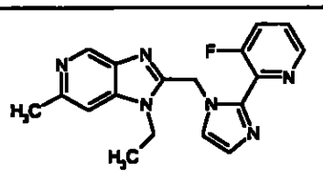
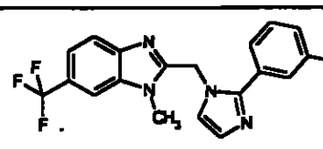
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
635		1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-(trifluoromethyl)-1H-benzimidazole	(CDCl3) 8.46 (m, 1H), 7.84(d, 1H), 7.60 (m, 2H), 7.52 (d, 1H), 7.38 (m, 1H), 7.25 (s, 1H), 7.10 (s, 1H), 6.14 (s, 2H), 4.35 (q, 2H), 1.14 (t, 3H)	
636		1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-methyl-1H-benzimidazole	(CDCl3) 8.48 (dt, 1H), 7.59-7.66 (m, 2H), 7.36 (m, 1H), 7.20 (s, 1H), 7.08-7.11 (m, 3H), 6.01 (s, 2H), 4.18 (q, 2H), 2.48 (s, 3H), 1.07 (s, 3H)	
637		6-chloro-1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	(CDCl3) 8.48 (dt, 1H), 7.74 (s, 1H), 7.61 (t, 1H), 7.37 (m, 1H), 7.20 (s, 1H), 7.23-7.26 (m, 3H), 7.08 (s, 1H), 6.01 (s, 2H), 4.25 (q, 2H), 1.07 (s, 3H)	
638		2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1,6-dimethyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.95 (s, 1H), 8.45 (dt, J = 5.8, 1.8 Hz, 1H), 7.61 (m, 1H), 7.36 (m, 1H), 7.27 (s, 1H), 7.10 (s, 1H), 7.06 (s, 1H), 6.06 (s, 2H), 3.66 (s, 3H), 2.67 (s, 3H)	*m/z* 323 [M+1]
639		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		*m/z* 293 [M+1]
640		1-benzyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		*m/z* 383 [M+1]
641		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-methyl-6-(trifluoromethyl)-1H-benzimidazole	(CDCl3) 8.20 (m, 1H), 7.87(m, 2H), 7.83 (s, 1H), 7.48 (d, 1H), 7.20 (s, 2H), 6.84 (dd, 1H), 6.25 (s, 2H), 3.92 (s, 3H)	
642		4-(2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-1-yl)-2-methylbutan-2-ol		*m/z* 379 [M+1]
643		1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-methyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.96 (s, 1H), 8.46 (dt, 4.8, 1.4 Hz, 1H), 7.81 (m, 1H), 7.37 (m, 1H), 7.24 (d, J = 1.2 Hz, 1H), 7.10 (s, 1H), 7.09 (d, J = 1.2 Hz, 1H), 6.06 (s, 2H), 4.23 (q, J = 7.2 Hz, 2H), 2.66 (s, 3H), 1.10 (t, J = 7.2 Hz, 3H)	*m/z* 337 [M+1]
644		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-methyl-6-(trifluoromethyl)-1H-benzimidazole		m/z 375 [M+1]

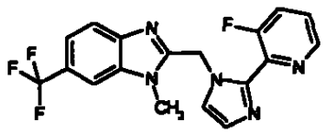
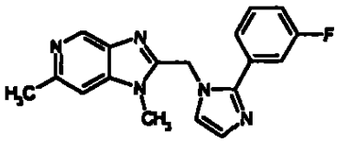
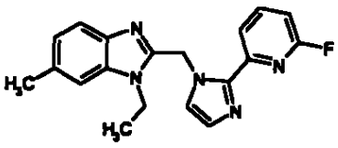
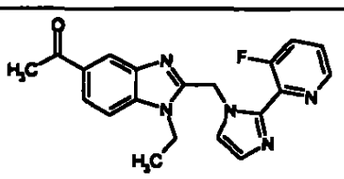
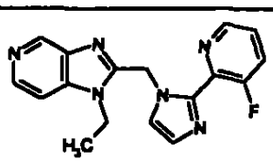
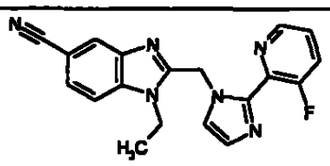
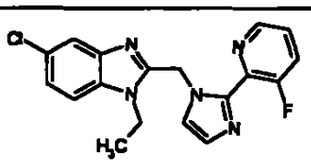
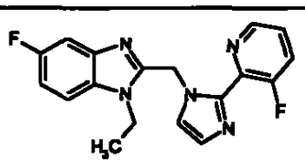
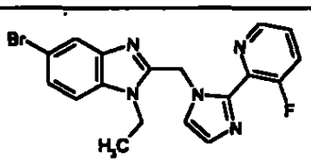
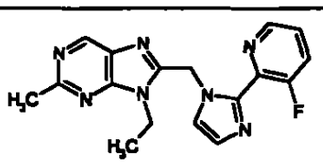
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
645		2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-methyl-6-(trifluoromethyl)-1H-benzimidazole		m/z 376 [M+1]
646		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1,6-dimethyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.95 (s, 1H), 7.49-7.37 (m, 3H), 7.16 (m, 2H), 7.06 (s, 1H), 6.97 (s, 1H), 5.50 (s, 2H), 3.33 (s, 3H), 2.66 (s, 3H)	m/z 322 [M+1]
647		1-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-methyl-1H-benzimidazole	(CDCl3) 8.15 (dd, 1H), 7.87 (q, 1H), 7.63 (d, 1H), 7.08-7.17 (m, 4H), 6.68 (dd, 1H), 6.26 (s, 1H), 4.27 (q, 2H), 2.46 (s, 1H), 1.18 (t, 3H)	
648		1-(1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-yl)ethanone	(CDCl3) 8.45 (d, 1H), 8.38 (s, 1H), 7.98 (dd, 1H), 7.81 (t, 1H), 7.37 (m, 2H), 7.24 (s, 1H), 7.21 (s, 1H), 6.08 (s, 2H), 4.29 (q, 2H), 2.66 (s, 3H), 1.14 (t, 3H)	
649		1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.12 (s, 1H), 8.45-8.49 (m, 2H), 7.620 (t, 1H), 7.35-7.41 (m, 1H), 7.30 (d, 1H), 7.27 (s, 1H), 7.11 (s, 1H), 6.13 (s, 2H), 4.30 (q, 2H), 1.12 (t, 3H)	
650		1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile	(CDCl3) 8.45 (d, 1H), 8.09 (s, 1H), 7.82 (t, 1H), 7.58 (d, 1H), 7.42 (s, 1H), 7.35-7.40 (m, 2H), 7.09 (s, 1H), 6.10 (s, 2H), 4.32 (q, 2H), 1.12 (t, 3H)	
651		5-chloro-1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		m/z 358 [M+1]
652		1-ethyl-5-fluoro-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		m/z 340 [M+1]
653		5-bromo-1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	(CDCl3) 8.46 (s, 1H), 7.90 (s, 1H), 7.62 (t, 1H), 7.32-7.42 (m, 2H), 7.17-7.27 (m, 2H), 7.06 (s, 1H), 6.02 (s, 2H), 4.22 (q, 2H), 1.06 (t, 3H)	
654		9-ethyl-8-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-2-methyl-9H-purine	(CDCl3) 8.96 (s, 1H), 8.40 (d, 1H), 7.59 (m, 1H), 7.30 (m, 2H), 7.12 (s, 1H), 6.07 (s, 2H), 4.30 (q, 2H), 2.76 (s, 3H), 1.20 (t, 3H)	

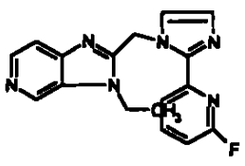
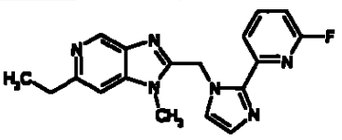
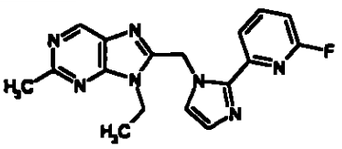
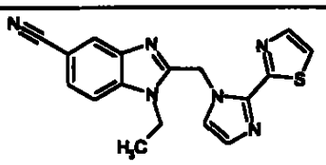
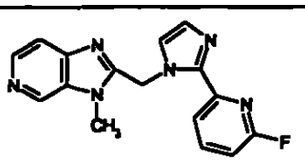
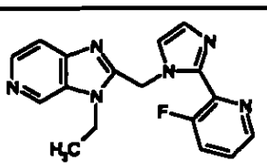
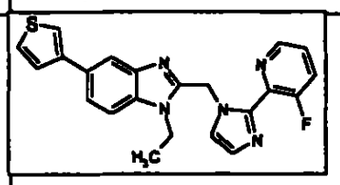
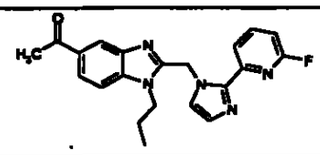
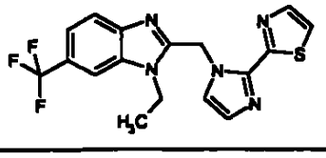
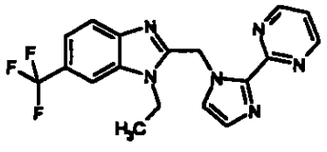
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
655		3-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.84 (s, 1H), 8.47 (d, J = 5.7 Hz, 1H), 8.20 (dd, J = 7.8, 3.0 Hz, 1H), 7.91 (q, J = 8.1 Hz, 1H), 7.28 (s, 1H), 7.25 (d, J = 9.9 Hz, 2H), 6.91 (dd, J = 5.1, 3 Hz, 1H), 6.35 (s, 2H), 4.39 (q, J = 5.4 Hz, 2H), 1.49 (t, J = 5.4 Hz, 3H)	m/z 323 [M+1]
656		6-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-methyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.96 (s, 1H), 8.17 (br d, J = 7.8 Hz, 1H), 7.87 (q, J = 7.8 Hz, 1H), 7.21 (s, 1H), 7.19 (s, 1H), 7.12 (s, 1H), 6.87 (m, 1H), 6.24 (s, 2H), 3.83 (s, 3H), 2.95 (q, J = 7.2 Hz, 2H), 1.36 (t, J = 7.2 Hz, 3H)	m/z 337 [M+1]
657		9-ethyl-8-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-2-methyl-9H-purine	(CDCl3) 8.96 (s, 1H), 8.17 (br d, J = 7.8 Hz, 1H), 7.87 (q, J = 7.8 Hz, 1H), 7.21 (s, 1H), 7.19 (s, 1H), 7.12 (s, 1H), 6.87 (m, 1H), 6.24 (s, 2H), 3.83 (s, 3H), 2.95 (q, J = 7.2 Hz, 2H), 1.36 (t, J = 7.2 Hz, 3H)	m/z 337 [M+1]
658		1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile	(DMSO) 8.05 (s, 1H), 7.80 (d, 1H), 7.73 (d, 1H), 7.65 (d, 1H), 7.60 (d, 1H), 7.48 (s,1H), 7.10 (s, 1H), 6.20 (s, 2H), 4.40 (q, 2H), 1.35 (t, 3H)	
659		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-methyl-3H-imidazo[4,5-c]pyridine	(DMSO) 8.95 (s, 1H), 8.22 (d, J = 5.4 Hz, 1H), 7.99 (m, 2H), 7.54 (s, 1H), 7.43 (d, J = 5.4 Hz, 1H), 7.16 (s, 1H), 7.0 (br d, J = 8.1 Hz, 1H), 6.08 (s, 2H), 4.01 (s, 3H)	m/z 309 [M+1]
660		3-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.81 (s, 1H), 8.46 (m, 2H), 7.84 (m, 2H), 7.36 (m, 1H), 7.25 (s, 1H), 7.12 (s, 1H), 6.11 (s, 2H), 4.38 (q, J = 7.2 Hz, 2H), 1.20 (t, J = 7.2 Hz, 3H)	m/z 323 [M+1]
661		1-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-5-thien-3-yl-1H-benzimidazole		LRMS: calcd 403.5; found 404.3
662		1-(1-propyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-yl)ethanone	(CDCl3) 8.38 (s, 1H), 8.18 (dd, 1H), 8.00 (d, 1H), 7.91 (q, 1H), 7.39 (d, 1H), 7.24 (s, 1H), 7.18 (s, 1H), 6.89 (dd, 1H), 6.31 (s, 2H), 4.28 (t, 2H), 2.67 (s, 3H), 1.69 (q, 2H), 0.88 (t, 3H)	
663		1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-6-(trifluoromethyl)-1H-benzimidazole	(CD3Cl3) 7.87 (m, 2H), 7.82 (s, 1H), 7.55 (d, 1H), 7.41 (d, 1H), 7.18 (s, 1H), 7.15 (s, 1H), 6.37 (s, 2H), 4.30 (q, 2H), 1.14 (t, 3H)	
664		1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-6-(trifluoromethyl)-1H-benzimidazole	(CDCl3) 8.86 (d, 2H), 7.85 (d, 1H), 7.62 (s, 1H), 7.55 (d, 1H), 7.29 (m, 2H), 7.16 (s, 1H), 6.39 (s, 2H), 4.28 (q, 2H), 1.18 (t, 3H)	

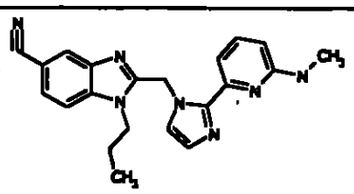
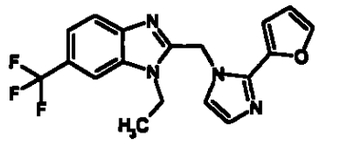
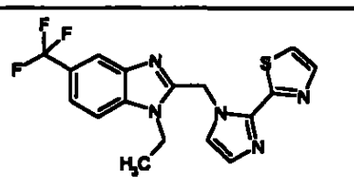
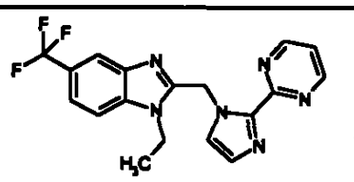
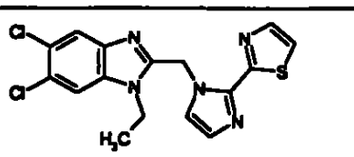
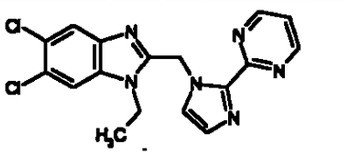
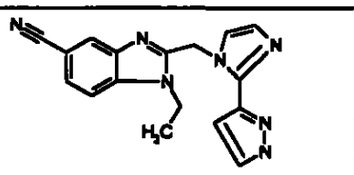
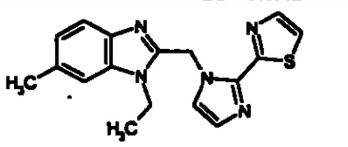
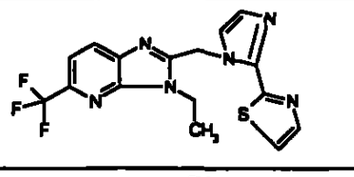
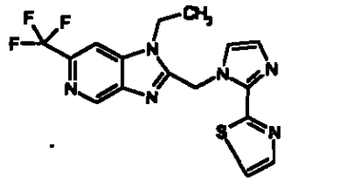
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
665		2-({2-[6-(methylamino)pyridin-2-yl]-1H-imidazol-1-yl}methyl)-1-propyl-1H-benzimidazole-5-carbonitrile		*m/z* 372 [M+1]
666		1-ethyl-2-{[2-(2-furyl)-1H-imidazol-1-yl]methyl}-6-(trifluoromethyl)-1H-benzimidazole		*m/z* 361 [M+1]
667		1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-5-(trifluoromethyl)-1H-benzimidazole	(CDCl3) 8.14(s, 1H), 7.84 (d, 1H), 7.58 (d, 1H), 7.40 (m, 2H), 7.18 (s, 1H), 7.15 (s, 1H), 6.37 (s, 2H), 4.30 (q, 2H), 1.12 (t, 3H)	
668		1-ethyl-2-{[2-pyrimidin-2-yl-1H-imidazol-1-yl]methyl}-5-(trifluoromethyl)-1H-benzimidazole	(CDCl3) 8.85 (d, 2H), 8.06 (s, 1H)< 7.54 (d, 1H), 7.40(d, 1H), 7.28 (m, 2H), 7.15 (s, 1H), 6.38 (s, 2H), 4.27 (q, 2H), 1.15 (t, 3H)	
669		5,6-dichloro-1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazole	(CDCl3) 7.84 (m, 2H), 7.44 (s, 1H), 7.34 (d, 1H), 7.14 (m, 2H), 6.31 (s, 2H), 4.20 (q, 2H), 1.06 (t, 3H)	
670		5,6-dichloro-1-ethyl-2-{(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl}-1H-benzimidazole	(CDCl3) 8.84 (d, 2H), 7.84 (s, 1H), 7.43 (s, 1H), 7.26 (m, 2H), 7.13 (s, 1H), 6.33 (s, 2H), 4.18 (q, 2H), 1.10 (t, 3H)	
671		1-ethyl-2-{[2-(1H-pyrazol-3-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazole-5-carbonitrile	(CDCl3) 7.97 (s, 1H), 7.53 (br s, 1H), 7.46 (d, J = 8.7 Hz, 1H), 7.35 (d, J = 8.1 Hz, 1H), 6.97 (d, J = 8.3 Hz, 2H), 6.79 (br s, 1H), 6.10 (s, 2H), 4.22 (q, J = 7.2 Hz, 2H), 0.88 (t, J = 7.2 Hz, 3H)	m/z 318 [M+1]
672		1-ethyl-6-methyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-1H-benzimidazole	(CDCl3) 7.86 (d, 1H), 7.65 (d, 1H), 7.39 (d, 1H), 7.14 (d, 1H), 7.11 (m, 3H), 6.31 (s, 2H), 4.16 (q, 2H), 1.02 (t, 3H)	
673		3-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-5-(trifluoromethyl)-3H-imidazo[4,5-b]pyridine	(CD3OD) 8.03 (d, J = 8.4 Hz, 1H), 7.72 (d, J = 3.3 Hz, 1H), 7.65 (d, J = 8.1 Hz, 1H), 7.55 (d, J = 3.3 Hz, 1H), 7.46 (d, J = 1.5 Hz, 1H), 7.20 (d, J = 1.5 Hz, 1H), 6.3 (s, 2H), 4.56 (q, J = 6.9 Hz, 2H), 1.49 (t,, J = 6.9 Hz, 3H)	
674		1-ethyl-2-{[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl}-6-(trifluoromethyl)-1H-imidazo[4,5-c]pyridine	(CD3OD) 8.83 (s, 1H), 8.14 (s, 1H), 7.71 (d, J = 2.7 Hz, 1H), 7.53 (d, J = 2.7 Hz, 1H), 7.45 (d, J = 0.9 Hz, 1H), 7.16 (d, J = 0.9 Hz, 1H), 6.30 (s, 2H), 4.54 (q, J = 5.4 Hz, 2H), 1.46 (t, J = 5.4 Hz, 3H)	m/z 379 [M+1]

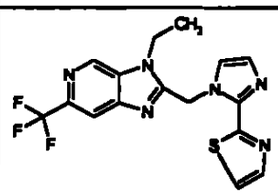
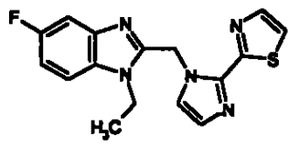
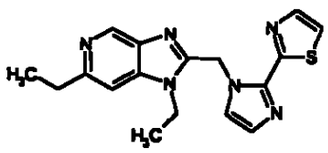
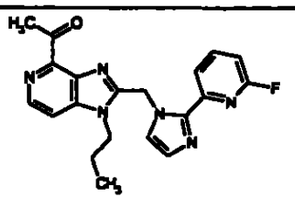
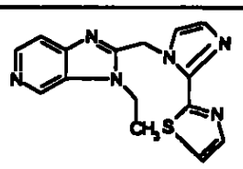
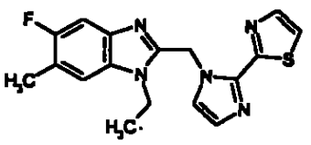
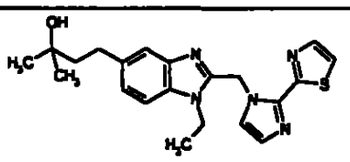
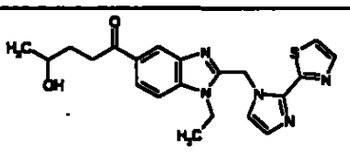
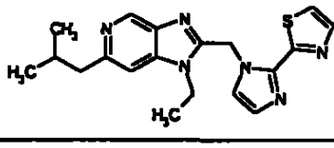
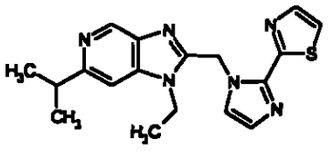
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
675		3-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-6-(trifluoromethyl)-3H-imidazo[4,5-c]pyridine	(CD3OD) 9.02 (s, 1H), 7.89 (s, 1H), 7.70 (d, J = 3 Hz, 1H), 7.52 (d, J = 3.3 Hz, 1H), 7.46 (d, J = 1.5 Hz, 1H), 7.19 (d, J = 1.5 Hz, 1H), 6.29 (s, 2H), 4.56 (q, J = 7.5 Hz, 2H), 1.52 (t, J = 7.5 Hz, 3H)	m/z 379 [M+1]
676		1-ethyl-5-fluoro-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	(CDCl3) 7.88 (d, 1H), 7.45 (dd, 1H), 7.39 (d, 1H), 7.23 (dd, 1H), 7.18 (s, 1H), 7.12 (s, 1H), 7.06 (td, 1H)	
677		1,6-diethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.01 (d, J = 1.2 Hz, 1H), 7.85 (d, J = 3.6 Hz, 1H), 7.40 (d, J = 3.0 Hz, 1H), 7.16 (d, J = 1.5 Hz, 1H), 7.14 (d, J = 0.9 Hz, 1H), 7.10 (s, 1H), 6.34 (s, 2H), 4.22 (q, J = 7.2 Hz, 2H), 2.93 (q, J = 7.2 Hz, 2H), 1.35 (t, J = 7.2 Hz, 3H), 1.10 (t, J = 7.2 Hz, 3H)	m/z 339 [M+1]
678		1-(2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-c]pyridin-4-yl)ethanone	(CDCl3) 9.01 (d, J = 1.2 Hz, 1H), 7.85 (d, J = 3.6 Hz, 1H), 7.40 (d, J = 3.0 Hz, 1H), 7.16 (d, J = 1.5 Hz, 1H), 7.14 (d, J = 0.9 Hz, 1H), 7.10 (s, 1H), 6.34 (s, 2H), 4.22 (q, J = 7.2 Hz, 2H), 2.93 (q, J = 7.2 Hz, 2H), 1.35 (t, J = 7.2 Hz, 3H), 1.10 (t, J = 7.2 Hz, 3H)	m/z 339 [M+1]
679		3-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CD3OD) 8.87 (s, 1H), 8.30 (d, J = 5.7 Hz, 1H), 7.75 (d, J = 3.3 Hz, 1H), 7.57 (d, J = 4.8 Hz, 1H), 7.52 (d, J = 3.3 Hz, 1H), 7.39 (d, J = 1.5 Hz, 1H), 7.18 (d, J = 1.5 Hz, 1H), 6.29 (s, 2H), 4.52 (q, J = 7.5 Hz, 2H), 1.44 (t, J = 7.5 Hz, 3H)	m/z 311 [M+1]
680		1-ethyl-5-fluoro-6-methyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	(CDCl3) 7.86 (d, 1H), 7.40 (m, 2H), 7.15 (d, 1H), 7.11 (d, 1H), 7.07 (d, 1H), 6.30 (s, 2H), 4.17 (q, 2H), 2.39 (d, 3H), 1.03 (t, 3H)	
681		4-(1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-yl)-2-methylbutan-2-ol	(CDCl3) 7.85 (d, 1H), 7.60 (s, 1H), 7.38 (d, 1H), 7.22 (m, 1H), 7.15 (m, 2H), 7.09 (s, 1H), 6.31 (s, 2H), 4.17 (q, 2H), 2.80 (m, 2H), 1.81 (m, 2H), 1.22 (d, 6H), 1.01 (t, 3H)	m/z 396.3 [M+1]
682		1-(1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-yl)-4-hydroxypentan-1-one	(CDCl3) 8.44 (d, 1H), 7.80 (dd, 1H), 7.65 (d, 1H), 7.40 (d, 1H), 7.36 (d, 1H), 7.18 (d, 1H), 7.14 (d, 1H), 6.36 (s, 2H), 4.27 (q, 2H), 3.86 (m, 1H), 3.19 (t, 2H), 1.93 (m, 2H), 1.25 (d, 3H), 1.09 (t, 3H)	m/z 410.2 [M+1]
683		1-ethyl-6-isobutyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.02 (s, 1H), 7.85 (d, 1H), 7.40 (d, 1H), 7.16 (s, 1H), 7.15 (s, 1H), 7.06 (s, 1H), 6.35 (s, 2H), 4.22 (q, 2H), 2.75 (d, 1H), 2.1 (m, 1H), 1.10 (t, 3H), 0.93 (d, 6H)	
684		1-ethyl-6-isopropyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.01 (s, 1H), 7.83 (d, J = 3.2 Hz, 1H), 7.38 (d, J = 3.2 Hz, 1H), 7.15 (s, 1H), 7.12 (s, 1H), 7.09 (s, 1H), 6.32 (s, 2H), 4.21 (q, J = 7.2 Hz, 2H), 3.17 (sept, J = 6.8 Hz, 1H), 1.34 (d, J = 6.8 Hz, 6H), 1.10 (t, J = 7.2 Hz, 3H)	m/z 353 [M+1]

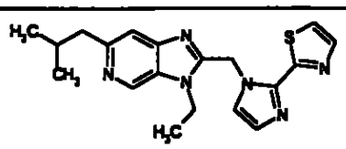
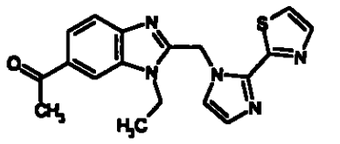
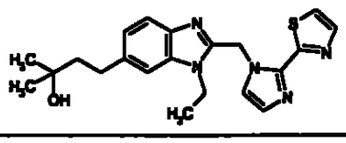
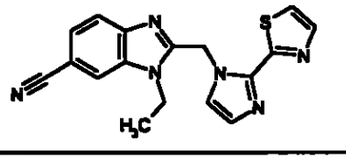
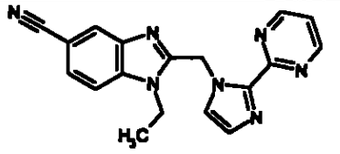
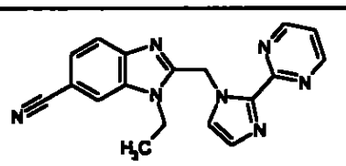
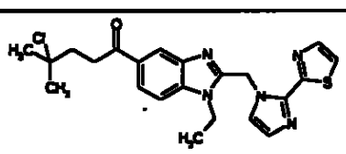
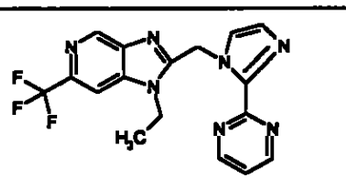
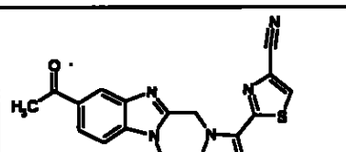
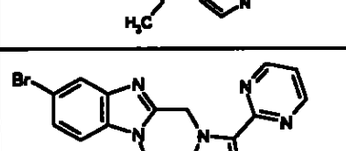
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
685		3-ethyl-6-isobutyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.70 (s, 1H), 7.85 (d, 1H), 7.41 (s, 1H), 7.40 (d, 1H), 7.20 (s, 1H), 7.15 (s, 1H), 6.34 (s, 2H), 4.33 (q, 2H), 2.75 (d, 1H), 2.1 (m, 1H), 1.19 (t, 3H), 0.93 (d, 6H)	
686		1-{1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-6-yl}ethanone	(CDCl3) 8.05 (d, 1H), 7.92 (dd, 1H), 7.87 (dd, 1H), 7.81 (dd, 1H), 7.40 (d, 1H), 7.20 (d, 1H), 7.14 (d, 1H), 6.17 (s, 2H), 4.33 (q, 2H), 2.67 (s, 3H), 1.13 (t, 3H)	
687		4-{1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-6-yl}-2-methylbutan-2-ol	(CDCl3) 7.88 (d, 1H), 7.68 (d, 1H), 7.39 (d, 1H), 7.12-7.18 (m, 3H), 7.09 (d, 1H), 6.13 (s, 2H), 4.19 (q, 1H), 2.80-2.89 (m, 2H), 1.80-1.89 (m, 2H), 1.31 (s, 6H), 1.08 (t, 3H)	
688		1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-6-carbonitrile	(CD3OD) (2HCl Salt) 8.38 (s, 1H), 7.98-8.01 (m, 2H), 7.95 (d, 1H), 7.87 (d, 1H), 7.71 (d, 2H), 6.50 (s, 2H), 4.62 (q, 2H), 1.62 (t, 3H)	
689		1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole-5-carbonitrile	(CD3OD) (2HCl Salt) 8.88 (d, 2H), 8.08 (d, 1H), 7.95 (d, 1H), 7.93 (d, 1H), 7.90 (s, 1H), 7.73 (dd, 1H), 7.58 (t, 1H), 6.60 (s, 2H), 4.61 (q, 2H), 1.63 (t, 3H)	
690		1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole-6-carbonitrile	(CDCl3) 8.85 (d, 2H), 7.82 (d, 1H), 7.69 (d, 1H), 7.55 (dd, 1H), 7.26-7.30 (m, 2H), 7.18 (d, 1H), 6.39 (s, 2H), 4.29 (q, 2H), 1.09 (t, 3H)	
691		4-chloro-1-(1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-yl)-4-methylpentan-1-one		m/z 442.2 [M-1] 444.1 [M+1]
692		1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-6-(trifluoromethyl)-1H-imidazo[4,5-c]pyridine	(CD3OD) 8.79 (s, 1 H), 8.70 (d, J = 5.1 Hz, 1H), 8.17 (s, 1H), 7.52 (d, J = 1.2 Hz, 1H), 7.31 (d, J = 1.2 Hz, 1H), 7.27 (t, J = 5.1 Hz, 1H), 6.63 (s, 1H), 6.32 (s, 2H), 4.57 (q, J = 7.5 Hz, 2H), 1.50 (t, J = 7.5 Hz, 3H)	m/z 374 [M+1]
693		2-{1-[(5-acetyl-1-ethyl-1H-benzimidazol-2-yl)methyl]-1H-imidazol-2-yl}-1,3-thiazole-4-carbonitrile	(CDCl3+CD3OD) 8.29 (s, 1H), 8.25 (d, 1H), 7.97 (dd, 1H), 7.52 (d, 1H), 7.42 (s, 1H), 7.22 (s, 1H), 6.17 (s, 2H), 4.44 (q, 2H), 2.64 (s, 3H), 1.43 (t, 3H)	m/z 377 [M+1]
694		5-bromo-1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole	(CDCl3) 8.85 (d, 2H), 7.91 (d, 1H), 7.39 (dd, 1H), 7.27 (t, 1H), 7.25 (m, 1H), 7.19 (d, 1H), 7.13 (d, 1H), 6.35 (s, 2H), 4.20 (q, 2H), 1.08 (t, 3H)	

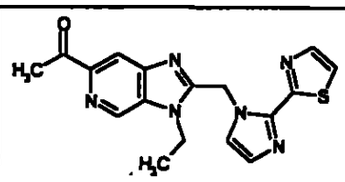
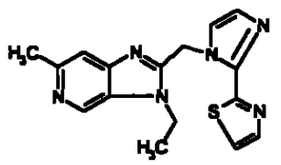
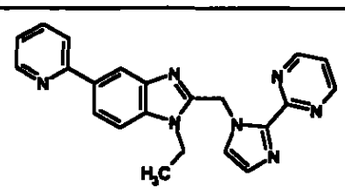
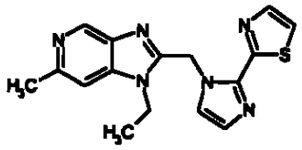
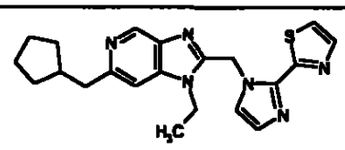
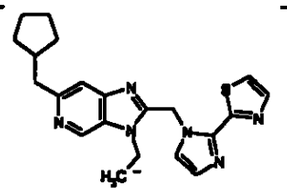
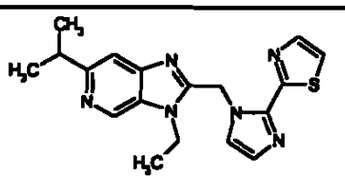
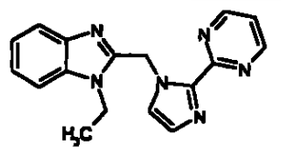
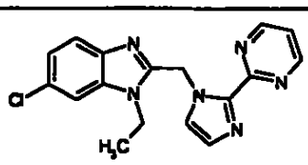
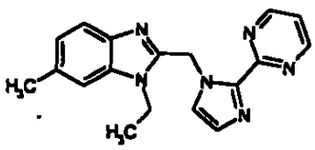
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
695		1-{3-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridin-6-yl}ethanone	(CDCl3) 8.79 (d, 2H), 8.47 (d, 1H), 7.83 (d, 1H), 7.40 (d, 1H), 7.19 (d, 1H), 7.15 (d, 1H), 6.39 (s, 2H), 4.02 (q, 2H), 2.77 (s, 3H), 1.86 (t, 3H)	*m/z* 353.2 [M+1]
696		3-ethyl-6-methyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.67 (s, 1H), 7.83 (d, J = 3.0 Hz, 1H), 7.5 (s, 1H), 7.38 (d, J = 3.0 Hz, 1H), 7.18 (d, J = 1.2 Hz, 1H), 7.14 (d, J = 1.2 Hz, 1H), 6.33 (s, 2H), 4.32 (q, J = 7.5 Hz, 2H), 1.18 (t, J = 7.5 Hz, 3H)	m/z 325 [M+1]
697		1-ethyl-5-pyridin-2-yl-2-{(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl}-1H-benzimidazole		*m/z* 382.2 [M+1]
698		1-ethyl-6-methyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.98 (d, J = 0.9 Hz, 1H), 7.84 (d, J = 3.3 Hz, 1H), 7.39 (d, J = 3.0 Hz, 1H), 7.16 (d, J = 0.9 Hz, 1H), 7.13 (d, J = 1.5 Hz, 1H), 7.10 (s, 1H), 6.33 (s, 2H), 4.21 (q, J = 7.2 Hz, 2H), 2.66, (s, 2H), 1.09 (t, J = 7.2 Hz, 3H)	*m/z* 325 [M+1]
699		6-(cyclopentylmethyl)-1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.01 (s, 1H), 7.85 (d, 1H), 7.41 (d, 1H), 7.18 (d, 1H), 7.15 (d, 1H), 7.08 (s, 1H), 6.36 (s, 2H), 4.22 (q, 2H), 2.86 (d, 2H), 2.25-2.40 (m, 1H), 1.46-1.78 (m, 8H), 1.15-1.30 (m, 2H), 1.08 (t, 3H)	
700		6-(cyclopentylmethyl)-3-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.68 (s, 1H), 7.84 (d, 1H), 7.48 (s, 1H), 7.41 (d, 1H), 7.20 (s, 1H), 7.15 (s, 1H), 6.14 (s, 2H), 4.32 (q, 2H), 2.88 (d, 2H), 2.25-2.38 (m, 1H), 1.45-72 (m, 6H), 1.16-1.33 (m, 5H)	
701		3-ethyl-6-isopropyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.70 (d, J = 1.2 Hz, 1H), 7.83 (d, J = 3.0 Hz, 1H), 7.53 (d, J = 0.9 Hz, 1H), 7.39 (d, J = 3.0 Hz, 1H), 7.18 (d, J = 0.9 Hz, 1H), 7.14 (d, J = 0.9 Hz, 1H), 6.32 (s, 2H), 4.32 (q, J = 7.2 Hz, 2H), 3.18 (sept, J = 6.9 Hz, 1H), 1.34 (d, J = 6.9 Hz, 6H), 1.17 (t, J =	*m/z* 353 [M+1]
702		1-ethyl-2-{(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl}-1H-benzimidazole		*m/z* 305 [M+1]
703		6-chloro-1-ethyl-2-{(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl}-1H-benzimidazole		*m/z* 339 [M+1]
704		1-ethyl-6-methyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole		*m/z* 319 [M+1]

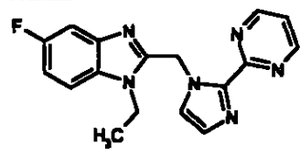
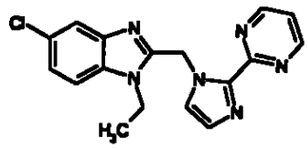
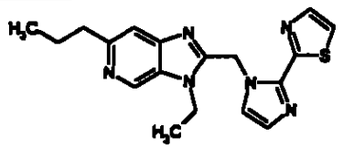
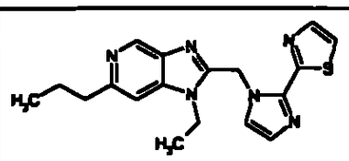
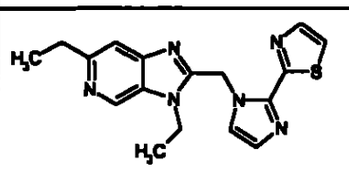
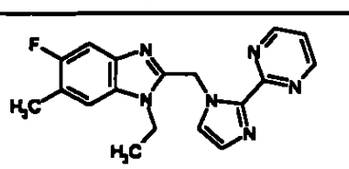
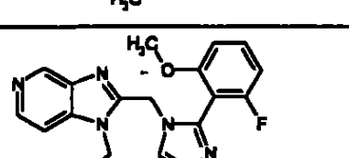
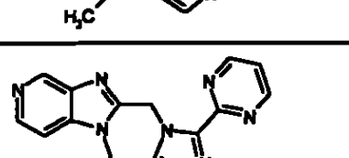
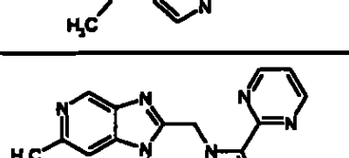
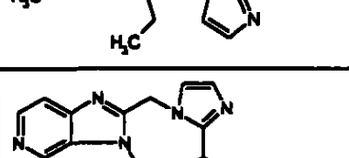
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
705		1-ethyl-5-fluoro-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole		*m/z* 323 [M+1]
706		5-chloro-1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole		*m/z* 339 [M+1]
707		3-ethyl-6-propyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.99 (d, J = 0.9 Hz, 1H), 7.83 (d, J = 3.3 Hz, 1H), 7.49 (d, J = 1.2 Hz, 1H), 7.39 (d, J = 3.6 Hz, 1H), 7.18 (d, J = 0.9 Hz, 1H), 7.14 (d, J = 1.5 Hz, 1H), 6.33 (s, 2H), 4.31 (q, J = 7.2 Hz, 2H), 2.86 (m, 2H), 1.78 (sext, J = 7.2	*m/z* 353 [M+1]
708		1-ethyl-6-propyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.83 (d, J = 0.9 Hz, 1H), 7.84 (d, J = 3.0 Hz, 1H), 7.39 (d, J = 3.3 Hz, 1H), 7.16 (d, J = 1.5 Hz, 1H), 7.13 (d, J = 1.5 Hz, 1H), 7.09 (s, 1H), 6.33 (s, 2H), 4.22 (q, J = 7.2 Hz, 2H), 2.86 (m, 2H), 1.79 (sext, J = 7.2 Hz, 2H), 1.09	*m/z* 353 [M+1]
709		3,6-diethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.99 (d, J = 0.9 Hz, 1H), 7.84 (d, J = 3.6 Hz, 1H), 7.51 (s, 1H), 7.39 (d, J = 3.6 Hz, 1H), 7.18 (d, J = 1.5 Hz, 1H), 7.14 (d, J = 0.9 Hz, 1H), 6.33 (s, 2H), 4.32 (q, J = 7.2 Hz, 2H), 2.93 (q, J = 7.2 Hz, 2H), 1.34 (t, J = 7.2 Hz, 3H), 1.17 (t, J = 7.2 Hz, 3H)	*m/z* 339 [M+1]
710		1-ethyl-5-fluoro-6-methyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole		*m/z* 337.4 [M+1]
711		1-ethyl-2-[[2-(2-fluoro-6-methoxyphenyl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.04 (d, J = 0.9 Hz, 1H), 8.42 (d, J = 5.4 Hz, 1H), 7.46-7.38 (m, 1H), 7.25-7.22 (m, 2H), 7.00 (d, J = 0.9 Hz, 1H), 6.85-6.76 (m, 2H), 5.31, 5.22 (AB, J = 15.3 Hz, 2H), 3.85 (q, J = 7.2 Hz, 2H), 3.77 (s, 3H), 1.00 (t, J = 7.2 Hz, 3H)	*m/z* 352 [M+1]
712		1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.09 (s, 1H), 8.85 (d, 2H), 8.46 (d, 1H), 7.28-7.30 (m, 3H), 7.16 (1H), 6.39 (s, 2H), 4.25 (q, 2H), 1.15 (t, 3H)	
713		1-ethyl-6-methyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.95 (d, J = 1.2 Hz, 1H), 8.84 (d, J = 4.8 Hz, 2H), 7.27 (t, J = 5.1 Hz, 1H), 7.25 (d, J = 1.2 Hz, 1H), 7.13 (d, J = 1.2 Hz, 1H), 7.10 (s, 1H), 6.35 (s, 2H), 4.19 (q, J = 7.2 Hz, 2H), 2.65 (s, 3H), 1.12 (t, J = 7.2 Hz, 3H)	*m/z* 320 [M+1]
714		3-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-c]pyridine	(DMSO) 8.94 (s, 1H), 8.71 (d, J = 5.1 Hz, 2H), 8.22 (d, J = 5.7 Hz, 1H), 7.53 (d, J = 1.2 Hz, 1H), 7.43 (d, J = 5.4 Hz, 1H), 7.31 (t, J = 4.5 Hz, 1H), 7.17 (d, J = 1.2 Hz, 1H), 6.22 (s, 2H), 4.46 (q, J = 7.5 Hz, 2H), 1.39 (t,, J = 7.5 Hz, 3H)	m/z 306 [M+1]

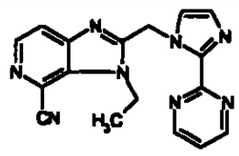
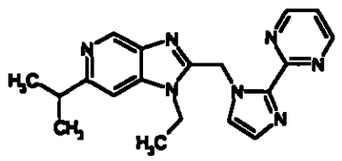
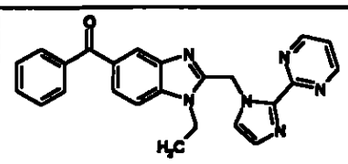
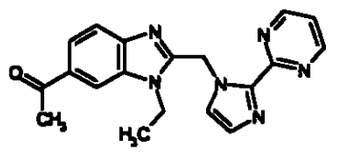
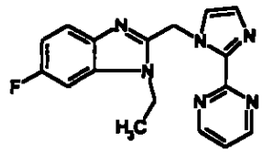
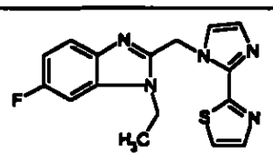
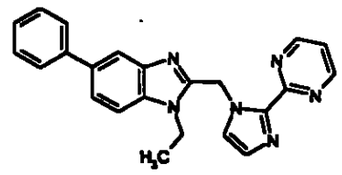
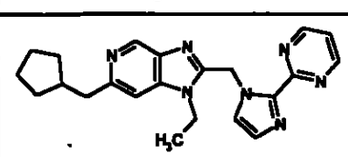
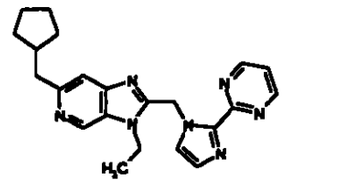
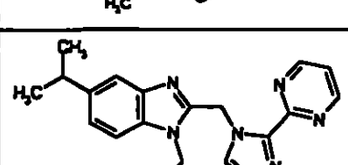
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
715		3-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-c]pyridine-4-carbonitrile	(CD3OD) 8.70 (d, J = 5.1Hz, 2 H), 8.41 (d, J = 5.4 Hz, 1H), 7.73 (d, J = 5.1 Hz, 1H), 7.52 (d, J = 1.2 Hz, 1H), 7.31 (d, J = 1.2 Hz, 1H), 7.27 (t, J = 4.5 Hz, 1H), 6.35 (s, 2H), 4.75 (q, J = 7.5 Hz, 2H), 1.83 (t,, J = 7.2 Hz, 3H)	m/z 331 [M+1]
716		1-ethyl-6-isopropyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.01 (d, J = 0.9 Hz, 1H), 8.84 (d, J = 4.8 Hz, 2H), 7.28 (t, J = 4.8 Hz, 1H), 7.25 (d, J = 1.2 Hz, 1H), 7.13 (d, J = 0.9 Hz, 1H), 7.10 (d, J = 0.9 Hz, 1H), 6.35 (s, 2H), 4.21 (q, J = 7.2 Hz, 2H), 3.17 (sept, J = 6.9 Hz, 1H), 1.34 (d, J = 6.9 Hz, 6H), 1.13 (t, J =	m/z 348 [M+1]
717		(1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazol-5-yl)(phenyl)methanone	(CDCl3) 8.84 (d, 2H), 8.20 (s, 1H), 7.80-7.90 (m, 3H), 7.40-7.60 (m, 4H), 7.3 (m, 3H), 7.18 (s, 1H), 6.38 (s, 2H), 4.25 (q, 2H), 1.22 (t, 3H)	
718		1-[1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazol-6-yl]ethanone	(CDCl3) 8.84 (d, 2H), 8.03 (s, 1H), 7.90 (d, 1H), 7.78 (d, 1H), 7.25-7.28 (m, 2H), 7.18 (s, 1H), 6.38 (s, 2H), 4.46 (q, 2H), 2.66 (s, 3H), 1.08 (t, 3H)	
719		1-ethyl-6-fluoro-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole	(CDCl3) 8.87 (d, J = 5.1 Hz, 1 H), 7.71 (q, J = 4.5 Hz, 1H), 7.27 (m, 3H), 7.14 (s, 1H), 7.03 (m, 2H), 6.34 (s, 2H), 4.18 (q, J = 7.5 Hz, 2H), 1.11 (t,, J = 7.5 Hz, 3H)	m/z 323 [M+1]
720		1-ethyl-6-fluoro-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole	(CDCl3) 7.88 (d, J = 3.3 Hz, 1 H), 7.70 (q, J =4.8 Hz, 1H),7.40 (d, J = 3 Hz, 1H), 7.25 (s, 1H), 7.16 (d, J = 1.2 Hz, 1H), 7.01 (m, 2H), 6.32 (s, 2H), 4.19 (q, J = 6.9 Hz, 2H), 1.06 (t,, J = 7.5 Hz, 3H)	m/z 328 [M+1]
721		1-ethyl-5-phenyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole		m/z 381.5 [M+I]
722		6-(cyclopentylmethyl)-1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.00 (s, 1H), 8.86 (d, 2H), 7.25-7.31 (m, 2H), 7.15 (s, 1H), 7.08 (s, 1H), 6.37 (s, 2H), 4.20 (q, 2H), 2.87 (d, 2H), 2.25-2.40 (m, 1H), 1.42-1.78 (m, 8H), 1.15-1.30 (m, 2H), 1.13 (t, 3H)	
723		6-(cyclopentylmethyl)-3-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.85 (d, 2H), 8.69 (s, 1H), 7.47 (s, 1H), 7.25-7.29 (m, 2H), 7.18 (s, 1H), 6.38 (s, 2H), 4.30 (q, 2H), 2.88 (d, 2H), 2.22-2.39 (m, 1H), 1.42-1.78 (m, 8H), 1.20-1.33 (m, 5H)	
724		1-ethyl-5-isopropyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole	(CDCl3) 8.85 (d, 2H), 7.83 (d, 1H), 7.24 (m, 2H), 7.21 (m, 2H), 7.13 (d, 1H), 6.33 (s, 2H), 4.14 (q, 2H), 3.02 (m, 1H), 1.29 (d, 6H), 1.08 (t, 3H)	

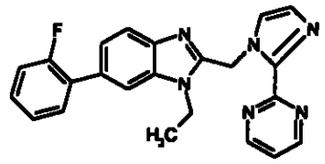
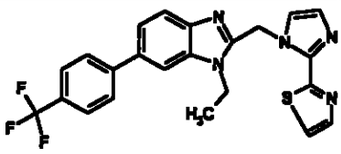
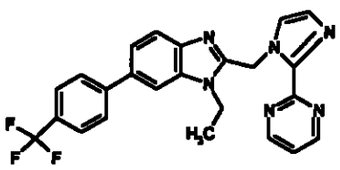
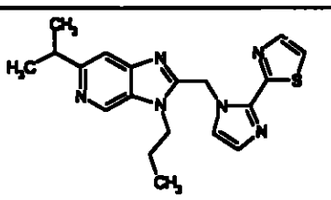
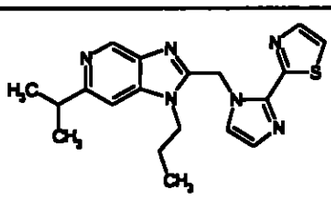
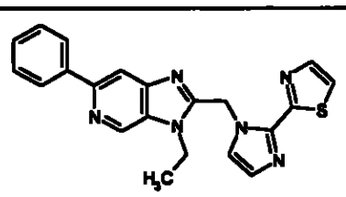
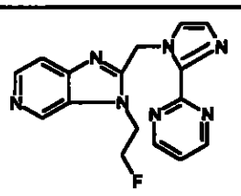
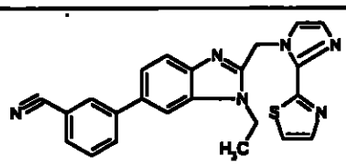
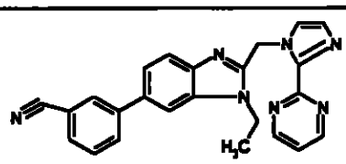
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
725		1-ethyl-6-(2-fluorophenyl)-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole	(CDCl3) 8.87 (d, J = 4.8 Hz, 2H), 7.85 (d, J = 8.4 Hz, 1H), 7.48 (m, 3H), 7.22 (m, 6H), 6.39 (s, 2H), 4.25 (q, J = 7.2 Hz, 2H), 1.16 (t, J = 7.2 Hz, 3H)	m/z 399 [M+1]
726		1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-6-[4-(trifluoromethyl)phenyl]-1H-benzimidazole	(DMSO) 7.95 (m, 3H), 7.79 (m, 3H), 7.70 (d, J = 3.3 Hz, 1H), 7.59 (d, J = 8.7 Hz, 1H) , 7.52 (s, 1H), 7.48 (s, 1H), 6.19 (s, 2H), 4.43 (q, J = 7.2 Hz, 2H), 1.34 (t, J = 7.2 Hz, 3H)	m/z 454 [M+1]
727		1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-6-[4-(trifluoromethyl)phenyl]-1H-benzimidazole	(CDCl3) 8.87 (d, J = 4.8 Hz, 2H), 8.00 (s, 1H), 7.86 (d, J = 8.4 Hz, 1H), 7.71 (m, 3H), 7.52 (m, 2H), 7.27 (t, J = 4.8 Hz, 1H), 7.25 (s, 1H), 7.17 (s, 1H), 6.39 (s, 2H), 4.28 (q, J =6.9 Hz, 2H), 1.16 (t, J = 6.9 Hz, 3H)	m/z 449 [M+1]
728		6-isopropyl-3-propyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.89 (d, J = 1.2 Hz, 1H), 7.83 (d, J = 3.3 Hz, 1H), 7.52 (s, 1H), 7.39 (d, 3.0 Hz, 1H), 7.21 (d, J = 1.5 Hz, 1H), 7.13 (d, J = 0.9 Hz, 1H), 6.33 (s, 2H), 4.21 (m, 2H), 3.16 (sept, J = 6.9 Hz, 1H), 1.81 (sext, J = 7.2 Hz, 2H), 1.34 (d, J = 6.9 Hz, 6H), 0.77 (t, J = 7.2 Hz, 3H)	m/z 387 [M+1]
729		6-isopropyl-1-propyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.01 (d, J = 0.9 Hz, 1H), 7.85 (d, J = 3.6 Hz, 1H), 7.39 (d, J = 3.6 Hz, 1H), 7.18 (d, J = 0.9 Hz, 1H), 7.12 (d, J = 0.9 Hz, 1H), 7.07 (s, 1H), 6.33 (s, 2H), 4.10 (m, 2H), 3.16 (sept, J = 6.9 Hz, 1H), 1.52 (sext, J = 7.2 Hz, 2H), 1.34 (d, J = 6.9 Hz, 6H), 0.75 (t, J = 7.2 Hz, 3H)	m/z 387 [M+1]
730		3-ethyl-6-phenyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.85 (d, 1H), 8.08 (d, 1H), 8.02 (d, 1H), 7.99 (m, 1H), 7.84 (d, 1H), 7.48 (m, 2H), 7.40 (m, 2H), 7.22 (d, 1H), 7.17 (d, 1H), 6.36 (s, 2H), 4.38 (q, 2H), 1.22 (t, 3H)	m/z 387.4 [M+1]
731		3-(2-fluoroethyl)-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-c]pyridine	(CD3OD) 8.91 (s, 1H),8.69 (d, J = 5.1 Hz, 2H), 8.28 (d, J = 5.7 Hz, 1H), 7.52 (m, 2H), 7.30 (s, 1H), 7.26 (t, J = 4.8 Hz, 1H), 6.25 (s, 2H)	m/z 324 [M+1]
732		3-(1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-6-yl)benzonitrile	(DMSO) 8.24 (s, 1H), 8.09 (d, J = 7.8 Hz, 1H), 8.0 (s, 1H), 7.76 (m,2H), 7.61 (m, 5H), 7.11 (s, 1H), 6.18 (s, 2H), 4.42 (q, J = 7.5 Hz, 2H), 1.34 (t, J = 7.5 Hz, 3H)	m/z 411 [M+1]
733		3-(1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazol-6-yl)benzonitrile	(DMSO) 8.76 (d, J = 5.1 Hz, 2H), 8.24 (s, 1H), 8.07 (d, J = 8.4 Hz, 1H), 7.99 (s, 1H), 7.77 (d, J = 7.8 Hz, 1H), 7.64 (t,, J = 8.1 Hz, 1H), 7.50 (m, 3H), 7.34 (t, J = 4.8 Hz, 1H), 7.17 (s, 1H), 6.17 (s, 2H), 4.42 (q, J = 6.9 Hz, 2H), 1.34 (t, J = 6.9 Hz, 3H)	m/z 406 [M+1]

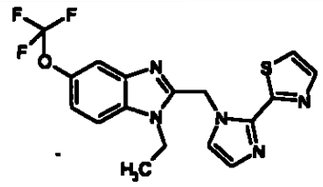
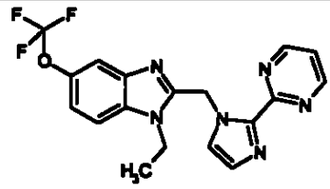
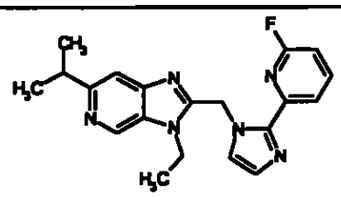
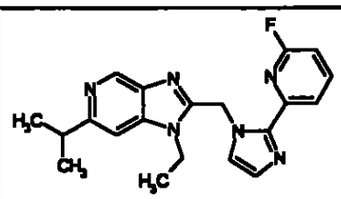
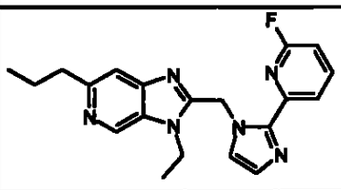
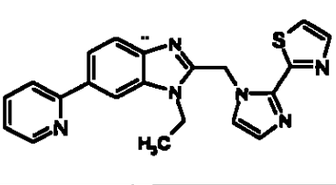
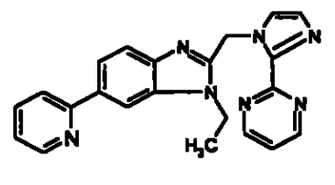
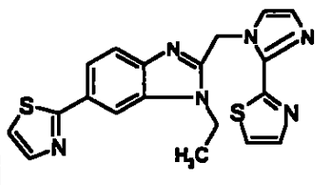
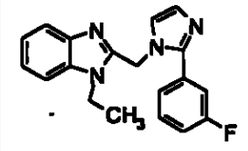
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
734		1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-5-(trifluoromethoxy)-1H-benzimidazole	(CDCl3) 7.86 (d, 1H), 7.66 (s, 1H), 7.40 (d, 1H), 7.33 (d, 1H), 7.26 (d, 2H), 7.14 (s, 1H), 6.34 (s, 2H), 4.26 (q, 2H), 1.10 (t, 3H)	*m/z* 394 [M+1]
735		1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-5-(trifluoromethoxy)-1H-benzimidazole	(CDCl3) 8.84 (d, 2H), 7.63 (s, 1H), 7.25-7.28 (m, 3H), 7.15 (d, 2H), 6.35 (s, 2H), 4.22 (q, 2H), 1.13 (t, 3H)	
736		3-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-isopropyl-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.71 (d, J = 1.2 Hz, 1H), 8.17 (dd, J = 7.7, 1.7 Hz, 1H), 7.88 (q, J = 7.9 Hz, 1H), 7.51 (d; J = 0.9 Hz, 1H), 7.21 (d, J = 0.9 Hz, 1H), 7.18 (d, J = 1.5 Hz, 1H), 6.88 (dd, J = 8.3, 2.0 Hz, 1H), 6.26 (s, 2H), 4.42 (q, J = 7.2 Hz, 2H), 3.17 (sept, J = 6.9 Hz, 1H), 1.33 (d, J = 6.9 Hz, 6H), 1.30 (t	*m/z* 365 [M+1]
737		1-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-isopropyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.99 (d, J = 0.9 Hz, 1H), 8.16 (dd, J = 7.8, 1.5 Hz, 1H), 7.88 (q, J = 7.8 Hz, 1H), 7.18 (d, J = 0.9 Hz, 1H), 7.16 (d, J = 1.5 Hz, 1H), 7.11 (d, 0.9 Hz, 1H), 6.89 (dd, J = 7.8, 2.4 Hz, 1H), 6.27 (s, 2H), 4.33 (q, J = 7.2 Hz, 2H), 3.17 (sept, J = 6.9 Hz, 1H), 1.35 (d, J = 6.9 Hz, 6H), 1.23 (t,	*m/z* 365 [M+1]
738		3-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-propyl-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.70 (d, J = 0.9 Hz, 1H), 8.17 (dd, J = 8.0, 2.6 Hz, 1H), 7.89 (q, J = 7.8 Hz, 1H), 7.47 (s, 1H), 7.22 (d, J = 0.9 Hz, 1H), 7.18 (d, J = 1.5 Hz, 1H), 6.88 (dd, J = 8.6, 2.9 Hz, 1H), 6.27 (s, 2H), 4.42 (q, J = 7.2 Hz, 2H), 2.86 (m, 2H), 1.76 (saxtet, J =	m/z 365 [M+1]
739			(CD3OD) 8.60 (d, J = 4.5 Hz, 1H), 8.09 (s, 1H), 7.88 (m, 4H), 7.68 (d, J = 8.4 Hz, 1H), 7.57 (d, J = 3.3 Hz, 1H), 7.34 (m, 2H), 7.15 (s, 1H), 6.31 (s, 2H), 4.45 (q, J = 7.5 Hz, 2H), 1.32 (t, J = 7.5 Hz, 3H)	*m/z* 387 [M+1]
740			(CD3OD) 8.77 (m, 2H), 8.14 (s, 1H), 7.91 (m, 2H), 7.81 (d, J = 8.4 Hz, 1H), 7.62 (d, J = 8.4 Hz, 1H), 7.45 (s, 1H), 7.32 (m, 4H), 6.30 (s, 2H), 4.50 (q, J = 7.2Hz, 2H), 1.42 (t, J = 7.2 Hz, 3H)	*m/z* 382 [M+1]
741			(CD3OD) 8.11 (s, 1H), 7.78-7.91 (m, 3H), 7.55-7.62 (m, 4H), 7.42 (d, J = 1.5 Hz, 1H), 6.25 (s, 2H), 4.46 (q, J = 7.5 Hz, 2H), 1.37 (t, J = 7.5 Hz, 3H)	*m/z* 393 [M+1]
742		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole		MH+ 321.3

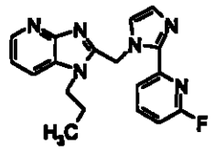
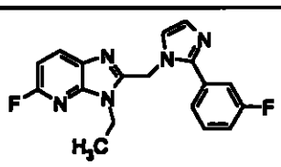
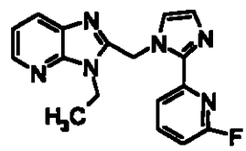
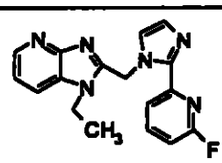
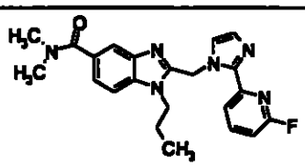
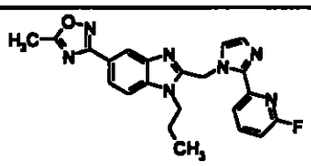
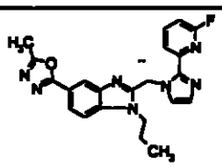
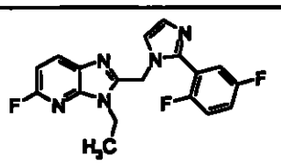
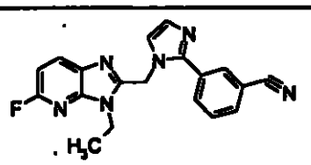
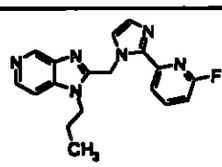
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
743		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-b]pyridine	(HCl salt) H-1 NMR (dmso): 1.05 (t, 3H), 2.03 (h, 2H), 4.62 (t, 2H), 6.58 (s, 2H), 7.24(d, 1H), 7.82 (t, 1H), 7.95 (s, 1H), 8.05 (m, 2H), 8.25(q, 1H), 8.62(d, 1H), 8.93 (d, 1H) LC-MS: M + 1, 337	
744		3-ethyl-5-fluoro-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	dihydrochloride 1H nmr(d6 DMSO): 8.18(1H, t), 7.99(1H, d), 7.94(1H, d), 7.72-7.69(1H, m), 7.66-7.61(1H, m), 7.58-7.50(2H, m), 7.03(1H, d), 5.96(2H, s), 4.23(2H, q), 1.31(3H, s), LRMS calcd. 339.3, found 340.2(MH+).	
745		3-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.19(m, 1H), 8.02(dd, 1H), 7.89(m, 1H), 7.20-7.26(m, 3H), 6.89(m, 1H), 6.32(s, 2H), 4.47(q, 2H), 1.30(t, 3H) LC-MS: calcd: 322.35, found 323.3(M+1)	
746		1-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-b]pyridine	(HCl salt) H-1 NMR (dmso): 1.63(t, 3H), 4.72(q, 2H), 6.58(s, 2H), 7.30 (d, 1H), 7.82(m, 1H), 7.96(s, 1H), 8.03(m, 2H), 8.24(q, 1H), 8.60(d, 1H), 8.90(d, 1H) LC-MS: M + 1, 323	
747		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-N,N-dimethyl-1-propyl-1H-benzimidazole-5-carboxamide	$CDCl_3$: 8.17 (d, J = 7.42 Hz, 1H), 7.85-7.92 (m, 1H), 7.80 (s, 1H), 7.34-7.42 (m, 2H), 7.21 (s, 1H), 7.15 (s, 1H), 6.89 (d, J = 7.97 Hz, 1H), 6.29 (s, 2H), 4.21-4.26 (m, 2H), 3.04-3.11 (br d, 6H), 1.61-1.69 (m, 2H), 0.80(t, J = 7.42 Hz, 3H).	
748		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-5-(5-methyl-1,2,4-oxadiazol-3-yl)-1-propyl-1H-benzimidazole	d6-DMSO: 7.94-8.09 (m, 3H), 7.82 (d, 1H), 7.76 (d, 1H), 7.47 (s, 1H), 7.18 (s, 1H), 7.03 (d, 1H), 6.15 (s, 2H), 4.35 (t, 2H), 2.65 (s, 3H), 1.74-1.82 (m, 2H), 0.94 (t, 3H). LCMS MH^+ 418.3, MH^- 416.2.	
749		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-5-(5-methyl-1,3,4-oxadiazol-2-yl)-1-propyl-1H-benzimidazole	$CDCl_3$: 8.36 (s, 1H), 8.18 (dd, 1H), 8.03 (dd, 1H), 7.89 (q, 1H), 7.44 (d, 1H), 7.25 (s, 1H), 7.17 (s, 1H), 6.90 (dd, 1H), 6.33 (s, 2H), 4.29 (t, 2H), 2.59 (s, 3H), 1.59-1.74 (m, 2H), 0.82 (t, 3H). LCMS MH^+ 418.3, MH^- 416.2	
750		2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-ethyl-5-fluoro-3H-imidazo[4,5-b]pyridine	hydrochloride 1H nmr (d6 DMSO): 8.15(1H, t), 8.08(1H, d), 7.99(1H, d), 7.76-7.72(1H, m), 7.62-7.50(2H, m), 7.02(1H, d), 5.92(2H, s), 4.20(2H, q), 1.26(3H, t), LRMS calcd. 357.3, found 358.2(MH+)	
751		3-{1-[(3-ethyl-5-fluoro-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl}benzonitrile	hydrochloride 1H nmr (d6 DMSO): 8.30(1H, s), 8.16(1H, dd), 8.11(1H, d), 8.04(1H, d), 8.00(1H, d), 7.96(1H, d), 7.74(1H, t), 7.03(1H, d), 5.97(2H, s), 4.22(2H, q), 1.30(3H, t), LRMS calcd. 346.4, found 347.3(MH+)	
752		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.06 (s, 1 H), 8.42 (d, 1 H), 8.18 (d, 1 H), 7.88 (dd, 1 H), 7.28 (d, 1 H), 7.22 (d, 1 H), 7.18 (d, 1 H), 6.88 (d, 1 H), 6.29 (s, 2 H), 4.26 (t, 2 H), 1.69 (q, 2 H), 0.84 (t, 3 H)	LRMS m/e 337

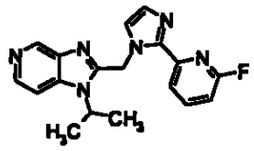
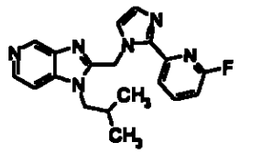
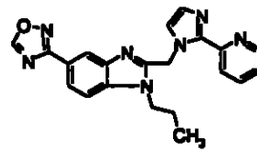
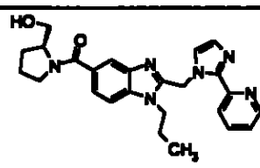
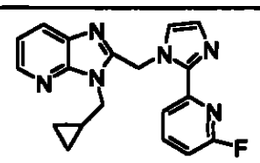
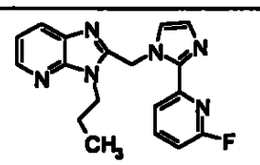
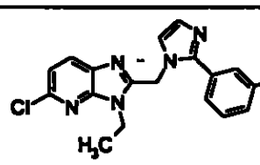
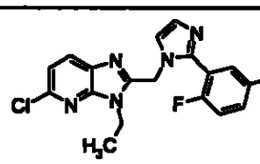
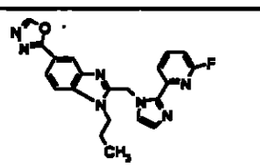
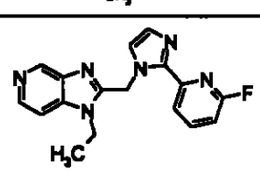
	TABLE 8			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
753		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-isopropyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.03 (s, 1 H), 8.35 (d, 1 H), 8.14 (d, 1 H), 7.87 (dd, 1 H), 7.42 (d, 1 H), 7.15 (d, 1 H), 7.09 (d, 1 H), 6.87 (d, 1 H), 6.28 (s, 2 H), 5.08 (septet, 1 H), 1.49 (d, 6 H); LRMS m/e 337.	
754		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-isobutyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.03 (s, 1 H), 8.39 (d, 1 H), 8.15 (d, 1 H), 7.85 (dd, 1 H), 7.27 (d, 1 H), 7.24 (s, 1 H), 7.17 (s, 1 H), 6.85 (d, 1 H), 6.25 (s, 2 H), 4.08 (d, 2 H), 2.09 (septet, 1 H), 0.85 (d, 6 H); LRMS m/e 323.	
755		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-5-(1,2,4-oxadiazol-3-yl)-1-propyl-1H-benzimidazole	Formate d6-DMSO: 9.62 (s, 1H), 7.99-8.09 (m, 3H), 7.90 (d, J = 8.24 Hz, 1H), 7.79 (d, J = 8.79 Hz, 1H), 7.52 (s, 1H), 7.17 (s, 1H), 7.02 (d, J = 7.41 Hz, 1H), 6.16 (s, 2H), 4.34-4.39 (m, 2H), 1.7-1.84 (m, 2H), 0.92 (t, J = 7.14 Hz, 3H).	
756		{(2S)-1-[(2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazol-5-yl)carbonyl]pyrrolidin-2-yl}methanol	$CDCl_3$: 8.18 (d, J = 7.69 Hz, 1H), 7.86-7.94 (m, 2H), 7.51 (d, J = 8.52 Hz, 1H). 7.38 (d, J = 8.52 Hz, 1H), 7.22 (s, 1H), 7.17 (s, 1H), 6.9 (dd, J = 2.75. 8.24 Hz, 1H), 6.30 (s, 2H), 4.43-4.46 (m, 1H), 4.23-4.28 (m, 2H), 3.76-3.79 (m, 2H), 3.52-3.62	
757		3-(cyclopropylmethyl)-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.37(dd, 1H), 8.18(dd, 1H), 8.01(dd, 1H), 7.88(m, 1H), 7.20-7.26(m, 3H), 6.87(dd, 1H), 6.31(s, 2H), 4.31(d, 2H), 1.22(m, 1H), 0.42-0.53(m, 4H) LC-MS: calcd: 348.39, found 349.3(M+1)	
758		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.38(dd, 1H), 8.19(m, 1H), 8.02(dd, 1H), 7.89(m, 1H), 7.20-7.26(m, 3H), 6.88(m, 1H), 6.32(s, 2H), 4.35(t, 2H), 1.74(m, 2H), 0.85(t, 3H) LC-MS: calcd: 336.37, found 337.2(M+1)	
759		5-chloro-3-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	LRMS calcd. 355.8, found 356.2(MH+)	
760		5-chloro-2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 7.96(1H, d), 7.38-7.34(1H, m), 7.26-7.17(4H, m), 7.04(1H, d), 5.37(1H. s), 3.96(2H, q), 1.06(3H, t), LRMS calcd. 373.8, found 374.2(MH+).	
761		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-5-(1,3,4-oxadiazol-2-yl)-1-propyl-1H-benzimidazole	CDCl3: 8.45 9s, 1H), 8.43 (s, 1H), 8.19 (d, J = 7.14 Hz, 1H), 8.10 (d, J = 8.38 Hz, 1H), 7.90(q, J = 7.96 Hz, 1H), 7.48 (d, J = 8.52 Hz, 1H), 7.19 (s, 1H), 6.89-6.92 (m, 1H), 6.33 (s, 2H), 4.3 (t, J = 7.42 Hz, 2H), 1.67-1.74 9m, 2H), 0.86 (t, J = 7.42 Hz,	
762		1-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 8.82 (s, 1 H), 8.45 (d, 1 H), 8.18 (d, 1 H), 7.88 (dd, 1 H), 7.65 (d, 1 H), 7.23 (d, 1 H), 7.20 (d, 1 H), 6.88 (d, 1 H), 6.30 (s, 2 H), 4.47 (q, 2 H), 1.33 (t, 3 H); LRMS m/e 323.	

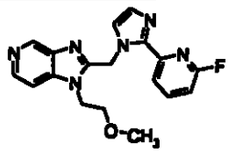
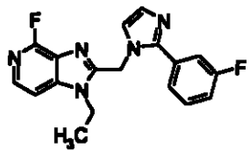
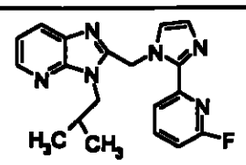
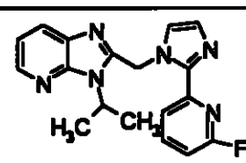
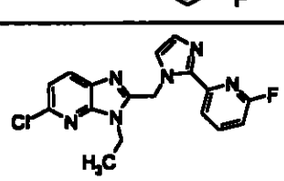
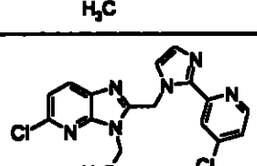
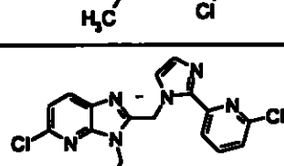
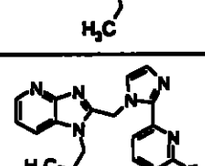
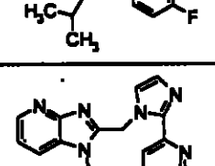
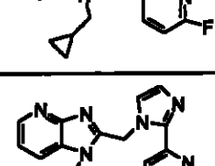
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
763		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-(2-methoxyethyl)-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9..02 (s, 1 H), 8.41 (d, 1 H), 8.16 (d, 1 H), 7.84 (dd, 1 H), 7.36 (d, 1 H), 7.25 (d, 1 H), 7.21 (d, 1 H), 6.83 (d, 1 H), 6.18 (s, 2 H), 4.57 (t, 2 H), 3.56 (t, 2 H), 3.20 (s, 3 H); LRMS m/e 353.	
764		1-ethyl-4-fluoro-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	1H nmr (CDCl3): 7.97(1H, dd), 7.53-7.48(1H, m), 7.44-7.38(2H. m), 7.22-7.12(3H. m), 7.04(1H, s), 5.55(2H, s), 3.75(2H, q), 0.96(3H, t), LRMS calcd. 339.34, found 340.1(MH+).	
765		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-isobutyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.38(dd, 1H), 8.18(dd, 1H), 8.01(dd, 1H), 7.88(m, 1H), 7.20-7.27(m, 3H), 6.87(dd, 1H), 6.29(s, 2H), 4.21(d, 2H), 2.27(m, 1H), 0.87(d, 6H) LC-MS: calcd: 350.40, found 351.3(M+1)	
766		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-isopropyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.36(dd, 1H), 8.18(m, 1H), 8.00(dd, 1H), 7.90(m, 1H), 7.18-7.22(m, 2H), 7.13(d, 1H), 6.89(m, 1H), 6.32(s, 2H), 5.04(m, 1H), 1.63(d, 6H) LC-MS: calcd: 336.37, found 337.2(M+1)	
767		5-chloro-3-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 8.17(1H, dd), 7.94-7.84(2H, m), 7.23-7.20(3H, m), 6.89-6.85(1H, m), 6.27(2H, s), 4.45(2H, q), 1.31(3H, t), LRMS calcd. 356.8, found 357.2(MH+).	
768		5-chloro-2-[[2-(4-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 8.41(1H, d), 8.35(1H, dd), 7.94(1H, d), 7.26-7.17(4H, m), 6.36(2H, s), 4.36(2H, q), 1.22(3H, t), LRMS calcd. 373.2, found 373.2(M)	
769		5-chloro-2-[[2-(6-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 8.22(1H, d), 7.94(1H, d), 7.75(1H, t), 7.29-7.20(4H, m), 6.31(2H, s), 4.45(2H, q), 1.30(3H, t), LRMS calcd. 373.2, found 373.3(M).	
770		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-isobutyl-1H-imidazo[4,5-b]pyridine	(HCl salt) H-1 NMR (dmso): 1.05 (d, 6H), 2.40 (h, 1H), 4.50 (d, 2H), 6.57 (s, 2H), 7.30 (d, 1H), 7.82 (m, 1H), 7.93(s, 1H), 8.03(m, 2H), 8.23(q, 1H), 8.62(d, 1H), 8.95(d,1H) LC-MS: M + 1, 351	
771		1-(cyclopropylmethyl)-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-b]pyridine	(free base) H-1 NMR (CDCl3): 0.30 (m, 2H), 0.57(m, 2H), 1.05 (m, 1H), 4.23(d, 2H), 6.38(s, 2H), 6.80(d, 1H), 7.08(s, 1H), 7.22 (m, 1H), 7.39(s, 1H), 7.73(d, 1H), 7.90(q, 1H), 8.20(d, 1H), 8.58(d, 1H) LC-MS: M + 1, 349	
772		1-allyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-b]pyridine	(HCl) salt Melting point: 225-231 (decompose) H-1 NMR (dmso): 5.22-5.53 (m, 4H), 6.21(m, 1H), 6.53 (s, 2H), 7.24(d, 1H), 7.82 (m, 1H), 7.95(s, 1H), 8.05(m, 2H), 8.25(q, 1H), 8.62(d, 1H), 8.82(d, 1H) LC-MS: M + 1, 335	

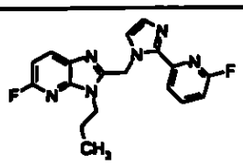
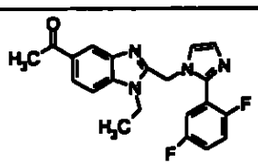
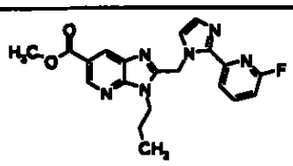
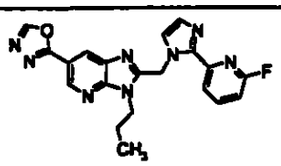
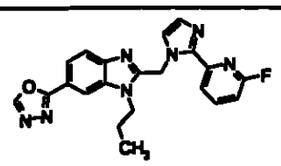
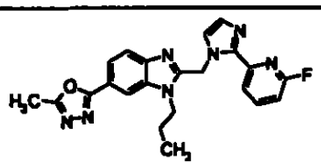
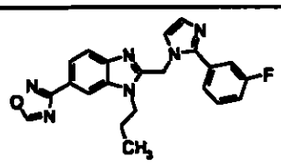
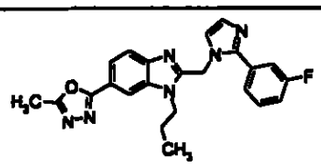
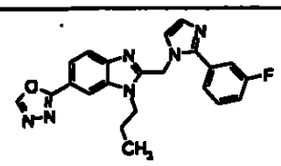
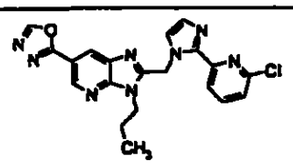
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
773		5-fluoro-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	hydrochloride 1H nmr (d6 DMSO): 8.42(1H, d), 8.26(1H, q), 8.10-8.05(2H, m), 7.96(1H, d), 7.36(1H, dd), 6.97(1H, d), 6.33(2H, s), 4.30(2H, t), 1.90-1.83(2H, m), 0.93(3H, t).	
774		1-(2-[[2-(2,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.01(dd, 1H), 7.34-7.41(m, 2H), 7.18-7.24(m, 3H), 7.04(d, 1H), 5.40(s, 2H), 3.88(q, 2H), 2.69(s,3H), 1.03(t, 3H) LC-MS: calcd: 380.40, found 381.4 (M+1)	
775		methyl 2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine-6-carboxylate	1H nmr (CDCl3): 9.05(1H, d), 8.62(1H, d), 8.19(1H, dd), 7.88(1H, q), 7.26-7.21(2H, m), 6.89-6.85(1H, m), 6.31(2H, s), 4.39(2H, t), 3.96(3H, s), 1.79-1.72(2H, m), 0.87(3H, t), LRMS calcd. 394.4, found 395.3(MH+).	
776		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-(1,3,4-oxadiazol-2-yl)-3-propyl-3H-imidazo[4,5-b]pyridine	(KC 1084-78-2) LRMS calcd. 404.4, found 405.3(MH+).	
777		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-(1,3,4-oxadiazol-2-yl)-1-propyl-1H-benzimidazole	^{1}H nmr (CDCl3) δ 8.46 (s, 1 H), 8.18 – 8.14 (m, 2 H), 7.95 – 7.83 (m, 3 H), 7.24 (d, 1 H), 7.17 (d, 1 H), 6.87 (d, 1 H), 6.31 (s, 2 H), 4.30 (t, 2 H), 1.71 (q, 2 H), 0.85 (t, 3 H); LRMS m/e 404.	
778		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-(5-methyl-1,3,4-oxadiazol-2-yl)-1-propyl-1H-benzimidazole	^{1}H nmr (CDCl3) δ 8.17 (d, 1 H), 8.07 (s, 1 H), 7.91 – 7.80 (m, 3 H), 7.23 (d, 1 H), 7.16 (d, 1 H), 6.87 (d, 1 H), 6.29 (s, 2 H), 4.28 (t, 2 H), 2.61 (s, 3 H), 1.69 (q, 2 H), 0.84 (t, 3 H); LRMS m/e 418.	
779		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-6-(1,2,4-oxadiazol-3-yl)-1-propyl-1H-benzimidazole	^{1}H nmr (CDCl3) δ 8.89 (s, 1 H), 8.15 (s, 1 H), 8.12 – 8.03 (m, 1 H), 7.81 – 7.73 (m, 1 H), 7.40 – 7.02 (m, 6 H), 5.47 (s, 2 H), 3.82 (t, 2 H), 1.55 (q, 2 H), 0.79 (t, 3 H); LRMS m/e 403.	
780		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-6-(5-methyl-1,3,4-oxadiazol-2-yl)-1-propyl-1H-benzimidazole	^{1}H nmr (CDCl3) δ 8.04 (s, 1 H), 7.94 – 7.84 (m, 2 H), 7.50 (7.39 (m, 3 H), 7.22 – 7.16 (m, 2 H), 7.08 (d, 1 H), 5.52 (s, 2 H), 3.76 (t, 2 H), 2.63 (s, 3 H), 1.47 (q, 2 H), 0.77 (t, 3 H); LRMS m/e 417.	
781		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-6-(1,3,4-oxadiazol-2-yl)-1-propyl-1H-benzimidazole	^{1}H nmr (CDCl3) δ 8.50 (s, 1 H), 8.15 (d, 1 H), 7.98 – 7.89 (m, 2 H), 7.56 – 7.39 (m, 3 H), 7.24 – 7.05 (m, 3 H), 5.57 (s, 2 H), 3.78 (t, 2 H), 1.47 (q, 2 H), 0.80 (t, 3 H); LRMS m/e 403.	
782		2-[[2-(6-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-(1,3,4-oxadiazol-2-yl)-3-propyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 9.14(1H, d), 8.63(1H, d), 8.51(1H, s), 8.26(1H, d), 7.76(1H, t), 7.28-7.24(3H, m), 6.36(2H, s), 4.42(2H, t), 1.81-1.74(2H, m), 0.88(3H, t), LRMS calcd. 420.9, found 421.3(MH+).	

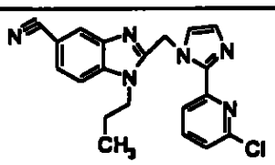
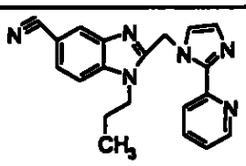
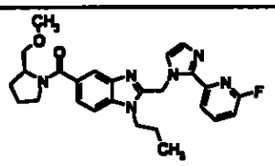
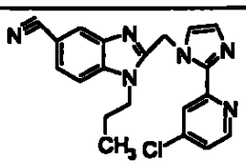
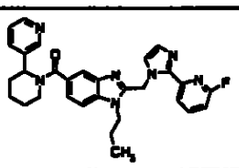
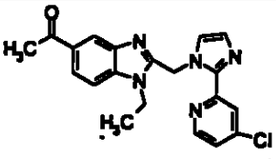
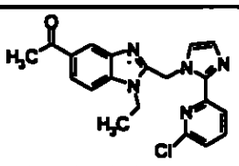
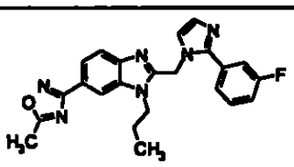
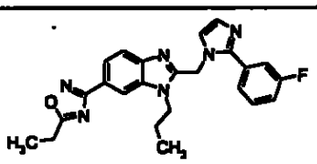
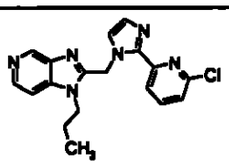
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
783		2-[[2-(6-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-5-carbonitrile	1H nmr(d6 DMSO): 8.02 (1H, d, J = 7.7 Hz), 8.08(1H, s), 7.76(1H, t, J = 8 Hz), 7.55(1H, dd, J = 8, 1.4 Hz), 7.428 (1H, d, J = 8.5 Hz), 7.18-7.32(3H, m), 6.34(1H, s), 4.29(2H, t, J =8.7 Hz), 1.66(2H, m), 0.81(3H, t, J =8.7 Hz). LRMS calcd. 376.5,	
784		1-propyl-2-[(2-pyridin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole-5-carbonitrile		
785		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-5-[[(2S)-2-(methoxymethyl)pyrrolidin-1-yl]carbonyl]-1-propyl-1H-benzimidazole	CDCl3: 8.17 (d, J = 7.42 Hz, 1H), 7.85-7.93 (m, 2H), 7.51-7.53 (m, 1H), 7.35 (d, J = 8.51 Hz, 1H), 7.21 (s, 1H), 7.16 (s, 1H), 6.89 (dd, J = 2.47, 7.97 Hz, 1H), 6.28-6.3 (m, 2H), 4.46 (bs, 1H), 4.21-4.26 (m, 2H), 3.51-3.68 (m, 4H), 3.40 (s,	
786		2-[[2-(4-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-5-carbonitrile	1H nmr(d6 DMSO): 8.42 (1H, d, J = 5 Hz), 8.35(1H, s), 8.08(1H, s), 7.1-7.65(1H, m), 6.41(1H, s), 4.19(2H, t, J =7.4 Hz), 1.57(2H, m), 0.78(3H, t, J =7.4 Hz), LRMS calcd. 376.5, found 377.3(MH+).	
787		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-5-[(2-pyridin-3-ylpiperidin-1-yl)carbonyl]-1H-benzimidazole	$CDCl_3$: 8.61 9s, 1H), 8.52 (d, J = 4.67 Hz, 1H), 8.15-8.18 (m, 1H), 7.87-7.93 (m, 1H), 7.85 (s, 1H), 7.66 (d, J = 7.69 Hz, 1H), 7.30-7.45 (m, 3H), 7.21 (s, 1H), 7.16 (s, 1H), 6.88-6.91 (m, 1H), 6.29 (s, 2H), 4.25 (t, J = 7.42 Hz, 2H), 2.82-2.91	
788		1-(2-[[2-(4-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone	^{1}H NMR, δppm (CDCl3): 8.36-8.47(m, 3H), 8.01(dd, 1H), 7.38(d, 1H), 7.29(dd, 1H), 7.16-7.18(m, 2H), 6.43(s, 2H), 4.30(q, 2H), 2.68(s,3H), 1.14(t, 3H) LC-MS: calcd: 379.85, found 380.3(M+1)	
789		1-(2-[[2-(6-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone	^{1}H NMR, δppm (CDCl3): 8.40(d, 1H), 8.23(d, 1H), 8.01(dd, 1H), 7.77(t, 1H), 7.41(d, 1H), 7.30(d, 1H), 7.24(d, 1H), 7.18(d, 1H), 6.36(s, 2H), 4.41(q, 2H), 2.68(s,3H), 1.25(t, 3H) LC-MS: calcd: 379.85, found 380.3(M+1)	
790		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-6-(5-methyl-1,2,4-oxadiazol-3-yl)-1-propyl-1H-benzimidazole	^{1}H nmr (CDCl3) δ 8.03 (d, 1 H), 8.02 (s, 1 H), 7.85 (d, 1 H), 7.51 – 7.40 (m, 3 H), 7.21 – 7.16 (m, 2 H), 7.07 (d, 1 H), 5.52 (s, 2 H), 3.75 (t, 2 H), 2.67 (s, 3 H), 1.47 (q, 2 H), 0.76 (t, 3 H); LRMS m/e 417.	
791		6-(5-ethyl-1,2,4-oxadiazol-3-yl)-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	^{1}H nmr (CDCl3) δ 8.05 (d, 1 H), 8.03 (s, 1 H), 7.85 (d, 1 H), 7.52 – 7.41 (m, 3 H), 7.21 – 7.17 (m, 2 H), 7.08 (d, 1 H), 5.52 (s, 2 H), 3.76 (t, 2 H), 3.00 (q, 2 H), 1.51 – 1.45 (m, 5 H), 0.77 (t, 3 H); LRMS m/e 431.	
792		2-[[2-(6-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-c]pyridine	dihydrochloride ^{1}H nmr (DMSO-d6) δ 9.32 (s, 1 H), 8.68 (d, 1 H), 8.47 (d, 1 H), 8.45 (d, 1 H), 8.09 – 8.03 (m, 2 H), 7.80 (d, 1 H), 7.54 (d, 1 H), 6.45 (s, 2 H), 4.61 (t, 2 H), 1.88 (q, 2 H), 0.95 (t, 3 H); LRMS m/e 352.	

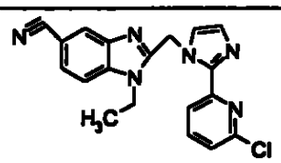
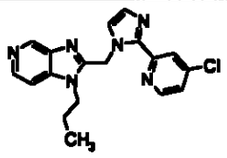
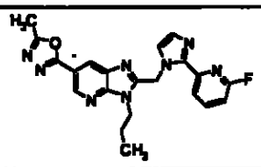
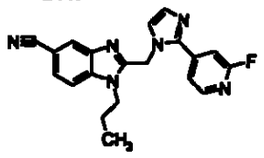
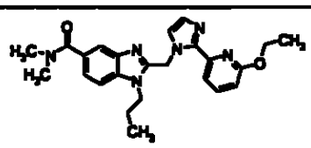
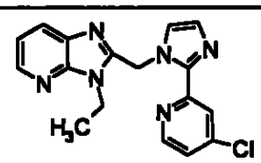
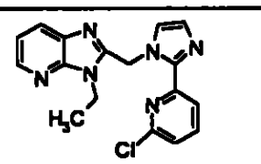
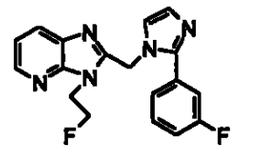
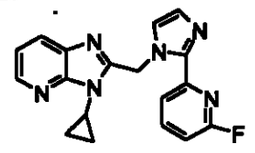
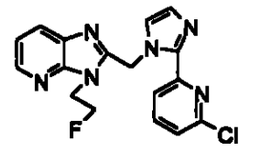
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
793		2-[[2-(6-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile	Mesylate d6- DMSO: 8.02-8.14 (m, 3H), 7.97 (s, 1H), 7.86 (d, J = 8.52 Hz,1H), 7.77 (s, 1H), 7.6 (d, J = 8.51 Hz, 1H, 7.57 (d, J = 7.97 Hz, 1H), 6.26 (s, 2H), 4.44-4.51 (m, 2H), 2.30 (s, 3H), 1.39 (t, J = 7.14 Hz, 3H). LCMS: MH+ 363.2.	
794		2-[[2-(4-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-c]pyridine	dihydrochloride ^{1}H nmr (DMSO-d6) 8 9.31 (s, 1 H), 8.66 (d, 1 H), 8.45 (s, 1 H), 8.41 (d, 1 H), 8.32 (d, 1 H), 7.86 (d, 1 H), 7.63 (d, 1 H), 7.52 (d, 1H), 6.42 (s, 2 H), 4.55 (t, 2 H), 1.91 (q, 2 H), 0.97 (t, 3 H): LRMS m/e 353.	
795		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-(5-methyl-1,3,4-oxadiazol-2-yl)-3-propyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 9.07(1H, d), 8.56(1H, d), 8.20(1H, dd), 7.88(1H, q), 7.26-7.2292H, m), 6.88(1H, dd), 6.3292H, s), 4.40(2H, t), 2.65(3H, s), 1.81-1.74(2H, m), 0.88(3H, t), LRMS calcd. 418.4, found 419.3(MH+).	
796		2-[[2-(2-fluoropyridin-4-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-5-carbonitrile	1H nmr (CDCl3): 8.28(1H, d), 8.04(1H, s), 7.54-7.49(2H, m), 7.40(1H, d), 7.25-7.22(2H, m), 7.11(1H, s), 5.55(2H, s), 3.89(2H, t), 1.60-1.53(2H, m), 0.83(3H, t), LRMS calcd. 360.4, found 361.2(MH+).	
797		2-[[2-(6-ethoxypyridin-2-yl)-1H-imidazol-1-yl]methyl]-N,N-dimethyl-1-propyl-1H-benzimidazole-5-carboxamide	1H nmr (CDCl3): 8.49(1H, d), 8.10(1H, d), 7.88(1H, d), 7.71(1H, t), 7.13(1H, d), 7.00(1H, d), 6.74(1H, d), 6.45(2H, s), 4.27(2H, q), 4.08(2H, t), 3.15-3.06(6H, br d), 1.48-1.35(5H, m), 0.67(3H, t), LRMS calcd. 433.5, found	
798		2-[[2-(4-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.44(dd, 1H), 8.39(m, 1H), 8.03(dd, 1H), 7.18-7.28(m, 5H), 6.41(s, 2H), 4.39(q, 2H), 1.20(t, 3H) LC-MS: calcd: 338.80, found 339.2(M+1)	
799		2-[[2-(6-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.23(dd, 1H), 8.03(dd, 1H), 7.76(t, 1H), 7.19-7.29(m, 4H), 6.36(s, 2H), 4.48(q, 2H), 1.29(t, 3H) LC-MS: calcd: 338.80, found 339.2(M+1)	
800		3-(2-fluoroethyl)-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): 4.26(t, 1H), 4.35(t, 1H), 4.51(t, 1H), 4.67(t, 1H), 5.54(s, 2H), 7.09-7.45 (m, 4H), 8.06(d, 1H), 8.36(d, 1H) LC-MS: M + 1, 340	
801		3-cyclopropyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 1.20-1.24 (m, 4H), 3.35 (m, 1H), 6.29 (s, 2H), 6.79 (d, 1H), 7.15 (m, 3H), 7.82 (q, 1H), 7.92 (d, 1H), 8.15 (d, 1H), 8.37(d, 1H) LC-MS: M + 1, 335	
802		2-[[2-(6-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-(2-fluoroethyl)-3H-imidazo[4,5-b]pyridine	HCl salt H-1 NMR (dmso): line list provided 4.77 (s, 2H), 4.90 (m, 2H), 6.28 (s, 2H), 7.24 (m, 1H), 7.62 (d, 1H), 7.93 (m, 2H), 8.12 (m, 2H), 8.36(m, 2H) LC-MS: M + 1, 357	

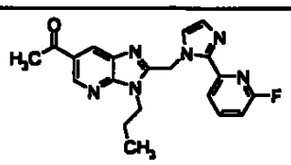
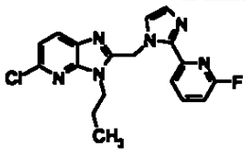
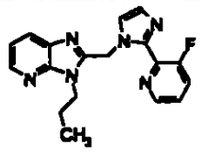
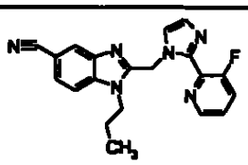
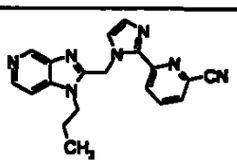
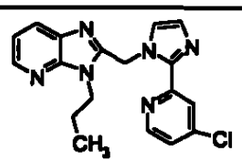
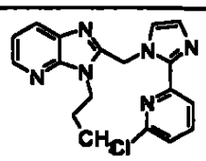
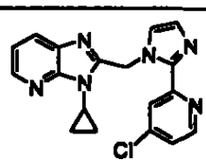
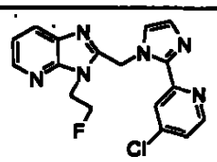
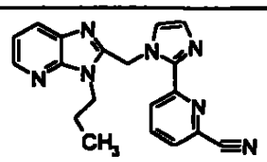
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
803		1-[2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridin-6-yl]ethanone	1H nmr (CDCl3): 9.01(1H, d), 8.53(1H, d), 8.20-8.17(1H, m), 7.87(1H, q), 7.24-7.21(2H, m), 6.88-6.84(1H, m), 6.30(2H, s), 4.40(2H, t), 2.66(3H, s), 1.80-1.73(2H, m), 0.88(3H, t), LRMS calcd. 378.4, found 379.3(MH+).	
804		5-chloro-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	hydrochloride 1H nmr (d6 DMSO): 8.35(1H, dd), 8.24(1H, q), 8.02(1H, s), 7.95(1H, dd), 7.90(1H, s), 7.33(1H, dd), 7.28(1H, d), 7.26(1H, d), 6.32(2H, s), 4.33(2H, t), 1.90-1.85(2H, m), 0.94(3H, t), LRMS calcd. 370.8, found 371.3(MH+).	
805		2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	dihydrochloride 1H nmr (d6 DMSO): 8.48-8.46(1H, m), 8.30(1H, dd), 8.12-8.03(2H, m), 7.96(1H, d), 7.90(1H, dd), 7.72-7.65(1H, m), 7.22(1H, dd), 6.18(2H, s), 4.27(2H, t), 1.83-1.75(2H, m), 0.87(3H, t), LRMS calcd. 336.4, found 337.2.	
806		2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-5-carbonitrile	hydrochloride 1H nmr (d6 DMSO): 8.45(1H, m), 8.08-8.02(3H, m), 7.93(1H, s), 7.83(1H, d), 7.69-7.62(2H, m), 6.16(2H, s), 4.29(2H, t), 1.72-1.20(2H, m), 0.86(3H, t), LRMS calcd. 360.4, found 361.2(MH+).	
807		6-[1-[(1-propyl-1H-imidazo[4,5-c]pyridin-2-yl)methyl]-1H-imidazol-2-yl]pyridine-2-carbonitrile	^{1}H nmr (CDCl3) δ 9.03 (s, 1 H), 8.56 (d, 1 H), 8.44 (d, 1 H), 7.91 (dd, 1 H), 7.60 (d, 1 H), 7.32 (d, 1 H), 7.30 (d, 1 H), 7.25 (d, 1 H), 6.25 (s, 2 H), 4.31 (t, 2 H), 1.78 (q, 2 H), 0.90 (t, 3 H); LRMS m/e 344.	
808		2-[[2-(4-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.36-8.45(m, 3H), 8.03(dd, 1H), 7.18-7.29(m, 4H), 6.40(s, 2H), 4.28(t, 2H), 1.66(m, 2H), 0.81(t, 3H)	
809		2-[[2-(6-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.23(dd, 1H), 8.02(dd, 1H), 7.76(t, 1H), 7.19-7.29(m, 4H), 6.36(s, 2H), 4.34(t, 2H), 1.72(m, 2H), 0.83(t, 3H)	
810		2-[[2-(4-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-cyclopropyl-3H-imidazo[4,5-b]pyridine	HCl salt H-1 NMR (DMSO): line list provided 1.24 (m, 4H), 3.48 (m, 1H), 6.43 (s, 2H), 7.19 (m, 1H), 7.67 (m, 1H), 7.86 (d, 1H), 7.97 (s, 1H), 8.06(s, 1H), 8.31 (d, 1H), 8.56 (d, 1H), 8.64 (m, 1H) LC-MS: M + 1, 351, M – 1, 349	
811		2-[[2-(4-chloropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-(2-fluoroethyl)-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): 4.60–4.77 (m, 2H), 4.81 (s, 2H), 6.35(s, 2H), 7.20-7.25 (m, 5H), 8.03 (d, 1H), 8.38 (m, 1H) LC-MS: M + 1 357	
812		6-[1-[(3-propyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl]pyridine-2-carbonitrile	^{1}H NMR, δppm (CDCl3): 8.56(dd, 1H), 8.39(dd, 1H), 8.00(dd, 1H), 7.92(dd, 1H), 7.63(dd, 1H), 7.20-7.29(m, 3H), 6.32(s, 2H), 4.36(t, 2H), 1.80(m, 2H), 0.89(t, 3H) LC-MS: calcd: 343.39, found 344.1(M+1)	

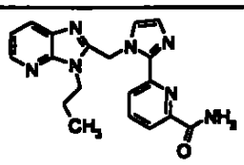
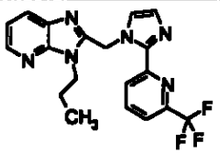
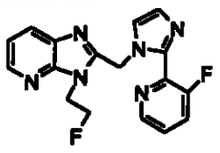
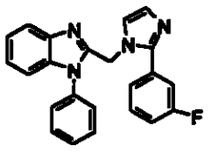
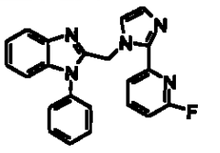
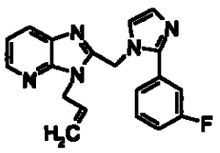
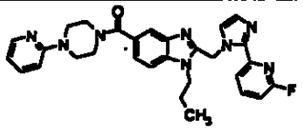
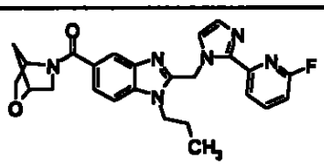
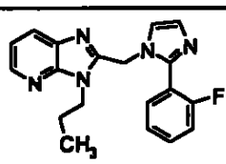
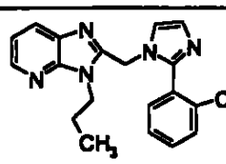
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
813		6-{1-[(3-propyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl}pyridine-2-carboxamide	^{1}H NMR, δppm (CDCl3): 8.88(s, 1H), 8.42(dd, 1H), 8.38(dd, 1H), 8.15(dd, 1H), 7.98(dd, 1H), 7.93(d, 1H), 7.22-7.27(m, 3H), 6.18 (s, 2H), 5.67(s, 1H), 4.07(t, 2H), 1.54(m, 2H), 0.83(t, 3H) LC-MS: calcd: 361.41, found 362.2(M+1)	
814		3-propyl-2-({2-[6-(trifluoromethyl)pyridin-2-yl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.53(d, 1H), 8.39(dd, 1H), 7.96-8.06(m, 2H), 7.64(dd, 1H), 7.20-7.27(m, 3H), 6.42(s, 2H), 4.26(t, 2H), 1.61(m, 2H), 0.72(t, 3H) LC-MS: calcd: 386.38, found 387.3(M+1)	
815		3-(2-fluoroethyl)-2-{[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 4.58-4.66 (m, 2H), 4.75 (s, 2H), 6.03 (s, 2H), 7.21-7.35 (m, 4H), 7.57 (m, 1H), 8.04 (d, 1H), 8.41(m, 1H) LC-MS: M + 1, 341	
816		2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-1-phenyl-1H-benzimidazole	H-1 NMR (CDCl3): 5.38(s, 2H), 6.91-7.17(m, 8H), 7.22-7.45 (m, 6H), 7.84 (d, 1H) LC-MS: 369	
817		2-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-1-phenyl-1H-benzimidazole	H-1 NMR: 6.22 (s, 2H), 6.78 (m, 1H), 7.03-7.37 (m, 9H), 7.65-7.92 (m, 3H) LC-MS: M-1, 368	
818		3-allyl-2-{[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): 4.59-4.62 (m, 3H), 5.03 (d, 1H), 5.43(s, 2H), 5.70 (m, 1H), 7.03 (s, 1H), 7.17 (m, 1H), 7.25 (m, 2H), 7.43(m, 3H), 8.04 (d, 1H), 8.40 (d, 1H) LC-MS: M + 1, 334, M –1 332	
819		2-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-1-propyl-5-[(4-pyridin-2-ylpiperazin-1-yl)carbonyl]-1H-benzimidazole	$CDCl_3$: 8.15-8.2 (m, 2H), 7.82-7.94 (m, 2H), 7.44-7.53 (m, 1H), 7.35-7.44 (m, 2H), 7.18 (q, 2H), 6.88 (d, 1H), 6.71 (s, 1H), 6.65 (s, 1H), 6.29 (s, 2H), 4.21-4.29 (m, 2H), 3.53-4.0 (m, 8H), 1.53-1.71 (m, 2H), 0.82 (t, 3H)	
820		5-[(2-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-1-propyl-1H-benzimidazol-5-yl)carbonyl]-2-oxa-5-azabicyclo[2.2.1]heptane	$CDCl_3$: 8.18 (d, 7.97 Hz, 1Hz), 7.85 7.94 (m, 2H), 7.52-7.54 (m, 1H), 7.38-7.42 (m, 1H), 7.17-7.26 (m, 2H), 6.90 (d, J = 7.96 Hz, 1H), 6.30 (s, 2H), 4.73-5.06 (m, 1H), 4.56 (d, 1H), 4.24-4.35 (m, 2H), 4.04-4.10 (m, 1H), 3.81-3.89 (m, 1H), 3.51-3.7	
821		2-{[2-(2-fluorophenyl)-1H-imidazol-1-yl]methyl}-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.03(dd, 1H), 7.65(m, 1H), 7.50(m, 1H), 7.20-7.35(m, 3H), 7.07(d, 1H), 5.38 (s, 2H), 3.84(t, 2H), 1.46(m, 2H), 0.74(t, 3H) LC-MS: calcd: 335.39, found 336.2(M+1)	
822		2-{[2-(2-chlorophenyl)-1H-imidazol-1-yl]methyl}-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.38(dd, 1H), 8.02(dd, 1H), 7.33-7.56(m, 4H), 7.19-7.27(m, 2H), 7.09(d, 1H), 5.30 (s, 2H), 3.85(t, 2H), 1.50(m, 2H), 0.76(t, 3H) LC-MS: calcd: 351.84, found 352.2(M+1)	

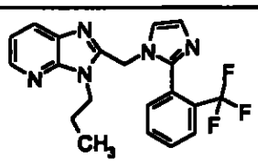
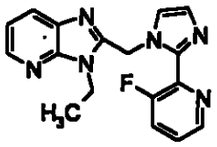
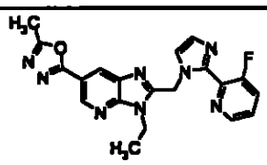
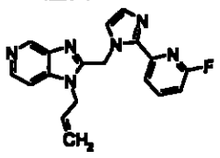
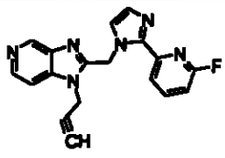
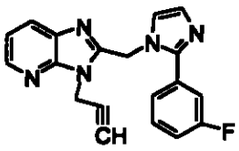
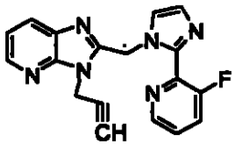
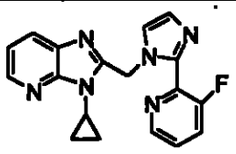
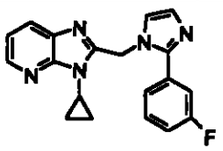
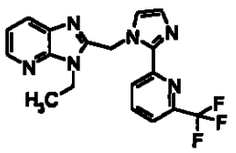
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
823		3-propyl-2-({2-[2-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.02(dd, 1H), 7.84 (dd, 1H), 7.53-7.65(m, 2H), 7.45(m, 1H), 7.21 7.27(m, 2H), 7.09(d, 1H), 5.17 (s, 2H), 3.93(t, 2H), 1.59(m, 2H), 0.80(t, 3H) LC-MS: calcd: 385.40, found 386.2 (M+1)	
824		3-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.47(m, 1H), 8.40(dd, 1H), 8.04(dd, 1H), 7.62(m, 1H), 7.36(m, 1H), 7.23-7.28(m, 2H), 7.16(d, 1H), 6.10(s, 2H), 4.37(q, 2H), 1.19(t, 3H) LC-MS: calcd: 322.35, found 323.3(M+1)	
825		3-ethyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-(5-methyl-1,3,4-oxadiazol-2-yl)-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 9.08(1H, d), 8.58(1H, d), 8.45-8.43(1H, m), 7.65-7.59(1H, m), 7.39-7.30(2H, m), 7.18(1H, s), 6.14(2H, s), 4.43(2H, q), 2.66(3H, s), 1.23(3H, t), LRMS calcd. 404.4, found 405.3(MH+).	
826		1-allyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.05 (s, 1 H), 8.40 (d, 1 H), 8.14 (d, 1 H), 7.85 (dd, 1 H), 7.26 (d; 1 H), 7.22 (d, 1 H), 7.17 (6.85 (d, 1 H), 6.19 (s, 2 H), 5.82 – 5.70 (m, 1 H), 5.12 (d, 1 H), 4.99 – 4.96 (m, 2 H), 4.82 (d, 1 H); LRMS m/e 335.	
827		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-prop-2-ynyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.04 (s, 1 H), 8.46 (d, 1 H), 8.15 (d, 1 H), 7.86 (dd, 1 H), 7.41 (d, 1 H), 7.26 (d, 1 H), 7.21 (d, 1 H), 6.85 (d, 1 H), 6.23 (s, 2 H), 5.21 (d, 2 H), 2.33 – 2.32 (m, 1 H); LRMS m/e 333.	
828		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-3-prop-2-ynyl-3H-imidazo[4,5-b]pyridine	H-1 NMR (dmso): 3.47 (s, 1H), 4.78 (s, 2H), 5.65 (s, 2H), 7.07-7.45 (m, 5H), 7.45(m, 2H), 8.07(m, 1H), 8.42(m, 1H) LC-MS: M + 1, 332, M – 1, 330	
829		2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-prop-2-ynyl-3H-imidazo[4,5-b]pyridine	HCl salt H-1 NMR (dmso): line list provided 3.51 (s, 1H), 5.25 (s, 2H), 6.25(s, 2H), 7.27(m, 1H), 7.72(m, 1H), 7.94-8.15 (m, 4H), 8.35(m, 1H), 8.50(1H) LC MS: M + 1, 333	
830		3-cyclopropyl-2-[[2-(3-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	HCl salt H-1 NMR (dmso): line list provided 1.19 (m, 4H), 3.36 (m, 2H), 6.24 (s, 2H), 7.21 (m, 1H), 7.70 (m, 1H), 7.88 (d, 2H), 8.00 (s, 1H), 8.07 (m, 3H), 8.31 (d, 1H), 8.52 (d, 1H) LC-MS: M + 1, 335	
831		3-cyclopropyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	HCl salt H-1 NMR (DMSO): line list provided 1.03-1.22 (m, 4H), 3.37 (m, 1H), 5.96 (s, 2H), 7.22 (m, 1H), 7.45-7.78 (m, 4H), 7.95-8.03 (m, 3H), 8.37 (d, 1H) LC-MS: M +1 334, M –1 332	
832		3-ethyl-2-({2-[6-(trifluoromethyl)pyridin-2-yl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.52(d, 1H), 8.39(dd, 1H), 7.90-8.05(m, 2H), 7.64(d, 1H), 7.21-7.27(m, 3H), 6.42(s, 2H), 4.39(q, 2H), 1.17(t, 3H) LC-MS: calcd: 372.36, found 373.3(M+1)	

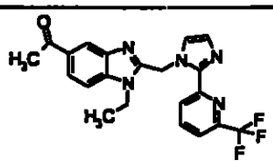
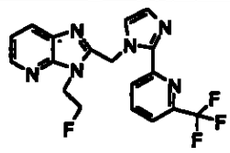
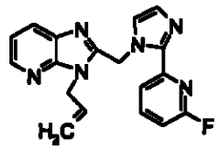
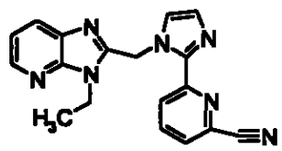
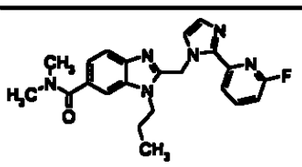
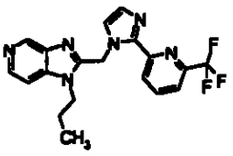
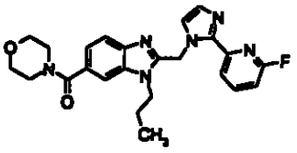
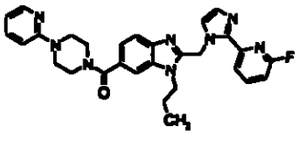
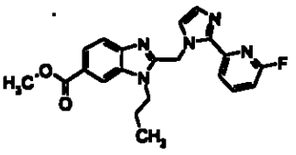
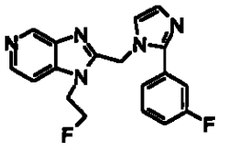
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
833		1-{1-ethyl-2-{[2-{6-(trifluoromethyl)pyridin-2-yl}-1H-imidazol-1-yl]methyl}-1H-benzimidazol-5-yl}ethanone	^{1}H NMR, δppm (CDCl3): 8.52(d, 1H), 8.40(d, 1H), 7.99-8.03(m, 2H), 7.64(d, 1H), 7.40(d, 1H), 7.20-7.22(m, 2H), 6.41(s, 2H), 4.34(q, 2H), 2.68(s, 3H), 1.15(t, 3H) LC-MS: calcd: 413.41, found 414.2(M+1)	
834		3-(2-fluoroethyl)-2-{[2-{6-(trifluoromethyl)pyridin-2-yl}-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 4.60-4.81 (m, 4H), 6.30 (s, 2H), 7.18-7.30 (m, 3H), 7.54 (d, 1H), 7.88-8.00 (m, 2H), 8.33(d, 1H), 8.49(d, 1H) LC-MS: M + 1, 391, M - 1, 389	
835		3-allyl-2-{[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl}-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 4.87 (d, 1H), 5.14 (m, 3H), 5.87 (m, 1H), 6.24 (s, 2H), 6.86 (dd, 1H), 7.23 (m, 3H), 7.84 (m, 1H), 8.02 (d, 1H), 8.15 (m, 1H), 8.38 (d, 1H) LC-MS: M + 1, 335, M - 1, 333	
836		6-{1-[(3-ethyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl}pyridine-2-carbonitrile	^{1}H NMR, δppm (CDCl3): 8.56(dd, 1H), 8.40(dd, 1H), 8.01(dd, 1H), 7.93(t, 1H), 7.63(dd, 1H), 7.21-7.29(m, 3H), 6.33(s, 2H), 4.44(q, 2H), 1.35(t, 3H) LC-MS: calcd: 329.37, found 330.1(M+1)	
837		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-N,N-dimethyl-1-propyl-1H-benzimidazole-6-carboxamide	^{1}H nmr (CDCl3) δ 8.17 (d, 1 H), 7.89 (dd, 1 H), 7.74 (d, 1 H), 7.49 (s, 1 H), 7.30 (d, 1 H), 7.21 (d, 1 H), 7.15 (d, 1 H), 6.89 (d, 1 H), 6.29 (s, 2 H), 4.23 (t, 2 H), 3.07 (br d, 6 H), 1.66 (q, 2 H), 0.81 (t, 3 H); LRMS m/e 407.	
838		1-propyl-2-{[2-[6-(trifluoromethyl)pyridin-2-yl]-1H-imidazol-1-yl]methyl}-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.08 (s, 1 H), 8.52 (d, 1 H), 8.44 (d, 1 H), 7.99 (dd, 1 H), 7.65 (d, 1 H), 7.29 (d, 1 H), 7.26 (d, 1 H), 7.21 (d, 1 H), 6.40 (s, 2 H), 4.19 (t, 2 H), 1.54 (q, 2 H), 0.71 (t, 3 H); LRMS m/e 387.	
839		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-(morpholin-4-ylcarbonyl)-1-propyl-1H-benzimidazole	^{1}H nmr (CDCl3) δ 8.17 (d, 1 H), 7.88 (dd, 1 H), 7.75 (d, 1 H), 7.51 (s, 1 H), 7.28 – 7.25 (m, 1 H), 7.21 (s, 1 H), 7.16 (s, 1 H), 6.89 (d, 1 H), 6.29 (s, 2 H), 4.24 (t, 2 H), 3.69 (br s, 8 H), 1.67 (q, 2 H), 0.82 (t, 3 H); LRMS m/e 449.	
840		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-6-[(4-pyridin-2-ylpiperazin-1-yl)carbonyl]-1H-benzimidazole	^{1}H nmr (CDCl3) δ 8.19 – 8.16 (m, 2 H), 7.88 (dd, 1 H), 7.77 (d, 1 H), 7.53 (s, 1 H), 7.48 (d, 1 H), 7.32 (d, 1 H), 7.26 (d, 1 H), 7.17 (d, 1 H), 6.89 (d, 1 H), 6.69 – 6.65 (m, 2 H), 6.30 (s, 2 H), 4.25 (t, 2 H), 3.59 (br s, 8 H), 1.67 (q, 2 H), 0.82 (t, 3 H);	
841		methyl 2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-6-carboxylate	^{1}H nmr (CDCl3) δ 8.18 (d, 1 H), 8.09 (s, 1 H), 7.98 – 7.87 (m, 2 H), 7.76 (d, 1 H), 7.24 (s, 1 H), 7.17 (s, 1 H), 6.88 (d, 1 H), 6.31 (s, 2 H), 4.29 (t, 2 H), 3.94 (s, 3 H), 1.69 (q, 2 H), 0.85 (t, 3 H); LRMS m/e 394.	
842		1-(2-fluoroethyl)-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	H-1 NMR (CDCl3): 4.02 (t, 1H), 4.05 (t, 1H), 4.32 (t, 1H), 4.47 (t, 1H), 5.58 (s, 2H), 7.05-7.33 (m, 5H), 7.44 (m, 2H), 8.47 (d, 1H), 9.10 (s, 1H) LC-MS: M + 1, 340	

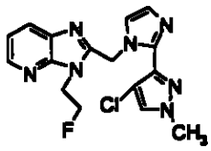
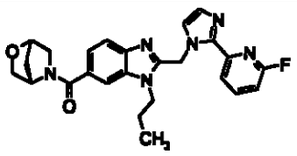
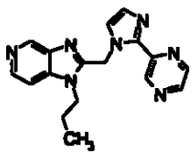
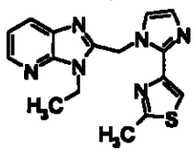
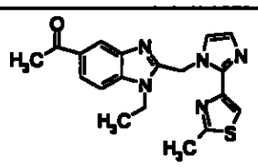
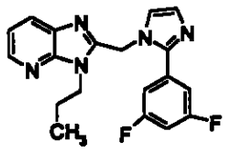
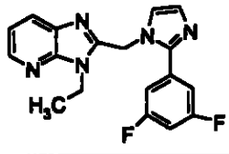
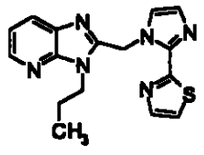
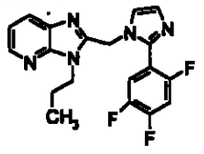
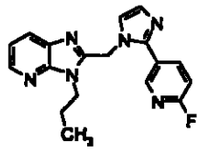
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
843		2-[[2-(4-chloro-1-methyl-1H-pyrazol-3-yl)-1H-imidazol-1-yl]methyl]-3-(2-fluoroethyl)-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 3.89 (s, 3H), 4.55 (s, 2H), 4.69 (m, 1H), 4.71 (m, 1H), 5.93 (s, 2H), 7.11 (s, 1H), 7.25 (m, 2H), 7.47 (s, 1H), 8.04 (d, 1H), 8.36 (d, 1H) LC-MS: M + 1, 360	
844		(4S)-5-[[2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazol-6-yl]carbonyl]-2-oxa-5-azabicyclo[2.2.1]heptane	^{1}H nmr (CDCl3) δ 8.18 (d,1 H), 7.89 (dd, 1 H), 7.78-7.72 (m, 1 H), 7.62 (s, 1 H), 7.42-7.33 (m 1 H), 7.22 (s, 1 H), 7.17 (s, 1 H), 6.89 (d, 1 H), 6.30 (s, 2 H), 5.06-4.51 (m 2 H), 4.25 (t, 2 H), 4.11-3.48 (m, 4 H), 1.96-1.87 (m, 2 H), 1.68 (q, 2 H),	
845		1-propyl-2-[(2-pyrazin-2-yl-1H-imidazol-1-yl)methyl]-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.58 (s, 1 H), 9.09 (d, 1 H), 8.61 – 8.42 (m, 3 H), 7.32 – 7.24 (m, 3 H), 6.33 (s, 2 H), 4.16 (t, 2H), 1.63 (q, 2 H), 0.81 (t, 3 H); LRMS m/e 320.	
846		3-ethyl-2-[[2-(2-methyl-1,3-thiazol-4-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.40(dd, 1H), 8.05(dd, 1H), 7.88(s, 1H), 7.25(m, 1H), 7.11(d, 1H), 7.07(d, 1H), 6.29(s, 2H), 4.35(q, 2H), 2.78(s, 3H), 1.18(t, 3H) LC-MS: calcd: 324.41, found 325.2(M+1)	
847		1-(1-ethyl-2-[[2-(2-methyl-1,3-thiazol-4-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-yl)ethanone	^{1}H NMR, δppm (CDCl3): 8.41(d, 1H), 8.01(dd, 1H), 7.89(s, 1H), 7.38 (d, 1H), 7.10(d, 1H), 7.05(d, 1H), 6.30(s, 2H), 4.27(q, 2H), 2.79(s, 3H), 2.69(s, 3H), 1.12(t, 3H) LC-MS: calcd: 365.46, found 366.2(M+1)	
848		2-[[2-(3,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.41(dd, 1H), 8.06(dd, 1H), 7.19-7.29(m, 4H), 7.08(d, 1H), 6.93(m, 1H), 5.52(s, 2H), 3.96(t, 2H), 1.57(m, 3H), 0.82(t, 3H) LC-MS: calcd: 353.38, found 354.3(M+1)	
849		2-[[2-(3,5-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.41(dd, 1H), 8.06(dd, 1H), 7.19-7.31(m, 4H), 7.07(d, 1H), 6.93(m, 1H), 5.52(s, 2H), 4.05(q, 2H), 1.14(t, 3H). LC-MS: calcd: 339.36, found 340.3(M+1)	
850		3-propyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.40(dd, 1H), 8.05(dd, 1H), 7.86(d, 1H), 7.40(d, 1H), 7.25(d, 1H), 7.22(d, 1H), 7.15(d, 1H), 6.37(s, 2H), 4.27(t, 2H), 1.62(m, 2H), 0.78(t, 3H). LC-MS: calcd: 324.41, found 325.3(M+1)	
851		3-propyl-2-[[2-(2,4,5-trifluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.41(dd, 1H), 8.03(dd, 1H), 7.50(m, 1H), 7.22-7.29(m, 2H), 7.07-7.15(m, 2H), 5.37(s, 2H), 3.93(t, 2H), 1.53(m, 2H), 0.82(t, 3H). LC-MS: calcd: 371.37, found 372.2(M+1)	
852		2-[[2-(6-fluoropyridin-3-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 8.53-8.51(1H, m), 8.40(1H, dd), 8.16-8.14(1H, m), 8.03(1H, dd), 7.28-7.23(2H, m), 7.11(1H, d), 7.05(1h, dd), 5.46(2H, s), 4.00(2H, t), 1.65-1.59(2H, m), 0.84(3H, t), LRMS calcd. 336.4, found 337.1(MH+).	

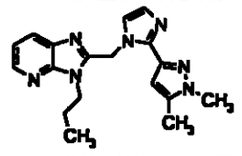
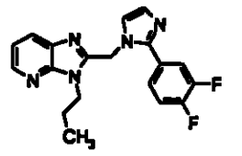
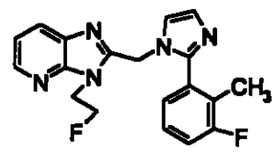
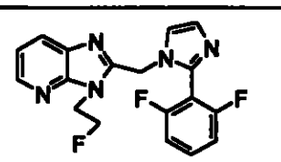
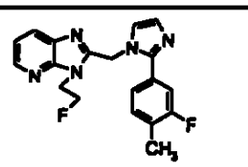
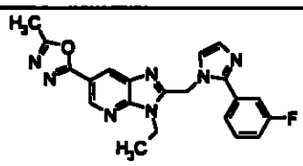
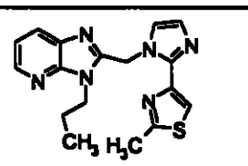
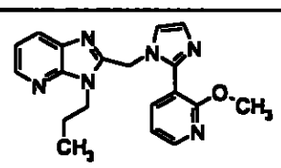
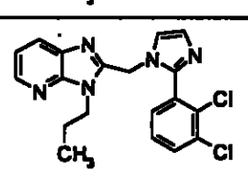
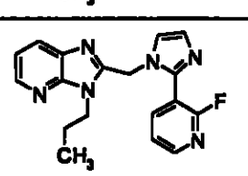
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
853		2-[[2-(1,5-dimethyl-1H-pyrazol-3-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 8.37(1H, dd), 8.04(1H, dd), 7.22(1H, dd), 7.06(1H, d), 7.02(1H, d), 6.66(1H, s), 6.20(1H, s), 4.19(2H, t), 3.83(3H, s), 2.33(3H, s), 1.60-1.53(2H, m), 0.76(3H, t), LRMS calcd. 335.4, found 336.2(MH+).	
854		2-[[2-(3,4-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 8.38(1H, dd), 8.04(1H, dd), 7.56-7.50(1H, m), 7.41-7.36(1H, m), 7.30-7.21(2H, m), 7.15(1H, d), 7.04(1H, d), 5.4592H, s), 3.92(2H, t), 1.60-1.50(2H, m), 0.80(3H, t), LRMS calcd. 353.4, found 354.3(MH+).	
855		3-(2-fluoroethyl)-2-[[2-(3-fluoro-2-methylphenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): 2.13 (s, 3H), 4.14 (m, 1H), 4.24 (m, 1H), 4.48 (m, 1H), 4.64 (m, 1H), 5.29 (s, 2H), 7.09 7.26 (m, 6H), 8.02 (d, 1H), 8.35 (d, 1H) LC-MS: M + 1, 354	
856		2-[[2-(2,6-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-(2-fluoroethyl)-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 4.14 (t, 1H), 4.24 (t, 1H), 4.46 (t, 1H), 4.64 (t, 1H), 5.40 (s, 2H), 6.98 (m, 2H), 7.11 (s, 1H), 7.26 7.40 (m, 3H), 8.01 (d, 1H), 8.34 (d, 1H) LC-MS: M + 1, 358	
857		3-(2-fluoroethyl)-2-[[2-(3-fluoro-4-methylphenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 2.35 (s, 3H), 4.26 (t, 1H), 4.35 (t, 1H), 4.51 (t, 1H), 4.67 (t, 1H), 5.53 (s, 2H), 7.07 (s, 1H), 7.18 (s, 1H), 7.26-7.34 (m, 4H), 8.07 (d, 1H), 8.36 (d, 1H) LC-MS: M + 1, 354	
858		3-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-6-(5-methyl-1,3,4-oxadiazol-2-yl)-3H-imidazo[4,5-b]pyridine	dihydrochloride 1H nmr (d6 DMSO): 9.96(1H, d), 8.50(1H, d), 7.98-7.91(2H, m), 7.72-7.50(4H, m), 6.01(2H, s), 4.35(2H, q), 2.58(3H, s), 1.35(3H, t), LRMS calcd. 403.4, found 404.3(MH+).	
859		2-[[2-(2-methyl-1,3-thiazol-4-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.40(dd, 1H), 8.05(dd, 1H), 7.91(s, 1H), 7.24(m, 1H), 7.11(d, 1H), 7.07(d, 1H), 6.30(s, 2H), 4.22(t, 2H), 2.78(s, 3H), 1.62(m, 2H), 0.79(t, 3H) LC-MS: calcd: 338.44, found 339.2(M+1)	
860		2-[[2-(2-methoxypyridin-3-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.38(dd, 1H), 8.30(dd, 1H), 8.03(dd, 1H), 7.87(dd, 1H), 7.19-7.27(m, 2H), 7.01-7.05(m, 2H), 5.33(s, 2H), 3.97(s, 3H), 3.86(t, 2H), 1.47(m, 2H), 0.77(t, 3H). LC-MS: calcd: 348.41, found 349.3(M+1)	
861		2-[[2-(2,3-dichlorophenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.38(dd, 1H), 8.02(dd, 1H), 7.59(dd, 1H), 7.39(dd, 1H), 7.21-7.29(m, 3H), 7.10(d, 1H), 5.29(s, 2H), 3.90 (t, 2H), 1.53 (m, 2H), 0.79(t, 3H). LC-MS: calcd: 386.29, found 386.3	
862		2-[[2-(2-fluoropyridin-3-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.35(m, 1H), 8.12(m, 1H), 8.02(dd, 1H), 7.35(m, 1H), 7.22-7.29(m, 2H), 7.10(d, 1H), 5.43(s, 2H), 3.95 (t, 2H), 1.54 (m, 2H), 0.80(t, 3H). LC-MS: calcd: 336.37, found 337.2	

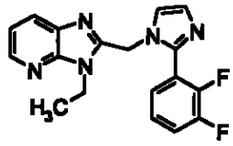
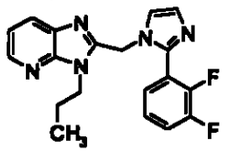
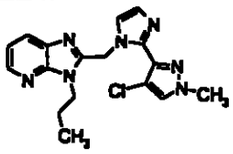
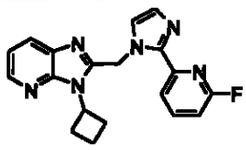
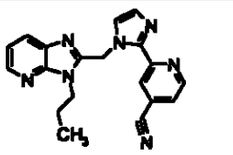
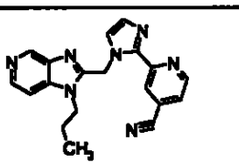
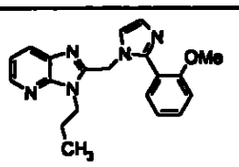
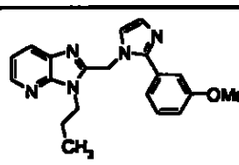
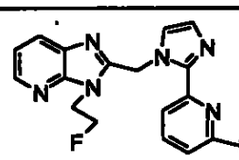
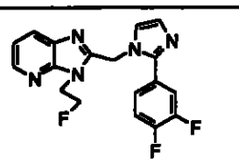
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
863		2-[[2-(2,3-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.40(dd, 1H), 8.04(dd, 1H), 7.22-7.43(m, 5H), 7.08(d, 1H), 5.40(s, 2H), 3.99 (q, 2H), 1.05(t, 3H). LC-MS: calcd: 339.35 found 340.1	
864		2-[[2-(2,3-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.03(dd, 1H), 7.22-7.42(m, 5H), 7.09(d, 1H), 5.39(s, 2H), 3.86(t, 2H), 1.50(m, 2H), 0.78(t, 3H) LC-MS: calcd: 353.38 found 354.2	
865		2-[[2-(4-chloro-1-methyl-1H-pyrazol-3-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 8.38(1H, dd), 8.04(1H, dd), 7.52(1H, s), 7.26-7.21(2H, m), 7.05(1H, d), 5.98(2H, s), 4.15(2H, t), 3.94(3H, s), 1.62-1.52(2H, m), 0.80(3H, t), LRMS calcd. 355.8, found 356.2(MH+).	
866		3-cyclobutyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	dihydrochloride 1H nmr (d6 DMSO): 8.39(1H, dd), 8.33(1H, dd), 8.25(1H, q), 8.03(1H, d), 7.95(1H, d), 7.87(1H, dd), 7.33(1H, dd), 7.21(1H, dd), 6.34(2H, s), 5.18(1H, m), 3.28-1.20(2H, m), 2.58-2.42(2H, m), 2.00-1.86(2H, m)	LRMS calcd. 348.4, found 349.3(MH+)
867		2-(1-[(3-propyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl)isonicotinonitrile	dihydrochloride 1H nmr (d6 DMSO): 8.78(1H, s), 8.72(1H, d), 8.32(1H, dd), 7.99(1H, d), 7.93-7.86(3H, m), 7.21(1H, dd), 6.34(2H, s), 4.37(2H, t), 1.91-1.82(2H, m), 0.93(3H, t)	LRMS calcd. 343.4, found 344.2(MH+)
868		2-(1-[(1-propyl-1H-imidazo[4,5-c]pyridin-2-yl)methyl]-1H-imidazol-2-yl)isonicotinonitrile	^{1}H nmr (CDCl3) δ 9.07 (s, 1 H), 8.68 (d, 1 H), 8.60 (s, 1 H), 8.44 (d, 1 H), 7.45 (d, 1 H), 7.29 (d, 1 H), 7.26 (d, 1 H), 7.22 (d, 1 H), 6.37 (s, 2 H), 4.16 (t, 2 H), 1.63 (q, 2 H), 0.81 (t, 3 H)	LRMS m/e 344
869		2-[[2-(2-methoxyphenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	dihydrochloride 1H nmr (d6 DMSO): 8.33(1H, dd), 8.02-7.99(2H, m), 7.93(1H, d), 7.65-7.59(1H, m), 7.51-7.48(1H, m), 7.29-7.21(2H, m), 7.11-7.06(1H, m), 5.75(2H, s), 4.12(2H, t), 3.64(3H, s), 1.69-1.61(2H, m), 0.74(3H, t).	LRMS calcd. 347.4, found348.3(MH+)
870		2-[[2-(3-methoxyphenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	dihydrochloride 1H nmr (d6 DMSO): 8.35(1H, dd), 8.04-7.98(2H, m), 7.93(1H, d), 7.48(1H, t), 7.35-7.19(4H, m), 5.95(2H, s), 4.22(2H, t), 3.69(3H, s), 1.79-1.68(2H, m), 0.81(3H, t)	LRMS calcd. 347.4, found 348.39MH+
871		6-(1-[[3-(2-fluoroethyl)-3H-imidazo[4,5-b]pyridin-2-yl]methyl]-1H-imidazol-2-yl)pyridine-2-carbonitrile	H-1 NMR (CDCl3): line list provided 4.74 (m, 1H), 4.84-4.95 (m, 3H), 6.16 (s, 2H), 7.19-7.28 (m, 2H), 7.39 (s, 1H), 7.54 (d, 1H), 7.83 (t, 1H), 7.89 (d, 1H), 8.34 (m, 1H), 8.53 (d, 1H)	LC-MS: M + 1, 348
872		2-[[2-(3,4-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-(2-fluoroethyl)-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 4.33 (t, 1H), 4.42 (t, 1H), 4.56 (t, 1H), 4.73 (t, 1H), 5.51 (s, 2H), 7.07 (s, 1H), 7.18-7.26 (m, 2H), 7.39 (m, 1H), 7.55 (m, 1H), 8.07 (d, 1H), 8.37 (s, 1H)	LC-MS: M + 1, 358

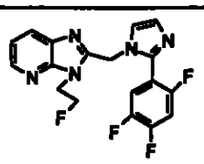
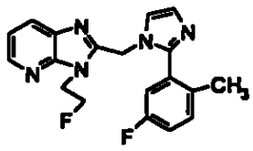
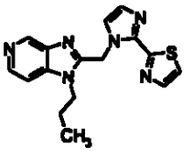
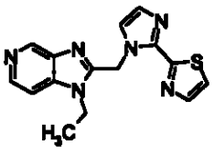
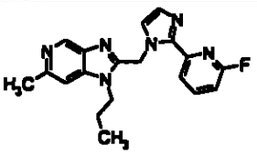
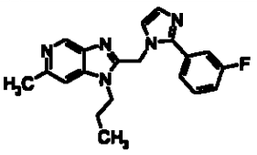
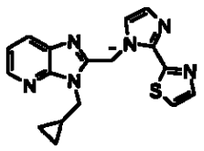
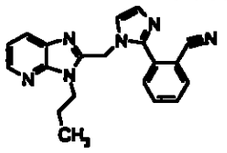
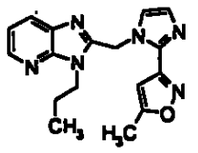
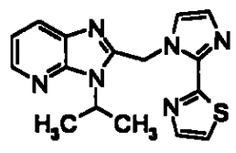
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
873		3-(2-fluoroethyl)-2-[[2-(2,4,5-trifluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 4.23 (t, 1H), 4.31 (t, 1H), 4.50 (t, 1H), 4.66 (t, 1H), 5.40 (s, 2H), 7.01-7.09 (m, 2H), 7.20-7.26 (m, 2H), 7.43 (m, 1H), 7.99 (d, 1H), 8.32 (d, 1H)	LC-MS: M + 1, 378
874		3-(2-fluoroethyl)-2-[[2-(5-fluoro-2-methylphenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 2.16 (s, 3H), 4.19 (t, 1H), 4.26 (t, 1H), 4.49 (t, 1H), 4.57 (t, 1H), 5.28 (s, 2H), 7.02-7.07 (2H), 7.14 (s, 1H), 7.21-7.26 (m, 3H), 8.02 (d, 1H), 8.35 (d, 1H)	LC-MS: 354
875		1-propyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.07 (s, 1 H), 8.41 (d, 1 H), 7.82 (d, 1 H), 7.38 (d, 1 H), 7.25 (d, 1 H), 7.19 (s, 1 H), 7.12 (s, 1 H), 6.35 (s, 2 H), 4.14 (t, 2 H), 1.53 (q, 2 H), 0.74 (t, 3 H)	LRMS m/e 325
876		1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.08 (s, 1 H), 8.43 (d, 1 H), 7.85 (d, 1 H), 7.38 (d, 1 H), 7.38 – 7.26 (m, 1 H), 7.17 (s, 1 H), 7.14 (s, 1 H), 6.35 (s, 2 H), 4.25 (q, 2 H), 1.11 (t, 3 H)	LRMS m/e 311
877		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-8-methyl-1-propyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 8.93 (s, 1 H), 8.16 (d, 1 H), 7.87 (dd, 1 H), 7.20 (d, 1 H), 7.16 (d, 1 H), 7.10 (d, 1 H), 6.87 (d, 1 H), 6.26 (s, 2 H), 4.19 (t, 2 H), 2.65 (s, 3 H), 1.65 (q, 2 H), 0.83 (t, 3 H)	LRMS m/e 351
878		2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-8-methyl-1-propyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 8.95 (s, 1 H), 7.49 – 7.36 (m, 3 H), 7.19 – 7.15 (m, 2 H), 7.04 (m, 2 H), 5.48 (s, 2 H), 3.64 (t, 2 H), 2.64 (s, 3 H), 1.40 (q, 2 H), 0.73 (t, 3 H)	
879		3-(cyclopropylmethyl)-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	dihydrochloride 1H nmr (d6 DMSO): 8.35(1H, dd), 7.95(1H, dd), 7.90-7.87(2H, m), 7.81(1H, s), 7.52(1H, s), 7.27(1H, dd), 6.35(2H, s), 4.31(2H, d0, 1.42-1.38(1H, m), 0.55-0.52(4H, m)	LRMS calcd. 338.4, found 335.1(M-)
880		2-{1-[(3-propyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl}benzonitrile	dihydrochloride 1H nmr (d6 DMSO): 8.31(1H, d), 8.15(1H, s), 8.05-8.03(2H, m), 7.94-7.92(2H, m), 7.85-7.77(2H, m), 7.27-7.24(1H, m), 5.97(1H, s), 4.14(2H, t), 1.72-1.64(2H, m), 0.75(3H, t)	LRMS calcd. 342.4, found 343.3(MH+)
881		2-[[2-(5-methylisoxazol-3-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.04(dd, 1H), 7.19-7.27(m, 3H), 6.65(d, 1H), 6.10(s, 2H), 4.26(t, 2H), 1.63(m, 2H), 0.83(t, 3H)	LC-MS: calcd: 322.37 found 323.2
882		3-isopropyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.37(dd, 1H), .8.02(dd, 1H) 7.84 (d, 1H), 7.39(d, 1H), 7.11-7.23(m, 3H), 6.32(s, 2H), 4.92(m, 1H), 1.56(d, 6H)	LC-MS: calcd: 324.41 found 325.4

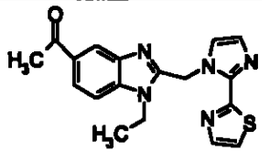
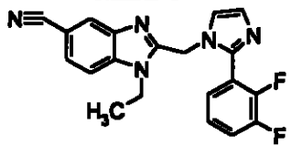
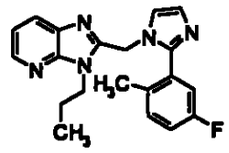
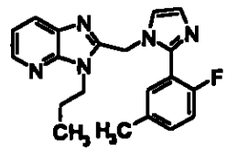
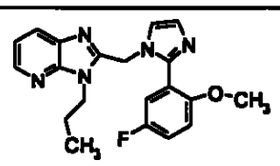
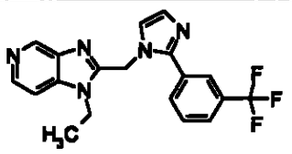
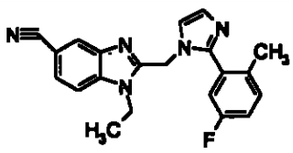
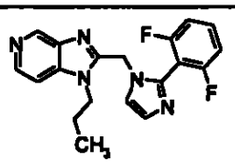
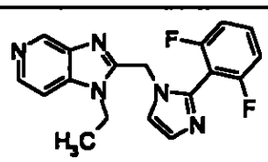
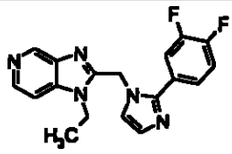
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
883		1-(1-ethyl-2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-1H-benzimidazol-5-yl)ethanone	^{1}H NMR, δppm (CDCl3): 8.39(d, 1H), .8.00(dd, 1H) 7.84 (d, 1H), 7.39(d, 1H), 7.37(d, 1H), 7.18(d, 1H), 7.13(d, 1H), 6.35(s, 2H), 4.27(q, 2H), 2.67(s, 3H), 1.12(t, 3H)	LC-MS: calcd: 351.43 found 352.2
884		2-[[2-(2,3-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile	^{1}H NMR, δppm (CDCl3): 8.09(dd, 1H) 7.55 (dd, 1H), 7.19-7.40(m, 5H), 7.04(d, 1H), 5.40(s, 2H), 3.86(q, 2H), 1.02(t, 3H)	
885		2-[[2-(5-fluoro-2-methylphenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.03(dd, 1H), 7.20-7.31(m, 3H), 7.07-7.13(m, 3H), 5.24(s, 2H), 3.88(t, 2H), 2.22(s, 3H), 1.54(m, 2H), 0.78(t, 3H)	LC-MS: calcd: 349.41 found 350.3
886		2-[[2-(2-fluoro-5-methylphenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.38(dd, 1H), 8.04(dd, 1H), 7.44(dd, 1H), 7.22-7.30(m, 2H), 7.19(d, 1H), 7.12(dd, 1H), 7.05(d, 1H), 5.37(s, 2H), 3.84(t, 2H), 2.36 (s, 3H), 1.46(m, 2H), 0.76(t, 3H)	LC-MS: calcd: 349.41 found 350.3
887		2-[[2-(5-fluoro-2-methoxyphenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.03(dd, 1H), 7.15-7.32(m 4H), 7.03(d, 1H), 6.96(dd, 1H), 5.30(s, 2H), 3.84(t, 2H), 3.79(s, 3H), 1.46(m, 2H), 0.76(t, 3H)	LC-MS: calcd: 365.41 found 366.2
888		1-ethyl-2-([2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl]methyl)-1H-imidazo[4,5-c]pyridine	dihydrochloride 1H nmr (d6 DMSO): 10.02(1H, s), 8.70(1H, d), 8.37(1H, d), 8.08(1H, s), 7.97-7.94(3H, m), 7.82(1H, s), 7.75(1H, t), 6.09(2H, s), 4.45(2H, q), 1.32(3H, t).	
889		1-ethyl-2-[[2-(5-fluoro-2-methylphenyl)-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile	hydrochloride 1H nmr (d6 DMSO): 8.10(1H, s), 8.07(1H, d), 7.95(1H, d), 7.78(1H, d), 7.64(1H, dd), 7.52(1H, dd), 7.38-7.35(2H, m), 5.82(2H, s), 4.23(2H, q), 2.17(3H, s), 1.18(3H, t).	
890		2-[[2-(2,6-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.05 (s. 1H), 8.43 (d, 1 H), 7.5 – 7.4 (m, 1 H), 7.27-7.23 (m, 2 H), 7.07 – 7.01 (m, 3 H), 5.34 (s, 2 H), 3.75 (t. 2H), 1.47 (q, 2 H), 0.77 (t, 3 H)	LRMS m/e 354
891		2-[[2-(2,6-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.05 (s, 1 H), 8.43 (d, 1 H), 7.52 – 7.42 (m, 1 H), 7.27 – 7.23 (m, 2 H), 7.08 – 7.01 (m, 3 H), 5.35 (s, 2 H), 3.85 (q, 2 H), 1.02 (t, 3 H)	;LRMS m/e 340
892		2-[[2-(3,4-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.10 (s, 1 H), 8.46 (d, 1 H), 7.56 – 7.51 (m, 1 H), 7.42 – 7.30 (m, 1 H), 7.31 – 7.26 (m, 2 H), 7.16 (d, 1 H), 7.03 (d, 1 H), 5.48 (s, 2 H), 3.83 (q, 2 H), 1.05 (t, 3 H)	LRMS m/e 340

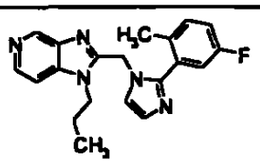
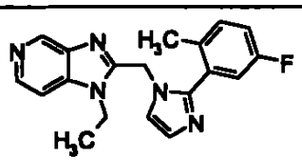
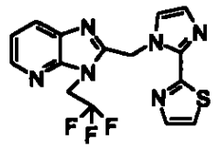
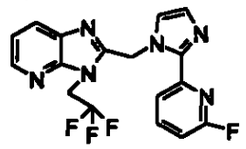
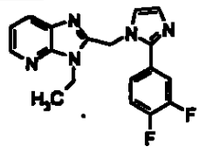
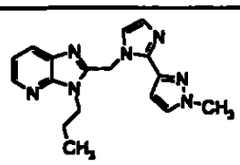
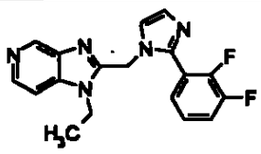
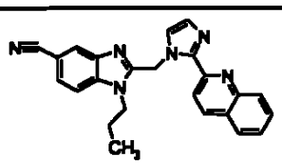
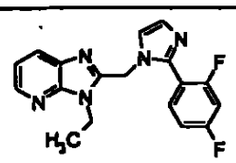
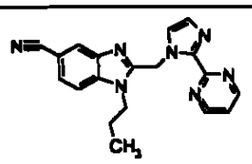
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
893		2-[[2-(5-fluoro-2-methylphenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.07 (s, 1 H), 8.43 (d, 1 H), 7.31 – 7.23 (m, 3 H), 7.12 – 7.04 (m, 3 H), 5.24 (s, 2 H), 3.73 (t, 2 H), 2.21 (s, 3 H), 1.49 (q, 2 H), 0.75 (t, 3 H)	LRMS m/e 350.
894		1-ethyl-2-[[2-(5-fluoro-2-methylphenyl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 9.08 (s, 1 H), 8.44 (d, 1 H), 7.31 – 7.24 (m, 3 H), 7.12 – 7.04 (m, 3 H), 5.25 (s, 1 H), 3.83 (q, 2 H), 2.22 (s, 3 H), 1.06 (t, 3 H)	LRMS m/e 336.
895		2-[[2-(1,3-thiazol-2-yl)-1H-imidazol-1-yl]methyl]-3-(2,2,2-trifluoroethyl)-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 5.32 (q, 2H), 6.19 (s, 2H), 7.19 (s, 1H), 7.26 (m, 2H), 7.43 (s, 1H), 7.79 (d, 1H), 8.04 (d, 1H), 8.41 (m, 1H)	LC-MS: M + 1, 365
896		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-3-(2,2,2-trifluoroethyl)-3H-imidazo[4,5-b]pyridine	HCl salt H-1 NMR (CD3OD): 5.42 (q, 2H), 6.40 (s, 2H), 7.24 (d, 1H), 7.37 (m, 1H), 7.90 (m, 2H), 8.03 (m, 2H), 8.22 (m, 1H), 8.43 (m, 1H)	LC-MS: M + 1, 377
897		2-[[2-(3,4-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.39(dd, 1H), 8.04(dd, 1H), 7.54(m 1H), 7.40(m, 1H), 7.26-7.32(m, 2H), 7.16(d, 1H), 7.04(d, 1H), 5.47(s, 2H), 4.02(q, 2H), 1.09(t, 3H)	LC-MS: calcd: 339.35 found 340.2
898		2-[[2-(1-methyl-1H-pyrazol-3-yl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	1H nmr (CDCl3): 8.38(1H, dd), 8.05(1H, dd), 7.42(1H, d), 7.23(1H, dd), 7.09(1H, d), 7.04(1H, d), 6.91(1H, d), 6.21(2H, s), 4.19(2H, t), 3.97(3H, s), 1.61-1.50(2H, m), 0.76(3H, t)	LRMS calcd. 321.4, found 322.3(MH+).
899		2-[[2-(2,3-difluorophenyl)-1H-imidazol-1-yl]methyl]-1-ethyl-1H-imidazo[4,5-c]pyridine	dihydrochloride 1H nmr (d6 DMSO): 9.44(1H, s), 8.70(1H, d), 8.37(1H, d), 8.04(1H, s), 7.89(1H, s), 7.73(1H, q), 7.49(1H, d), 7.37(1H, t), 6.05(2H, s), 4.44(2H, q), 1.30(3H, t)	LRMS calcd. 339.3, found 340.2.
900		1-propyl-2-[(2-quinolin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazole-5-carbonitrile	dihydrochloride 1H nmr (d6 DMSO): 8.60(1H, d), 8.3591H, d), 8.02-7.99(2H, m), 7.88-7.85(2H, m), 7.79-7.60(5H, m), 6.54(2H, s), 4.47(2H, t), 1.85-1.77(2H, m), 0.89(3H, t)	LRMS calcd. 392.5, found 393.4(MH+).
901		2-[[2-(2,4-difluorophenyl)-1H-imidazol-1-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	dihydrochloride 1H nmr (d6 DMSO): 8.35-8.33(1H, m), 8.07-8.06(1H, m), 7.99-7.96(2H, m), 7.86-7.80(1H, m), 7.63-7.57(1H, m), 7.35-7.32(1H, m), 7.28-7.25(1H, m), 5.89(2H, s), 4.27(2H, q), 1.28(3H, t)	LRMS calcd. 339.3, found 340.2(MH+).
902		1-Propyl-2-(2-pyrimidin-2-yl-imidazol-1-ylmethyl)-1H-benzoimidazole-5-carbonitrile	dihydrochloride 1H nmr (d6 DMSO): 8.92(2H, d), 8.18(1H, d), 8.00-7.99(2H, m), 7.88(1H, dd), 7.65-7.62(2H, m), 6.46(2H, s), 4.42(2H, t), 1.93-1.84(2H, m), 0.97(3H, t)	LRMS calcd. 343.4, found 344.2(MH+).

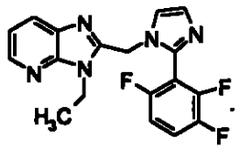
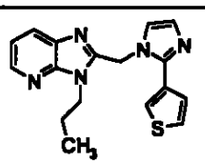
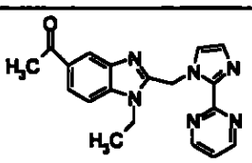
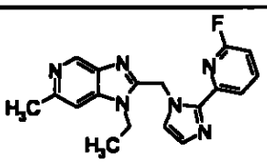
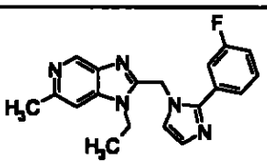
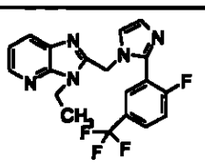
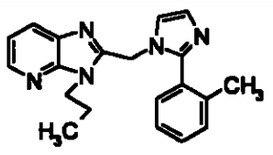
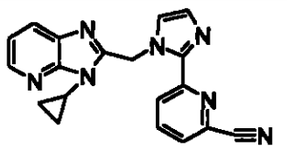
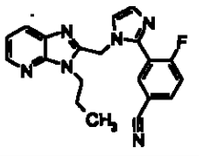
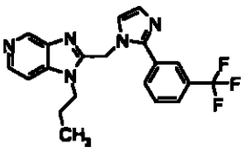
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
903		3-ethyl-2-[[2-(2,3,6-trifluorophenyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.40(dd, 1H), 8.02(dd, 1H), 7.24-7.32(m, 3H), 7.11(d, 1H), 7.00(m, 1H), 5.36(s, 2H), 4.02(q, 2H), 1.09(t, 3H)	LC-MS: calcd: 357.34 found 358.2
904		3-propyl-2-[(2-thien-3-yl-1H-imidazol-1-yl)methyl]-3H-imidazo[4,5-b]pyridine	^{1}H NMR, δppm (CDCl3): 8.40(dd, 1H), 8.05(dd, 1H), 7.66(dd, 1H), 7.43-7.49(m, 2H), 7.25(dd, 1H), 7.14(d, 1H), 7.02(d, 1H), 5.55(s, 2H), 3.91(t, 2H), 1.51(m, 2H), 0.79(t, 3H)	LC-MS: calcd: 323.42 found 324.3
905		1-{1-ethyl-2-[(2-pyrimidin-2-yl-1H-imidazol-1-yl)methyl]-1H-benzimidazol-5-yl}ethanone	^{1}H NMR, δppm (CDCl3): 8.87(d, 2H), .8.41(dd, 1H), 8.02(dd, 1H), 7.40(dd, 1H), 7.26-7.31(m, 2H), 7.16(d, 1H), 6.40(s, 2H), 4.27(q, 2H), 2.69(s, 3H), 1.17(t, 3H)	
906		1-ethyl-2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-6-methyl-1H-imidazo[4,5-c]pyridine	^{1}H nmr (CDCl3) δ 8.93 (s, 1 H), 8.16 (d, 1 H), 7.87 (dd, 1 H), 7.18 (d, 1 H), 7.12 (s, 1 H), 6.87 (d, 1 H), 6.26 (s, 2 H), 4.30 (q, 2 H), 2.65 (s, 3 H), 1.22 (t, 3 H)	LRMS m/e 337
907		1-ethyl-2-[[2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-6-methyl-1H-imidazo[4,5-c]pyridine	dihydrochloride ^{1}H nmr (DMSO-d6) δ 9.28 (s, 1 H), 8.24 (s, 1 H), 8.23 (d, 1 H), 7.94 (d, 1 H), 7.69 – 7.48 (m, 4 H), 6.12 (s, 2 H), 4.39 (q, 2 H), 2.77 (s, 3 H), 1.35 (t, 3 H):	LRMS m/e 336
908		3-ethyl-2-({2-[2-fluoro-5-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 1.08 (t, 3H), 3.99 (q, 2H), 5.38 (s, 2H), 7.10 (s, 1H), 7.22-7.39 (m, 2H), 7.75 (m, 1H), 7.93 (m, 1H), 8.02 (d, 1H), 8.38 (d, 1H)	LC-MS: M + 1, 390
909		2-[[2-(2-methylphenyl)-1H-imidazol-1-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): line list provided 0.73 (t, 3H), 1.49 (m, 2H), 2.24 (s, 3H), 3.81 (m, 2H), 5.22 (s, 2H), 7.10 (s, 1H), 7.18-7.36 (m, 6H), 8.02 (d, 1H), 8.37 (d, 1H)	LC-MS: M + 1, 332
910		6-{1-[(3-cyclopropyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl}pyridine-2-carbonitrile	H-1 NMR (CDCl3): line list provided 1.28 (m, 4H), 3.37 (m, 1H), 3.48 (s, 2H), 6.36 (s, 2H), 7.15-7.28 (m, 3H), 7.56 (d, 1H), 7.86 (m, 2H), 8.38 (m, 1H), 8.54 (d, 1H)	LC-MS: M + 1, 342, M –1, 340
911		4-fluoro-3-{1-[(3-propyl-3H-imidazo[4,5-b]pyridin-2-yl)methyl]-1H-imidazol-2-yl}benzonitrile	$CDCl_3$: 8.38 (dd, J = 1.48, 4.81 Hz, 1H), 7.98 (dt, J = 1.48, 7.35 Hz, 2H), 7.72-7.78 (m, 1H), 7.35 (t, J = 9.07 Hz, 1H), 7.22-7.26 (m, 2H),7.11 (d, J = 1.1 Hz, 1H), 5.37 (s, 2H), 3.93 (t, J = 7.69 Hz, 2H), 1.54 (dq, J = 7.42, 7.69 Hz, 2H),	LCMS: MH+ 361.2.
912		1-propyl-2-({2-[3-(trifluoromethyl)phenyl]-1H-imidazol-1-yl}methyl)-1H-imidazo[4,5-c]pyridine	1H nmr (CDCl3): 9.09(1H, s), 8.43(1H, d), 7.93(1H, s), 7.84(1H, d), 7.72(1H, d), 7.62(1H, t), 7.25(1H,), 7.19(1H, d), 7.09(1H, d), 5.50(2H, s), 3.63(2H, t), 1.49-1.39(2H, m), 0.75(3H, t).	

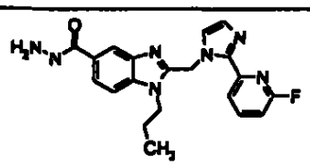
	TABLE 6			
Cpd#	STRUCTURE	IUPAC NAME	NMR	MS
913		2-[[2-(6-fluoropyridin-2-yl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole-5-carbohydrazide	CD_3OD: 8.10-8.29 (m, 6H), 8.03 (S, 1H), 7.29 (d, 1H), 6.4 (s, 2H), 4.59-4.65 (m, 2H), 2.0-2.12 (m, 2H), 1.06-1.07 (m, 3H).	LCMS: MH+ 384.3.

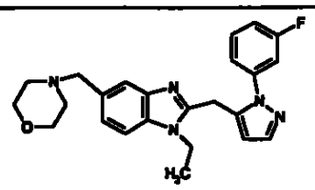
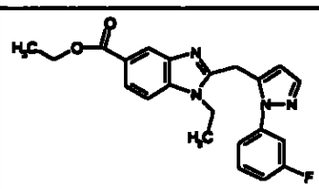
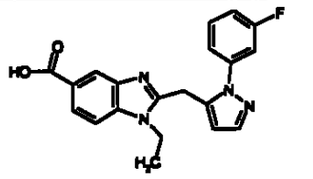
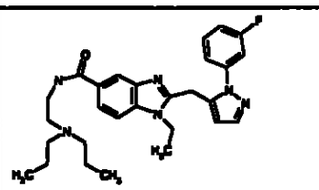
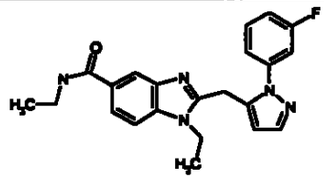
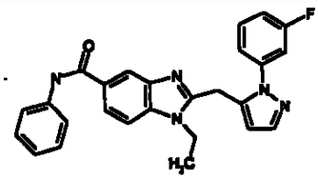
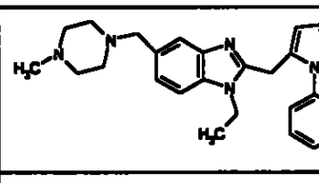
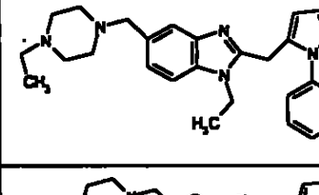
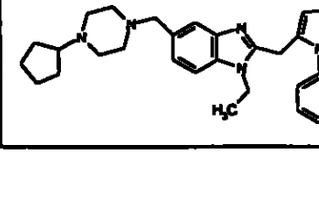
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
914		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-(morpholin-4-ylmethyl)-1H-benzimidazole		MH+ 420.3
915		ethyl 1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole-5-carboxylate		MH+ 393.3
916		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole-5-carboxylic acid		MH+ 365.2
917		N-[2-(dipropylamino)ethyl]-1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole-5-carboxamide		MH+ 491.4
918		N,1-diethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole-5-carboxamide		MH+ 392.3
919		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-N-phenyl-1H-benzimidazole-5-carboxamide		MH+ 392.3
920		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-[(4-methylpiperazin-1-yl)methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.65 (d, 1H), 7.61 (d, 1H), 7.45 (m, 1H), 7.22-7.31 (m, 4H), 7.11 (m, 1H), 6.16 (d, 1H), 4.31 (s, 2H), 3.96 (q, 2H), 3.62 (s, 2H), 2.40-2.60 (m, 8H), 2.25 (s, 3H), 1.22 (t, 3H)	
921		1-ethyl-5-[(4-ethylpiperazin-1-yl)methyl]-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.65 (d, 1H), 7.62 (d, 1H), 7.45 (m, 1H), 7.23-7.30 (m, 4H), 7.13 (m, 1H), 6.16 (d, 1H), 4.31 (s, 2H), 3.96 (q, 2H), 3.62 (s, 2H), 2.40-2.60 (m, 10H), 1.21 (t, 3H), 1.078 (t, 3H)	
922		5-[(4-cyclopentylpiperazin-1-yl)methyl]-1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.65 (d, 1H), 7.61 (d, 1H), 7.45 (m, 1H), 7.22-7.31 (m, 4H), 7.13 (m, 1H), 6.15 (d, 1H), 4.31 (s, 2H), 3.96 (q, 2H), 3.63 (s, 2H), 2.40-2.60 (m, 9H), 1.31-1.90 (m, 8H), 1.21 (t, 3H)	

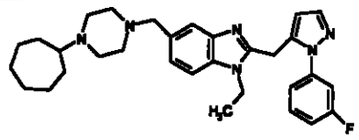
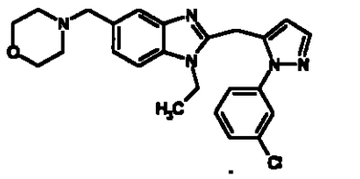
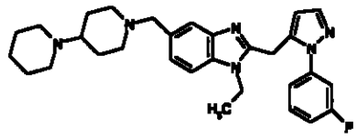
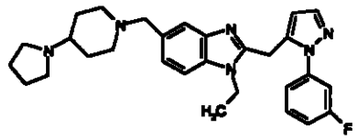
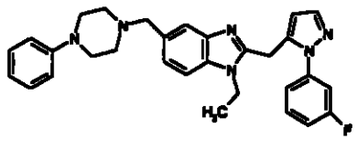
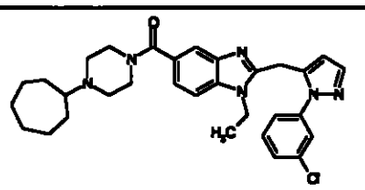
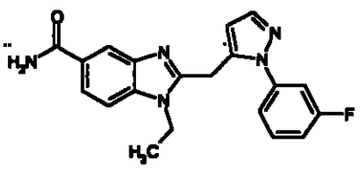
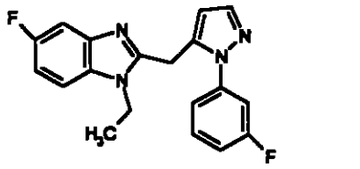
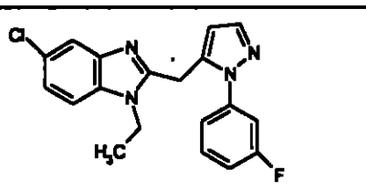
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
923		5-[(4-cycloheptylpiperazin-1-yl)methyl]-1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole		MH+ 515.5.
924		2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-(morpholin-4-ylmethyl)-1H-benzimidazole		MH+ 436.3, MH- 434.3
925		1'-[(1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazol-5-yl)methyl]-1,4'-bipiperidine	1H NMR (CDCl3): 7.65 (d, 1H), 7.61 (d, 1H), 7.44 (m, 1H), 7.2307.31 (m, 4H), 7.13 (m, 1H), 6.16 (d, 1H), 4.31 (s, 2H), 3.96 (q, 2H), 3.61 (s, 2H), 2.96 (m, 2H), 2.50 (m, 4H), 1.40-2.31 (m, 12H), 1.22 (t	
926		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-[(4-pyrrolidin-1-ylpiperidin-1-yl)methyl]-1H-benzimidazole		
927		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-[(4-phenylpiperazin-1-yl)methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.69 (d, 1H), 7.62 (s, 1H), 7.45 (m, 1H), 7.21-7.33 (m, 6H), 7.13 (m, 1H), 6.82-6.94 (m, 3H), 6.16 (d, 1H), 4.33 (s, 2H), 3.97 (q, 2H), 3.69 (s, 2H), 3.15-3.23 (m, 4H), 2.59-2.67 (m, 4H)	
928		2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-5-[(4-cycloheptylpiperazin-1-yl)carbonyl]-1-ethyl-1H-benzimidazole		MH+ 545.4, MH- 543.4
929		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole-5-carboxamide		
930		1-ethyl-5-fluoro-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole	(L)-Tartrate salt 1H NMR (CD3OD): 7.67 (s, 1H), 7.05-7.46 (m, 7H), 6.31 (s, 1H), 4.53 (s, 2H), 4.47 (s, 2H), 4.14 (q, 2H), 1.21 (t, 3H)	
931		5-chloro-1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole	(L)-Tartrate salt 1H NMR (d6-DMSO): 7.85 (s, 1H), 7.21-7.58 (m, 7H), 6.26 (s, 1H), 4.48 (s, 2H), 4.30 (s, 2H), 4.16 (q, 2H), 1.15 (t, 3H)	

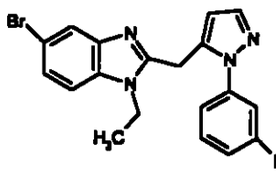
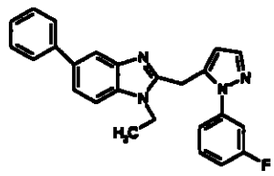
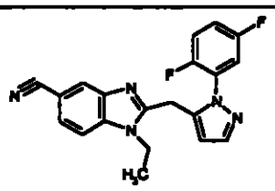
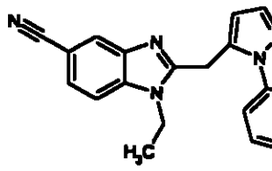
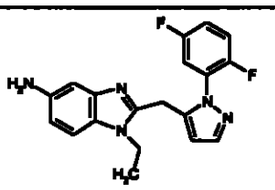
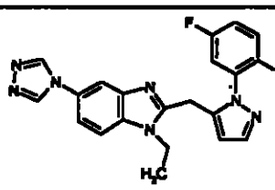
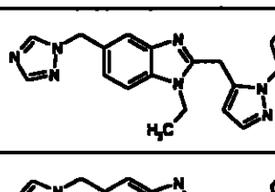
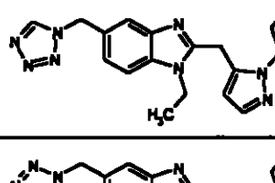
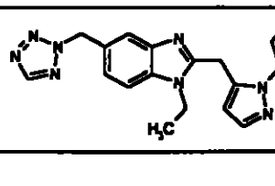
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
932		5-bromo-1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole	(L)-Tartrate salt 1H NMR (d6-DMSO): 7.72 (d, 1H), 7.65 (d, 1H), 7.21-7.53 (m, 6H), 6.26 (s, 1H), 4.48 (s, 2H), 4.30 (s, 2H), 4.16 (q, 2H), 1.14 (t, 3H)	
933		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-phenyl-1H-benzimidazole	1H NMR (CDCl3): 7.96 (d, 1H), 7.27-7.66 (m, 11H), 7.14 (m, 1H), 6.21 (d, 1H), 4.38 (s, 2H), 4.01 (q, 2H), 1.25 (t, 3H)	
934		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile		MH+ 364.2
935		2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile	1H NMR (CDCl3): 8.05 (d, 1H), 7.36-7.65 (m, 7H), 6.21 (d, 1H), 4.36 (s, 2H), 4.02 (q, 2H), 1.24 (t, 3H)	
936		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazol-5-amine		MH+ 354.2
937		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-(4H 1,2,4-triazol-4-yl)-1H-benzimidazole		MH+ 405.95
938		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-(1H-1,2,4-triazol-1-ylmethyl)-1H-benzimidazole		MH+ 402.4
939		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-(1H-tetrazol-1-ylmethyl)-1H-benzimidazole		MH+ 403.2, MH- 401.4
940		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-(2H-tetrazol-2-ylmethyl)-1H-benzimidazole		MH+ 403.4, MH- 401.4

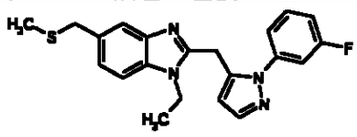
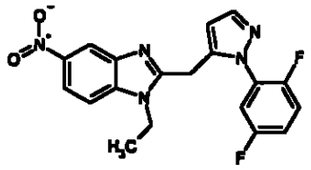
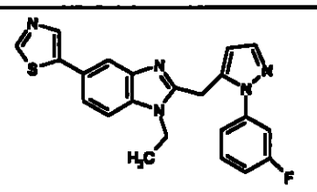
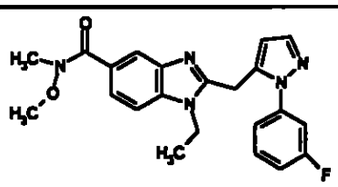
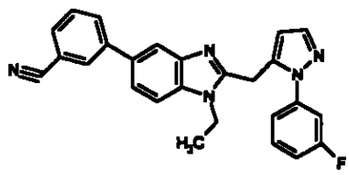
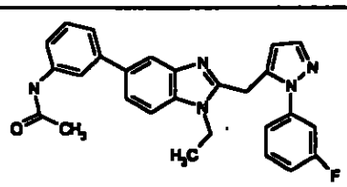
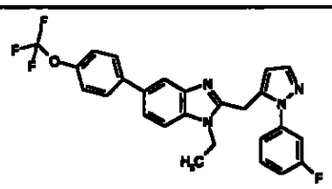
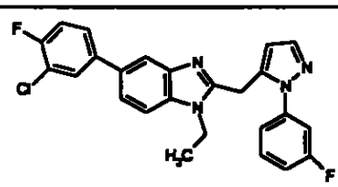
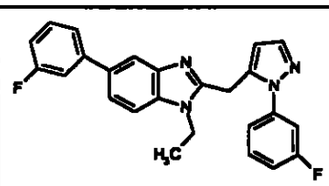
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
941		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-[(methylthio)methyl]-1H-benzimidazole		MH+ 381.3, MH- 379.3
942		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-nitro-1H-benzimidazole	Mesylate 1H NMR (d6 DMSO) 8.38 (1H, d), 8.15-8.12(1H,m), 7.77(IH,d), 7.71(1H,s), 7.51-7.34(3H, m), 6.40(IH, s), 4.21 (2H, q), 2.32(3H, s), 1.11(3H, t).	LCMS MH+ 384.2
943		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-(1,3-thiazol-5-yl)-1H-benzimidazole	Hydrochloride 1H NMR (CD3OD): 9.725 (s, 1H), 8.67 (s, 1H), 8.13 (s, 1H), 8.01-8.08 (m, 2H), 7.79 (s, 1H), 7.21-7.57 (m, 4H), 6.59 (d, 1H), 4.97 (s, 2H), 4.50 (q, 2H), 1.39 (t, 3H)	
944		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-N-methoxy-N-methyl-1H-benzimidazole-5-carboxamide	1H NMR (CDCl3): 8.13 (d, 1H), 7.63-7.70 (m, 2H), 7.24-7.49 (m, 4H), 7.13 (m, 1H), 6.19 (d, 1H), 4.36 (s, 2H), 4.00 (q, 2H), 3.80 (s, 3H), 3.40 (s, 3H), 1.23 (t, 3H)	
945		3-(1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazol-5-yl)benzonitrile	1H NMR (CDCl3): 7.84-7.92 (m, 3H), 7.40-7.84 (m. 6H), 7.26-7.33 (m, 2H), 7.14 (m, 1H), 6.21 (d, 1H), 4.37 (s, 2H), 4.03 (q, 2H), 1.26 (t, 3H)	
946		N-[3-(1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazol-5-yl)phenyl]acetamide	1H NMR (CDCl3): 7.93 (d, 1H), 7.26-7.72 (m, 10H), 7.14 (m, 1H), 6.20 (d, 1H), 4.36 (s, 2H), 4.01 (q, 2H), 2.21 (s, 3H), 1.24 (t, 3H)	
947		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-[4-(trifluoromethoxy)phenyl]-1H-benzimidazole	1H NMR (CDCl3): 7.92 (d, 1H), 7.27-7.65 (m, 10H), 7.14 (m, 1H), 6.20 (d, 1H), 4.37 (s, 2H), 4.08 (q, 2H), 1.25 (t, 3H)	
948		5-(3-chloro-4-fluorophenyl)-1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.897 (d, 1H), 7.63-7.66 (m, 2H), 7.11-7.50 (m, 8H), 6.21 (d, 1H), 4.36 (s, 2H), 4.02 (q, 2H), 1.25 (t, 3H)	
949		1-ethyl-5-(3-fluorophenyl)-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.95 (d, 1H), 7.84 (d, 1H), 7.27-7.53 (m, 8H)/ 7.14 (m, 2H), 7.03 (m, 1H), 6.20 (d, 1H), 4.36 (s, 2H), 4.02 (q, 2H), 1.25 (t, 3H)	

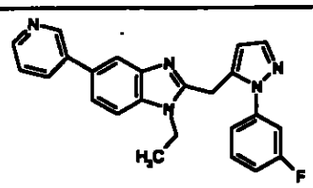
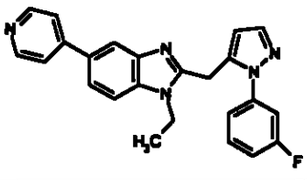
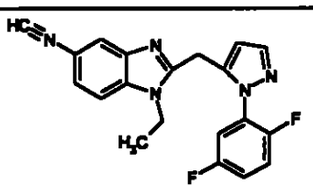
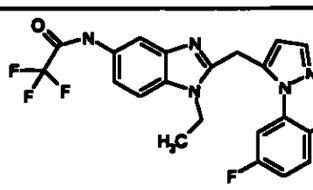
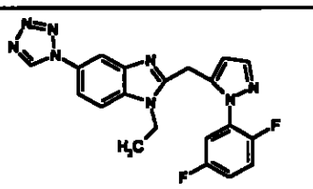
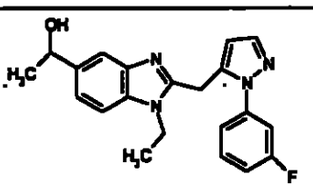
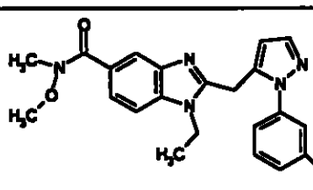
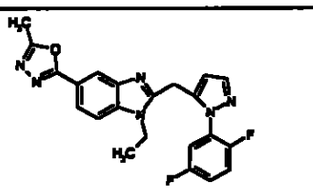
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
950		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-pyridin-3-yl-1H-benzimidazole	1H NMR (CDCl3): 8.90 (d, 1H), 8.59 (m, 1H), 7.90-7.95 (m, 2H), 7.84 (d, 1H), 7.25-7.53 (m, 6H), 7.14 (m, 1H), 6.21 (d 1H), 4.37 (s, 2H), 4.03 (q 2H), 1.26 (t, 3H)	
951		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-pyridin-4-yl-1H-benzimidazole	1H NMR (CDCl3): 8.67 (d, 1H), 8.65 (d, 1H), 8.03 (d, 1H), 7.26-7.55 (m, 8H), 7.15 (m, 1H), 6.21 (d, 1H), 4.37 (s, 2H), 4.03 (q, 2H), 1.26 (t, 3H)	
952		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-(methylidyne-lambda~5~-azanyl)-1H-benzimidazole	1H NMR (CDCl3): 7.70-7.67(2H, m), 7.31-7.14(5H, m), 6.16(1H, s), 4.28(2H, s), 4.02(2H, q), 1.22(3H, t)	MH+ 364.1
953		N-(2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)-2,2,2-trifluoroacetamide		MH+ 449.96
954		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-(1H-tetrazol-1-yl)-1H-benzimidazole	1H NMR (DMSO): 10.07 (s, 1H0, 8.07 (s, 1H), 7.86 (d, 1H), 7.79 (d, 1H), 7.71 (s, 1H), 7.36-7.57 (m, 3H), 6.4 (s, 2H), 4.46 (s, 2H), 4.21 (q, 2H0, 1.14 (t, 3H)	
955		1-(1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazol-5-yl)ethanol		
956		2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-N-methoxy-N-methyl-1H-benzimidazole-5-carboxamide	1H NMR (CDCl3): 8.13 (d, 1H), 7.83-7.70 (m, 2H), 7.51 (m, 1H), 7.31-7.41 (m, 4H), 6.20 (d, 1H), 4.35 (s, 2H), 4.00 (q, 2H), 3.60 (s, 3H), 3.40 (s, 3H), 1.23 (t, 3H)	
957		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-(5-methyl-1,3,4-oxadiazol-2-yl)-1H-benzimidazole		MH+ 437.02

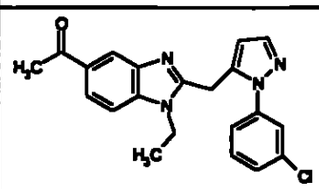
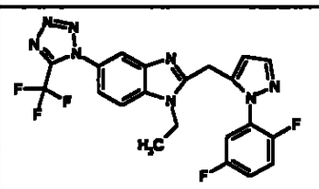
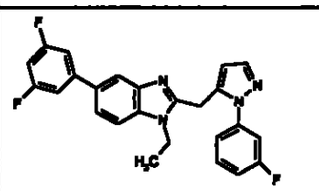
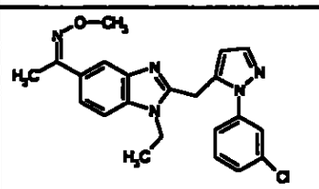
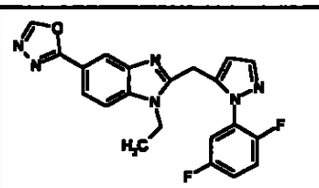
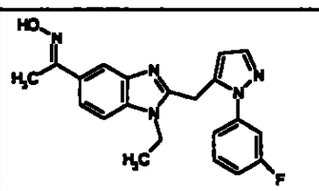
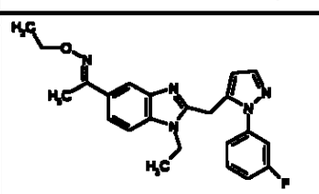
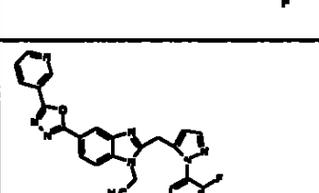
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
958		1-(2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone	1H NMR (CDCl3): 8.37 (d, 1H), 8.03 (dd, 1H), 7.85 (d, 1H), 7.38-7.50 (m, 5H), 6.24 (d, 1H), 4.49 (s, 2H), 4.03 (q, 2H), 2.68 (s, 3H), 1.24 (t, 3H)	
959		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-(5-(trifluoromethyl)-1H-tetrazol-1-yl]-1H-benzimidazole		LCMS MH+ 474.99
960		5-(3,5-difluorophenyl)-1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.91 (d, 1H), 7.64 (d, 1H), 7.27-7.50 (m, 5H), 7.10-7.18 (m, 3H), 6.77 (m, 1H), 6.20 (d, 1H), 4.36 (s, 2H), 4.02 (q, 2H), 1.25 (t, 3H)	
961		(1Z)-1-(2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone O-methyloxime	1H NMR (CDCl3): 7.94 (d, 1H), 7.73 (dd, 1H), 7.73 (dd, 1H), 7.63 (d, 1H), 7.52 (m, 1H), 7.38-7.40 (m, 3H), 7.27 (m ,1H), 6.19 (d, 1H), 4.32 (s, 2H), 3.87-4.10 (m, 5H), 2.30 (s, 3H), 1.22 (t, 3H.)	
962		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-(1,3,4-oxadiazol-2-yl)-1H-benzimidazole		MH+ 425.10
963		(1E)-1-(1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazol-5-yl)ethanone oxime	1H NMR (CD3OD): 7.81 (d, 1H), 7.64-7.68 (m, 2H), 7.42-7.53 (m, 2H), 7.18-7.32 (m, 3H), 6.28 (d, 1H), 4.44 (s, 2H), 4.12 (q, 2H), 2.30 (s, 3H), 1.23 (t, 3H)	
964		(1E)-1-(1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazol-5-yl)ethanone O-ethyloxime	Syn and anti 1H NMR (CDCl3): 7.95 (d, 1H+H1), 7.73 (dd, 1H+H1), 7.63 (d, 1H+H1), 7.44 (m, 1H+H1), 7.24-7.33 (m, 3H+H1), [6.18 (d, 1H+H1), 7.13 (d, 1H+H1)], 4.33 (s, 2H), [4.26 (q, 2H), 4.13 (q, 2H1)], 3.98 (q, 2H+2H1), [2.31 (s, 3H), 2.27 (s, 3H1)], [1.35 (t,	
965		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-(5-pyridin-3-yl-1,3,4-oxadiazol-2-yl)-1H-benzimidazole	1H NMR (d6 DMSO): 9.40(1H, s), 8.87(1H, s), 8.83(1H, d), 8.41(1H, s), 8.20(1H, d), 8.01(1H, d), 7.76(2H, m), 7.58(1H, m), 7.48-7.41(2H, m), 6.50(1H, s), 4.81(2H, s), 4.31(2H, q), 1.19(3H, t)	MH+ 484.5

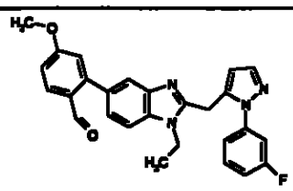
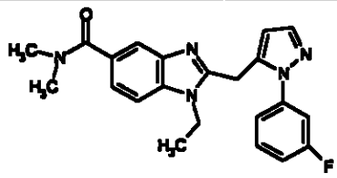
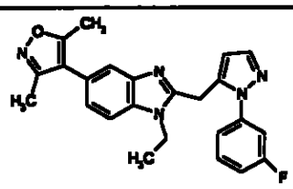
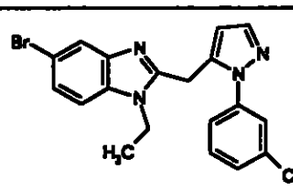
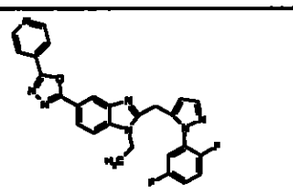
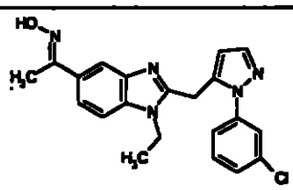
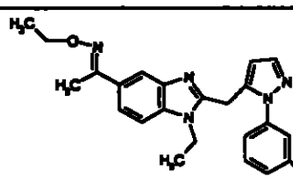
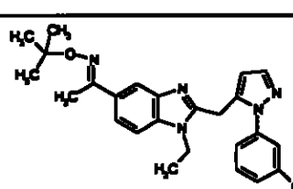
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
966		2-(1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazol-5-yl)-4-methoxybenzaldehyde	1H NMR (CDCl3): 9.86 (s, 1H), 8.03 (d, 1H), 7.26-7.78 (m, 7H), 6.94-7.18 (m, 3H), 5.22 (dd, 1H), 4.38 (s, 2H), 4.04 (q, 2H), 3.91 (s, 3H), 1.27 (t, 3H)	
967		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-N,N-dimethyl-1H-benzimidazole-5-carboxamide	1H NMR (CDCl3): 7.78 (s, 1H), 7.63 (s, 1H), 7.10-7.48 (m, 6H), 6.18 (s, 1H), 4.35 (s, 2H), 4.00 (q, 2H), 3.13 (s, 3H), 3.05 (s, 3H), 1.22 (t, 3H)	
968		5-(3,5-dimethylisoxazol-4-yl)-1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazole	1H NMR (CDCl3): 7.62-7.64 (m, 2H), 7.25-7.50 (m, 4H), 7.11-7.18 (m, 2H), 6.21 (d, 1H), 4.36 (s, 2H), 4.02 (q, 2H), 2.42 (s, 3H), 2.29 (s, 3H), 1.26 (t, 3H)	
969		5-bromo-2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazole	1H NMR (CDCl3): 7.87 (d, 1H), 7.63 (d, 1H), 7.50 (m, 1H), 7.35-7.42 (m, 4H), 7.18 (d, 1H), 6.18 (d, 1H), 4.31 (s, 2H), 3.96 (q, 2H), 1.21 (t, 3H)	
970		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-5-(5-pyridin-4-yl-1,3,4-oxadiazol-2-yl)-1H-benzimidazole	Dihydrochloride 1H NMR (d6 DMSO): 8.98(2H, m), 8.43(1H, s), 8.35(2H, m), 8.19(1H, d), 7.99(1H, d), 7.75(1H, d), 7.59-7.5891H, m), 7.50-7.41(2H, m), 6.49(1H, s), 4.58(2H, s), 4.30(2H, q), 1.19(3H, t)	MH+ 484.5
971		(1E)-1-(2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone oxime	1H NMR (CDCl3): 10.92 (br s, 1H), 8.58 (s, 1H), 7.52-7.64 (m, 3H), 7.29 (d, 1H), 6.20 (d, 1H), 4.36 (s, 2H), 3.97 (q, 2H), 2.38 (s, 3H), 1.21 (t, 3H)	
972		(1E)-1-(2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone O-ethyloxime	Syn and anti 1H NMR (CDCl3): 7.95 (d, 1H+H1), 7.73 (dd, 1H+H1), 7.63 (d, 1H+H1), 7.44 (m, 1H+H1), 7.24-7.33 (m, 3H+H1), [6.18 (d, 1H+H1), 7.13 (d, 1H+H1)], 4.33 (s, 2H), [4.26 (q, 2H), 4.13 (q, 2H1)], 3.98 (q, 2H+2H1), [2.31 (s, 3H), 2.27 (s, 3H1)], [1.35 (t,	
973		(1E)-1-(2-[[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl]-1-ethyl-1H-benzimidazol-5-yl)ethanone O-(tert-butyl)oxime	Syn and anti 1H NMR (CDCl3): 8.00 (d, 1H+H1), 7.75 (dd, 1H+H1), 7.63 (d, 1H+H1), 7.27 (d, 1H+H1), 7.38-7.40 (m, 3H+H1), 6.20 (d, 1H)[6.18(d, 1H1)], 4.32 (s, 2H+H1), 3.99 (q, 2H+H1), 2.28 (s, 3H), [2.27(s, 3H1)], 1.37 (s, 9H),	

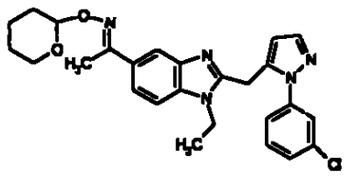
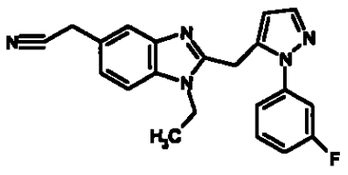
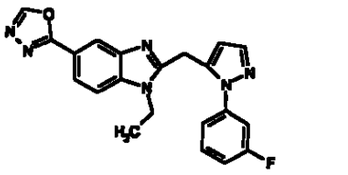
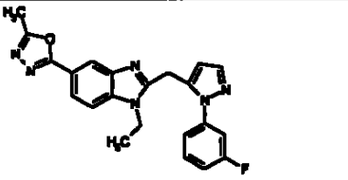
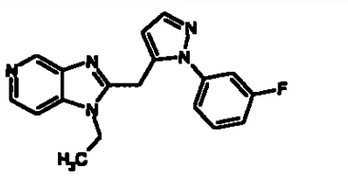
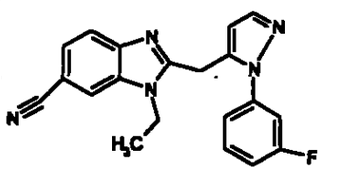
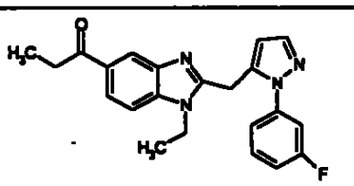
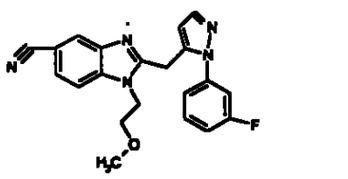
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
974		(1E)-1-(2-{[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl}-1-ethyl-1H-benzimidazol-5-yl)ethanone O-tetrahydro-2H-pyran-2-yloxime	1H NMR (CDCl3): 7.95 (d, 1H), 7.79 (dd, 1H), 7.63 (d, 1H), 7.52 (m, 1H), 7.37-7.40 (m, 3H), 7.26 (dd, 1H), 6.19 (d, 1H), 5.43 (m, 1H), 4.32 (s, 2H), 3.85-4.02 (m, 4H), 3.66 (m, 2H), 1.62-1.92 (m, 4H), 1.22 (t, 3H)	
975		(1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazol-5-yl)acetonitrile	7.66 (m, 1H), 7.63 (d, 1H), 7.24-7.49 (m, 5H), 7.13 (m, 1H), 6.17 (d, 1H), 4.34 (s, 2H), 3.99 (q, 2H,), 3.87 (s, 2H), 1.22 (t, 3H)	
976		1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-5-(1,3,4-oxadiazol-2-yl)-1H-benzimidazole	1H NMR (d6 DMSO): 8.17(1H, s), 8.04-7.98(2H, m), 7.71(1H, d), 7.55-7.50(2H, m), 7.45-7.43(1H, m), 7.29-7.2491H, m), 6.40(1H, d), 4.77(2H, s), 4.36(2H, q), 2.58(3H, s), 1.24(3H, t), LCMS MH+ 403.6	
977		1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-5-(5-methyl-1,3,4-oxadiazol-2-yl)-1H-benzimidazole	1H NMR (CD3OD): 8.79 (s, 1H), 8.31 (d, 1H), 7.69 (s, 1H), 7.60 (d, H), 7.46 (dd, 1H), 7.30 (d, 2H), 7.16-7.20 (m, 1H), 6.37 (s, 1H), 4.55 (s, 2H), 4.20 (q, 2H), 1.24 (t, 3H)	
978		1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-imidazo[4,5-c]pyridine	1H NMR (CD3OD): 8.79 (s, 1H), 8.31 (d, 1H), 7.69 (s, 1H), 7.60 (d, H), 7.46 (dd, 1H), 7.30 (d, 2H), 7.16-7.20 (m, 1H), 6.37 (s, 1H), 4.55 (s, 2H), 4.20 (q, 2H), 1.24 (t, 3H)	
979		1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazole-6-carbonitrile		
980		1-(1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazol-5-yl)propan-1-one		
981		2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1-(2-methoxyethyl)-1H-benzimidazole-5-carbonitrile		

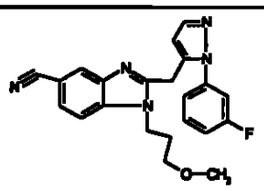
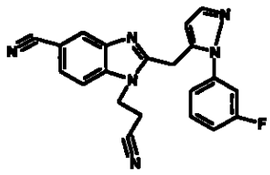
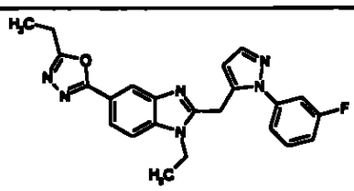
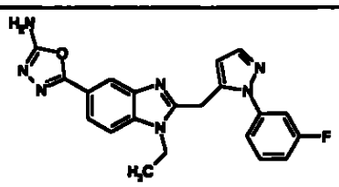
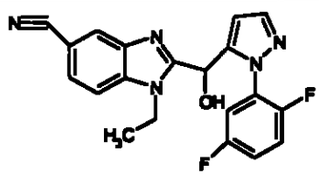
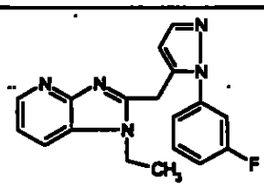
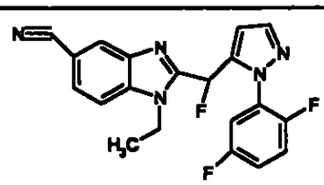
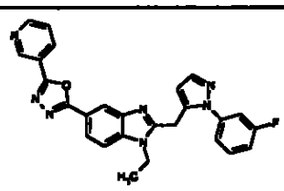
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
982		2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1-(3-methoxypropyl)-1H-benzimidazole-5-carbonitrile		MH+ 390.1, MH- 388.3
983		1-(2-cyanoethyl)-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazole-5-carbonitrile		MH+ 371.3
984		1-ethyl-5-(5-ethyl-1,3,4-oxadiazol-2-yl)-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazole	1 H NMR (d6DMSO): 8.17(1H, s), 8.01-7.94(2H, m), 7.71(1H, s), 7.53-7.51(2H, m), 7.44-7.42(1H, m), 7.28-7.24(1H, m), 6.39(1H, s), 4.73(2H, s), 4.33(2H, q), 2.94(2H, q), 1.32(3H, t), 1.23(3H, t)	MH+ 417.5.
985		5-(1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazol-5-yl)-1,3,4-oxadiazol-2-amine	1 H NMR (d6DMSO): 8.17(1H, s), 8.01-7.94(2H, m), 7.71(1H, s), 7.53-7.51(2H, m), 7.44-7.42(1H, m), 7.28-7.24(1H, m), 6.39(1H, s), 4.73(2H, s), 4.33(2H, q), 2.94(2H, q), 1.32(3H, t), 1.23(3H, t)	MH+ 417.5
986		2-{[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl](hydroxy)methyl}-1-ethyl-1H-benzimidazole-5-carbonitrile	1H NMR (CDCl3): 7.93 (d, 1H), 7.67 (d, 1H), 7.55 (dd, 1H), 7.40 (dd, 1H): 7.24 (m, 1H), 7.10-7.15 (m, 2H), 6.20 (d, 1H), 6.01 (s, 1H), 4.98 (br, S, 1H): 4.04 (q, 2H), 1.21 (t, 3H)	
987		1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-imidazo[4,5-b]pyridine		MH+ 322.3, MH- 320.3
988		2-{[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl](fluoro)methyl}-1-ethyl-1H-benzimidazole-5-carbonitrile	1H NMR (CDCl3): 8.07 (d, 1H), 7.77 (d, 1H), 7.80 (dd, 1H), 7.47 (dd, 1H), 7.11-7.23 (m, 3H), 6.85 [d, 1H, J(H,F)= 47.4], 6.50 (t, 1H), 4.27 (m, 2H), 1.36 (t, 3H)	
989		1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-5-(5-pyridin-3-yl-1,3,4-oxadiazol-2-yl)-1H-benzimidazole	1H NMR (d6DMSO): 9.41(1H, s), 8.88(1H, d), 8.67(1H, d), 8.46(1H, s), 8.25(1H, d), 8.10(1H, d), 7.81-7.72(2H, m), 7.55-7.46(3H, m), 7.30-7.26(1H, m), 6.43(1H, s), 4.84(2H, s), 4.40(2H, q), 1.27(3H, t)	

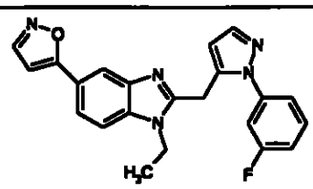
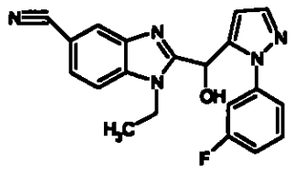
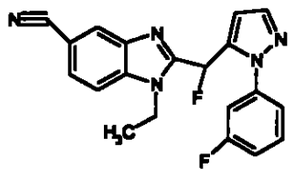
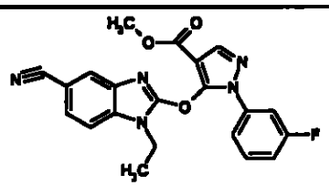
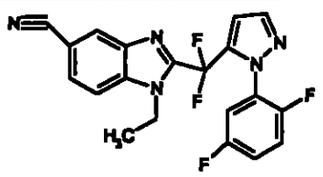
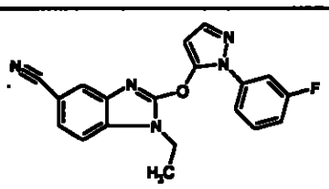
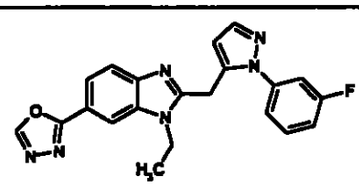
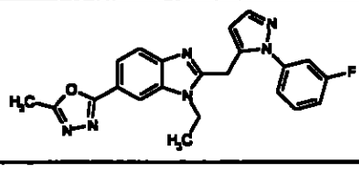
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
990		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-isoxazol-5-yl-1H-benzimidazole	1H NMR (CDCl3): 8.30 (d, 1H), 8.16 (dd, 1H), 7.76 (dd, 1H), 7.64 (d, 1H), 7.38-7.50 (m, 2H), 7.25-7.32 (m, 2H), 7.14 (m, 1H), 6.52 (d, 1H), 6.21 (d, 1H), 4.37 (s, 2H), 4.01 (q, 2H), 1.25 (t, 3H)	
991		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl](hydroxy)methyl]-1H-benzimidazole-5-carbonitrile	1H NMR (CDCl3): 8.02 (dd, 1H), 7.47-7.62 (m 5H), 7.39 (d, 1H), 7.18 (m, 1H), 6.12 (d, 1H), 6.00 (s, 1H), 5.05 (brs, 1H), 3.83 (q, 2H), 1.08 (t, 3H)	
992		1-ethyl-2-(fluoro[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl)-1H-benzimidazole-5-carbonitrile	1H NMR (CDCl3): 8.12 (dd, 1H), 7.73 (d, 1H), 7.62 (dd, 1H), 7.44-7.53 (m, 2H), 7.31-7.39 (m, 2H), 7.17 (m, 1H), 6.83 (d, 1H, JH,F=46.8 MZ), 4.39 (m, 2H), 1.43 (t, 3H)	
993		methyl 5-[(5-cyano-1-ethyl-1H-benzimidazol-2-yl)oxy]-1-(3-fluorophenyl)-1H-pyrazole-4-carboxylate		MH+ 406.3
994		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl](difluoro)methyl]-1-ethyl-1H-benzimidazole-5-carbonitrile	1H NMR (CDCl3): 8.09 (m, 1H), 7.84 (M, 1H), 7.64 (dd, 1H), 7.48 (dd, 1H), 6.96-7.16 (m, 3H), 6.85 (d, 1H), 4.33 (q, 2H), 1.38 (t, 3H)	
995		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]oxy]-1H-benzimidazole-5-carbonitrile		MH+ 348.2, MH- 364.2
996		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-6-(1,3,4-oxadiazol-2-yl)-1H-benzimidazole		MH+ 389.2
997		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-6-(5-methyl-1,3,4-oxadiazol-2-yl)-1H-benzimidazole		MH+ 403.3

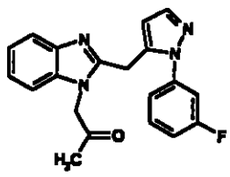
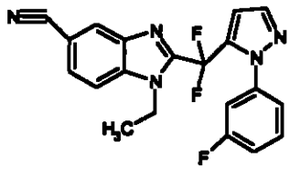
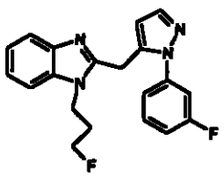
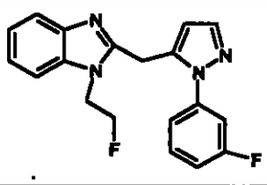
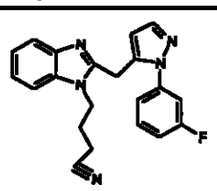
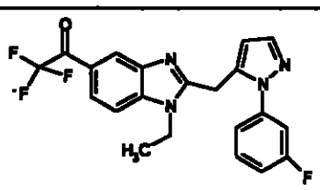
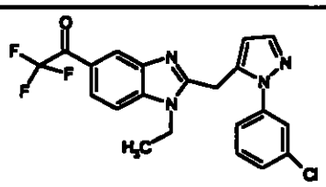
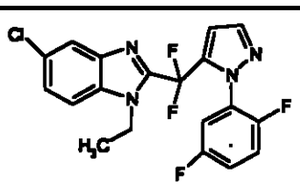
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
998		1-(2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazol-1-yl)acetone		LCMS MH+ 349.3, MH- 347.2
999		2-(difluoro{1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1-ethyl-1H-benzimidazole-5-carbonitrile	1H NMR (CDCl3): 8.078 (m, 1H), 7.80 (m, 1H), 7.63 (dd, 1H), 7.48 (dd, 1H), 7.13-7.28 (m, 3H), 6.99 (m, 1H), 6.81 (d, 1H), 4.35 (q, 2H), 1.39 (t, 3H)	
1000		2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1-(3-fluoropropyl)-1H benzimidazole		LCMS MH+ 353.2, MH- 351.2
1001		1-(2-fluoroethyl)-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazole		LCMS MH+ 339.2
1002		4-(2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazol-1-yl)butanenitrile		LCMS MH+ 360.2, MH- 358.3
1003		1-(1-ethyl-2-{[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl}-1H-benzimidazol-5-yl)-2,2,2-trifluoroethanone		MH+ 417.2
1004		1-(2-{[1-(3-chlorophenyl)-1H-pyrazol-5-yl]methyl}-1-ethyl-1H-benzimidazol-5-yl)-2,2,2-trifluoroethanone		
1005		5-chloro-2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl](difluoro)methyl]-1-ethyl-1H-benzimidazole		

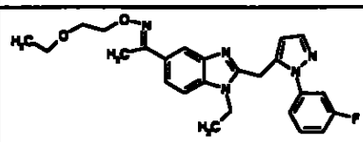
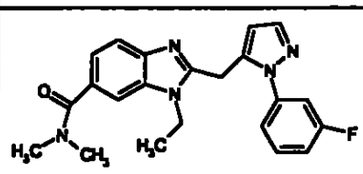
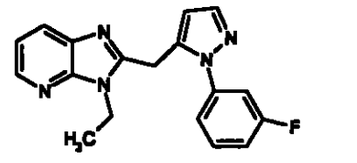
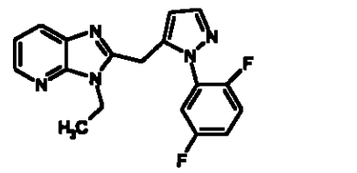
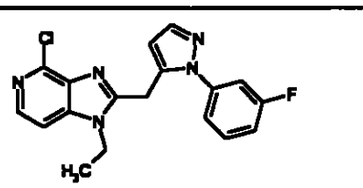
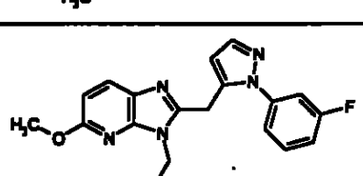
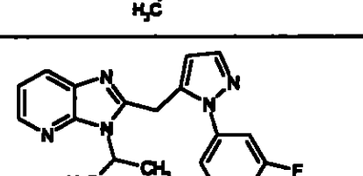
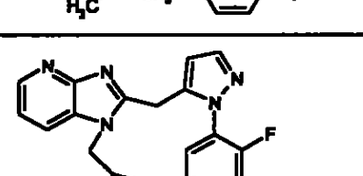
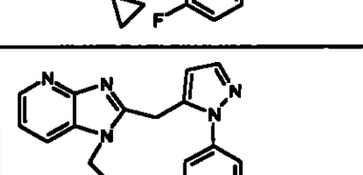
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
1006		(1E)-1-(1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-benzimidazol-5-yl)ethanone O-(2-ethoxyethyl)oxime	1H NMR, δppm (CDCl3): 7.95(m, 1H), 7.72(dd, 1H), 7.63(d, 1H), 7.45(m, 1H), 7.11-7.31(m, 4H), 6.18(d, 1H), 4.34-4.37(m, 4H), 3.98(q, 2H), 3.77(t, 2H), 3.58(q, 2H), 2.33(s, 3H), 1.18-1.28(m, 6H)	
1007		1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-N,N-dimethyl-1H-benzimidazole-6-carboxamide	1H NMR, δppm (CDCl3: 7.72(dd, 1H), 7.63(d, 1H), 7.40-7.49 (m, 2H), 7.24-7.34(m, 3H), 7.13(d, 1H), 6.18(d, 1H), 4.35(s, 2H), 3.99(q, 2H), 3.13(s, 2H), 3.07(s, 3H), 1.23(t, 3H)	
1008		3-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-3H-imidazo[4,5-b]pyridine		
1009		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-3-ethyl-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.19 (1H, d), 7.81 (1H, d), 7.48-7.44(1H,m), 7.28-7.13(4H, m), 6.14(1H, m), 4.44(2H, s), 3.93(2H, q), 1.17(3H, t),	LRMS calcd. 355.8, found 356.2(M H+)
1010		4-chloro-1-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-imidazo[4,5-c]pyridine	1H nmr (CDCl3): 8.19(1H, d), 7.81(1H, d), 7.48-7.44(1H, m), 7.28-7.13(4H, m), 6.14(1H, m), 4.44(2H, s), 3.93(2H, q), 1.17(3H, t),	LRMS calcd. 355.8, found 356.2(M H+)
1011		3-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-methoxy-3H-imidazo[4,5-b]pyridine		M+ 392.3
1012		2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-3-isopropyl-3H-imidazo[4,5-b]pyridine		
1013		1-(cyclopropylmethyl)-2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): 0.22 (m, 2H), 0.54(m, 2H), 0.95(m, 1H), 3.84(d, 2H), 4.32(s, 2H), 6.18(s, 2H), 7.13-7.25 (m, 4H), 7.65 (m, 2H), 8.52 (d, 1H)	LCMS: M+1, 368
1014		1-(cyclopropylmethyl)-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): 0.22 (m, 2H), 0.54(m, 2H), 0.95(m, 1H), 3.84(d, 2H), 4.32(s, 2H), 6.18(s, 2H), 7.13-7.25 (m, 4H), 7.65 (m, 2H), 8.52 (d, 1H)	LCMS: M+1, 368

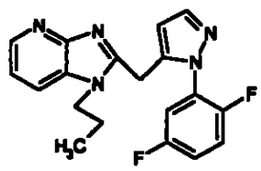
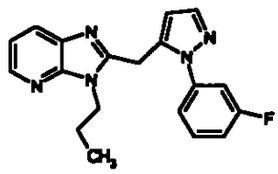
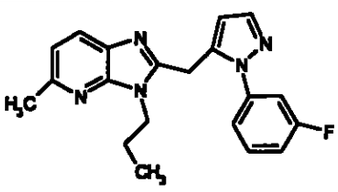
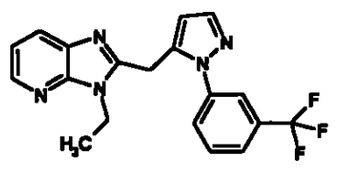
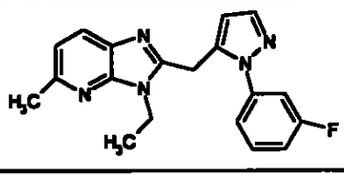
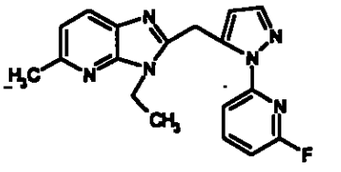
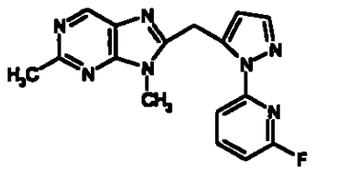
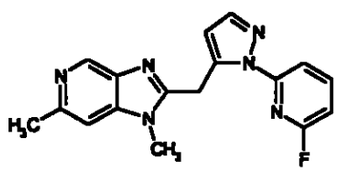
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
1015		2-[[1-(2,5-difluorophenyl)-1H-pyrazol-5-yl]methyl]-1-propyl-1H-imidazo[4,5-b]pyridine	H-1 NMR (CDCl3): 0.82(t, 3H), 1.62(h, 2H), 3.85(t, 2H), 4.33 (s, 2H), 6.20 (s, 1H), 7.05-7.25(m, 4H), 7.82(m, 2H), 8.53(d, 1H)	LCMS: M+1, 354
1016		2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.43(dd, J = 4.8, 1.5 Hz, 1H), 8.10 (dd, J = 8.0, 1.4 Hz, 1H), 7.64 (d, J = 2.1 Hz, 1H), 7.47 (m, 1H), 7.23-7.34 (m, 3H), 7.12 (m, 1H), 6.31 (d, J = 1.8 Hz, 1H), 4.80 (s, 2H), 4.03 (t, J = 7.7 Hz, 2H), 1.85 (m, 2H), 0.84 (t, J = 7.5 Hz,	*m/z* 366.2 [M+1]
1017		2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-methyl-3-propyl-3H-imidazo[4,5-b]pyridine	(CDCl3) 7.85 (d, J = 7.8 Hz, 1H), 7.64 (d, J = 1.5 Hz, 1H), 7.43 (m, 1H), 7.24-7.29 (m, 2H), 7.12 (m, 1H), 7.06 (d, J = 8.1 Hz, 1H), 6.22 (d, J = 1.5 Hz, 1H), 4.33 (s, 2H), 4.01 (t, J = 7.5 Hz, 2H), 2.64 (s, 3H), 1.87 (m, 2H), 0.84 (t, J = 7.3 Hz, 3H)	*m/z* 350.3 [M+1]
1018		3-ethyl-2-({1-[3-(trifluoromethyl)phenyl]-1H-pyrazol-5-yl}methyl)-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.36 (dd, J = 4.8, 1.3 Hz, 1H), 7.98 (dd, J = 8.0, 1.3 Hz, 1H), 7.78 (m, 1H), 7.58-7.72 (m, 4H), 7.22 (dd, J = 8.1, 4.8 Hz, 1H), 6.29 (d, J = 1.5 Hz, 1H), 4.36 (s, 2H), 4.17 (q, J = 7.2 Hz, 2H), 1.27 (t, J = 7.2 Hz, 3H)	*m/z* 372.2 [M+1]
1019		3-ethyl-2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-5-methyl-3H-imidazo[4,5-b]pyridine	(CDCl3) 7.85 (d, J = 8.1 Hz, 1H), 7.64 (d, J = 1.8 Hz, 1H), 7.44 (m, 1H), 7.24-7.29 (m, 2H), 7.13 (m, 1H), 7.06 (d, J = 8.1 Hz, 1H), 6.21 (d, J = 1.5 Hz, 1H), 4.33 (s, 2H), 4.12 (q, J = 7.3 Hz, 2H), 2.65 (s, 3H), 1.25 (t, J = 7.3 Hz, 3H)	*m/z* 338.2 [M+1]
1020		3-ethyl-2-[[1-(6-fluoropyridin-2-yl)-1H-pyrazol-5-yl]methyl]-5-methyl-3H-imidazo[4,5-b]pyridine		*m/z* 337.2 [M+1]
1021		6-[[1-(6-fluoropyridin-2-yl)-1H-pyrazol-5-yl]methyl]-2,9-dimethyl-9H-purine	(CDCl3) 8.81 (s, 1H), 7.87 (m, 2H), 7.69 (d, 1H), 6.67 (dd, 1H), 6.33 (s, 1H), 4.86 (s, 2H), 3.90 (s, 3H), 2.79 (s, 3H)	
1022		2-[[1-(6-fluoropyridin-2-yl)-1H-pyrazol-5-yl]methyl]-1,8-dimethyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.82 (s, 1H), 7.88 (m, 1H), 7.84 (m, 1H), 7.67 (s, 1H), 7.11 (s, 1H), 6.69 (m, 1H), 6.27, (s, 1H), 4.85 (s, 2H), 3.81 (s, 3H), 2.66 (s, 3H)	*m/z* 323 [M+1]

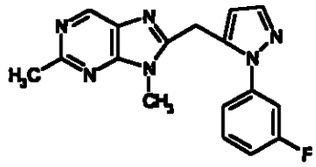
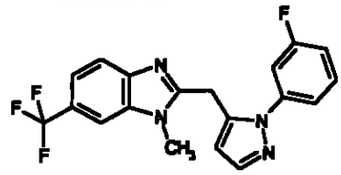
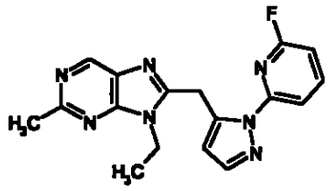
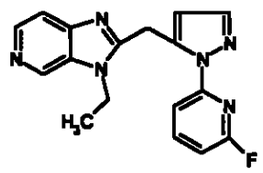
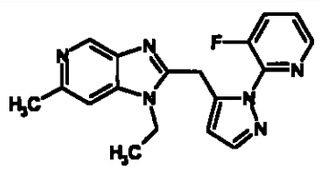
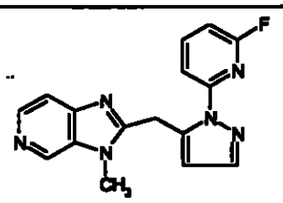
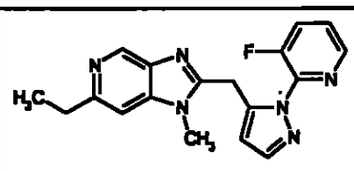
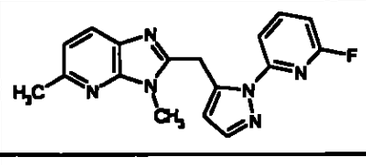
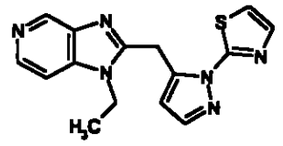
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
1023		8-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-2,9-dimethyl-9H-purine	(CDCl3) 8.90 (s, 1H), 7.63(d, 1H), 7.42 (m, 1H), 7.26 (m, 2H), 7.12 (m, 1H), 6.16 (d, 1H), 4.32 (s, 2H), 3.60 (s, 3H), 2.78 (s, 3H)	
1024		2-[[1-(3-fluorophenyl)-1H-pyrazol-5-yl]methyl]-1-methyl-6-(trifluoromethyl)-1H-benzimidazole	(CDCl3) 7.79 (d, 1H), 7.59 (d, 2H), 7.54 (m, 2H), 7.30 (m, 2H), 7.16 (m, 1H), 6.12 (d, 1H), 4.38 (s, 2H), 3.61 (s, 3H),	
1025		9-ethyl-8-[[1-(6-fluoropyridin-2-yl)-1H-pyrazol-5-yl]methyl]-2-methyl-9H-purine	(CDCl3) 8.82 (s, 1H), 7.88 (m, 1H), 7.83 (q, 1H), 7.69 (d, 1H), 6.69 (m, 1H), 6.35 (s, 1H), 4.95 (s, 2H), 4.44 (q, 2H), 2.82 (s, 3H), 1.52 (t, 3H)	
1026		3-ethyl-2-[[1-(6-fluoropyridin-2-yl)-1H-pyrazol-5-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.78 (s, 1H), 8.38 (d, J = 3.9 Hz, 1H), 7.83-7.89 (m, 2H), 7.66 (s, 1H), 7.56 (d, J = 3.9 Hz, 1H), 7.25 (d, J = 9.9 Hz, 1H), 6.70 (d, J = 9.9 Hz, 1H), 4.81 (s, 2H), 4.39 (q, J = 5.4 Hz, 2H), 1.49 (t, J = 5.4 Hz, 3H)	m/z 323 [M+1]
1027		1-ethyl-2-[[1-(3-fluoropyridin-2-yl)-1H-pyrazol-5-yl]methyl]-6-methyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.82 (s, 1H), 8.28 (br d, J = 4.0 Hz, 1H), 7.70 (d, J = 1.6 Hz, 1H), 7.61 (m, 1H), 7.35 (m, 1H), 7.07 (s, 1H), 6.23 (s, 1H), 4.56 (s, 2H), 4.09 (q, J = 7.2 Hz, 2H), 2.65 (s, 3H), 1.25 (t, J = 7.2 Hz, 3H)	*m/z* 337 [M+1]
1028		2-[[1-(6-fluoropyridin-2-yl)-1H-pyrazol-5-yl]methyl]-3-methyl-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.78 (br s, 1H), 8.38 (br s, 1H), 7.87 (m, 2H), 7.68 (s, 1H), 7.55 (br s, 1H), 7.25 (s, 1H), 6.69 (br d, J = 7.5 Hz, 1H), 6.30 (s, 2H), 4.88 (s, 3H)	m/z 309.2 [M+1]
1029		6-ethyl-2-[[1-(3-fluoropyridin-2-yl)-1H-pyrazol-5-yl]methyl]-1-methyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.86 (s, 1H), 8.30 (d, J = 4.4 Hz, 1H), 7.71 (s, 1H), 7.62 (m, 1H), 7.36 (m, 1H), 7.07 (s, 1H), 6.18 (s, 1H), 4.58 (s, 2H), 3.64 (s, 3H), 2.94 (q, J = 7.6 Hz, 2H), 1.36 (t, J = 7.6 Hz, 3H)	*m/z* 337 [M+1]
1030		2-[[1-(6-fluoropyridin-2-yl)-1H-pyrazol-5-yl]methyl]-3,5-dimethyl-3H-imidazo[4,5-b]pyridine	(CDCl3) 8.86 (s, 1H), 8.30 (d, J = 4.4 Hz, 1H), 7.71 (s, 1H), 7.62 (m, 1H), 7.36 (m, 1H), 7.07 (s, 1H), 6.18 (s, 1H), 4.58 (s, 2H), 3.64 (s, 3H), 2.94 (q, J = 7.6 Hz, 2H), 1.36 (t, J = 7.6 Hz, 3H)	*m/z* 337 [M+1]
1031		1-ethyl-2-[[1-(1,3-thiazol-2-yl)-1H-pyrazol-5-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.00 (s, 1H0, 8.43 (d, 1H), 7.83 (d; 1H), 7.43 (d, 1H), 7.15 (d, 1H), 7.06 (d, 1H), 6.25 (d, 1H), 4.99 (s, 2H), 4.25 (q, 2H), 1.36 (t, 3H)	

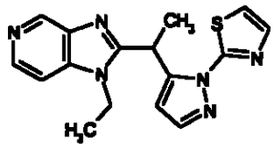
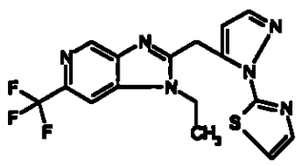
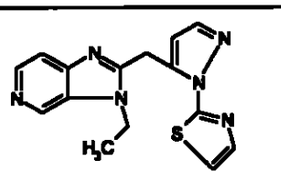
	TABLE 7			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
1032		1-ethyl-2-{1-[1-(1,3-thiazol-2-yl)-1H-pyrazol-5-yl]ethyl}-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.05 (s, 1H), 8.39 (d, 1H), 7.59 (d, 1H), 7.49 (d, 1H), 7.25 (d, 1H), 7.09 (d, 1H), 6.28 (d, 1H), 5.85 (q, 1H), 4.19 (q, 2H), 1.85 (d, 3H), 1.29 (t, 3H)	
1033		1-ethyl-2-[[1-(1,3-thiazol-2-yl)-1H-pyrazol-5-yl]methyl]-6-(trifluoromethyl)-1H-imidazo[4,5-c]pyridine	(CD3OD) 8.7 (s,1H), 8.17 (s, 1H), 7.74 (d, J = 3.6 Hz, 1H), 7.33 (d, J = 3.6 Hz, 1H), 7.21 (d, J = 3.6 Hz, 1H), 7.21 (d, J = 3.6 Hz, 1H), 6.53 (s, 1H), 5.01 (s, 2H), 4.54 (q, J = 7.2 Hz, 2H), 1.52 (t, J = 7.2 Hz, 3H)	
1034		3-ethyl-2-[[1-(1,3-thiazol-2-yl)-1H-pyrazol-5-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CD3OD) 9.42 (s, 1H), 8.44 (d, J = 6.6 Hz, 1H), 7.9 (d, J = 6.3 Hz, 1H), 7.7 (s, 1H), 7.26 (d, J = 3.6 Hz, 1H), 7.20 (d, J = 3.6 Hz, 1H), 6.63 (s, 1H), 5.09 (s, 2H), 4.88 (q, J = 7.5 Hz, 2H), 1.62 (t, J = 7.5 Hz, 3H)	m/z 311 [M+1]

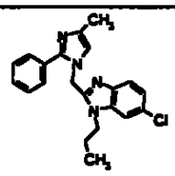
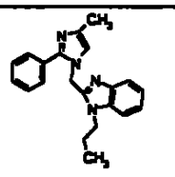
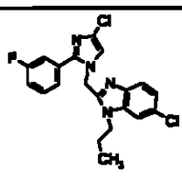
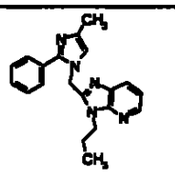
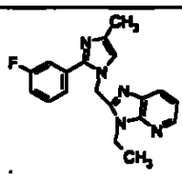
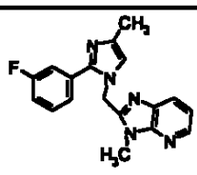
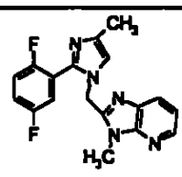
	TABLE 8			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
1035		6-chloro-2-[(4-methyl-2-phenyl-1H-imidazol-1-yl)methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.62-7.71 (m, 3H), 7.45-7.53 (m, 3H), 7.23-7.27 (m, 2H), 6.74 (q, 1H), 5.42 (s, 2H), 3.59 (t, 2H), 2.21 (d, 3H,), 1.37 (m, 2H), 0.70 (t, 3H)	
1036		2-[(4-methyl-2-phenyl-1H-imidazol-1-yl)methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.80 (m, 1H), 7.25-7.67 (m, 8H), 6.74 (q, 1H), 5.43 (s, 2H), 3.82 (t, 2H), 2.20 (d, 3H), 1.38 (m, 2H,), 0.69 (t, 3H)	
1037		6-chloro-2-[(4-chloro-2-(3-fluorophenyl)-1H-imidazol-1-yl]methyl]-1-propyl-1H-benzimidazole	1H NMR (CDCl3): 7.70 (d, 1H), 7.37-7.50 (m, 3H), 7.17-7.32 (m, 3H), 6.98 (s, 1H), 5.43 (s, 2H), 3.70 (t, 2H), 1.49 (m, 2H), 0.77 (t, 3H)	
1038		2-[(4-methyl-2-phenyl-1H-imidazol-1-yl)methyl]-3-propyl-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.39 (dd, 1H), 8.06 (dd, 1H), 7.63-7.85 (m, 2H), 7.45-7.55 (m, 3H), 7.26 (m, 1H), 6.77 (q, 1H), 5.46 (s, 2H), 3.82 (t, 2H), 2.23 (d, 3H), 1.46 (m, 2H), 0.73 (t, 3H)	
1039		3-ethyl-2-[[2-(3-fluorophenyl)-4-methyl-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.39 (dd, 1H), 8.06 (dd, 1H), 7.38-7.50 (m, 3H), 7.12-7.29 (m, 2H), 6.77 (q, 1H), 5.46 (s, 2H), 3.98 (q, 2H), 2.22 (d, 3H), 1.08 (t, 3H)	
1040		2-[[2-(3-fluorophenyl)-4-methyl-1H-imidazol-1-yl]methyl]-3-methyl-3H-imidazo[4,5-b]pyridine		
1041		2-[[2-(2,5-difluorophenyl)-4-methyl-1H-imidazol-1-yl]methyl]-3-methyl-3H-imidazo[4,5-b]pyridine		

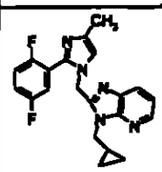
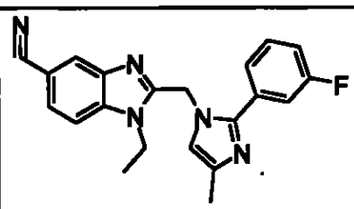
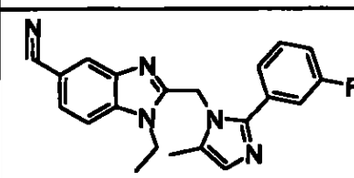
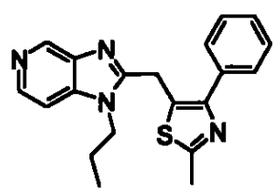
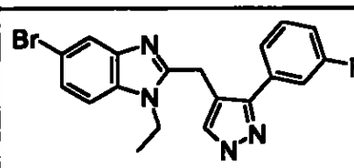
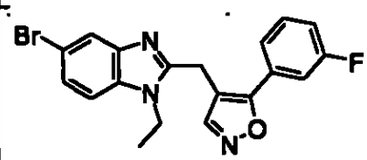
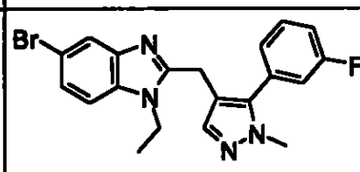
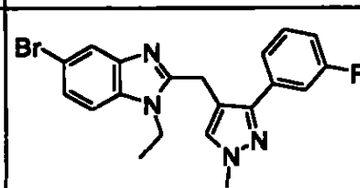
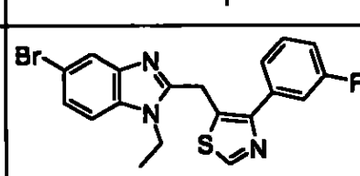
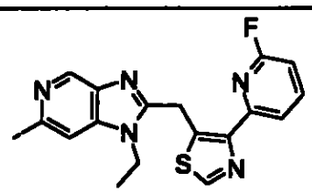
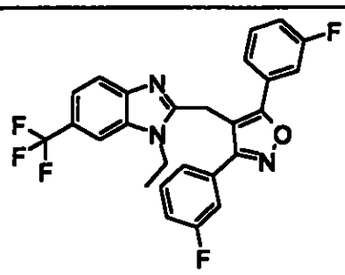
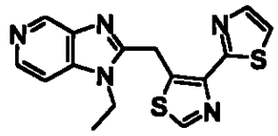
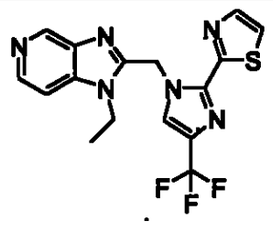
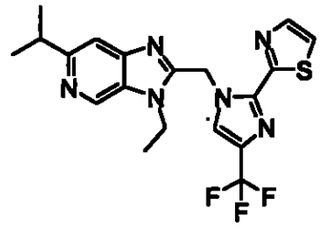
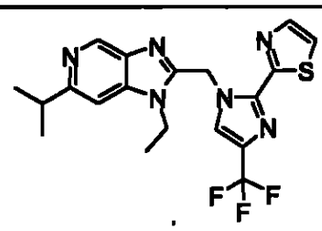
	TABLE 8			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
1042		3-(cyclopropylmethyl)-2-[[2-(2,5-difluorophenyl)-4-methyl-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-b]pyridine	1H NMR (CDCl3): 8.38 (dd, 1H), 8.04 (dd, 1H), 7.40 (m, 1H), 7.15-7.27 (m, 3H), 8.79 (d, 1H), 5.35 (s, 2H), 3.82 (d, 2H), 2.22 d, 3H), 0.75 (m, 1H), 0.39-0.44 (m, 2H), 0.23-0.28 (m, 2H)	
1043		1-ethyl-2-[[2-(3-fluorophenyl)-4-methyl-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile		*m/z* 360 [M+1]
1044		1-ethyl-2-[[2-(3-fluorophenyl)-5-methyl-1H-imidazol-1-yl]methyl]-1H-benzimidazole-5-carbonitrile		*m/z* 360 [M+1]
1045		2-[(2-methyl-4-phenyl-1,3-thiazol-5-yl)methyl]-1-propyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.06 (s, 1H), 8.39 (d, J = 5.6 Hz, 1H), 7.61 (m, 2H), 7.47 (m, 2H), 7.41 (m, 1H), 7.20 (d, J = 5.6 Hz, 1H), 4.54 (s, 2H), 3.77 (t, J = 7.6 Hz, 2H), 2.68 (s, 3H),	*m/z* 349 [M+1]
1046		5-bromo-1-ethyl-2-[[3-(3-fluorophenyl)-1H-pyrazol-4-yl]methyl]-1H-benzimidazole		LRMS: calcd 399.3; found [M+1] 401.0
1047		5-bromo-1-ethyl-2-[[5-(3-fluorophenyl)isoxazol-4-yl]methyl]-1H-benzimidazole	(CDCl3) 8.40 (s, 1H), 7.88 (s, 1H), 7.31-7.52 (m, 4H), 7.18-7.22 (m, 2H), 4.14 (s, 2H), 4.04 (q, 2H), 1.18 (t, 3H)	
1048		5-bromo-1-ethyl-2-[[5-(3-fluorophenyl)-1-methyl-1H-pyrazol-4-yl]methyl]-1H-benzimidazole	(CDCl3) 7.81 (s, 1H), 7.38-7.45 (m, 2H), 7.32 (dd, 1H), 7.00-7.18 (m, 4H), 4.00 (s, 2H), 3.90 (q, 2H), 3.78 (s, 3H), 1.15 (t, 3H)	
1049		5-bromo-1-ethyl-2-[[3-(3-fluorophenyl)-1-methyl-1H-pyrazol-4-yl]methyl]-1H-benzimidazole	(CDCL3) 7.88 (s, 1H), 7.27-7.42 (m, 4H), 7.00-7.20 (m, 3H), 4.21 (s, 2H), 3.95 (t, 2H), 3.83 (s, 3H), 1.15 (t, 3H)	
1050		5-bromo-1-ethyl-2-[[4-(3-fluorophenyl)-1,3-thiazol-5-yl]methyl]-1H-benzimidazole	(CDCl3) 8.78 (s, 1H), 7.91 (s, 1H), 7.38-7.48 (m, 4H), 7.11-7.19 (m, 2H), 4.59 (s, 2H), 3.90 (q, 2H), 1.12 (t, 3H)	

	TABLE 8			
Cmp. #	STRUCTURE	IUPAC NAME	NMR	MS
1051		1-ethyl-2-[[4-(6-fluoropyridin-2-yl)-1,3-thiazol-5-yl]methyl]-6-methyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 8.92 (s, 1H), 8.75 (s, 1H), 8.16 (d, 1H), 7.90 (dd, 1H), 7.08 (s, 1H), 6.87 (d, 1H), 5.28 (s, 2H0, 4.32 (q, 2H), 2.63 (s, 3H), 1.32 (t, 3H)	
1052		2-[[3,5-bis(3-fluorophenyl)isoxazol-4-yl]methyl]-1-ethyl-6-(trifluoromethyl)-1H-benzimidazole		m/z 484 [M+1]
1053		2-(2,4'-bi-1,3-thiazol-5'-ylmethyl)-1-ethyl-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.05 (s, 1H0, 8.76 (s, 1H), 8.41 (d, 1H), 7.88 (d, 1H), 7.41 (d, 1H), 7.25 (d, 1H), 5.35 (s, 2H), 4.26 (q, 2H), 1.25 (t, 3H)	
1054		1-ethyl-2-[[2-(1,3-thiazol-2-yl)-4-(trifluoromethyl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.10 (s, 1H), 8.47 (d, J = 6.0 Hz, 1H), 7.88 (d, J = 3.2 Hz, 1H), 7.58 (s, 1H), 7.48 (d, J = 3.2 Hz, 1H), 7.31 (d, J = 5.6 Hz, 1H), 6.37 (s, 2H), 4.31 (q, J = 7.2 Hz, 2H), 1.24 (t, J = 7.2 Hz, 3H)	m/z 379 [M+1]
1055		3-ethyl-6-isopropyl-2-[[2-(1,3-thiazol-2-yl)-4-(trifluoromethyl)-1H-imidazol-1-yl]methyl]-3H-imidazo[4,5-c]pyridine	(CDCl3) 8.75 (s, 1H), 7.87 (d, J = 3.3 Hz, 1H), 7.59 (d, J = 0.9 Hz, 1H), 7.54 (s, 1H), 7.47 (d, J = 3.6 Hz, 1H), 6.32 (s, 2H), 4.38 (q, J = 7.2 Hz, 2H), 3.21 (sept, J = 6.9 Hz, 1H), 1.35 (d, J = 6.9 Hz, 6H), 1.30 (t, J = 7.2 Hz	m/z 421 [M+1]
1056		1-ethyl-6-isopropyl-2-[[2-(1,3-thiazol-2-yl)-4-(trifluoromethyl)-1H-imidazol-1-yl]methyl]-1H-imidazo[4,5-c]pyridine	(CDCl3) 9.02 (s, 1H), 7.88 (d, J = 2.7 Hz, 1H), 7.55 (d, J = 0.9 Hz, 1H), 7.48 (d, J = 3.3 Hz, 1H), 7.13 (s, 1H), 6.34 (s, 2H), 4.28 (q, J = 7.2 Hz, 2H), 3.20 (sept, J = 6.9 Hz, 1H), 1.36 (d, J = 6.9 Hz,	m/z 421 [M+1]

Example 51

Preparation of radiolabeled probe compounds of the invention

The compounds of the invention are prepared as radiolabeled probes by carrying out their synthesis using precursors comprising at least one atom that is a radioisotope. The radioisotope is preferably selected from of at least one of carbon (preferably ^{14}C), hydrogen (preferably ^{3}H), sulfur (preferably ^{35}S), or iodine (preferably ^{125}I). Such radiolabeled probes are conveniently synthesized by a radioisotope supplier specializing in custom synthesis of radiolabeled probe compounds. Such suppliers include Amersham Corporation, Arlington Heights, IL; Cambridge Isotope Laboratories, Inc. Andover, MA; SRI International, Menlo Park, CA; Wizard Laboratories, West Sacramento, CA; ChemSyn Laboratories, Lexena, KS; American Radiolabeled Chemicals, Inc., St. Louis, MO; and Moravek Biochemicals Inc., Brea, CA.

Tritium labeled probe compounds are also conveniently prepared catalytically via platinum-catalyzed exchange in tritiated acetic acid, acid-catalyzed exchange in tritiated trifluoroacetic acid, or heterogeneous-catalyzed exchange with tritium gas. Such preparations are also conveniently carried out as a custom radiolabeling by any of the suppliers listed in the preceding paragraph using the compound of the invention as substrate. In addition, certain precursors may be subjected to tritium-halogen exchange with tritium gas, tritium gas reduction of unsaturated bonds, or reduction using sodium borotritide, as appropriate.

Example 52

Receptor autoradiography

Receptor autoradiography (receptor mapping) is carried out in vitro as described by Kuhar in sections 8.1.1 to 8.1.9 of Current Protocols in Pharmacology (1998) John Wiley & Sons, New York, using radiolabeled compounds of the invention prepared as described in the preceding Example.

Example 53

Binding Assay

The high affinity and high selectivity of preferred compounds of the invention for the benzodiazepine site of the $GABA_A$ receptor can be confirmed using the binding assay described by Thomas and Tallman (*J. Bio. Chem.* 1981; 156:9838-9842, and *J. Neurosci.* 1983; 3:433-440).

Rat cortical tissue is dissected and homogenized in 25 volumes (w/v) of Buffer A (0.05 M Tris HCl buffer, pH 7.4 at 4 °C). The tissue homogenate is centrifuged in the cold (4 °C) at 20,000 x g for 20 minutes. The supernatant is decanted, the pellet rehomogenized in the same volume of buffer, and centrifuged again at 20,000 x g. The supernatant of this centrifugation step is decanted. The resulting pellet may be stored at -20 °C overnight. The pellet is then thawed and resuspended in 25 volumes of Buffer A (original wt/vol), centrifuged at 20,000 x g and the supernatant decanted. This wash step is repeated once. The pellet is finally resuspended in 50 volumes of Buffer A.

Incubations contain 100 µl of tissue homogenate, 100 µl of radioligand, (0.5 nM ^{3}H-Ro15-1788 [^{3}H-Flumazenil], specific activity 80 Ci/mmol), and test compound or control (see below), and are brought to a total volume of 500 µl with Buffer A. Incubations are carried for 30 minutes at 4°C and then rapidly filtered through Whatman GFB filters to separate free and bound ligand. Filters are washed twice with fresh Buffer A and counted in a liquid scintillation counter. Nonspecific binding (control) is determined by displacement of ^{3}H Ro15-1788 with 10 µM Diazepam (Research Biochemicals International, Natick, MA). Data are collected in triplicate, averaged, and percent inhibition of total specific binding (Total Specific Binding = Total - Nonspecific) is calculated for each compound.

A competition binding curve may obtained with up to 11 points spanning the compound concentration range from 10^{-12}M to 10^{-5}M obtained per curve by the method described above for

determining percent inhibition. K_i values are calculated according the Cheng-Prussof equation. Each of the compounds disclosed in Tables 6-8 was tested in this fashion and each was found to have a K_i of < 4μM. Preferred compounds of the invention exhibit K_i values of less than 100 nM and more preferred compounds of the invention exhibit K_i values of less than 10 nM.

Example 54

Electrophysiology

The following assay can be used to determine if a compound of the invention acts as an agonist, an antagonist, or an inverse agonist at the benzodiazepine site of the $GABA_A$ receptor.

Assays are carried out as described in White and Gurley (NeuroReport 6: 1313-1316, 1995) and White, Gurley, Hartnett, Stirling, and Gregory (Receptors and Channels 3: 1-5, 1995) with modifications. Electrophysiological recordings are carried out using the two electrode voltage-clamp technique at a membrane holding potential of -70 mV. *Xenopus Laevis* oocytes are enzymatically isolated and injected with non-polyadenylated cRNA mixed in a ratio of 4:1:4 for α, β and γ subunits, respectively. Of the nine combinations of α, β and γ subunits described in the White et al. publications, preferred combinations are $\alpha_1\beta_2\gamma_2$, $\alpha_2\beta_3\gamma_2$, $\alpha_3\beta_3\gamma_2$, and $\alpha_5\beta_3\gamma_2$. Preferably all of the subunit cRNAs in each combination are human clones or all are rat clones. The sequence of each of these cloned subunits is available from GENBANK, e.g., human α_1, GENBANK accession no. X14766, human α_2, GENBANK accession no. A28100; human α_3, GENBANK accession no. A28102; human α_5, GENBANK accession no. A28104; human β_2, GENBANK accession no. NM 021911; human β_3, GENBANK accession no. M82919 and accession no. Z20136; human γ_2, GENBANK accession no. X15376; rat α_1, GENBANK accession no. L08490, rat α_2, GENBANK accession no. L08491; rat α_3, GENBANK accession no. L08492; rat α_5, GENBANK accession no. L08494; rat β_2, GENBANK accession no. X15467; rat

β_3, GENBANK accession no. X15468; and rat γ_2, GENBANK accession no. L08497. For each subunit combination, sufficient message for each constituent subunit is injected to provide current amplitudes of >10 nA when 1 μM GABA is applied.

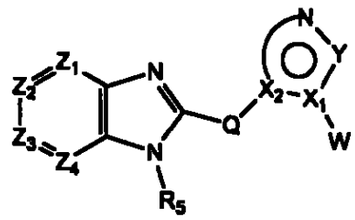
Compounds are evaluated against a GABA concentration that evokes <10% of the maximal evokable GABA current (e.g. 1μM-9μM). Each oocyte is exposed to increasing concentrations of a compound being evaluated (test compound) in order to evaluate a concentration/effect relationship. Test compound efficacy is calculated as a percent-change in current amplitude: 100*((Ic/I)-1), where Ic is the GABA evoked current amplitude observed in the presence of test compound and I is the GABA evoked current amplitude observed in the absence of the test compound.

Specificity of a test compound for the benzodiazepine site is determined following completion of a concentration/effect curve. After washing the oocyte sufficiently to remove previously applied test compound, the oocyte is exposed to GABA + 1 μM RO15-1788, followed by exposure to GABA + 1 μM RO15-1788 + test compound. Percent change due to addition of compound is calculated as described above. Any percent change observed in the presence of RO15-1788 is subtracted from the percent changes in current amplitude observed in the absence of 1 μM RO15-1788. These net values are used for the calculation of average efficacy and EC_{50} values by standard methods. To evaluate average efficacy and EC_{50} values, the concentration/effect data are averaged across cells and fit to the logistic equation.

It is to be understood that the foregoing describes preferred embodiments of the present invention and that modifications may be made therein without departing from the scope of the present invention as set forth in the following claims.

What is claimed is:

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein:

Z_1 is nitrogen or CR_1;

Z_2 is nitrogen or CR_2;

Z_3 is nitrogen or CR_3;

Z_4 is nitrogen or CR_4;

provided that no more than two of Z_1, Z_2, Z_3, and Z_4 are nitrogen;

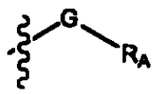
R_1, R_2, R_3, and R_4 are independently selected from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, haloalkyl, and haloalkoxy,

ii) alkyl, alkoxy, cycloalkyl, alkenyl, alkynyl, (cycloalkyl)alkyl, $-NH(R_{10})$, $-N(R_{10})(R_{11})$, hydroxyalkyl, aminoalkyl, $(R_{10})NHalkyl-$, $(R_{10})(R_{11})Nalkyl-$, alkanoyl, alkoxycarbonyl, (heterocycloalkyl)alkyl, alkylsulfonyl, alkylthio, mono- or dialkylaminocarbonyl, heterocycloalkyl, aryl, and heteroaryl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20},

wherein R_{10} and R_{11} are independently selected at each occurrence from the group consisting of alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, (cycloalkyl)alkyl, aryl, arylalkyl, alkanoyl, and mono and dialkylaminoalkyl; and

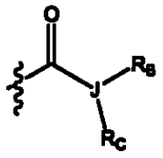
iii) a group of the formula:



where G is a bond, alkyl, -O-, -C(=O)-, or $-CH_2C(=O)-$, and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20},

iv) a group of the formula



where J is N, CH, or C-alkyl, and

R_B and R_C are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, (cycloalkyl)alkyl, heterocycloalkyl, aryl, arylalkyl, alkanoyl, heteroaryl, and mono and dialkylaminoalkyl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, alkoxy, and alkyl;

R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain:

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, or N-R_D wherein R_D is hydrogen, Ar_1, alkyl, cycloalkyl, heterocycloalkyl, or Ar_1alkyl; wherein Ar_1 is aryl or heteroaryl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, alkoxy, and alkyl, and/or

c) one or more substituents R_{20};

v) $-OC(=O)R_E$, $-C(=O)OR_E$, $-C(=O)NH_2$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-S(O)_nR_E$, $-S(O)_nNH_2$, $-S(O)_nNHR_E$, $-S(O)_nNR_ER_F$, $-NHC(=O)R_E$, $-C(=NR_E)R_F$, $-HC=N-OH$, $-HC=N(alkoxy)$, $-HC=N(alkyl)$, $-NR_EC(=O)R_F$, $-NHS(O)_mR_E$, and $-NR_ES(O)_mR_F$, where m is 0, 1 or 2, and

R_E and R_F are independently selected at each occurrence from alkyl, cycloalkyl, heterocycloalkyl, alkoxy, mono- or dialkylamino, aryl, or heteroaryl each of which is optionally substituted by 1, 2, or 3 of R_{30};

R_{20} is independently selected at each occurrence from the group consisting of: halogen; hydroxy; nitro; cyano; amino; alkyl; alkoxy optionally substituted with amino or mono- or dialkylamino; cycloalkyl; cycloalkylalkyl; cycloalkylalkoxy; alkenyl; alkynyl; haloalkyl; oxo; haloalkoxy; mono- and dialkylamino; aminoalkyl; and mono- and dialkylaminoalkyl;

R_{30} is independently selected at each occurrence from halogen, hydroxy, nitro, cyano, amino, alkyl, alkoxy optionally substituted with amino or mono- or dialkylamino, cycloalkyl, cycloalkylalkyl, cycloalkylalkoxy, heterocycloalkyl, alkenyl, alkynyl, haloalkyl, haloalkoxy, oxo; mono- and dialkylamino, aminoalkyl, and mono- and dialkylaminoalkyl;

R_5 represents hydrogen or haloalkyl; or

R_5 represents alkyl, cycloalkyl, or (cycloalkyl)alkyl, each of which may contain one or more double or triple bonds, and each of which is optionally substituted with 1, 2, or 3 of R_{30}, or

R_5 represents aryl, arylalkyl, heteroaryl, or heteroarylalkyl each of which is optionally substituted with 1, 2, or 3 substituents selected from the group consisting of haloalkyl, amino, $-NH(R_{10})$, $-N(R_{10})(R_{11})$, carboxamido, $(R_{10})NHcarbonyl$, $(R_{10})(R_{11})Ncarbonyl$, halogen, hydroxy, nitro, cyano, amino, alkyl, alkoxy optionally substituted with amino or mono- or dialkylamino, cycloalkyl, cycloalkylalkyl, cycloalkylalkoxy, heterocycloalkyl, alkenyl, alkynyl, haloalkyl, haloalkoxy, aminoalkyl, and mono- and dialkylaminoalkyl;

Q represents $-C(R_6)(R_7)$ or oxygen,

with the proviso that Q is not oxygen when X_2 is nitrogen;

R_6 and R_7 independently represent hydrogen, fluorine, or alkyl;

the group:



represents a 5 to 7 membered heteroaryl or heterocycloalkyl ring containing up to 4 heteroatoms independently selected from nitrogen, sulfur, and oxygen, said 5 to 7 membered heteroaryl or heterocycloalkyl ring is substituted at each carbon atom by R, and substituted at each nitrogen atom available for substitution by R', wherein

R is independently chosen at each occurrence from hydrogen, halogen, amino, alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, (cycloalkyl)alkyl, haloalkyl, haloalkoxy, carboxamido, and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which may be further substituted with one or more substituents independently selected from halogen, oxo, hydroxy, alkyl, and alkoxy;

R' is independently chosen at each occurrence from alkyl, hydrogen, cycloalkyl, cycloalkyl(alkyl), and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which 3- to 7-membered carbocyclic or heterocyclic groups are optionally substituted with one or more substituents independently selected from halogen, oxo, hydroxy, alkyl, and alkoxy;

X_1 and X_2 independently represent nitrogen, carbon or CH;

Y is nitrogen, oxygen, carbon, -CH-, $-CH_2-$, or absent; and

W represents aryl or heteroaryl, wherein the aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, -

$C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0, 1, or 2.

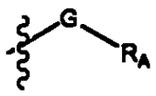
2. A compound or salt according to Claim 1, wherein R_1, R_2, R_3, and R_4 are independently selected from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6) alkyl, and halo(C_1-C_6)alkoxy,

ii) (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_2-C_6)alkenyl, alkynyl, ((C_3-C_8)cycloalkyl)(C_1-C_4)alkyl, -$NH(R_{10})$, $-N(R_{10})(R_{11})$, hydroxy(C_1-C_6)alkyl, amino(C_1-C_6)alkyl, $(R_{10})NH$ (C_1-C_6)alkyl, $(R_{10})(R_{11})N$(C_1-C_6)alkyl, (C_1-C_6)alkanoyl, (C_1-C_6)alkoxycarbonyl, (C_1-C_6)alkylsulfonyl, (C_1-C_6)alkylthio, mono- or di(C_1-C_6)alkylaminocarbonyl, heterocycloalkyl, (heterocycloalkyl)C_1-C_4alkyl, aryl, and heteroaryl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20},

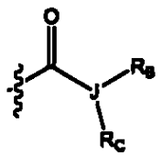
wherein R_{10} and R_{11} are independently selected from the group consisting of (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkylalkyl, aryl, aryl(C_1-C_6)alkyl, (C_1-C_6)alkanoyl, and mono and di(C_1-C_6)alkylaminoalkyl;

iii) a group of the formula:



where G is (C_1-C_6)alkyl, -O-, -C(=O)-, or $-CH_2C(=O)-$, and R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring consisting of from 3 to 8 ring atoms, and each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O; said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}, and

iv) a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8cycloalkyl) (C_1-C_4)alkyl, heterocycloalkyl, aryl, aryl(C_1-C_4)alkyl, (C_1-C_6)alkanoyl, heteroaryl, and mono and di(C_1-C_6)alkylamino(C_1-C_6)alkyl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, C_1-C_6alkoxy, and C_1-C_6alkyl; or

R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds;

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen, Ar_1, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, heterocycloalkyl, or Ar_1(C_1-C_6)alkyl; wherein Ar_1 is aryl or heteroaryl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, C_1-C_6alkoxy, and C_1-C_6alkyl; and/or

c) one or more substituents R_{30};

v) -OC(=O)R_E, -C(=O)OR_E, -C(=O)NH_2, -C(=O)NHR_E, -C(=O)N$R_E$$R_F$, -S(O)$_n$$R_E$, -S(O)$_n$$NH_2$, -S(O)$_nNHR_E$, -S(O)$_nNR_E$$R_F$, -NHC(=O)$R_E$, -C(=N$R_E$)$R_F$, -HC=N-OH, -HC=N($C_1$-$C_6$alkoxy), -HC=N($C_1$-$C_6$alkyl), -N$R_E$C(=O)$R_F$, -NHS(O)$_m$$R_E$, and -N$R_E$S(O)$_m$$R_F$, where m is 0, 1 or 2, and

R_E and R_F are independently selected at each occurrence from (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, heterocycloalkyl, (C_1-C_6)alkoxy, mono- and di(C_1-C_6)alkylamino, aryl, and heteroaryl each of which is optionally substituted by 1, 2, or 3 of R_{30};

R_{20} is independently selected at each occurrence from the group consisting of halogen; hydroxy; nitro; cyano; amino; (C_1-C_6)alkyl; (C_1-C_6)alkoxy optionally substituted with amino or mono- or di(C_1-C_6)alkylamino; (C_3-C_8)cycloalkyl; (C_3-C_8)cycloalkyl(C_1-C_4)alkyl; (C_3-C_8)cycloalkyl(C_1-C_4)alkoxy; (C_2-C_6)alkenyl; (C_2-C_6)alkynyl; halo(C_1-C_6)alkyl; halo(C_1-C_6)alkoxy; oxo; mono- and di(C_1-C_6)alkylamino; amino(C_1-C_6)alkyl; and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_{30} is independently selected at each occurrence from halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy optionally substituted with amino or mono- or di(C_1-C_6)alkylamino, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_4)alkyl, (C_3-C_8)cycloalkyl(C_1-C_4)alkoxy, heterocycloalkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, oxo, mono- and di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents hydrogen or halo(C_1-C_6)alkyl; or

R_5 represents (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, or $(C_3-C_8$cycloalkyl$)(C_1-C_4)$alkyl, each of which may contain one or more double or triple bonds, and each of which is optionally substituted with 1, 2, or 3 of R_{30} or

R_5 represents aryl, aryl(C_1-C_4)alkyl, heteroaryl, or heteroaryl(C_1-C_4)alkyl each of which is optionally substituted with 1, 2, or 3 substituents selected from the group consisting of:

halo(C_1-C_6)alkyl, amino, NH(R_{10}), N$(R_{10})(R_{11})$, carboxamido, NH(R_{10})carbonyl, N$(R_{10})(R_{11})$carbonyl, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy optionally substituted with amino or mono- or di(C_1-C_6)alkylamino, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_4)alkyl,

(C_3-C_8)cycloalkyl(C_1-C_4)alkoxy, heterocyclo(C_1-C_4)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

Q represents $-C(R_6)(R_7)$ or oxygen,

with the proviso that Q is not oxygen when X_2 is nitrogen;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6alkyl;

the group:



represents a 5 to 7 membered heteroaryl or heterocycloalkyl ring containing up to 4 heteroatoms selected from nitrogen, sulfur, and oxygen, said 5 to 7 membered heteroaryl or heterocycloalkyl ring is substituted at each carbon atom by R, and is substituted at each nitrogen atom available for substitution by R', wherein

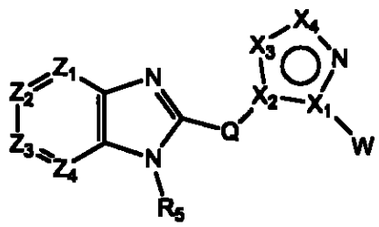
R is independently chosen at each occurrence from hydrogen, halogen, amino, C_1-C_6alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_1-C_6alkoxy, (C_3-C_8)cycloalkyl, $(C_3-C_8$cycloalkyl$)(C_1-C_4)$alkyl, halo(C_1-C_6)alkyl, haloalkoxy, carboxamido, and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which may be further substituted with one or more substituents independently selected from halogen, oxo, hydroxy, C_{1-4}alkyl, and $-O(C_{1-4}$alkyl);

R' is independently chosen at each occurrence from hydrogen, C_1-C_6alkyl, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl$(C_1-C_4$alkyl), and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which 3- to 7-membered carbocyclic or heterocyclic groups are optionally substituted with one or more

substituents independently selected from halogen, oxo, hydroxy, C_{1-4}alkyl, and -O(C_{1-4}alkyl); and

X_1, X_2, W, and Y are as defined in Claim 1.

3. A compound or salt according to Claim 2 of the formula:



wherein Z_1, Z_2, Z_3, Z_4, R_5, Q, X_1, X_2, and W are as defined in Claim 2;

X_3 and X_4 are independently selected from the group consisting of carbon, CR, N, O, S, NH, and N(C_1-C_6)alkyl;

provided that at least one of X_1, X_2, X_3, and X_4 is carbon or CR, wherein

R is independently chosen at each occurrence from hydrogen, halogen, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, carboxamido, and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which may be further substituted with one or more substituents independently selected from halogen, oxo, hydroxy, C_{1-4}alkyl, and -O(C_{1-4}alkyl).

4. A compound or salt according to Claim 1 wherein Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; and Z_4 is CR_4.

5. A compound or salt according to Claim 2 wherein Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; and Z_4 is CR_4.

6. A compound or salt according to Claim 3 wherein

Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; and Z_4 is CR_4.

7. A compound or salt according to Claim 6, wherein X_2 is carbon; and Q is oxygen.

8. A compound or salt according to Claim 6, wherein X_2 is N; and Q is $C(R_6)(R_7)$.

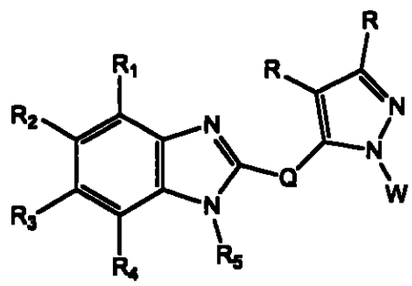
9. A compound or salt according to Claim 6, wherein X_2 is carbon; and Q is $C(R_6)(R_7)$.

10. A compound or salt according to Claim 6, wherein X_1 is carbon; X_2 is N; and Q is $C(R_6)(R_7)$.

11. A compound or salt according to Claim 6, wherein X_1 is nitrogen; X_2 is carbon; and Q is $C(R_6)(R_7)$.

12. A compound or salt according to Claim 6, wherein Q is $C(R_6)(R_7)$.

13. A compound or salt according to Claim 6 of the formula



wherein R, R_1, R_2, R_3, R_4, R_5, Q, and W are as defined in Claim 6.

14. A compound or salt according to Claim 13 wherein Q is $C(R_6)(R_7)$.

15. A compound or salt according to Claim 14, wherein:

R is independently selected at each occurrence from the group consisting of

i) hydrogen, halogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_1-C_6)alkoxy, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, and

ii) phenyl and pyridyl each of which is optionally substituted with up to 3 substituents independently chosen from halogen, hydroxy, C_1-C_4alkyl, and -O(C_1-C_4alkyl);

R_1, R_2, R_3, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, heterocycloalkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents hydrogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, phenyl, benzyl, thiophenyl, thiazoyl, pyridyl, imidazolyl, pyrazolyl; or pyrimidinyl;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6 alkyl; and

W represents phenyl, thienyl, thiazoyl, pyridyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, or pyrimidinyl, each of which is optionally substituted with up to 4 independently selected R_{30} groups.

16. A compound or salt according to Claim 14, wherein:

R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1, R_3, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

Q is CH_2; and

W represents phenyl, furanyl, thienyl, thiazoyl, pyridyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, pyrimidinyl, benzimidazolyl, quinolinyl, isoquinolinyl each of which is optionally substituted with up to 4 R_{30} groups.

17. A compound or salt according to Claim 16 wherein R_1, R_3, and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and W is phenyl, pyridyl, or thiazolyl, each which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

18. A compound or salt according to Claim 17, wherein W is 2-thiazolyl, 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

19. A compound or salt according to Claim 17, wherein R, R_1, and R_4 are hydrogen.

20. A compound or salt according to Claim 17, wherein R_5 is ethyl or n-propyl.

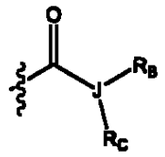
21. A compound or salt according to Claim 17 wherein R_2 is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl)C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl)alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

22. A compound or salt according to Claim 17 wherein

R_2 is a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_3-C_8)cycloalkyl, and (C_3-C_8cycloalkyl) (C_1-C_4)alkyl; or

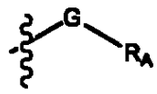
R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl;

c) one or more substituents R_{20}.

23. A compound or salt according to Claim 17 wherein R_2 is a group of the formula:



where G is a bond or C_1-C_2alkyl; and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}.

24. A compound or salt according to Claim 23 wherein R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl each of which is is optionally substituted with 1, 2, 3, or 4 of R_{20}.

25. A compound or salt according to Claim 14, wherein:

R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1, R_2, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

Q is CH_2; and

W represents phenyl, furanyl, thienyl, thiazoyl, pyridyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, pyrimidinyl, benzimidazolyl, quinolinyl, isoquinolinyl each of which is optionally substituted with up to 4 R_{30} groups.

26. A compound or salt according to Claim 25 wherein R_1, R_2, and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and W is phenyl, pyridyl, or thiazolyl, each of which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2 alkyl, and C_1-C_2 alkoxy.

27. A compound or salt according to Claim 26, wherein W is 2-thiazolyl, 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

28. A compound or salt according to Claim 26, wherein R, R_1, and R_4 are hydrogen.

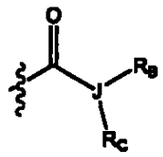
29. A compound or salt according to Claim 26, wherein R_5 is ethyl or n-propyl.

30. A compound or salt according to Claim 26 wherein R_3 is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl)C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

31. A compound or salt according to Claim 26 wherein R_3 is a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_3-C_8)cycloalkyl, and (C_3-C_8cycloalkyl) (C_1-C_4)alkyl; or

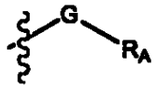
R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl;

c) one or more substituents R_{20}.

32. A compound or salt according to Claim 26 wherein R_3 is a group of the formula:



where G is a bond or C_1-C_2alkyl; and

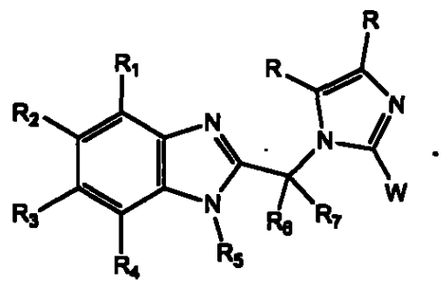
R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated,

partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}.

33. A compound or salt according to Claim 32 wherein R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl each of which is is optionally substituted with 1, 2, 3, or 4 of R_{20}.

34. A compound or salt according to Claim 26 wherein R_3 is -HC=N-OH or -HC=N(C_1-C_6 alkoxy).

35. A compound or salt according to Claim 6 of the formula



wherein R, R_1, R_2, R_3, R_4, R_5, R_6, R_7, and W are as defined in Claim 6.

36. A compound or salt according to Claim 35, wherein:

R is independently selected at each occurrence from the group consisting of

i) hydrogen, halogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_1-C_6)alkoxy, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, and

ii) phenyl and pyridyl each of which is optionally substituted with up to 3 substituents independently chosen from halogen, hydroxy, C_{1-4}alkyl, and -O(C_{1-4}alkyl);

R_1, R_2, R_3, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl,

(C_2-C_6)alkenyl, (C_2-C_6)alkynyl, heterocycloalkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents hydrogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, phenyl, benzyl, thiophenyl, thiazoyl, pyridyl, imidazolyl, pyrazolyl, or pyrimidinyl;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6 alkyl; and

W represents phenyl, thienyl, thiazoyl, pyridyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, or pyrimidinyl, each of which is optionally substituted with up to 4 R_{30} groups.

37. A compound or salt according to Claim 35, wherein:
W represents a 6-membered aryl or heteroaryl groups, wherein the 6-membered aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, $-S(O)_mR_E$, and $-OR_E$; and m is 0, 1, or 2.

38. A compound or salt according to Claim 35, wherein:
W represents a 5-membered heteroaryl group, wherein the 5-membered heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, $-S(O)_mR_E$, and $-OR_E$, and m is 0, 1, or 2.

39. A compound or salt according to Claim 35, wherein:
R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1, R_3, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-

C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

R_6 and R_7 are hydrogen; and

W represents phenyl, furanyl, thienyl, thiazoyl, pyridyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, pyrimidinyl, benzimidazolyl, quinolinyl, isoquinolinyl each of which is optionally substituted with up to 4 R_{30} groups.

40. A compound or salt according to Claim 39 wherein R_1, R_3, and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and W is phenyl, pyridyl, or thiazolyl, each which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

41. A compound or salt according to Claim 40, wherein W is 2-thiazolyl, 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

42. A compound or salt according to Claim 40, wherein R, R_1, and R_4 are hydrogen.

43. A compound or salt according to Claim 40, wherein R_5 is ethyl or n-propyl.

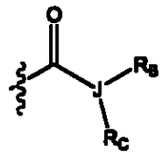
44. A compound or salt according to Claim 40 wherein R_2 is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl) C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each

of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

45. A compound or salt according to Claim 40 wherein R_2 is a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_3-C_8)cycloalkyl, and (C_3-C_8cycloalkyl) (C_1-C_4)alkyl; or

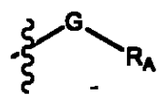
R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl;

c) one or more substituents R_{20}.

46. A compound or salt according to Claim 40 wherein R_2 is a group of the formula:



where G is a bond or C_1-C_2alkyl; and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}.

47. A compound or salt according to Claim 46 wherein R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl

each of which is is optionally substituted with 1, 2, 3, or 4 of R_{20}.

48. A compound or salt according to Claim 40 wherein R_2 is -HC=N-OH or -HC=N(C_1-C_6alkoxy).

49. A compound or salt according to Claim 35, wherein:
R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;
R_1, R_2, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;
R_5 represents (C_1-C_6)alkyl;
R_6 and R_7 are hydrogen; and
W represents phenyl, furanyl, thienyl, thiazoyl, pyridyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, pyrimidinyl, benzimidazolyl, quinolinyl, isoquinolinyl each of which is optionally substituted with up to 4 R_{30} groups.

50. A compound or salt according to Claim 49 wherein
R_1, R_2, and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and
W is phenyl, pyridyl, or thiazolyl, each which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

51. A compound or salt according to Claim 50, wherein W is 2-thiazolyl, 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

52. A compound or salt according to Claim 50, wherein R, R_1, and R_4 are hydrogen.

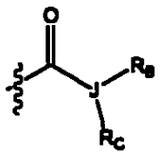
53. A compound or salt according to Claim 50, wherein R_5 is ethyl or n-propyl.

54. A compound or salt according to Claim 50 wherein R_3 is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl)C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl) C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

55. A compound or salt according to Claim 50 wherein R_3 is a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_3-C_8)cycloalkyl, and (C_3-C_8cycloalkyl) (C_1-C_4)alkyl; or

R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

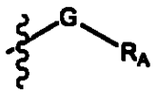
a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl;

c) one or more substituents R_{20}.

56. A compound or salt according to Claim 50 wherein

R_3 is a group of the formula:



where G is a bond or C_1-C_2alkyl; and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}.

57. A compound or salt according to Claim 56 wherein R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl each of which is is optionally substituted with 1, 2, 3, or 4 of R_{20}.

58. A compound or salt according to Claim 50 wherein R_3 is -HC=N-OH or -HC=N(C_1-C_6alkoxy).

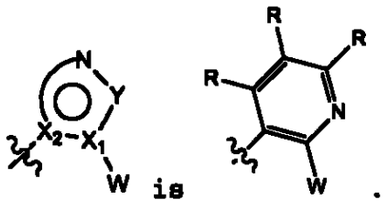
59. A compound or salt according to Claim 3 wherein:
Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4;
X_1 is carbon; X_2 is nitrogen; X_3 is CR; X_4 is nitrogen; and Q is $C(R_6)(R_7)$.

60. A compound or salt according to Claim 3 wherein
Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4;
X_1 is carbon; X_2 is nitrogen; X_3 is nitrogen; X_4 is CR; and Q is $C(R_6)(R_7)$.

61. A compound or salt according to Claim 3 wherein
Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4;
X_1 is carbon; X_2 is carbon; X_3 is S; and X_4 is CR.

62. A compound or salt according to Claim 61 wherein Q is $C(R_6)(R_7)$.

63. A compound or salt according to Claim 2, wherein Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4; and the group



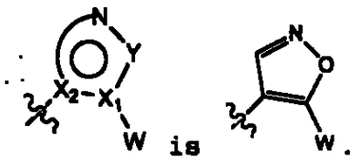
64. A compound or salt according to Claim 63 wherein Q is $C(R_6)(R_7)$.

65. A compound or salt according to Claim 3 wherein Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4; X_1 is nitrogen; X_2 is carbon; X_3 is nitrogen; and X_4 is CR.

66. A compound or salt according to Claim 3 wherein Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4; X_1 is carbon; X_2 is carbon; X_3 is NH or $N(C_1\text{-}C_6\text{alkyl})$; and X_4 is CR.

67. A compound or salt according to Claim 3 wherein Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4; X_1 is carbon; X_2 is nitrogen; X_3 is nitrogen; X_4 is nitrogen; and Q is $C(R_6)(R_7)$.

68. A compound or salt according to Claim 2, wherein Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4; and the group



69. A compound or salt according to Claim 3, wherein

Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4;
X_1 is nitrogen; X_2 is carbon; X_3 is CR; and X_4 is nitrogen.

70. A compound or salt according to Claim 69 wherein Q is $C(R_6)(R_7)$.

71. A compound or salt according to Claim 3, wherein Z_1 is CR_1; Z_2 is CR_2; Z_3 is CR_3; Z_4 is CR_4; X_1 is nitrogen; X_2 is carbon; X_3 is nitrogen; and X_4 is nitrogen.

72. A compound or salt according to Claim 71 wherein Q is $C(R_6)(R_7)$.

73. A compound or salt according to Claim 1 wherein one and only one of Z_1, Z_2, Z_3, and Z_4 is nitrogen.

74. A compound or salt according to Claim 2 wherein one and only one of Z_1, Z_2, Z_3, and Z_4 is nitrogen.

75. A compound or salt according to Claim 3 wherein one and only one of Z_1, Z_2, Z_3, and Z_4 is nitrogen.

76. A compound or salt according to Claim 75 wherein either Z_2 or Z_3 is nitrogen; and
W represents a 5-membered heteroaryl group, the 5-membered heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0, 1, or 2.

77. A compound or salt according to Claim 76, wherein X_2 is carbon; and Q is oxygen.

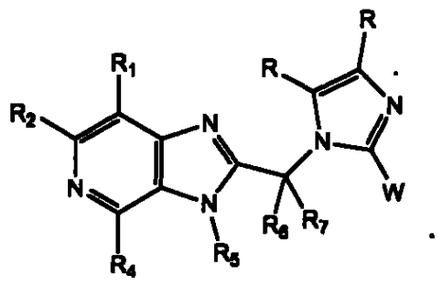
78. A compound or salt according to Claim 76, wherein X_2 is N; and Q is $C(R_6)(R_7)$.

79. A compound or salt according to Claim 76, wherein X_2 is carbon; and Q is $C(R_6)(R_7)$.

80. A compound or salt according to Claim 76, wherein X_1 is carbon; X_2 is N; and Q is $C(R_6)(R_7)$.

81. A compound or salt according to Claim 76, wherein X_1 is nitrogen; X_2 is carbon; and Q is $C(R_6)(R_7)$.

82. A compound or salt according to Claim 76 of the formula



wherein R, R_1, R_2, R_4, R_5, R_6, R_7, and W are as defined in Claim 76.

83. A compound or salt according to Claim 82, wherein:
R is independently selected at each occurrence from the group consisting of

i) hydrogen, halogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_1-C_6)alkoxy, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, and

ii) phenyl and pyridyl each of which is optionally substituted with up to 3 substituents independently chosen from halogen, hydroxy, C_{1-4}alkyl, and $-O(C_{1-4}$alkyl$)$;

R_1, R_2, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, heterocycloalkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino,

amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents hydrogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, phenyl, benzyl, thiophenyl, thiazoyl, pyridyl, imidazolyl, pyrazolyl, or pyrimidinyl;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6 alkyl; and

W represents thienyl, thiazolyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, or isoxazolyl each of which is optionally substituted with up to 4 R_{30} groups.

84. A compound or salt according to Claim 82, wherein:

R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1 and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

R_6 and R_7 are hydrogen; and

W represents furanyl, thienyl, thiazoyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, or isoxazolyl, each of which is optionally substituted with up to 4 R_{30} groups.

85. A compound or salt according to Claim 84 wherein

R_1 and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and

W is thiazolyl which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

86. A compound or salt according to Claim 85, wherein W is 2-thiazolyl.

87. A compound or salt according to Claim 85, wherein R, R_1, and R_4 are hydrogen.

88. A compound or salt according to Claim 85, wherein R_5 is ethyl or n-propyl.

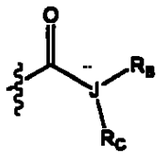
89. A compound or salt according to Claim 85 wherein R_2 is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_1-C_6alkynyl, (C_3-C_8cycloalkyl)C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl) C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

90. A compound or salt according to Claim 85 wherein R_2 is chosen from hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy.

91. A compound or salt according to Claim 85 wherein R_2 is a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_3-C_8)cycloalkyl, and (C_3-C_8cycloalkyl) (C_1-C_4)alkyl; or

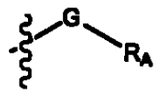
R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl; and/or

c) one or more substituents R_{20}.

92. A compound or salt according to Claim 85 wherein R_2 is a group of the formula:



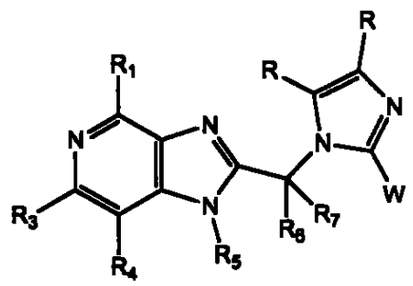
where G is a bond or C_1-C_2alkyl; and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}.

93. A compound or salt according to Claim 92 wherein R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl each of which is is optionally substituted with 1, 2, 3, or 4 of R_{20}.

94. A compound or salt according to Claim 85 wherein R_2 is -HC=N-OH or -HC=N(C_1-C_6alkoxy).

95. A compound or salt according to Claim 76 of the formula



wherein R, R_1, R_2, R_4, R_5, R_6, R_7, and W are as defined in Claim 76.

96. A compound or salt according to Claim 75, wherein:

R is independently selected at each occurrence from the group consisting of

i) hydrogen, halogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_1-C_6)alkoxy, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, and

ii) phenyl and pyridyl each of which is optionally substituted with up to 3 substituents independently chosen from halogen, hydroxy, C_{1-4}alkyl, and -O(C_{1-4}alkyl);

R_1, R_3, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, heterocycloalkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents hydrogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, phenyl, benzyl, thiophenyl, thiazoyl, pyridyl, imidazolyl, pyrazolyl, or pyrimidinyl;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6 alkyl; and

W represents thienyl, thiazoyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, or isoxazolyl each of which is optionally substituted with up to 4 R_{30} groups.

97. A compound or salt according to Claim 95, wherein:

R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1 and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

R_6 and R_7 are hydrogen; and

W represents furanyl, thienyl, thiazoyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, or isoxazolyl, each of which is optionally substituted with up to 4 R_{30} groups.

98. A compound or salt according to Claim 97 wherein R_1 and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and

W is thiazolyl which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

99. A compound or salt according to Claim 98, wherein W is 2-thiazolyl.

100. A compound or salt according to Claim 98, wherein R, R_1, and R_4 are hydrogen.

101. A compound or salt according to Claim 98, wherein R_5 is ethyl or n-propyl.

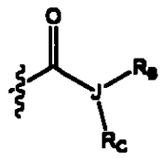
102. A compound or salt according to Claim 98 wherein R_3 is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy, and

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl) C_1-C_4alkyl, -$NH(R_{10})$, -$N(R_{10})(R_{11})$, $(R_{10})NH(C_1$-$C_6)$alkyl, $(R_{10})(R_{11})N(C_1$-$C_6)$alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

103. A compound or salt according to Claim 102 wherein R_3 is chosen from hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy.

104. A compound or salt according to Claim 98 wherein R_3 is a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_3-C_8)cycloalkyl, and (C_3-C_8cycloalkyl) (C_1-C_4)alkyl; or

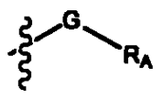
R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl; and/or

c) one or more substituents R_{20}.

105. A compound or salt according to Claim 98 wherein R_3 is a group of the formula:



where G is a bond or C_1-C_2alkyl; and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}.

106. A compound or salt according to Claim 105 wherein R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl each of which is is optionally substituted with 1, 2, 3, or 4 of R_{20}.

107. A compound or salt according to Claim 98 wherein R_2 is -HC=N-OH or -HC=N(C_1-C_6alkoxy).

108. A compound or salt according to Claim 76 wherein: X_1 is carbon; X_2 is nitrogen; X_3 is CR; and X_4 is nitrogen; and Q is $C(R_6)(R_7)$.

109. A compound or salt according to Claim 76 wherein X_1 is carbon; X_2 is nitrogen; X_3 is nitrogen; X_4 is CR; and Q is $C(R_6)(R_7)$.

110. A compound or salt according to Claim 76 wherein X_1 is carbon; X_2 is carbon; X_3 is S; and X_4 is CR.

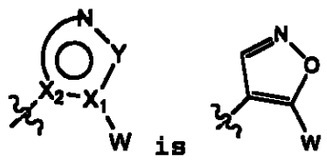
111. A compound or salt according to Claim 110 wherein Q is $C(R_6)(R_7)$.

112. A compound or salt according to Claim 76 wherein X_1 is nitrogen; X_2 is carbon; X_3 is nitrogen; and X_4 is CR.

113. A compound or salt according to Claim 76 wherein X_1 is carbon; X_2 is carbon; X_3 is NH or N(C_1-C_6alkyl); and X_4 is CR.

114. A compound or salt according to Claim 76 wherein X_1 is carbon; X_2 is nitrogen; X_3 is nitrogen; X_4 is nitrogen; and Q is $C(R_6)(R_7)$.

115. A compound or salt according to Claim 74, wherein either Z_2 or Z_3 is nitrogen;
and the group



is ; and

W represents a 5-membered heteroaryl group, the 5-membered heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0, 1, or 2.

116. A compound or salt according to Claim 76, wherein X_1 is nitrogen; X_2 is carbon; X_3 is CR; and X_4 is nitrogen.

118. A compound or salt according to Claim 117 wherein Q is $C(R_6)(R_7)$.

119. A compound or salt according to Claim 76, wherein X_1 is nitrogen; X_2 is carbon; X_3 is nitrogen; and X_4 is nitrogen.

120. A compound or salt according to Claim 119 wherein Q is $C(R_6)(R_7)$.

121. A compound or salt according to Claim 75 wherein either Z_2 or Z_3 is nitrogen; and
W represents a 6-membered aryl or heteroaryl group, the 6-membered aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0, 1, or 2.

122. A compound or salt according to Claim 121, wherein X_2 is carbon; and Q is oxygen.

123. A compound or salt according to Claim 121, wherein X_2 is N; and Q is $C(R_6)(R_7)$.

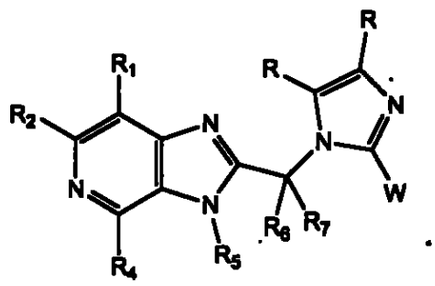
124. A compound or salt according to Claim 121, wherein X_2 is carbon; and Q is $C(R_6)(R_7)$.

125. A compound or salt according to Claim 121, wherein X_1 is carbon; X_2 is N; and Q is $C(R_6)(R_7)$.

126. A compound or salt according to Claim 121, wherein X_1 is nitrogen; X_2 is carbon; and Q is $C(R_6)(R_7)$.

127. A compound or salt according to Claim 121, wherein Q is $C(R_6)(R_7)$.

128. A compound or salt according to Claim 121 of the formula



wherein R, R_1, R_2, R_4, R_5, R_6, R_7, and W are as defined in Claim 121.

129. A compound or salt according to Claim 128, wherein:
R is independently selected at each occurrence from the group consisting of

i) hydrogen, halogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_1-C_6)alkoxy, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, and

ii) phenyl and pyridyl each of which is optionally substituted with up to 3 substituents independently chosen from halogen, hydroxy, C_{1-4}alkyl, and $-O(C_{1-4}$alkyl);

R_1, R_2, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, heterocycloalkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or

di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents hydrogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, phenyl, benzyl, thiophenyl, thiazoyl, pyridyl, imidazolyl, pyrazolyl, or pyrimidinyl;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6 alkyl; and

W represents phenyl, pyrimidinyl, pyridyl, pyridizinyl, or pyrazinyl, each of which is optionally substituted with up to 4 R_{30} groups.

130. A compound or salt according to Claim 128, wherein:

R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1 and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono·or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

R_6 and R_7 are hydrogen; and

W represents phenyl, pyrimidinyl, pyridyl, pyridizinyl, or pyrazinyl each of which is optionally substituted with up to 4 R_{30} groups.

131. A compound or salt according to Claim 130 wherein

R_1 and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and

W is phenyl or pyridyl, each of which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

132. A compound or salt according to Claim 131, wherein W is 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

133. A compound or salt according to Claim 131, wherein R, R_1, and R_4 are hydrogen.

134. A compound or salt according to Claim 131, wherein R_3 is ethyl or n-propyl.

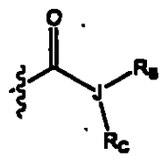
135. A compound or salt according to Claim 131 wherein R_2 is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy, and

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl)C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

136. A compound or salt according to Claim 135 wherein R_2 is chosen from hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy.

137. A compound or salt according to Claim 131 wherein R_2 is a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_3-C_8)cycloalkyl, and (C_3-C_8cycloalkyl) (C_1-C_4)alkyl; or

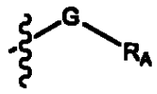
R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl;

c) one or more substituents R_{20}.

138. A compound or salt according to Claim 131 wherein R_2 is a group of the formula:



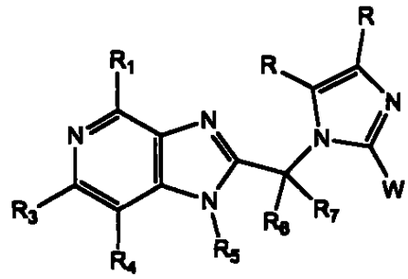
where G is a bond or C_1-C_2alkyl; and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}.

139. A compound or salt according to Claim 138 wherein R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl each of which is is optionally substituted with 1, 2, 3, or 4 of R_{20}.

140. A compound or salt according to Claim 131 wherein R_2 is -HC=N-OH or -HC=N(C_1-C_6alkoxy).

141. A compound or salt according to Claim 121 of the formula



wherein R, R_1, R_2, R_4, R_5, R_6, R_7, and W are as defined in Claim 141.

142. A compound or salt according to Claim 141, wherein:

R is independently selected at each occurrence from the group consisting of

i) hydrogen, halogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_1-C_6)alkoxy, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, and

ii) phenyl and pyridyl each of which is optionally substituted with up to 3 substituents independently chosen from halogen, hydroxy, C_{1-4}alkyl, and $-O(C_{1-4}$alkyl);

R_1, R_3, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, heterocycloalkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents hydrogen, (C_1-C_6)alkyl, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, phenyl, benzyl, thiophenyl, thiazoyl, pyridyl, imidazolyl, pyrazolyl, or pyrimidinyl;

R_6 and R_7 independently represent hydrogen, fluorine, or C_1-C_6 alkyl; and

W represents phenyl, pyridyl, pyridizinyl, pyrimidinyl, or pyrazinyl, each of which is optionally substituted with up to 4 R_{30} groups.

143. A compound or salt according to Claim 142, wherein:

R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1 and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

R_6 and R_7 are hydrogen; and

W represents phenyl, pyridyl, pyridizinyl, pyrimidinyl, or pyrazinyl, each of which is optionally substituted with up to 4 R_{30} groups.

144. A compound or salt according to Claim 143 wherein R_1 and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and

W is phenyl or pyridyl, each of which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

145. A compound or salt according to Claim 144, wherein W is 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

146. A compound or salt according to Claim 144, wherein R, R_1 and R_4 are hydrogen.

147. A compound or salt according to Claim 144, wherein R_5 is ethyl or n-propyl.

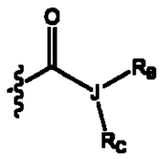
148. A compound or salt according to Claim 144 wherein R_3 is chosen from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,

ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl)C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

149. A compound or salt according to Claim 148 wherein R_3 is chosen from hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy.

150. A compound or salt according to Claim 144 wherein R_3 is a group of the formula



where J is N, CH, or C-(C_1-C_6)alkyl and

R_B and R_C are independently selected from the group consisting of hydrogen, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_3-C_8)cycloalkyl, and (C_3-C_8cycloalkyl) (C_1-C_4)alkyl; or

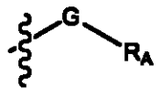
R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, and N-R_D wherein R_D is hydrogen or (C_1-C_6)alkyl;

c) one or more substituents R_{20}.

151. A compound or salt according to Claim 144 wherein R_3 is a group of the formula:



where G is a bond or C_1-C_2alkyl; and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}.

152. A compound or salt according to Claim 151 wherein R_A is chosen from phenyl, pyrrolyl, pyrazolyl, thiazolyl, isoxazolyl, triazolyl, tetrazolyl, oxadiazolyl, and oxazolyl each of which is is optionally substituted with 1, 2, 3, or 4 of R_{20}.

153. A compound or salt according to Claim 144 wherein R_2 is -HC=N-OH or -HC=N(C_1-C_6alkoxy).

154. A compound or salt according to Claim 121 wherein: X_1 is carbon; X_2 is nitrogen; X_3 is CR; X_4 is nitrogen; and Q is $C(R_6)(R_7)$.

155. A compound or salt according to Claim 121 wherein X_1 is carbon; X_2 is nitrogen; X_3 is nitrogen; X_4 is CR; and Q is $C(R_6)(R_7)$.

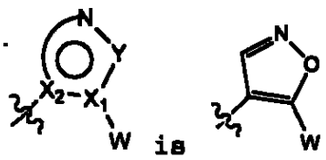
156. A compound or salt according to Claim 121 wherein X_1 is carbon; X_2 is carbon; X_3 is S; X_4 is CR; and Q is $C(R_6)(R_7)$.

157. A compound or salt according to Claim 156 wherein X_1 is nitrogen; X_2 is carbon; X_3 is nitrogen; and X_4 is CR.

158. A compound or salt according to Claim 121 wherein X_1 is carbon; X_2 is carbon; X_3 is NH or N(C_1-C_6alkyl); and X_4 is CR.

159. A compound or salt according to Claim 121 wherein X_1 is carbon; X_2 is nitrogen; X_3 is nitrogen; X_4 is nitrogen; and Q is $C(R_6)(R_7)$.

160. A compound or salt according to Claim 119, wherein either Z_2 or Z_3 is nitrogen;
and the group



is

; and

W represents a 6-membered aryl or heteroaryl group, wherein the 6-membered aryl or heteroaryl group is optionally

substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0, 1, or 2.

161. A compound or salt according to Claim 121, wherein X_1 is nitrogen; X_2 is carbon; X_3 is CR; and X_4 is nitrogen.

162. A compound or salt according to Claim 161 wherein Q is $C(R_6)(R_7)$.

163. A compound or salt according to Claim 121, wherein X_1 is nitrogen; X_2 is carbon; X_3 is nitrogen; and X_4 is nitrogen.

164. A compound or salt according to Claim 163 wherein Q is $C(R_6)(R_7)$.

164. A pharmaceutical composition comprising a compound or salt according to Claim 1 combined with at least one pharmaceutically acceptable carrier or excipient.

165. A method for altering the signal-transducing activity of $GABA_A$ receptors, said method comprising contacting cells expressing such receptors with a solution comprising a compound or salt according to Claim 1 at a concentration sufficient to detectably alter the electrophysiology of the cell, wherein a detectable alteration of the electrophysiology of the cell indicates an alteration of the signal-transducing activity of $GABA_A$ receptors.

166. A method for altering the signal-transducing activity of $GABA_A$ receptors, said method comprising contacting cells expressing such receptors with a solution comprising a compound or salt according to Claim 1 at a concentration

sufficient to detectably alter the chloride conductance in vitro of cell expressing $GABA_A$ receptors.

167. A method according to Claim 65 wherein the detectable alteration of the electrophysiology of the cell is a change in the chloride ion conductance of the cell.

168. The method of Claim 167 wherein the cell is recombinantly expressing a heterologous $GABA_A$ receptor and the alteration of the electrophysiology of the cell is detected by intracellular recording or patch clamp recording.

169. The method of Claim 167 wherein the cell is a neuronal cell that is contacted in vivo in an animal, the solution is a body fluid, and the alteration in the electrophysiology of the cell is detected as a reproducible change in the animal's behavior.

170. The method of Claim 169 wherein the animal is a human, the cell is a brain cell, and the fluid is cerebrospinal fluid.

171. A method for altering the signal-transducing activity of $GABA_A$ receptors, the method comprising exposing cells expressing $GABA_A$ receptors to a compound or salt according to Claim 1 at a concentration sufficient to inhibit RO15-1788 binding *in vitro* to cells expressing a human $GABA_A$ receptor.

172. A method for the treatment of anxiety, depression, a sleep disorder, schizophrenia, attention deficit-hyperactivity disorder, or for the enhancement of memory comprising administering an effective amount of a compound or salt of of Claim 1 to a patient in need thereof.

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173. A method for demonstrating the presence of $GABA_A$ receptors a cell or tissue sample, said method comprising:

contacting a cell or tissue sample with a labeled compound or salt according to Claim 1;

washing the cell or tissue sample to remove unbound labeled compound or salt; and

detecting the presence of labeled compound of salt in the cell or tissue sample.

174. The method of Claim 173 in which the cell or tissue sample is a tissue section.

175. The method of Claim 173 in which the labeled compound or salt contains a radioactive label or a directly or indirectly luminescent label.

176. The method of Claim 173 in which each cell or tissue sample is a tissue section, labeled compound or salt contains a radioactive label or a directly or indirectly luminescent label, and the labeled compound or salt is detected autoradiographically to generate an autoradiogram for each of the at least one samples.

177. The method of Claim 173 in which each measurement of the amount of labeled compound or salt in a sample is carried out by viewing the autoradiograms and the comparison is a comparison of the exposure density of the autoradiograms.

178. A package comprising a pharmaceutical composition of claim 164 in a container and further comprising at least one of:

instructions for using the composition to treat a patient suffering from an anxiety disorder, or

instructions for using the composition to treat a patient suffering from depression, or

instructions for using the composition to treat a patient suffering from a sleeping disorder,

instructions for using the composition to treat a patient suffering from schizophrenia, or

instructions for using the composition to treat a patient suffering from attention deficit-hyperactivity disorder.

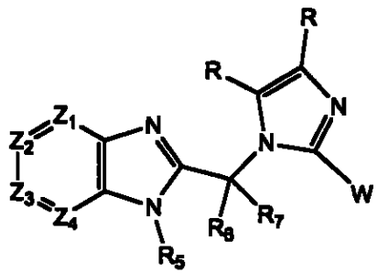
179. A package comprising a pharmaceutical composition of claim 164 in a container and further comprising indicia comprising at least one of: instructions for using the composition to treat a patient suffering from Alzheimer's dementia or instructions for using the composition to enhance memory in a patient.

180. The use of a compound or salt according to Claim 1 for the manufacture of a medicament.

181. The use of a compound or salt according to Claim 1 for the treatment of anxiety, depression, a sleep disorder, schizophrenia, or attention deficit-hyperactivity disorder.

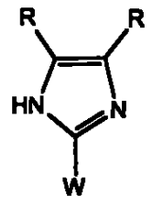
182. The use of a compound or salt according to Claim 1 for the enhancement of memory.

183. A process for preparing a compound of Formula A



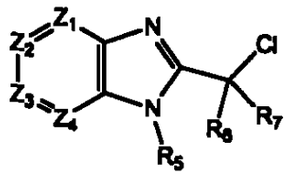
Formula A

comprising reacting a compound of Formula B



Formula B

with a compound of Formula C



Formula C

wherein:

Z_1 is nitrogen or CR_1;

Z_2 is nitrogen or CR_2;

Z_3 is nitrogen or CR_3;

Z_4 is nitrogen or CR_4;

provided that no more than two of Z_1, Z_2, Z_3, and Z_4 are nitrogen;

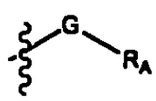
R_1, R_2, R_3, and R_4 are independently selected from

i) hydrogen, halogen, hydroxy, nitro, cyano, amino, haloalkyl, and haloalkoxy,

ii) alkyl, alkoxy, cycloalkyl, alkenyl, alkynyl, (cycloalkyl)alkyl, $-NH(R_{10})$, $-N(R_{10})(R_{11})$, hydroxyalkyl, aminoalkyl, $(R_{10})NHalkyl$, $(R_{10})(R_{11})Nalkyl$, alkanoyl, alkoxycarbonyl, (heterocycloalkyl)alkyl, alkylsulfonyl, alkylthio, mono- or dialkylaminocarbonyl, heterocycloalkyl, aryl, and heteroaryl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20},

wherein R_{10} and R_{11} are independently selected from the group consisting of alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, (cycloalkyl)alkyl, aryl, arylalkyl, alkanoyl, and mono and dialkylaminoalkyl; and

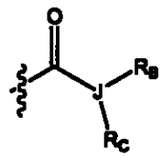
iii) a group of the formula:



where G is a bond, alkyl, -O-, -C(=O)-, or -CH_2C(=O)-, and

R_A is a saturated, partially unsaturated, or aromatic carbocycle, consisting of 1 ring or 2 fused, pendant, or spiro rings, each ring containing 0, 1, or 2 heteroatoms independently chosen from N, S, and O, said saturated, partially unsaturated, or aromatic carbocycle is optionally substituted with 1, 2, 3, or 4 of R_{20}, and

iv) a group of the formula



where J is N, CH, or C-alkyl, and

R_B and R_C are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, (cycloalkyl)alkyl, heterocycloalkyl, aryl, arylalkyl, alkanoyl, heteroaryl, and mono and dialkylaminoalkyl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, alkoxy, and alkyl;

R_B and R_C and the atom to which they are attached form a 4- to 10-membered monocyclic or bicyclic ring, which may contain:

a) one or more double bonds,

b) one or more of oxo, O, S, SO, SO_2, or N-R_D wherein R_D is hydrogen, Ar_1, alkyl, cycloalkyl, heterocycloalkyl, or Ar_1alkyl; wherein Ar_1 is aryl or heteroaryl, each of which is optionally substituted by 1 or 2 substituents independently chosen from halogen, hydroxy, cyano, amino, nitro, alkoxy, and alkyl, and/or

c) one or more substituents R_{20};

v) -OC(=O)R_E, -C(=O)OR_E, -C(=O)NH_2, -C(=O)NHR_E, -C(=O)N$R_E R_F$, -S(O)$_n R_E$, -S(O)$_n NH_2$, -S(O)$_n$NHR_E, -S(O)$_n$N$R_E R_F$, -NHC(=O)R_E, -C(=NR_E)R_F, -HC=N-OH, -HC=N(alkoxy), -HC=N(alkyl), -

$NR_EC(=O)R_F$, $-NHS(O)_mR_E$, and $-NR_ES(O)_mR_F$, where m is 0, 1 or 2, and

R_E and R_F are independently selected at each occurrence from alkyl, cycloalkyl, heterocycloalkyl, alkoxy, mono- or dialkylamino, aryl, or heteroaryl each of which is optionally substituted by 1, 2, or 3 of R_{30};

R_{20} is independently selected at each occurrence from the group consisting of: halogen; hydroxy; nitro; cyano; amino; alkyl; alkoxy optionally substituted with amino or mono- or dialkylamino; cycloalkyl; cycloalkylalkyl; cycloalkylalkoxy; alkenyl; alkynyl; haloalkyl; oxo; haloalkoxy; mono- and dialkylamino; aminoalkyl; and mono- and dialkylaminoalkyl;

R_{30} is independently selected at each occurrence from halogen, hydroxy, nitro, cyano, amino, alkyl, alkoxy optionally substituted with amino or mono- or dialkylamino, cycloalkyl, cycloalkylalkyl, cycloalkylalkoxy, heterocycloalkyl, alkenyl, alkynyl, haloalkyl, haloalkoxy, oxo, mono- and dialkylamino, aminoalkyl, and mono- and dialkylaminoalkyl;

R_5 represents hydrogen or haloalkyl; or

R_5 represents alkyl, cycloalkyl, or (cycloalkyl)alkyl, each of which may contain one or more double or triple bonds, and each of which is optionally substituted with 1, 2, or 3 of R_{30}, or

R_5 represents aryl, arylalkyl, heteroaryl, or heteroarylalkyl each of which is optionally substituted with 1, 2, or 3 substituents selected from the group consisting of haloalkyl, amino, $-NH(R_{10})$, $-N(R_{10})(R_{11})$, carboxamido, $(R_{10})NHcarbonyl$, $(R_{10})(R_{11})Ncarbonyl$, halogen, hydroxy, nitro, cyano, amino, alkyl, alkoxy optionally substituted with amino or mono- or dialkylamino, cycloalkyl, cycloalkylalkyl, cycloalkylalkoxy, heterocycloalkyl,

alkenyl, alkynyl, haloalkyl, haloalkoxy, aminoalkyl, and mono- and dialkylaminoalkyl;

R_6 and R_7 independently represent hydrogen, fluorine, or alkyl;

R is independently chosen at each occurrence from hydrogen, halogen, amino, C_1-C_6alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, C_1-C_6alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8cycloalkyl)(C_1-C_4)alkyl, halo(C_1-C_6)alkyl, haloalkoxy, carboxamido, and 3- to 7-membered carbocyclic or heterocyclic groups which are saturated, unsaturated, or aromatic, which may be further substituted with one or more substituents independently selected from halogen, oxo, hydroxy, C_1-$_4$alkyl, and
-O(C_1-$_4$alkyl); and

W represents aryl or heteroaryl, wherein the aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0; 1, or 2.

184. A process according to Claim 183, wherein:

Z_1 is CR_1, Z_2 is CR_2, Z_3 is CR_3, and Z_4 is CR_4,

R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1, R_3, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

R_6 and R_7 are hydrogen; and

W represents phenyl, furanyl, thienyl, thiazolyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, isoxazolyl, pyrimidinyl, benzimidazolyl, quinolinyl, isoquinolinyl each of which is optionally substituted with up to 4 R_{30} groups.

185. A process according to Claim 184, wherein W is 2-thiazolyl, 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

186. A process according to Claim 184, wherein R, R_1, and R_4 are hydrogen.

187. A process according to Claim 184, wherein R_5 is ethyl or n-propyl.

188. A process according to Claim 184 wherein
R_2 is chosen from
i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,
ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl) C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20}.

189. A process according to Claim 183 wherein
Z_1 is CR_1;
one and only one of Z_2 or Z_3 is nitrogen;
Z_4 is CR_4; and
R_2 or R_3 is chosen from
i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,
ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl) C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20};
R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

R_1 and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

R_6 and R_7 are hydrogen;

W represents a 5-membered heteroaryl group, the 5-membered heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0, 1, or 2.

190. A process according to Claim 189, wherein Z_3 is nitrogen.

191. A process according to Claim 189 wherein R_1 and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and W is thiazolyl, thienyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, or isoxazolyl, each of which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

192. A process according to Claim 191, wherein W is 2-thiazolyl.

193. A compound or salt according to Claim 191, wherein R, R_1 and R_4 are hydrogen.

194. A compound or salt according to Claim 191, wherein R_5 is ethyl or n-propyl.

195. A process according to Claim 189, wherein Z_2 is nitrogen.

196. A process according to Claim 195 wherein
R_1 and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and
W is thiazolyl, thienyl, imidazolyl, oxazolyl, triazolyl, tetrazolyl, pyrazolyl, or isoxazolyl, each of which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

197. A process according to Claim 196, wherein W is 2-thiazolyl.

198. A compound or salt according to Claim 196, wherein R, R_1 and R_4 are hydrogen.

199. A compound or salt according to Claim 196, wherein R_5 is ethyl or n-propyl.

200. A process according to Claim 183 wherein
Z_1 is CR_1;
one and only one of Z_2 or Z_3 is nitrogen;
Z_4 is CR_4;
R_2 or R_3 is chosen from
i) hydrogen, halogen, hydroxy, nitro, cyano, amino, halo(C_1-C_6)alkyl, and halo(C_1-C_6)alkoxy,
ii) C_1-C_6alkyl, C_1-C_6alkoxy, C_3-C_8cycloalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, (C_3-C_8cycloalkyl) C_1-C_4alkyl, -NH(R_{10}), -N(R_{10})(R_{11}), (R_{10})NH(C_1-C_6)alkyl, (R_{10})(R_{11})N(C_1-C_6)alkyl, (heterocycloalkyl)C_1-C_4alkyl, and heterocycloalkyl, each of which is optionally substituted with 1, 2, 3, or 4 of R_{20};
R is independently selected at each occurrence from the group consisting of hydrogen, halogen, and (C_1-C_2)alkyl;

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R_1, R_3, and R_4 are independently selected from hydrogen, halogen, hydroxy, nitro, cyano, amino, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo(C_1-C_6)alkoxy, mono or di(C_1-C_6)alkylamino, amino(C_1-C_6)alkyl, and mono- and di(C_1-C_6)alkylamino(C_1-C_6)alkyl;

R_5 represents (C_1-C_6)alkyl;

R_6 and R_7 are hydrogen; and

W represents a 6-membered aryl or heteroaryl group, wherein the 6-membered aryl or heteroaryl group is optionally substituted with up to 4 groups independently selected from R_{30}, $-CO_2H$, $-C(=O)OR_E$, $-C(=O)NHR_E$, $-C(=O)NR_ER_F$, $-C(O)R_E$, and $-S(O)_mR_E$, $-OR_E$, where R_{30} and R_E are as defined above and m is 0, 1, or 2.

201. A process according to Claim 200, wherein Z_3 is nitrogen.

202. A process according to Claim 201 wherein R_1 and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and

W is phenyl, pyrimidinyl, pyridyl, pyrazinyl, or pyridizinyl, each of which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

203. A process according to Claim 202, wherein W is 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

204. A compound or salt according to Claim 202, wherein R, R_1 and R_4 are hydrogen.

205. A compound or salt according to Claim 202, wherein R_5 is ethyl or n-propyl.

206. A process according to Claim 200, wherein Z_2 is nitrogen.

207. A process according to Claim 206 wherein
R_1 and R_4 are independently selected from hydrogen, halogen, trifluoromethyl, C_1-C_2 alkyl, and cyano; and
W is phenyl, pyrimidinyl, pyridyl, pyrazinyl, or pyridizinyl, each of which is optionally substituted by one or more substituents independently chosen from halogen, cyano, hydroxy, oxo, C_1-C_2haloalkyl, C_1-C_2alkyl, and C_1-C_2 alkoxy.

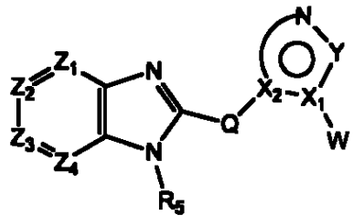
208. A process according to Claim 207, wherein W is 2-pyrimidinyl, 3-fluorophenyl, or 6-fluoro-2-pyridinyl.

209. A compound or salt according to Claim 207, wherein R, R_1 and R_4 are hydrogen.

210. A compound or salt according to Claim 207, wherein R_5 is ethyl or n-propyl.

ABSTRACT OF THE DISCLOSURE

This invention relates to benzimidazoles, pyridylimidazoles and related bicyclic heteroaryl compounds, all of which may be described by of Formula I



Formula I

The invention is particularly related to such compounds that bind with high selectivity and high affinity to the benzodiazepine site of $GABA_A$ receptors. This invention also relates to pharmaceutical compositions comprising such compounds and to the use of such compounds in treatment of certain central nervous system (CNS) diseases. Novel processes for preparing compounds of Formula I are disclosed.

This invention also relates to the use of benzimidazoles, pyridylimidazoles and related bicyclic heteroaryl compounds of Formula I in combination with one or more other CNS agents to potentiate the effects of the other CNS agents. Additionally this invention relates to the use such compounds as probes for the localization of $GABA_A$ receptors in tissue sections.

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CONSULADO DE COLOMBIA
WASHINGTON, D.C.

No. 2730

TRADUCCION No: 01/2/98
VITA MARTELO
Traductora e Interprete Oficial
Inglés - Español - Inglés
Res. No. 2879 Min. Justicia

EL CONSULADO DE COLOMBIA

CERTIFICA:

Que es auténtica la firma de Perneria F. Crawford
quien el día 07 de Octubre, 1998
desempeñaba las funciones de Ofic. Aut. Depto Estado
la cual aparece al pie de los documentos anexos relacionados con Poder,
representación y certificado notarial

Dado en Washington, D.C. a los Siete (07) días del mes de
Octubre mil novecientos noventa y ocho (1998).

Pagado Impuesto de Timbre 6=
Pagado Derecho Consular 15=
Total 21=

(El Consulado no asume ninguna responsabilidad por el contenido de los documentos anexos)

SANDRA L. GALVIS PINZON
Vicecónsul

18 DIC 2001

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18 DIC 1998

MINISTERIO DE RELACIONES EXTERIORES

No. 9900156-5

United States of America

DEPARTMENT OF STATE

To all to whom these presents shall come, Greetings:

*I Certify That the document hereunto annexed is under the Seal of the Secretary of State of the State of Connecticut, and that such Seal is entitled to full faith and credit.**

TRADUCCION No.: 01/2/98
MARIA ELVIRA MARTELO
Traductora e Interprete Oficial
Inglés - Español - Inglés
Res. No. 2879 Min. Justicia

In testimony whereof, I, Strobe Talbott, Acting Secretary of State, have hereunto caused the seal of the Department of State to be affixed and my name subscribed by the Authentication Officer of the said Department, at the city of Washington, in the District of Columbia, this seventh day of October, 1998.

Strobe Talbott
Acting Secretary of State

By Theresa D. Crawford
Assistant Authentication Officer,
Department of State

Issued pursuant to CHXIV, State of Sept. 15, 1789, 1 Stat. 68-69; 22 USC 2657; 22 USC 2651a; 5 USC 301; 28 USE 1733 et. seq.; 8 USC 1443(f); RULE 44 Federal Rules of Civil Procedure.

* *FOR THE CONTENTS OF THE ANNEXED DOCUMENT, THE DEPARTMENT ASSUMES NO RESPONSIBILITY*

This certificate is not valid if it is removed or altered in any way whatsoever

18 DIC 2001

STATE OF CONNECTICUT
OFFICE OF THE SECRETARY OF THE STATE

I, **MILES S. RAPOPORT**, Secretary of the State of Connecticut, and keeper of the seal thereof,

DO HEREBY CERTIFY that JACQUELINE M GILMORE, was duly appointed and commissioned a NOTARY PUBLIC in and for the State of Connecticut, for the term of April 23, 1998 to April 30, 2003;

and that to his/her acts and attestations as such, full faith and credit are and ought to be given in and out of Court.

In Testimony Whereof, I have hereunto set my hand and affixed the Great Seal of the State of Connecticut, at Hartford, on **October 2, 1998.**

Miles S. Rapoport

Secretary of the State

CONSUL... WASHING...

TRADUCCION No.: 01219 8

...VIRA MARTELO
Traductora e Interprete Oficial
Ingles - Español - Inglés
...es. No. 2879 M...

COMO NOTARIO SEXTO ENCARGADO DEL CIRCULO DE SANTAFE DE BOGOTA, HAGO CONSTAR QUE ESTA COPIA FOTOSTATICA CONCUERDA CON EL ORIGINAL QUE HE TENIDO A LA VISTA
18 DIC 2001
...ABLO MENDEZ BARAJAS
NOTARIO (E)

CERTIFICADO NOTARIAL (INDIVIDUO)

A los ___ días del mes de _____ de 19_____

ante mí, Notario Público de _____

compareció(eron) personalmente _____

_____

a quien(es) doy fe de conocer y me consta que es(son) la(s) persona(s) firmante(s) del documento que precede, y quien(es) tiene(n) capacidad legal para otorgarlo.

NOTARIAL CERTIFICATE (INDIVIDUAL) 29

On this ___ day of _____ 19_____

before me, a Notary Public of _____

personally appeared _____

_____

to me known, and known to me to be the person(s) who executed that foregoing document, and who has(have) legal capacity to execute it.

_____ Notario Público — Notary Public _____

CERTIFICADO NOTARIAL (SOCIEDAD)

Hoy, 28 de Septiembre de 19 98

compareció(eron) ante mí

Harry H. Penner Jr.

a quien(es) conozco personalmente y que firma(n) este documento en representación de la Sociedad/compañía

denominada NEUROGEN CORPORATION

Certifico:

1. Que he visto los siguientes documentos:* Certificado de Constitucion de Neurogen Corporation fechado 31 Mayo 1994 en Branford, Connecticut

2. Que dichos documentos prueban lo siguiente:

2.1. Que NEUROGEN CORPORATION

es una Sociedad/Compañía legalmente constituida y existente de acuerdo con las leyes de Delaware

2.2. Que el domicilio de dicha Sociedad/Compañía es 35 Northeast Industrial Road, Branford, Connecticut, Estados Unidos de America.

2.3. Que el objeto u objeto para los cuales se otorga el presente poder están comprendidos dentro del objeto social de la mencionada Sociedad/Compañía.

2.4. Que el(los) Sr.(Sres.) Harry H. Penner

está(n) autorizado(s) para otorgar el presente Poder.

Ciudad Branford

Estado Connecticut.

Hoy 28 Sep de 19 98

NOTARIAL CERTIFICATE (CORPORATION)

On this 28th day of September 19 98

appeared before me

Harry H. Penner Jr.

who(m) I know personally and who(m) signed this document as representative(s) of the Corporation/Company named NEUROGEN CORPORATION

I Certify:

1. That I have seen the following documents:* Certificate of incorporation of Neurogen Corporation dated May 31, 1994 in Branford, Connecticut

2. That the above documents duly prove the following:

2.1. That NEUROGEN CORPORATION

is a Corporation/Company legally constituted and in existence in accordance with the laws of Delaware,

2.2. That the domicile of said Corporation/Company is 35 Northeast Industrial Road, Branford, Connecticut, United States of America.

2.3. That the purpose or purposes for which the present Power of Attorney is granted are comprised within the corporation purposes set forth in the statutes of the mentioned Corporation/Company.

2.4. That Mr.(Messrs.) Harry H. Penner Jr.

is(are) authorized to grant the present Power of Attorney.

City Branford

State Connecticut

This 28th day of Sept. 19 98

TRADUCCION No. 01-2198

MARIA ELVIRA MARTELO
Traductora e Intérprete Oficial
Inglés - Español - Inglés
Res. No. 2879 Min. Justicia

_____ Notario Público — Notary Public

My Commission Expires April 30, 2003

* Los documentos deben identificarse con fecha y origen.

* Documents must be identified with date and origin.

CAVELIER
ABOGADOS
EDIFICIO SISKI
CARRERA 4ª Nº 72-35
BOGOTA, 8 - COLOMBIA

For patents, utility models, industrial designs, trademarks, commercial names, trade emblems, slogans.

Para patentes, modelos de utilidad, diseños industriales, marcas de fábrica, nombres comerciales, enseñas, lemas comerciales.

REPRESENTACION Y PODER

REPRESENTATION AND POWER OF ATTORNEY

I (we), the undersigned/Yo (nosotros), abajo firmado (s)

NEUROGEN CORPORATION

of/domiciliado (s) en 35 Northeast Industrial Road, Branford, Connecticut, United States of America,

por el presente nombramos a EMILIO FERRERO, tpa. 31929; GONZALO PERDOMO, tpa. 831; LUZ CLEMENCIA DE PAEZ, tpa. 23555 y GERMAN CAVELIER, tpa. 832, domiciliados en la Carrera 4ª Nº 72-35, Bogotá, Colombia, en obedecimiento a lo dispuesto en el parágrafo 1º del Artículo 543 del Código de Comercio, el primero como principal y los demás como suplentes, en su orden, como mis (nuestros) representantes en todos los asuntos de propiedad industrial con facultad para recibir notificaciones y nombrar apoderados judiciales o extrajudiciales. El primer representante suplente reemplazará al principal en caso de ausencia o impedimento temporal o definitivo de aquél. La misma regla se aplicará cuando el segundo representante suplente haya de reemplazar al primero, o el tercero al segundo. En tales casos, el representante principal, o el primero, o segundo suplente, en su caso, o ambos, declararán su intención de no ejercer la representación mediante declaración autenticada por Notario Público en Colombia, o por Notario u otro Funcionario Público, o Cónsul de Colombia, en el extranjero; y si se tratare de impedimento, con el certificado respectivo. Si alguno de los nombrados faltare definitivamente, el siguiente tomará su lugar. Cuando cesare la ausencia o impedimento del representante principal, o de su primero o segundo suplentes, en su caso, podrán ejercer la representación, en su orden, uno u otros según el caso, asumiéndola por el solo hecho de ejercerla, cesando en ese momento el ejercicio de la representación por el primero, segundo o tercer suplente en su caso.

Además, confiero (conferimos) poder a los abogados arriba nombrados, para obtener la protección de mi (nuestra) propiedad industrial y contra la competencia desleal, a cuyo efecto autorizo (amos) a los dichos apoderados para que me (nos) representen ante cualesquiera entidades o personas, ejerzan o no jurisdicción, especialmente ante las del orden administrativo, contencioso-administrativo y judicial, así como los tribunales de arbitramento, en todo lo concerniente a los siguientes asuntos: a) Obtención de patentes de invención, modelos de utilidad y diseños industriales; el registro de marcas de fábrica, colectivas, defensivas, de servicio, lemas comerciales, nombres comerciales, enseñas, variedades vegetales y denominaciones de origen; su renovación, traspaso, cambio de nombre o domicilio, cancelación voluntaria; y el registro de licencias de uso de esos derechos; b) Las acciones de competencia desleal, protección del consumidor, oposiciones u observaciones, cancelación administrativa y judicial, nulidad, medidas cautelares, concesión de licencias, la tutela, la protección de secretos industriales, [illegible] civiles, penales, administrativos o [illegible] relacionados con estos derechos; [illegible] promovamos o se nos promuevan [illegible] los asuntos arriba determinados, puedan sustituir este mandato, transigir, conciliar, admitir los hechos [illegible], renunciar, cancelar, recibir, renunciar, y ratificar [illegible] actos.

In due compliance with the terms of paragraph 1st. of article 543 of the Commercial Code, do hereby appoint EMILIO FERRERO, tpa. 31929; GONZALO PERDOMO, tpa. 831; LUZ CLEMENCIA DE PAEZ, tpa. 23555 and GERMAN CAVELIER, tpa. 832, domiciled at Carrera 4ª Nº 72-35, Bogotá, Colombia, the first as principal and the others as alternates, in the order of their appointment, as our representatives for all industrial property matters with faculty to receive notifications and to appoint attorneys in and out of Court. The first alternate shall replace the principal in case of his absence or of temporal or definitive impediment. The same rule will apply when the second alternate representative is to replace the first one, or when the third is to replace the first or second alternates in their turn, or both of them, second. In such cases, the principal representative, or the first or second alternates in their turn, or both of them, shall state their intention not to act as representatives through a declaration given before a Notary Public in Colombia, or before a Notary or another Public Official or a Colombian Consul abroad; and in case of impediment, the appropriate certificate shall suffice. If any of the appointees were to be definitely absent, the following alternate shall take his place. When the absence or impediment of the principal representative, or of the first or second alternate in their turn ceases, the representation can be taken again in their sequence, by the principal, the first or second alternate depending on case, and the mere fact or its exercise will suffice. The exercise of the representation by the first, second or third alternates in their turn shall end at such time.

In addition, we grant a Power of Attorney in favor of the above-named attorneys-at-law so that they may obtain the protection of my (our) industrial property and against the unfair competition, for which purpose I (we) authorize the said attorneys to represent me (us) before any authorities or persons, with or without jurisdiction, specially those administrative, administrative contentious and judicial, as well as before Arbitration Court, in all matters concerning the following: a) Obtainment of patents, utility models and industrial designs, the registration of trademarks, collective, defensive and service marks, slogans, commercial names, trade emblems, vegetal varieties and denominations of origin; its renewal, assignment, change of name or domicile, voluntary cancellation; and the registration of licenses of use of the above rights; b) Actions of unfair competition, protection to the consumer, oppositions or observations, administrative or Court cancellation, nullity, infringement, granting of licenses, the action for writ mandamus, the protection of trade secrets, and in general the civil, penal, and administrative suits relating to those rights; actions and suits instituted by me (us) or against me (us). And that in all the above matters they may substitute this Power of Attorney, compromise, conciliate, admit the facts of the case, desist, cancel, receive, resign, and ratify acts done by representatives without a power of attorney.

Given and signed this/Dado y firmado hoy 28 Sept. 1998

in/en [illegible]

Signature/Firma Harry H. Penner, Jr.
Chief Executive Officer

© CAVELIER ABOGADOS

TRADUCCIÓN OFICIAL No. 01.12/98 preparada por María Elvira Martelo, Traductora Oficial debidamente aprobada por el Ministerio de Justicia de Colombia por Resolución 2879 de 1995 y reconocida por el Ministerio de Relaciones Exteriores.

(A continuación se traducen los sellos y legalizaciones de un documento escrito en inglés y español, por el cual **NEUROGEN CORPORATION** otorga poder a **EMILIO FERRERO, GONZALO PERDOMO, LUZ CLEMENCIA DE PAEZ y GERMAN CAVELIER**). Dado y firmado el 28 de septiembre de 1998. (Firma ilegible), Harry H. Penner, Jr., Presidente Ejecutivo.

CERTIFICADO NOTARIAL (SOCIEDAD) en inglés y español referente a la existencia legal de **NEUROGEN CORPORATION** expedido en la ciudad de Branford, Estado de Connecticut, el 28 de septiembre de 1998. (Firma ilegible), Notario Público. (Sello notarial en tinta) Mi comisión expira el 30 de abril del 2003. (Sello en relieve) JACQUELINE M. GILMORE, Notario Público, Connecticut. (Sello parcial del Consulado de Colombia en Washington



ESTADO DE CONNECTICUT

SECRETARÍA DE ESTADO

Yo, MILES RAPAPORT, Secretario del Estado de Connecticut y Custodio del sello del mismo, **POR EL PRESENTE CERTIFICO QUE** JACQUELINE M GILMORE fue debidamente nombrada y comisionada como NOTARIO PÚBLICO en y para el Estado de Connecticut por el término 23 de abril de 1998 a 30 de abril del 2003;

y que sus actos y declaraciones en calidad de tal merecen plena fe y crédito en los tribunales de justicia y fuera de ellos.

EN FE DE LO CUAL he firmado y estampado el Gran Sello del Estado de Connecticut, en Hartford, el 2 de octubre de 1998. (Firma) Miles S. Rapaport, Secretario de Estado. (Sello de oblea dorado del Estado de Connecticut).

No. 9900156-5

ESTADOS UNIDOS DE AMÉRICA

DEPARTAMENTO DE ESTADO

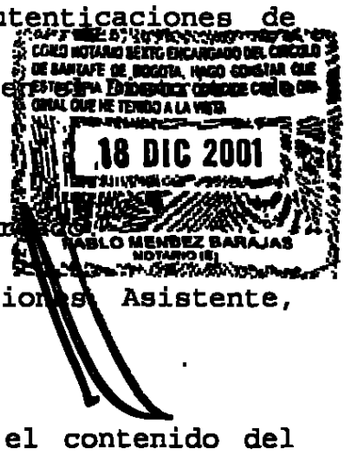
A todos a quienes los presentes llegaren, Salud:

Certifico que el documento adjunto se encuentra bajo el Sello del Estado de Connecticut y que dicho sello merece plena fe y crédito*.

En fe de lo cual, yo, Strobe Talbott, Secretario de Estado Encargado, he hecho imponer el sello del Departamento de Estado y suscribir mi nombre por el Funcionario de Autenticaciones de dicho Departamento, en la ciudad de Washington, en el Distrito de Columbia, hoy 7 de octubre de 1998.

(Firma) Strobe Talbott, Secretario de Estado Encargado

Por: (Firma ilegible), Funcionario de Autenticaciones, Asistente, Departamento de Estado.



*El departamento no asume responsabilidad por el contenido del documento adjunto.

Este certificado no es válido si sufre alguna eliminación o alteración.

(Sello impreso del Departamento de Estado).

(Sello del Consulado de Colombia en Washington).

(En español) Certificación de la firma que antecede expedida por el Consulado de Colombia en Washington, D.C. el día 7 de octubre de 1998, bajo el No. 2730. Firmado por SANDRA L. GALVIS PINZON, Vicecónsul. Pagados impuestos de timbre y derechos consulares. (Sello consular en tinta).

(Al dorso) Legalización de la firma que antecede expedida por el **MINISTERIO DE RELACIONES EXTERIORES** bajo el No. 190920 del 1 de diciembre de 1998, firmado por el Jefe de Legaliz[illegible]

COMO NOTARIO SEXTO ENCARGADO DEL CIRCULO DE SANTAFE DE BOGOTA, HAGO CONSTAR QUE ESTA COPIA FOTOSTATICA CONCUERDA CON EL ORIGINAL QUE TENGO A LA VISTA
18 DIC 2001
PABLO MENDEZ BARAJAS
NOTARIO (E)

Es traducción fiel y completa de la cual se dej[illegible] oficina para su confrontación.

TRADUCCION No. 01.12198
MARIA ELVIRA MARTELO
Traductora e Interprete Oficial
Inglés - Español - Inglés
Res. No. 2879 Min. Justicia

COLO 10611-801-003-7

Id. 30

Dic. 4/98

NO SE ASUME RESPONSABILIDAD DEL TEXTO
98 DEC -7 PM 12:08
JEFE DE LEGALIZACIONES SANTAFE DE BOGOTA D.C.

COMO NOTARIO SEXTO DEL CIRCULO DE SANTAFE BOGOTA, HAGO CONSTAR QUE LA(S) FIRMA(S)
Maria E. Martelo
CONCUERDA(N) CON LA FIRMA REGISTRADA POR (SELLOS) EN ESTA NOTARIA
SANTAFE DE [illegible]
PABLO MENDEZ BARAJAS
Sexto Encargado

MINISTERIO DE RELACIONES EXTERIORES
342891
COTEJADA CON EL ORIGINAL QUE REPOSA EN EL DOCUMENTO DESCRITO EN LAS OFICINAS INTERNAS

Apostille

(Convention de La Haye du 5 Octobre 1961)

1. Country: United States of America

   This public document

2. has been signed by **Norman Goodman**

3. acting in the capacity of **County Clerk**

4. bears the seal/stamp of the county of **New York**

Certified

5. At Albany, New York 6. the 21st day of Nov

7. by Special Deputy Secretary of State, State of New York

8. No. A-85700E

9. Seal/Stamp 10. Signature

COMO NOTARIO SEXTO ENCARGADO DEL CIRCULO
DE SANTAFE DE BOGOTA, HAGO CONSTAR QUE
ESTA COPIA FOTOSTATICA COINCIDE CON EL ORI-
GINAL QUE HE TENIDO A LA VISTA
18 DIC 2001
ABEL [illegible] MENDEZ BARAJAS
NOTARIO (E)

Howard J Carr

Howard J. Carr
Special Deputy Secretary of State

TRADUCCION No.: 01.12.01
MARIA ELVIRA MARTELO
Traductora e Interprete Oficial
Inglés - Español - Inglés
Res. No. 2879 Min. Justicia

04135885.RSL (REV: 2/6/98)

CAVELIER
ABOGADOS
EDIFICIO SISKI
CARRERA 4ª Nº 72-35
BOGOTA, D - COLOMBIA

For patents, utility models, industrial designs, trademarks, commercial names, trade emblems, slogans.

Para patentes, modelos de utilidad, diseños industriales, marcas de fábrica, nombres comerciales, enseñas, lemas comerciales. 302

REPRESENTACION Y PODER

REPRESENTATION AND POWER OF ATTORNEY

I (we), the undersigned/Yo (nosotros), abajo firmado (a)
Pfizer Inc.

of/domiciliado (a) en
235 E. 42nd Street, 20th Floor

New York, New York 10017-5755, U.S.A.

por el presente nombramos a GERMAN CAVELIER, tpa. 832; GONZALO PERDOMO, tpa. 831; EMILIO FERRERO, tpa. 31929; y LUZ CLEMENCIA DE PAEZ, tpa. 23555; domiciliados en la Carrera 4ª Nº 72-35, Bogotá, Colombia, en obedecimiento a lo dispuesto en el parágrafo 1º del Artículo 543 del Código de Comercio, el primero como principal y los demás como suplentes, en su orden, como mis (nuestros) representantes en todos los asuntos de propiedad industrial con facultad para recibir notificaciones y nombrar apoderados judiciales o extrajudiciales. El primer representante suplente reemplazará al principal en caso de ausencia o impedimento temporal o definitivo de aquél. La misma regla se aplicará cuando el segundo representante suplente haya de reemplazar al primero, o el tercero al segundo. En tales casos, el representante principal, o el primero, o segundo suplente, en su caso, o ambos, declararán su intención de no ejercer la representación mediante declaración autenticada por Notario Público en Colombia, o por Notario u otro Funcionario Público, o Cónsul de Colombia, en el extranjero; y si se tratare de impedimento, con el certificado respectivo. Si alguno de los nombrados faltare definitivamente, el siguiente tomará su lugar. Cuando cesare la ausencia o impedimento del representante principal, o de su primero o segundo suplentes, en su caso, podrán ejercer la representación, en su orden, uno u otros según el caso, asumiéndola por el solo hecho de ejercerla, cesando en ese momento el ejercicio de la representación por el primero, segundo o tercer suplente en su caso.

Además, confiero (conferimos) poder a los abogados arriba nombrados, para obtener la protección de mi (nuestra) propiedad industrial y contra la competencia desleal, a cuyo efecto autorizo (amos) a los dichos apoderados para que me (nos) representen ante cualesquiera entidades o personas, ejerzan o no jurisdicción, especialmente ante las del orden administrativo, contencioso-administrativo y judicial, así como los tribunales de arbitramento, en todo lo concerniente a los siguientes asuntos: a) Obtención de patentes de invención, modelos de utilidad y diseños industriales; el registro de marcas de fábrica, colectivas, defensivas, de servicio, lemas comerciales, nombres comerciales, enseñas, variedades vegetales y denominaciones de origen; su renovación, traspaso, cambio de nombre o domicilio, cancelación voluntaria; y el registro de licencias de uso de esos derechos; b) Las acciones de competencia desleal, protección del consumidor, oposiciones u observaciones, cancelación administrativa y judicial, nulidad, medidas cautelares, concesión de licencias, la tutela, la protección de secretos industriales, y en general los juicios civiles, penales, administrativos o contencioso-administrativos relacionados con estos derechos; acciones y procesos que promovamos o se nos promuevan. Y para que en todos los asuntos arriba determinados, puedan sustituir este mandato, transigir, conciliar, admitir los hechos del proceso, desistir, cancelar, recibir, renunciar, y ratificar los actos de agentes oficiosos.

in due compliance with the terms of paragraph 1st. of article 543 of the Commercial Code, do hereby appoint GERMAN CAVELIER, tpa. 832; GONZALO PERDOMO, tpa. 831; EMILIO FERRERO, tpa. 31929; and LUZ CLEMENCIA DE PAEZ, tpa. 23555; domiciled at Carrera 4ª Nº 72-35, Bogotá, Colombia, the first as principal and the others as alternates, in the order of their appointment, as our representatives for all industrial property matters with faculty to receive notifications and to appoint attorneys in and out of Court. The first alternate shall replace the principal in case of his absence or of temporal or definitive impediment. The same rule will apply when the second alternate representative is to replace the first one, or when the third is to replace the first or second alternates in their turn, or both of them, second. In such cases, the principal representative, or the first or second alternates in their turn, or both of them, shall state their intention not to act as representatives through a declaration given before a Notary Public in Colombia, or before a Notary or another Public Official or a Colombian Consul abroad; and in case of impediment, the appropriate certificate shall suffice. If any of the appointees were to be definitely absent, the following alternate shall take his place. When the absence or impediment of the principal representative, or of the first or second alternate in their turn ceases, the representation can be taken again in their sequence, by the principal, the first or second alternate depending on case, and the mere fact or its exercise will suffice. The exercise of the representation by the first, second or third alternates in their turn shall end at such time.

In addition, we grant a Power of Attorney in favor of the above-named attorneys-at-law so that they may obtain the protection of my (our) industrial property and against the unfair competition, for which purpose I (we) authorize the said attorneys to represent me (us) before any authorities or persons, with or without jurisdiction, especially those administrative, administrative contentious and judicial, as well as before Arbitration Courts, all matters concerning the following: a) Obtainment of patents of invention, utility models and industrial designs; the registration of trademarks, collective, defensive and service marks, slogans, commercial names, trade emblems, vegetal varieties and denominations of origin; its renewal, assignment, change of name or domicile, voluntary cancellation; and the registration of licenses for the use of those rights; b) Actions of unfair competition, protection of the consumer, oppositions or observations, administrative and judicial cancellation, nullity, infringement, granting of licenses, the action for writ mandamus, the protection of trade secrets, and in general the civil, penal, and administrative suits relating to those rights; actions and suits instituted by me (us) or against me (us). And that in all the above matters they may substitute this Power of Attorney, compromise, conciliate, admit the facts of the case, desist, cancel, receive, resign, and ratify acts done by representatives without power of attorney.

Given and signed this/Dado y firmado hoy
8th Day of October, 2001

In/en New York, NY, U.S.A.

Signature / Firma

J. Trevor Lumb
Asst. Gen. Patent Counsel

CAVELIER ABOGADOS
WPPODERE-3 (MINUTA Nº 12.1.1.2.6 USA)

TRADUCCION No.: 01.12la
MARIA ELVIRA MARTELO
Traductora e Interprete Oficial
Inglés - Español - Inglés
Res. No. 2879 Min. Justicia

303

CLERK'S
NEW YORK
COUNTY

State of New York
County of New York,

255074 Form 1

I, NORMAN GOODMAN, County Clerk and Clerk of the Supreme Court of the State of New York, in and for the County of New York, a Court of Record, having by law a seal,

DO HEREBY CERTIFY pursuant to the Executive Law of the State of New York, that

Roy T. Waldron

whose name is subscribed to the annexed affidavit, deposition, certificate of acknowledgment or proof, was at the time of taking the same a NOTARY PUBLIC in and for the State of New York duly commissioned, sworn and qualified to act as such; that pursuant to law, a commission or a certificate of his official character, with his autograph signature has been filed in my office; that at the time of taking such proof, acknowledgment or oath, he was duly authorized to take the same; that I am well acquainted with the handwriting of such NOTARY PUBLIC or have compared the signature on the annexed instrument with his autograph signature deposited in my office, and I believe that such signature is genuine.

IN WITNESS WHEREOF, I have hereunto set my hand affixed my official seal this

NOV 16 2001

FEE PAID $3.00

TRADUCCION No.: 01-12/01
MARIA ELVIRA MARTELO
Traductora e Interprete Oficial
Inglés - Español - Inglés

County Clerk and Clerk of the Supreme Court, New York County

CONSULADO GENERAL DE COLOMBIA
CONSUL NOTARIO DEL CONSULADO GENERAL DE COLOMBIA EN LA CIUDAD DE SANTAFE DE BOGOTA, HAGO CONSTAR QUE ESTA COPIA FOTOSTATICA CONCUERDA CON EL ORIGINAL QUE HE TENIDO A LA VISTA.
18 DIC 2001
PABLO MENDEZ TARAZONA
NOTARIO III

CERTIFICADO NOTARIAL (INDIVIDUO)

A los * días del mes de OCTUBRE de 19 2001

ante mí, Notario Público de l Estado de Nueva York, NY EEUU

compareció(eron) personalmente J. Trevor Lumb

a quien(es) doy fe de conocer y me consta que es(son) la(s) persona(s) firmante(s) del documento que precede, y quien(es) tiene(n) capacidad legal para otorgarlo.

Notario Público

NOTARIAL CERTIFICATE (INDIVIDUAL)

30K

On this 8th day of October, 2001

before me, a Notary Public of State of New York, NY, USA

personally appeared J. Trevor Lumb

to me known, and known to me to be the person(s) who executed that foregoing document and who has(have) legal capacity to execute it.

Roy P. Waldron
Notary Public, State of New York
No. 02WA6030057
Qualified in New York County
Commission Expires September 7, 20 05

Notary Public

CERTIFICADO NOTARIAL (SOCIEDAD)

Hoy, 8 de Octubre de 19 2001

compareció(eron) ante mí J. Trevor Lumb

a quien(es) conozco personalmente y que firma(n) este documento en representación de la Sociedad/compañía denominada Pfizer Inc.

Certifico:

1. Que he visto los siguientes documentos:*

ARTICULOS DE CONSTITUCION, 30 OCTUBRE 1997

NOTIFICACION DE ACCION DEL COMITE ADMINISTRATIVO, 16 ENERO, 2001

2. Que dichos documentos prueban lo siguiente:

2.1. Que Pfizer Inc.

es una Sociedad/Compañía legalmente constituída y existente de acuerdo con las leyes de Delaware, EEUU

2.2. Que el domicilio de dicha Sociedad/Compañía es Nueva York, NY EEUU

2.3. Que el objeto u objeto para los cuales se otorga el presente poder están comprendidos dentro del objeto social de la mencionada Sociedad/Compañía.

2.4. Que el(los) Sr.(Sres.) J. Trevor Lumb

está(n) autorizado(s) para otorgar el presente Poder.

Ciudad Nueva York
Estado Nueva York
Hoy 8 Octubre de 19 2001

COUNTY

Notario Público

* Los documentos deben identificarse con fecha y origen.

NOTARIAL CERTIFICATE (CORPORATION)

On this 8th day of October, 2001

appeared before me J. Trevor Lumb

who(m) I know personally and who(m) signed this document as representative(s) of the Corporation/Company named Pfizer Inc

I Certify:

1. That I have seen the following documents:*

Certificate of Incorporation, October 30, 1997

Notification of Corporate Management Committee Action, January 16, 2001

2. That the above documents prove the following:

2.1. That Pfizer Inc.

is a Corporation/Company legally constituted and in existence in accordance with the laws of Delaware, USA

2.2. That the domicile of said Corporation/Company is New York, NY, USA

2.3. That the purpose of purposes for which the present Power of Attorney is granted are comprised within the corporation purposes set forth in the charter of the mentioned Corporation/Company.

2.4. That Mr.(Messrs.) J. Trevor Lumb

is(are) authorized to grant the present Power of Attorney.

City New York
State New York
This 8th day of October, 2001

CONSUL NOTARIO SEXTO ENCARGADO DEL CIRCULO
ESTA COPIA FOTOSTATICA CONCUERDA CON EL ORIGINAL QUE HE TENIDO A LA VISTA
18 DIC 2001
PABLO MARTINEZ BARAJAS

Roy P. Waldron
Notary Public, State of New York
No. 02WA6030057
Qualified in New York County
Commission Expires September 7, 20 05

Notary Public

* Documents must be identified with date and origin.

TRADUCCION No.: 01-12 61
MARIA ELVIRA MARTELO
Traductora e Intérprete Oficial
Inglés - Español - Inglés
Res. No. 2879 Min. Justicia

Pam E Weldon
Notary Public, State of New York
No. 01WE6220617
Qualified in New York County
Commission Expires September 7, 20__

Pam E Weldon
Notary Public, State of New York
No. 01WE6220617
Qualified in New York County
Commission Expires September 7, 20__

TRADUCCIÓN OFICIAL No. 01.12/01 preparada p r María Elvira Martelo, Traductora Oficial debidamente aprobada por el Ministerio de Justicia de Colombia mediante Resolución 2879 de 1995 y reconocida por el Ministerio de Relaciones Exteriores.

(A continuación se traducen las legalizaciones de un document de Representación y Poder escrito en inglés y español, p r el cual **PFIZER INC.**, domiciliada en 235 E. 42nd Street, 20th Flo r, New York, New York 10017-5755, Estados Unidos, otorga poder a **GERMAN CAVELIER, GONZALO PERDOMO, EMILIO FERRERO y LUZ CLEMENCIA DE PAEZ.**) Dado y firmado el 8 de octubre de 2001 en Nueva Y rk, Nueva York, EUA. (Firma ilegible), J. Trevor Lumb, Asistente General del Asesor de Patentes.

NOTARIO SESTO ENCARGADO DEL CIRCULO DE SANTAFE DE BOGOTA. HAGO CONSTAR QUE ESTA COPIA FOTOSTATICA CONCIDE CON EL ORIGINAL QUE ME FUERON A LA VISTA
18 DIC 2001
PABLO MENDEZ BARAJAS

CERTIFICADO NOTARIAL -INDIVIDUO- otorgado en inglés y español certificando la firma de J. Trevor Lumb y su capacidad legal para otorgar el anterior poder. (Firma ilegible), Notari Público. (Sello en tinta) Roy F. Waldron, Notario Públic , Estado de Nueva York, No. 02WA6030057, Calificado en el Condad de Nueva York, Comisión expira el 7 de septiembre de 2005. (Sello seco ilegible).

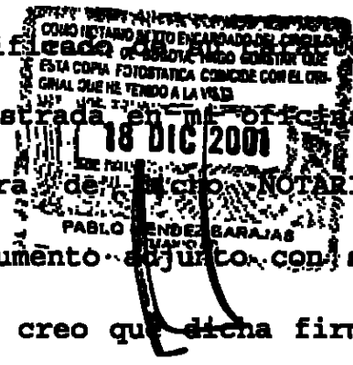
CERTIFICADO NOTARIAL -SOCIEDAD- otorgado en inglés y espafi l referente a la existencia legal de **PFIZER INC.** Dado en la ciudad de Nueva York, en el Estado de Nueva York, el 8 de octubre de 2001. (Firma ilegible), Notario Público. (Sello en tinta) Roy F. Waldron, Notario Público, Estado de Nueva York, No. 02WA6030057, Calificad en el Condado de Nueva York, C misión expira el 7 de

septiembre de 2005. (Sell sec ilegible)

Estado de Nueva York) 255074

Condado de Nueva York) ss

Yo, NORMAN GOODMAN, Escribano de Condado y Escribano de la Suprema Corte del Estado de Nueva York, en y para el Condado de Nueva York, una Corte de registro que por ley tiene un sell , POR EL PRESENTE CERTIFICO de acuerdo con la ley ejecutiva del Estado de Nueva York, que ROY F. WALDRON, cuyo nombre suscribe la declaración juramentada, declaración, certificado de reconocimiento o prueba adjunta, era en el momento de tomarla un NOTARIO PÚBLICO en y para el Estado de Nueva York, debidamente comisionado, juramentado y calificado para actuar como tal; que de acuerdo con la ley, una comisión o certificado de dicho oficial, con firma autógrafa, ha sido registrada en mi oficina; que estoy familiarizado con la escritura de dicho NOTARIO PÚBLICO o he comparado la firma del instrumento adjunto con su firma autógrafa depositada en mi oficina y creo que dicha firma es genuina.



EN FE DE LO CUAL, he firmado e impuesto el sello oficial hoy 16 de noviembre de 2001.

(Firma facsimilar ilegible), Escribano de Condado y Escriban de la Corte Suprema, Condado de Nueva York. (Sello en tinta del Escribano de Condado).

APOSTILLA

(Convención de la Haya del 5 de Octubre de 1961)

1. País: **Estados Unidos de América**

Este documento público

2. Ha sido firmado por **Norman Goodman**

3. Actuando en su capacidad de **Escribano de Condado**

4. Lleva el sello/timbre del Condado de **Nueva York**

CERTIFICADO

5. En Nueva York, Nueva York.

6. el 21 de noviembre de 2001

7. Por el Subsecretario de Estado Especial, Estado de Nueva York

8. No. A-85700E.

9. Sello: EL GRAN SELLO DEL ESTADO DE NUEVA YORK.

10. Firma (Firma ilegible) Howard J. Carr, Subsecretari de Estado Especial

COMO NOTARIO SEXTO ENCARGADO DEL CIRCULO DE SANTAFE DE BOGOTA, HAGO CONSTAR QUE ESTA COPIA FOTOSTATICA CONCUERDA CON EL ORIGINAL QUE HE TENIDO A LA VISTA

PABLO [illegible] BARAJAS

Es traducción fiel y completa de la cual se [illegible] esta oficina para su confrontación.

COLO 12889-801-001-1

ID. 5

DIC. 11/01

María E. Martelo.

TRADUCCION No: 01.12/01

MARIA ELVIRA MARTELO
Traductora e Interprete Oficial
Inglés - Español - Inglés
Reg. No. [illegible]

COMO NOTARIO SEXTO DEL CIRCULO DE SANTAFE DE BOGOTA, HAGO CONSTAR QUE LA(S) ANTERIOR(ES) FIRMA(S) PUESTA(S) POR

Elvira Martelo

IDENTIFICADOS CON C.C. No.(s)

ES(SON) AUTENTICA(S)

SANTAFE DE BOGOTA, 11 DEC 2001

PABLO [illegible] BARAJAS

MINISTERIO DE RELACIONES EXTERIORES

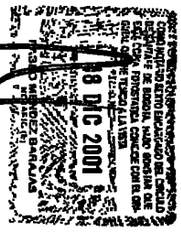
200701

FIRMA APARECE EN EL DOCUMENTO DESEMPEÑA LAS FUNCIONES INDICADAS

NO SE ASUME RESPONSABILIDAD DEL TEXTO

2001 DEC 11 A 11:39

JEFE DE LEGALIZACIONES SANTAFE DE BOGOTA D.C.



CAVELIER
ABOGADOS

EDIFICIO SISKI
CARRERA 4 No. 72 - 35
BOGOTA 8, COLOMBIA

WEB SITE: www.cavelier-abogados.com
E-MAIL: cavelier@colomsat.net.co

TELEFONO: (57) (1) 347-3611
TELEFAX: (57) (1) 217-9211 (57) (1) 310-4995

308

Señora Jefe de la

DIVISION DE NUEVAS CREACIONES

Superintendencia de Industria y Comercio

E. S. D.

Poderdante: PFIZER INC.

Poder conferido el: 08-10-2001

Yo, GERMAN CAVELIER, obrando en mi calidad de apoderad principal del poderdante arriba mencionado, atentamente manifiesto a Usted que sustituyo el poder que me ha sido c nferido en la persona del doctor EMILIO FERRERO, Abogado con Tarjeta Profesional No. 31.929, con todas las facultades que me fueron conferidas.

Hago la anterior sustitución conforme al artículo 66 del Códig de Procedimiento Civil ya que los otros sustitutos faltan en este momento.

Señora Jefe,

GERMAN CAVELIER

T.P.A. No. 832

C.C. No. 2.877.924

CUARTO NOTARIO SENTO ENCARGADO DEL CIRCULO de Bogotá HAGO CONSTAR QUE ESTA COPIA FOTOSTATICA CONCUERDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA

18 DIC 2001

PABLO MENDEZ BARAJAS
NOTARIO (E)

Acepto:

EMILIO FERRERO

T.P.A. N° 31.929

C.C. N . 438.019 de Usaquén

2e-780-2

NOTARIA SEXTA DE BOGOTA
RECONOCIMIENTO Y PRESENTACION PERSONAL

Santafé de Bogotá D. C. 16 OCT. 2001

Ante Mí JUAN MANUEL BOTERO MEDINA

NOTARIO SEXTO DEL CIRCULO DE BOGOTA.

Compareció(eron) personalmente,

...ioien(es) exhibió(eron) la(s) C. C. 2877924
4358019

y m(s) Libreta(s) Militar(es) 832 TDC 31929

...nicilado(s) en Bogotá, y declaró(aron) que la(s) firma(s) que aparece(n) en el presente documento es(son) la(s) suya(s) y que el contenido del mismo es cierto.
En constancia se firma esta diligencia.

COTEJO NOTARIAL
COYO NOTARIO SEXTO ENCARGADO DEL CIRCULO DE SANTAFE DE BOGOTA, HAGO CONSTAR QUE ESTA COPIA FOTOSTATICA COINCIDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA
18 DIC 2001
PABLO MENDEZ DARAJAS
NOTARIO (E)

309

Industria y Comercio

SUPERINTENDENCIA

SUPERINDUSTRIA Y COMERCIO
Radicacion : 01109589 00000000 Folios: 310
Fecha (AMD): 2001-12-21 16:39:31
Tramite : 002 PATENTES D 1 REGISTRO/ 411 PRESENTAC
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

NIT : 900176089-2

RECIBO OFICIAL DE CAJA : 01 - 74,216
FECHA : NOVIEMBRE 26 DE 2001

***** C O N S I G N A C I O N *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CAVELIER ABOGADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	8479742	26/11/2001	27.589,880.00

***** C O N C E P T O *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	59005-01-01 SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE IN	356,640.00
		TOTAL : $	356,640.00

SON: TRESCIENTOS CINCUENTA Y SEIS MIL SEISCIENTOS CUARENTA PESOS

RESPONSABLE : 801

RECIBO DE CAJA APLICADO AL EXPEDIENTE No.

Carrera 13 No. 27-00 Pisos 5, 7 y 10
Conmutador 382 0840
Fax 350 5220
E-mail: info@sic.gov.co
www.sic.gov.co
Bogotá, D.C., Colombia

b/o 13083-601-001-0

310

Industria y Comercio

SUPERINTENDENCIA

NIT : 900176089-2

RECIBO OFICIAL DE CAJA : 01 - 74.167
FECHA : NOVIEMBRE 26 DE 2001

***** C O N S I G N A C I O N *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CAVELIER ABOGADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	8479742	26/11/2001	27.589.880.00

***** C O N C E P T O *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	02 INVOCACION DE UNA PRIORIDAD EN MU	100.000.00
		TOTAL : $	100.000.00

SON: CIEN MIL PESOS

RESPONSABLE : JDQ

RECIBO DE CAJA APLICADO AL EXPEDIENTE No.

Carrera 13 No. 27-00 Pisos 5, 7 y 10
Conmutador 382 0840
Fax 350 5220
E-mail: info@sic.gov.co
www.sic.gov.co
Bogotá, D.C., Colombia

Cdo 13083-801-001-0

311

ercio

SUPERINDUSTRIA Y COMERCIO Folios: 310 N C I A
Radicacion : 01109589 00000000
Fecha (AMD): 2001-12-21 16:29:31
Tramite : 002 PATENTES D 1 REGISTRO/ 411 PRESENTAC
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES
USUARIO RADICADOR

REQUISITOS NECESARIOS PARA PRESEN

PATENTE DE INVENCIÓN [✓]	MODELO DE UTILIDAD	[ ]	[ ]
• Indicación de que se solicita la concesión de una patente		[ ]	[✓]
• Datos de identificación del solicitante o de la persona que presenta la solicitud		[ ]	[✓]
• Descripción de la invención		[ ]	[✓]
• Dibujos de ser estos pertinentes		[ ]	[ ]
• Comprobante de Pago de las tasas establecidas		[ ]	[✓]
COMPLETA [✓]	INCOMPLETA	[ ]	[ ]
DISEÑO INDUSTRIAL [ ]			
• Indicación de que se solicita el registro de Diseño Industrial.		[ ]	[ ]
• Datos de identificación del solicitante ó de la persona que presenta la solicitud.		[ ]	[ ]
• Representación gráfica y fotográfica del Diseño Industrial o muestra del material que incorpora el diseño.		[ ]	[ ]
• Comprobante de pago de las tasas establecidas.		[ ]	[ ]
COMPLETA [ ]	INCOMPLETA	[ ]	[ ]
ESQUEMA DE TRAZADO [ ]			
• Indicación de que se solicita el registro de un Esquema de trazado.		[ ]	[ ]
• Datos de identificación del solicitante o de la persona que presenta la solicitud.		[ ]	[ ]
• Representación gráfica del esquema de trazado		[ ]	[ ]
• Comprobante de pago de las tasas establecidas.		[ ]	[ ]
COMPLETA [ ]	INCOMPLETA	[ ]	[ ]

Firma Responsable

Fecha: ____/____/____

PC 312

Industria y Comercio
SUPERINTENDENCIA
Folio 312

2020
Bogotá, D. C.

Doctor(a)
EMILIO FERRERO
Apoderado(a)

Oficio No. 09153

REFERENCIA:

Radicación	01-109589
Trámite	002
Evento	001
Actuación	430
Folios	001

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica que:

- Debe allegar el documento en que consta la cesión del derecho a la patente otorgado por los inventores a los solicitantes o a sus causantes (art. 26-k,Dec 486/2000).

- Debe aportar la traducción de la solicitud presentada como solicitud colombiana.

En cumplimiento del artículo 39 de la Decisión 486, en concordancia con el artículo 85 de la misma decisión, se le requiere para que dentro del término de dos (2) meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el artículo 8 de la Resolución 210 del 15 de enero del 2001.

ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista de fecha 07 MAR. 2002

Se recuerda al interesado que debe presentar, dentro de los dieciséis meses siguientes contados a partir de la fecha de presentación de la solicitud cuya prioridad se invoca, copia de la misma certificada por la autoridad que la expidió y, en los casos en que haya lugar, la traducción simple del capítulo reivindicatorio. El incumplimiento de éste plazo, acarreará la pérdida de la prioridad invocada.

202027

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Bogotá D.C. Colombia