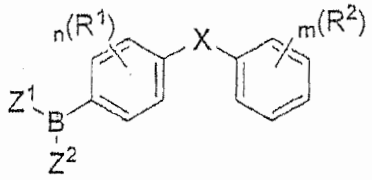
CLAIMS

1. A compound having the following formula:



or a pharmaceutically acceptable form thereof,

wherein

Z^1 and Z^2 independently for each occurrence represent hydroxy, alkoxy, aryloxy, or aralkyloxy; or Z_1 and Z_2 taken together form a moiety derived from a dihydroxyl compound having at least two hydroxyl groups separated by at least two connecting carbon atoms in a chain or ring, said chain or ring comprising carbon atoms and optionally one or more heteroatoms independently selected from the group consisting of N, S, and O;

n is 1, 2, 3, or 4;

m is 1 or 2;

X is a bond, O, S, NR^3, CR^4R^5, OCR^4R^5, CR^4R^5O, SCR^4R^5, CR^4R^5S, $NR^3CR^4R^5$, or $CR^4R^5NR^3$;

R^1 for each occurrence is independently halide, alkyl, perhaloalkyl, alkoxy, or trihaloalkoxy;

R^2 for each occurrence is independently halide, alkyl, perhaloalkyl nitro, alkoxy, trihaloalkoxy, aryloxy, carboxy, amido, ester, $-NR^4CO_2R^5$, or $-N(R^5)_2$; or two R^2 on adjacent carbons taken together form a 5–7 membered optionally substituted ring which contains 0–3 heteroatoms selected from the group consisting of N, O, and S; and

each of R^3, R^4, and R^5 for each occurrence is independently H, alkyl, aralkyl, aryl, ester, or amido.

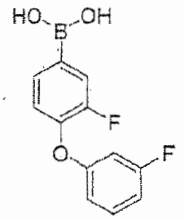
2. The compound according to claim 1, wherein the Z^1 and Z^2 groups of formula A are each hydroxyl.

3. The compound according to claim 1 or claim 2, wherein m is 1 and R^2 is meta to X.

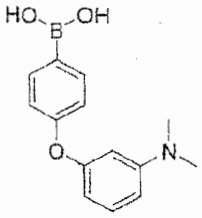
4. The compound according to any one of claims 1 to 3, wherein at least one R^1 group is fluoro in the ortho position relative to the boron atom.

5. The compound according to any one of claims 1 to 4, wherein X is a covalent bond.

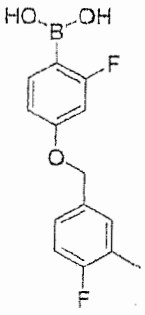
6. The compound according to claim 1, wherein the compound is:



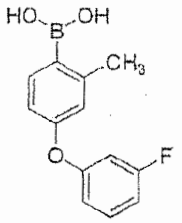
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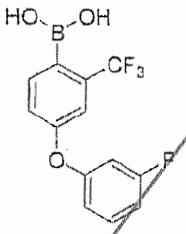
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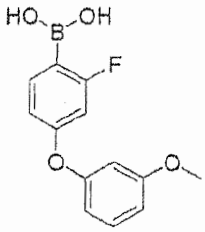
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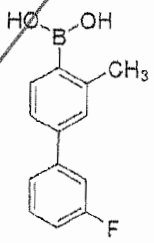
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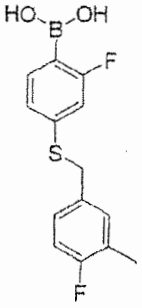
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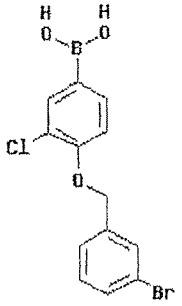


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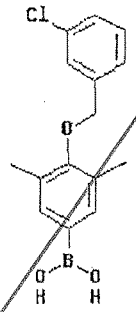
or

or a pharmaceutically acceptable form thereof.

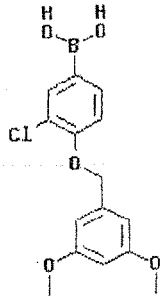
7. The compound according to claim 1, wherein the compound is:



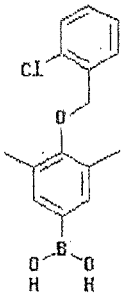
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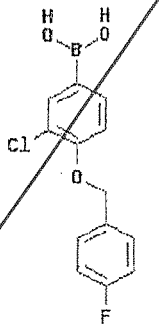
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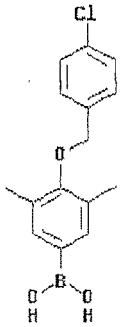


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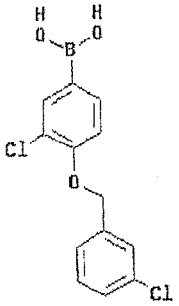


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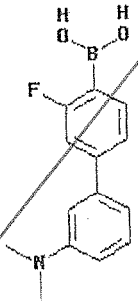




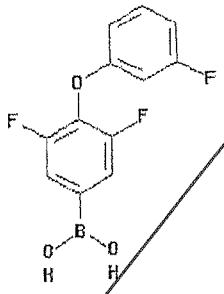
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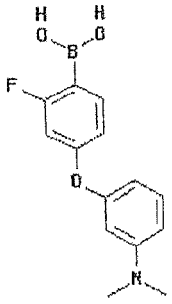
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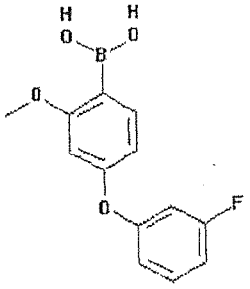


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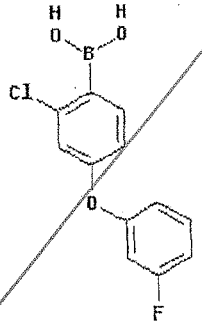


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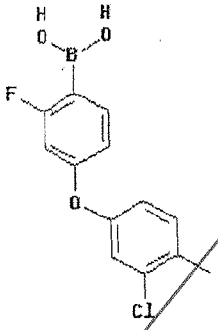
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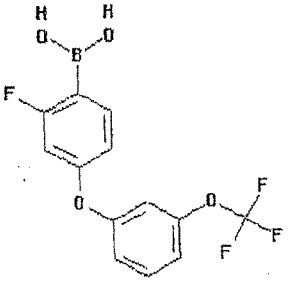
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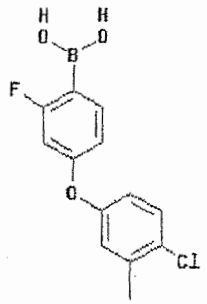
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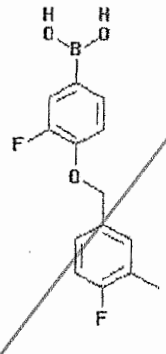
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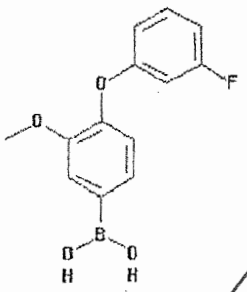
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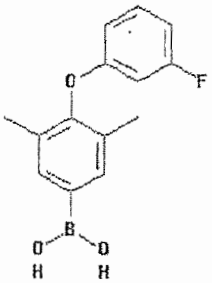
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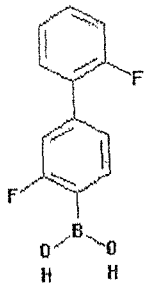
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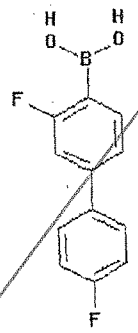
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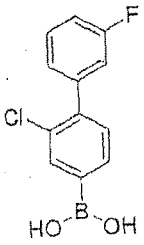
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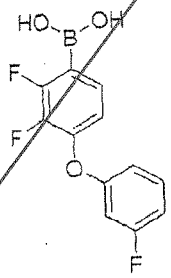
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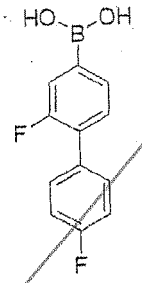
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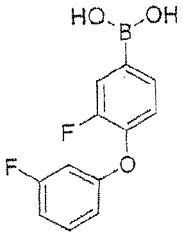
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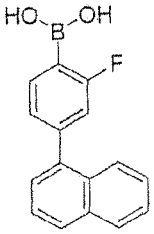
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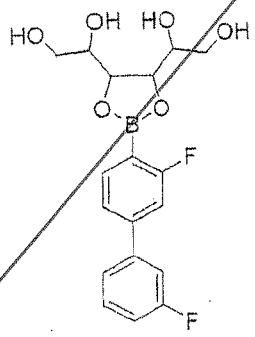
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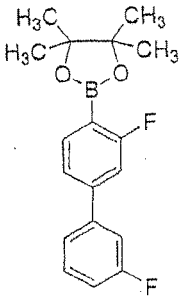
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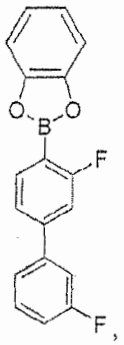


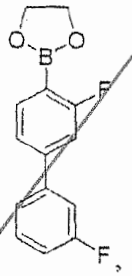
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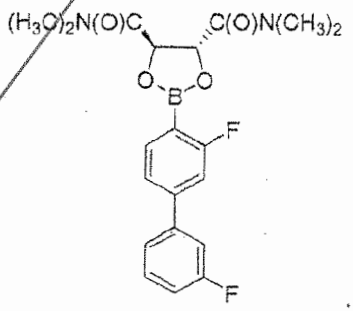


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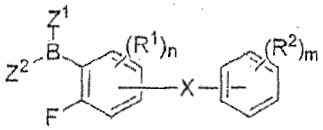




or

or a pharmaceutically acceptable form thereof.

8. A compound having the following formula



or a pharmaceutically acceptable form thereof, wherein:

(i) Z^1 is –OR and Z^2 is –OR, an optionally substituted C_{1-6} aliphatic, C_{1-6} heteroaliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group; or

(ii) Z^1 and Z^2 taken together form a 5– to 8–membered ring having at least one O atom directly attached to the boron, wherein the ring is comprised of carbon atoms and optionally one or more additional heteroatoms independently selected from the group consisting of N, S, and O; or

(iii) Z^1 is –OR, and Z^2 and the phenyl ring to which the boron is attached taken together form an optionally substituted 5- to 7-membered ring, wherein the ring is comprised of carbon atoms and optionally one or more additional heteroatoms independently selected from the group consisting of N, S, and O;

each R is hydrogen or an optionally substituted C_{1-6} aliphatic, C_{1-6} heteroaliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group;

X is a covalent bond or a bivalent C_{1-6} hydrocarbon chain, wherein one, two or three methylene units of X are optionally and independently replaced with one or more –O–, –N=N–, –NR'–, –(C=NR')–, –S–, -C(=O)–, –S(=O)–, $–S(=O)_2–$ or an optionally substituted phenylene moiety;

each R' is -C(O)R, a suitable amino protecting group, or an optionally substituted C_{1-6} aliphatic, C_{1-6} heteroaliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group;

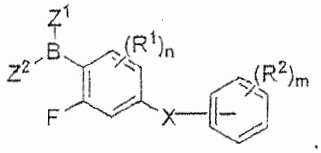
each occurrence of R^1 is, independently, halogen, –OR, $–CF_3$, –CN, $–NO_2$, –NC, $–SO_2R$, –SOR, –C(O)R, $–CO_2R$, $–C(O)N(R')_2$, –CHO, $–N_3$, $–N_2R$, $–N(R')_2$, $–B(OH)_2$, or an optionally substituted C_{1-8} aliphatic group;

each instance of R^2 is, independently, halogen, –OR, $–CF_3$, –CN, $–NO_2$, –NC, $–SO_2R$, –SOR, –C(O)R, $–CO_2R$, $–C(O)N(R')_2$, $–N_3$, $–N_2R$, $–N(R')_2$, an optionally substituted C_{1-8} aliphatic or C_{6-12} aryl group;

n is an integer from 0 to 3; and

m is an integer from 0 to 2.

9. The compound according to claim 11, the compound has the following structure:

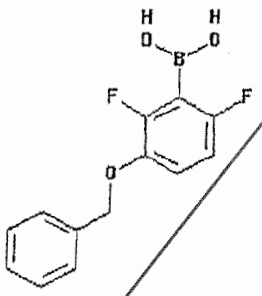


10. The compound according to claim 11, wherein X is a covalent bond.

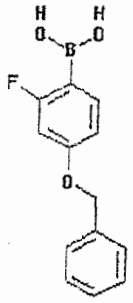
11. The compound according to claim 11, wherein X is a bivalent C_{1-6} hydrocarbon chain, wherein one, two or three methylene units of X are optionally and independently replaced with one or more –O–, –N=N–, –NR'–, –(C=NR')-, –S–, -C(=O)–, –S(=O)–, -$S(=O)_2$– or an optionally substituted phenylene moiety, or

wherein X is a bivalent C_{1-6} hydrocarbon chain, wherein one, two or three methylene units of X are optionally and independently replaced with one or more –O–.

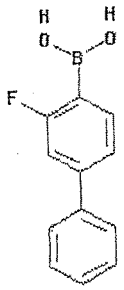
12. The compound according to claim 11, wherein the compound is selected from the group consisting of:



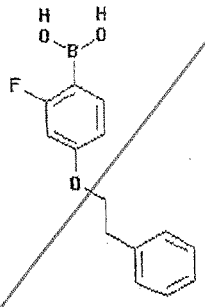
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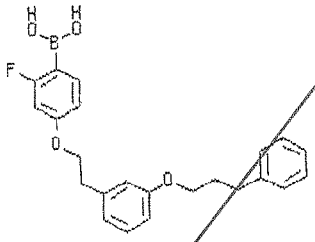
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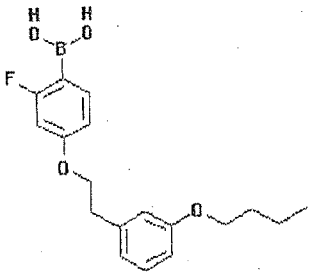
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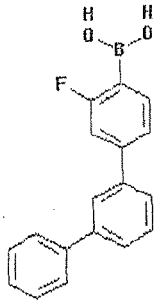
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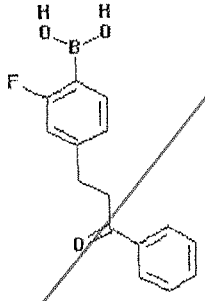
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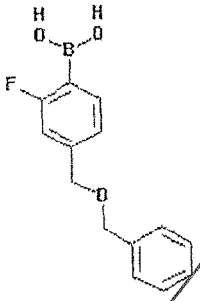
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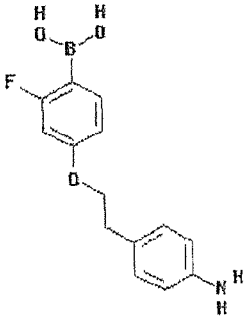
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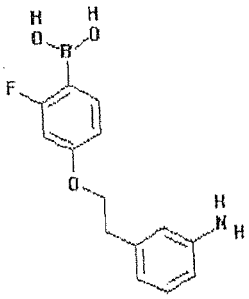
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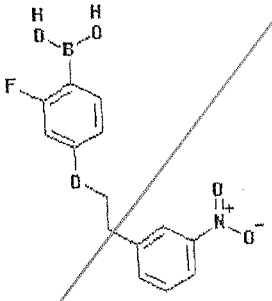
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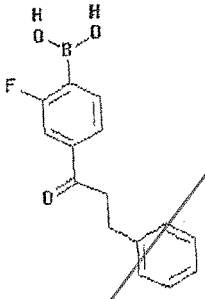
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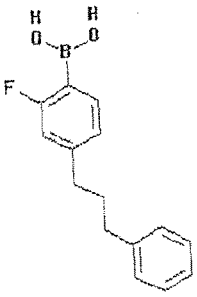
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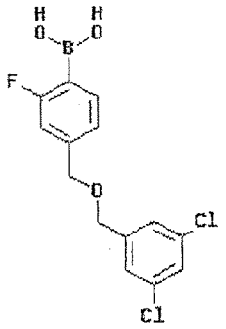
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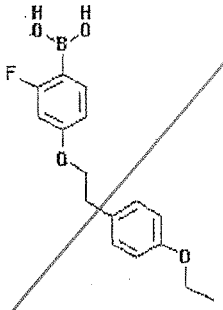
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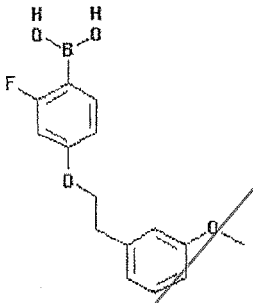
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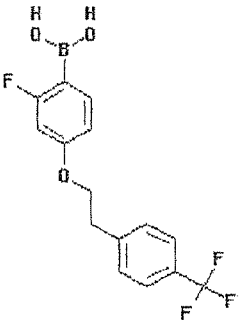
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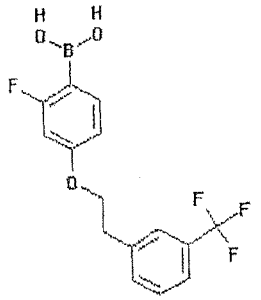
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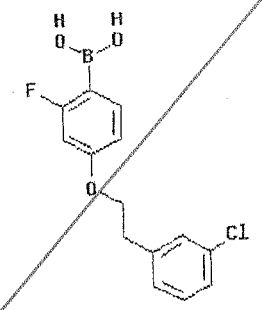
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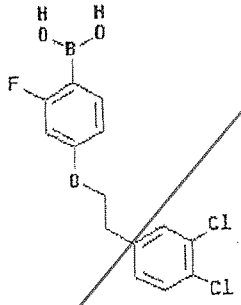
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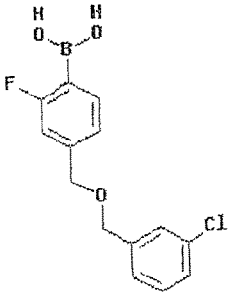
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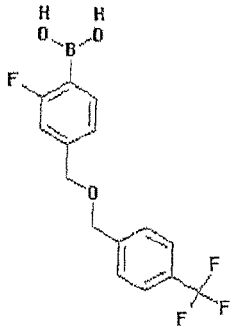
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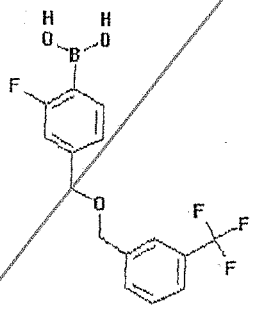
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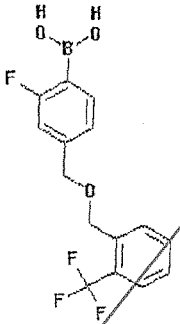
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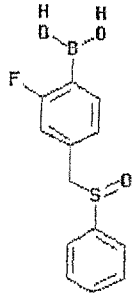
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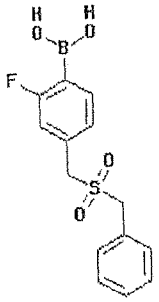
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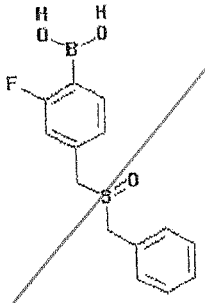
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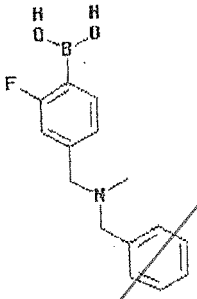
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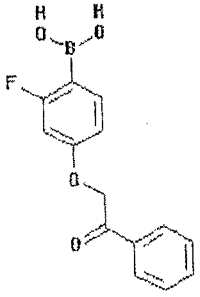
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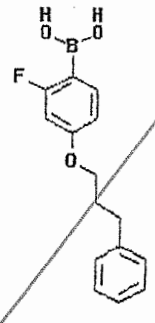
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II-90,



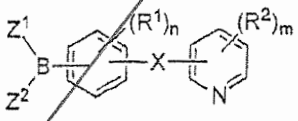
II-140,



and II-156

or a pharmaceutically acceptable form thereof.

13. A compound having the following formula:



or a pharmaceutically acceptable form thereof, wherein:

(i) Z^1 is –OR and Z^2 is –OR, an optionally substituted C_{1-6} aliphatic, C_{1-6} heteroaliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group; or

(ii) Z^1 and Z^2 taken together form a 5- to 8–membered ring having at least one O atom directly attached to the boron, wherein the ring is comprised of carbon atoms and optionally one or more additional heteroatoms independently selected from the group consisting of N, S, and O wherein the 5- to 8- membered ring is optionally substituted with one ore more C_{1-6} alkyl; or

(iii) Z^1 is –OR, and Z^2 and the phenyl ring to which the boron is attached taken together form an optionally substituted 5- to 7-membered ring, wherein the ring is

comprised of carbon atoms and optionally one or more additional heteroatoms independently selected from the group consisting of N, S, and O;

each R is hydrogen or an optionally substituted C_{1-6} aliphatic, C_{1-6} heteroaliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group;

X is a bivalent C_{1-6} hydrocarbon chain wherein one methylene unit of X is replaced with –O–;

each occurrence of R^1 is, independently, halogen, –OR, $–CF_3$, –CN, $–NO_2$, –NC, $–SO_2R$, –SOR, –C(O)R, $–CO_2R$, $–C(O)N(R')_2$, –CHO, $–N_3$, $–N_2R$, $–N(R')_2$, $–B(OH)_2$, or an optionally substituted C_{1-8} aliphatic group;

each instance of R^2 is, independently, halogen, –OR, $–CF_3$, $–NO_2$, –NC, $–SO_2R$, –SOR, –C(O)R, $–CO_2R$, $–C(O)N(R')_2$, $–N_3$, $–N_2R$, $–N(R')_2$, an optionally substituted C_{1-8} aliphatic or C_{6-12} aryl group;

wherein each R' is hydrogen, -C(O)R, a suitable amino protecting group, or an optionally substituted C_{1-6} aliphatic, C_{1-6} heteroaliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group; and

each instance of n and m is, independently, 0 to 4.

14. The compound according to claim 16 wherein Z^1 is –OR and Z^2 is –OR.

15. The compound according to claims 16 or 17, wherein R^1 is halogen.

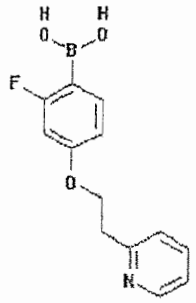
16. The compound according to any of claims 16 to 18, wherein at least one R^1 group is fluoro in the ortho position relative to the $B(Z^1)(Z^2)$.

17. The compound according to any of claims 16 to 19, wherein X is –O–.

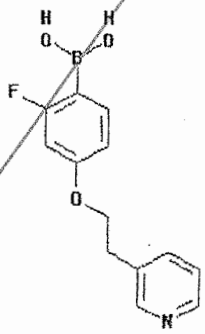
18. The compound according to any of claims 16 to 20, wherein n is 1.

19. The compound according to any of claims 16 to 21, wherein m is 0.

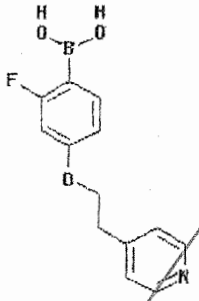
20. The compound according to claim 16, wherein the compound is:



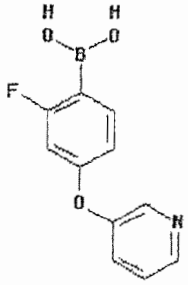
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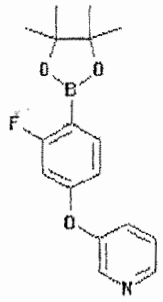
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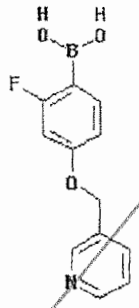
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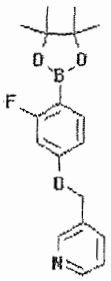
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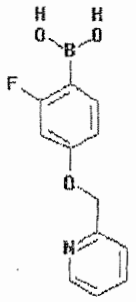
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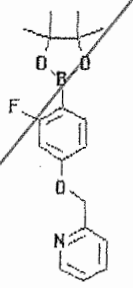
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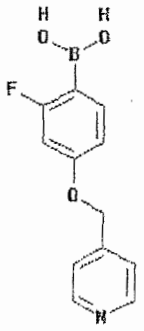
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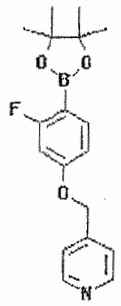
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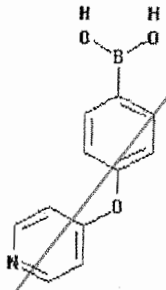
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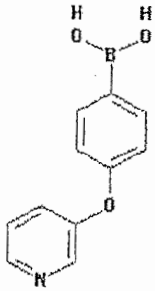
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II-179,



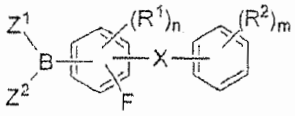
II-292,



or

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21. A compound having the following formula:



or a pharmaceutically acceptable form thereof, wherein

Z^1 is –OR and Z^2 is –OR;

each R is, independently, hydrogen or an optionally substituted C_{1-6} aliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group;
X is a covalent bond or a bivalent C_{1-6} hydrocarbon chain, wherein one, two or three methylene units of X are optionally and independently replaced with one or more –O–;
each occurrence of R^1 is, independently, halogen;
R^2 is –CN, $–NO_2$, –NC, $–C(O)N(R')_2$, $–N_3$, N_2R, $–N(R)_2$, or $–N(R')_2$;
each R' is hydrogen, –C(O)R, a suitable amino protecting group, or an optionally substituted C_{1-6} aliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group;
each instance of n is, independently, 1, 2, or 3; and
m is 1.

22. The compound according to claim 24, wherein X is para to the boron atom.

23. The compound according to claim 24 or 25, wherein the phenyl ring bonded to the boron has at least one fluorine bonded ortho to the boron.

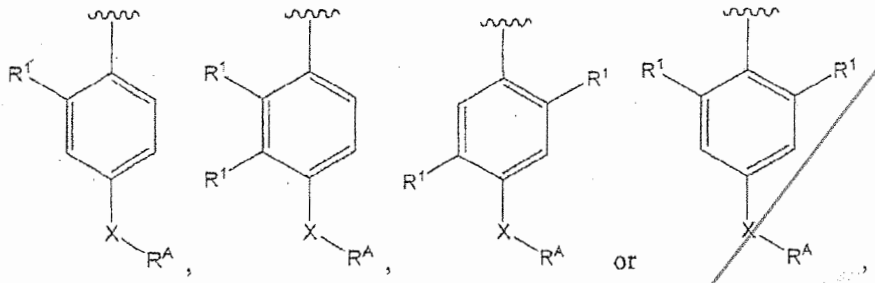
24. The compound according to any of claims 24 to 26, wherein R_2 is $–N(R')^2$.

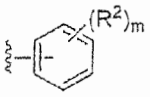
25. The compound according to any of claims 24 to 27, wherein X is a covalent bond.

26. The compound according to any of claims 27 to 28, wherein R_1 is flouro or chloro.

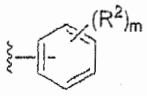
27. The compound according to any of claims 27 to 29, wherein n is 1.

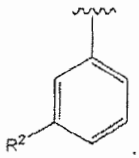
28. The compound according to claim 1, wherein the phenyl ring bonded to the boron atom is



wherein R^A is  .

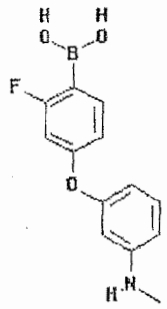
29. The compound according to claim 1, wherein the group

 is

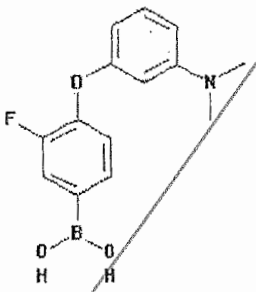
 .

30. The compound according to any of claims 24 to 32, wherein R^2 is $-N(R')_2$.

31. The compound according to claim 24, wherein the compound is:



or

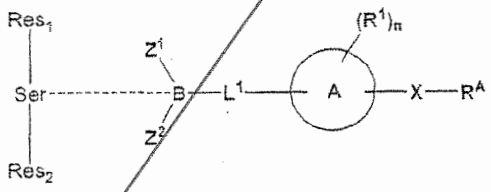


II-200

II-205

or a pharmaceutically acceptable form thereof.

32. A complex comprising a compound associated with a serine residue of a protein having the formula (I)-complex:



(I)-complex

wherein:

Z^1 and Z^2 are –OH;

L^1 is a covalent bond, or an optionally substituted straight or branched C_{1-6} alkylene or C_{2-6} alkenylene moiety;

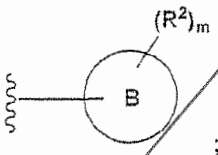
Ring A is an optionally substituted saturated, partially unsaturated or aromatic C_{5-8} monocyclic, C_{6-10} bicyclic or C_{10-16} tricyclic ring system optionally containing one or more heteroatoms independently selected from the group consisting of N, S and O;

X is a covalent bond or a bivalent C_{1-6} hydrocarbon chain, wherein one, two or three methylene units of X are optionally replaced with –O–, –N=N–, –NR'–, –(C=NR')-, –S–, -C(=O)–, –S(=O)–, –$S(=O)_2$– or an optionally substituted phenylene moiety;

each R' is hydrogen, -C(O)R, a suitable amino protecting group, or an optionally substituted C_{1-6} aliphatic, C_{1-6} heteroaliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group;

each R is hydrogen or an optionally substituted C_{1-6} aliphatic, C_{1-6} heteroaliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group;

R^A is (i) hydrogen, halogen, –OR, –CF_3, –CN, –NO_2, –NC, –SO_2R, –SOR, -C(O)R, –CO_2R, –C(O)N(R')$_2$, –CHO, –N_3, –N_2R, or –N(R')$_2$; or (ii) Ring B having the formula:



;

wherein Ring B is an optionally substituted saturated, partially unsaturated or aromatic C_{5-8} monocyclic, C_{6-10} bicyclic or C_{10-16} tricyclic ring system optionally containing one or more heteroatoms independently selected from the group consisting of N, S and O;

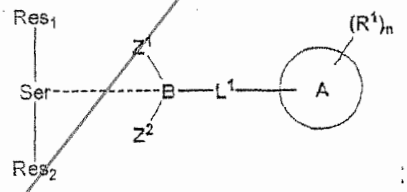
each occurrence of R^1 is, independently, halogen, –OR, $–CF_3$, –CN, $–NO_2$, –NC, $-SO_2R$, –SOR, –C(O)R, $–CO_2R$, $–C(O)N(R')_2$, –CHO, $–N_3$, $–N_2R$, $–N(R')_2$, $–B(OH_2)$, or an optionally substituted $C_{1–8}$ aliphatic group;

each instance of R^2 is, independently, halogen, –OR, $–CF_3$, –CN, $–NO_2$, –NC, $-SO_2R$, –SOR, –C(O)R, $–CO_2R$, $–C(O)N(R')_2$, $–N_3$, $–N_2R$, $–N(R')_2$, an optionally substituted $C_{1–8}$ aliphatic or $C_{6–12}$ aryl group;

each instance of n and m is, independently, 0 to 10;

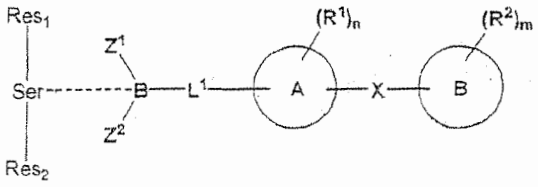
and wherein Res_1—Ser—Res_2 is a protein having a length between about 400 to about 600 residues; and Ser is serine residue Ser_{241} of FAAH.

33. The complex according to claim 35, wherein said compound is a compound of formula **(II)-complex**:



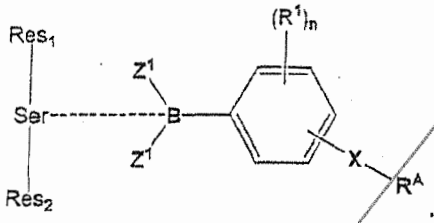
(II)-complex.

34. The complex according to claim 1, wherein said compound is a compound of formula (III)-complex:



(III)-complex.

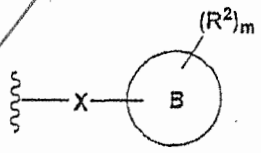
35. The complex according to claim 1, wherein said compound is a compound of formula (III-a)-complex:



(III-a)-complex.

36. The complex according to claim 37, wherein both Ring A and Ring B are aromatic,

37. The complex according to claim 37, wherein Ring A is phenyl and the group



is attached to Ring A *para* to the boron (B) atom.

38. The complex according to claim 37, wherein X is a covalent bond; or

wherein X is a bivalent C_{1-6} hydrocarbon chain, wherein one, two or three methylene units of X are optionally and independently replaced with one or more –O–, –N=N–, –NR'–, –(C=NR')-, –S–, -C(=O)–, –S(=O)–, -S(=O)$_2$– or an optionally substituted phenylene moiety; or

wherein X is a bivalent C_{1-6} hydrocarbon chain, wherein one, two or three methylene units of X are optionally and independently replaced with one or more -O-.

39. The complex according to any of claims 35 to 37, wherein Ring A is phenyl and at least one R^1 group is fluoro in the ortho position relative to the boron atom.

40. The complex according to claim 37, wherein Ring B is a substituted phenyl comprising at least one fluorine substituent.

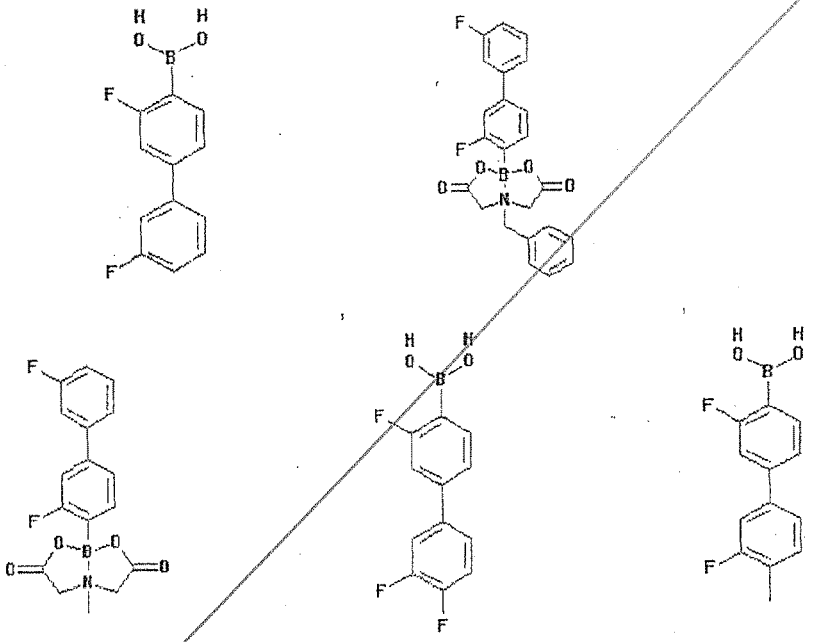
41. The complex according to claim 43, wherein m is 1 and R^2 is fluorine.

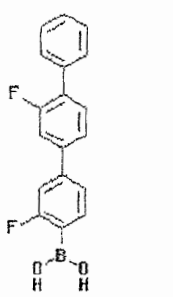
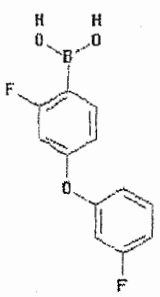
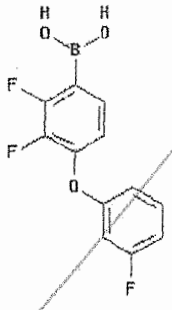
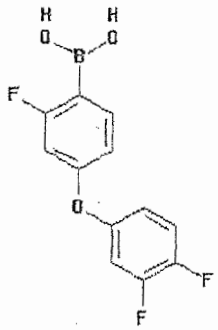
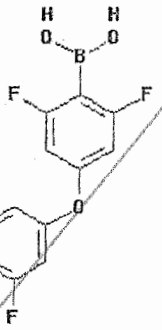
42. The complex according to claim 44, wherein R^2 is meta to the linker group X.

43. The complex according to claim 35, wherein the compound is selected from the group consisting of: compounds I-1 to I-130 of Table 1; compounds I-133 to I-135 of Table 1; compounds I-137 to I-204 of Table 1; compounds II-1 to II-33 of Table 2, compounds II-35 to II-55 of Table 2, and compounds II-57 to II-319 of Table 2.

44. The complex according to claim 35,

wherein the compound is selected from the group consisting of:



, and

or a pharmaceutically acceptable form thereof.

45. A pharmaceutical composition comprising a compound of any one of claims 1 to 34, or a pharmaceutically acceptable form thereof. a pharmaceutically acceptable excipient.

46. Use of the compound of any of claims 1 to 34 in the manufacture of a medicament to treat a FAAH-mediated disease, disorder or condition.

47. The use according to claim 49, wherein the FAAH mediated disease, disorder or condition is a painful syndrome, disease and/or disorder, an inflammatory disorder, an immune disorder, depression, anxiety, a sleep disorder, a feeding behavior, a movement disorder, glaucoma, neuroprotection or cardiovascular disease.

48. The use according to claim 50, wherein the FAAH mediated disorder is a painful syndrome, disease and/or disorder selected from neuropathic pain, central pain, deafferentiation pain, chronic pain, stimulus of nociceptive receptors, acute pain, non-inflammatory pain, inflammatory pain, pain associated with cancer, preoperative pain, arthritic pain, lumbosacral pain, musculo-skeletal pain, headache, migraine, muscle ache, lower back and neck pain, and toothache.

49. The use according to claim 51, wherein the painful syndrome, disease or disorder is neuropathic pain selected from the group consisting of chronic neuropathic pain; neuropathic pain characterized by hyperalgesia; neuropathic pain that follows neuronal injury; diabetic neuropathy; neuralgia; post-herpetic neuralgia; trigeminal neuralgia; pain resulting from physical trauma, amputation, cancer, toxins, or chronic inflammatory conditions; neuropathic pain resulting from a peripheral nerve disorder, nerve compression, nerve crush, nerve stretch, incomplete nerve transsection, mononeuropathy, polyneuropathy, dorsal root ganglion compression, inflammation of the spinal cord, contusion, tumor of the spinal cord, hemisection of the spinal cord, tumor of the brainstem, tumor of the thalamus, tumor of the cortex, trauma to the brainstem, trauma to the thalamus, or trauma to the cortex; and neuropathic pain associated with spontaneous shooting and lancinating pain, ongoing and burning pain, paraesthesias, dysesthesias, hyperesthesia, dynamic allodynia, static allodynia, thermal allodynia, thermal hyperalgesia, cold hyperalgesia, mechanical hyperalgesia, hyperpathia, or hypoalgesia.

50. The use according to claim 51, wherein the painful syndrome, disease or disorder is non-inflammatory pain selected from the group consisting of peripheral neuropathic pain, central pain, deafferentation pain, chronic noiceptive pain, noxious stimulus of noiceptive receptors, phantom pain, pain felt by psychiatric patients, and wandering pain.

51. The use according to claim 50, wherein:

a. the inflammatory disorder is inflammation characterized by one or more of the signs of pain from the generation of noxious substances and the stimulation of nerves; inflammation characterized by heat from vasodilatation; inflammation characterized by redness from vasodilatation and increased blood flow; inflammation characterized by swelling from excessive inflow or restricted outflow of fluid; inflammation characterized by loss of function; inflammation affecting the blood vessels; inflammation affecting the joints; inflammation affecting the gastrointestinal tract; inflammation affecting the skin; inflammation affecting multiple organs and tissues; inflammation associated with vascular disease; inflammation associated with migraine headache; inflammation associated with tension headache; inflammation associated with psoriasis, irritable bowel disease, periarteritis nodosa, thyroiditis, aplastic anemia, Hodgkin's disease, scierodoma, rheumatic fever, type I diabetes, myasthenia gravis, sarcoidosis, nephrotic syndrome, Behcet's syndrome, polymyositis, gingivitis, hypersensitivity, conjunctivitis, multiple sclerosis, and ischemia; neuroinflammation associated with the brain disorders; chronic inflammation associated with cranial radiation injury; acute inflammatory conditions and chronic inflammatory conditions; inflammation associated with trauma and non-inflammatory myalgia; acute, adhesive, atrophic, catarrhal, chronic, cirrhotic, diffuse, disseminated, exudative, fibrinous, fibrosing, focal, granulomatous, hyperplastic, hypertrophic, interstitial, metastatic, necrotic, obliterative, parenchymatous, plastic, productive, proliferous, pseudomembranous, purulent, sclerosing, seroplastic, serous, simple, specific, subacute, suppurative, toxic, traumatic, and/or ulcerative inflammation;

b. the immune disorder is an autoimmune disorder, arthritis, rheumatoid arthritis, spondyloarthopathies, gouty arthritis, a degenerative joint disease, osteoarthritis, systemic lupus erythematosus, Sjogren's syndrome, ankylosing spondylitis, undifferentiated spondylitis, Behcet's disease, haemolytic autoimmune anaemias, multiple sclerosis, amyotrophic lateral sclerosis, amylosis, acute painful shoulder, psoriatic, juvenile arthritis, asthma, atherosclerosis, osteoporosis, bronchitis, tendonitis, bursitis, a skin inflammation disorder, psoriasis, eczema, burns, dermatitis, enuresis, eosinophilic disease, a gastrointestinal disorder, inflammatory bowel disease, peptic ulcers, regional enteritis, diverticulitis, gastrointestinal bleeding, Crohn's disease, gastritis, diarrhoea, irritable bowel syndrome, ulcerative colitis, a disorder ameliorated by a gastroprokinetic agent, ileus, postoperative ileus, ileus during sepsis, gastroesophageal reflux disease, eosinophilic esophagitis, gastroparesis, diabetic gastroparesis, food intolerance, food allergy, a functional bowel disorder, non-ulcerative dyspepsia, or non-cardiac chest pain;

c. the anxiety is clinical anxiety, panic disorder, agoraphobia, generalized anxiety disorder, specific phobia, social phobia, obsessive–compulsive disorder, acute stress disorder, post–traumatic stress disorder, an adjustment disorder with anxious features, an anxiety disorder due to general medical conditions, or a substance–induced anxiety disorder;

d. the sleep disorder is insomia, sleep apnea, restless legs syndrome, delayed sleep phase syndrome, periodic limb movement disorder, hypopnea syndrome, rapid eye movement behavior disorder, shift work sleep disorder, a parasomnia, nightmares, night terrors, sleep talking, head banging, snoring, clenched jaw, or grinding of teeth;

e. the depression is a depressive disorder or conditions, major depressive disorder, unipolar depression, dysthymic disorders, chronic depression,

mild depression, bipolar disorders, manic–depression, clinical depression, or subclinical depression; and

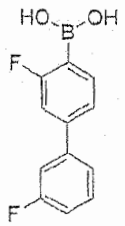
f. the feeding behavior is an eating disorder, anorexia, cachexia, over-eating leading to obesity, weight loss associated with cancer, or weight loss associated with a wasting condition.

52. The use according to claim 49, wherein the FAAH-mediated disease is post herpetic neuralgia.

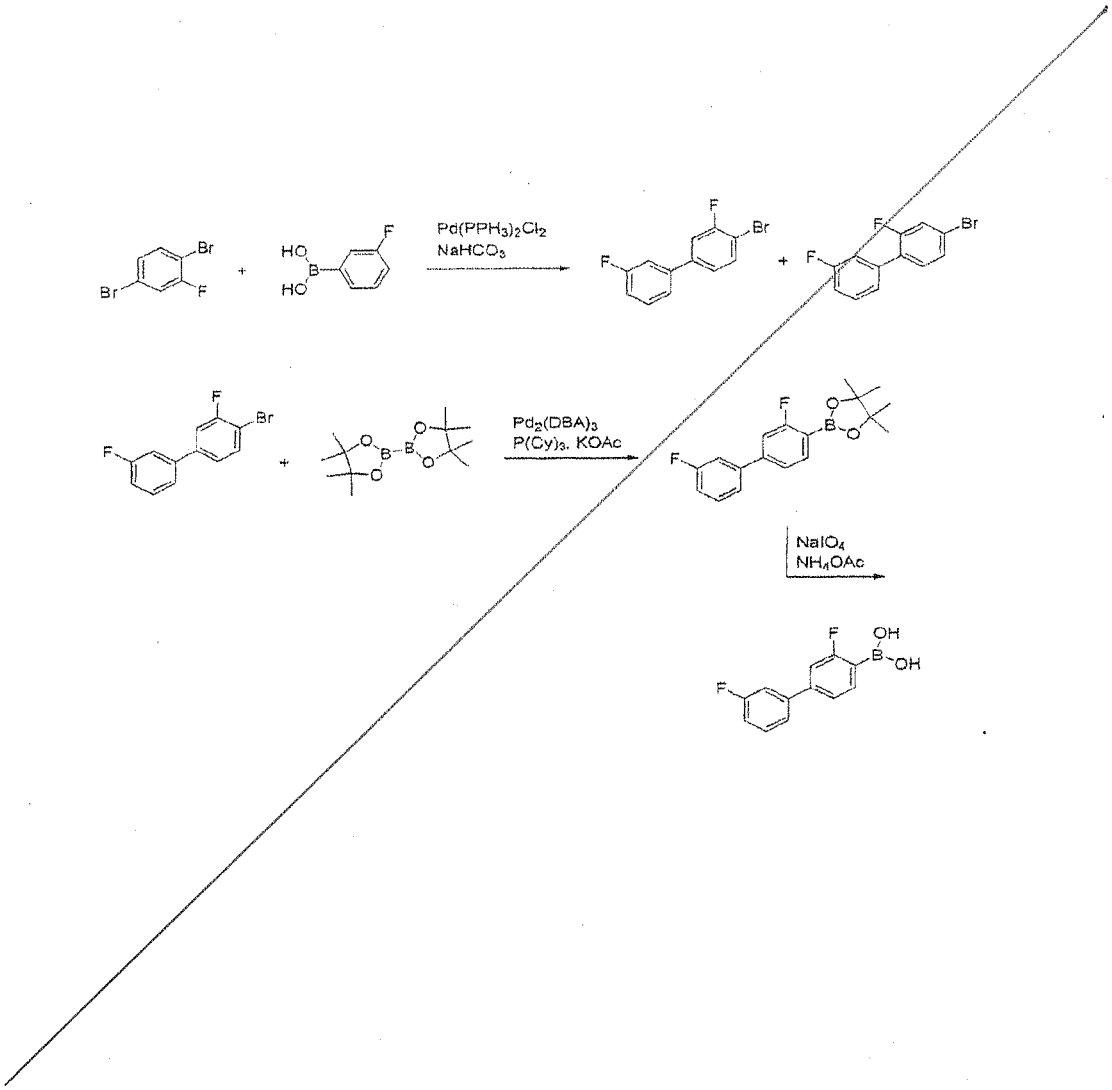
53. The use according to any one of claims 49-55, wherein the composition is administered in combination with one or more additional therapeutically active agents.

54. Method for the synthesis of a compound in a composition according to any one of the preceding claims comprising (i) the reaction of an organometallic species with an organic borate or (ii) the palladium coupling reaction of aryl or alkenyl halides and diboronates of dialkoxy boranes and hydroboration of alkenes or alkynes, leading to boronates that can be readily transformed into boronic acids by hydrolyzing the boronate under aqueous acidic conditions or via oxidative hydrolysis, thus leading to a compound according to any one of the preceding claims.

55. Method for the synthesis of the compound having the following structure

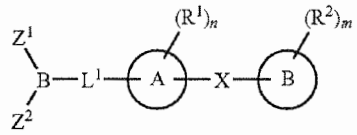


comprising the following steps:


Pd(PPH3)2Cl2
NaHCO3
Pd2(DBA)3
P(Cy)3, KOAc
NaIO4
NH4OAc

CLAIMS

1. A pharmaceutically acceptable composition, comprising a compound of formula III,



or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient;

wherein:

Z^1 is --OR and Z^2 is --OR;

each R is, independently, hydrogen or an optionally substituted C_{1-6} aliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group;

L^1 is a covalent bond;

Ring A is phenyl, wherein Ring A has at least one fluorine substituent;

X is a covalent bond or a bivalent C_{1-6} hydrocarbon chain, wherein one, two or three methylene units of X are optionally and independently replaced with one or more --O--;

Ring B is phenyl;

each occurrence of R^1 is, independently, halogen;

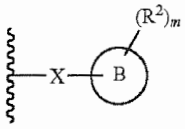
R^2 is --CN, --NO_2, --NC, --C(O)N(R')$_2$, --N_3, N_2R, --N(R)$_2$, or --N(R')$_2$;

each R' is hydrogen, --C(O)R, a suitable amino protecting group, or an optionally substituted C_{1-6} aliphatic, C_{6-12} aryl, or C_{6-12} heteroaryl group;

each instance of n is, independently, 1, 2, 3 or 4; and

m is 1.

2. The composition according to claim 1, wherein the group



is attached to Ring A para to the boron atom.

3. The composition according to claim 1, wherein Ring A is phenyl and at least one R^1 group is fluoro in the ortho position relative to the boron atom.

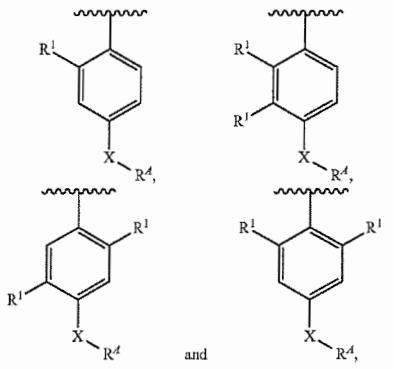
4. The composition according to claim 1, wherein R^2 is --$N(R')_2$.

5. The composition according to claim 1, wherein X is a covalent bond.

6. The composition according to claim 1, wherein R^1 is selected from fluoro or chloro, wherein at least one R^1 group is fluoro.

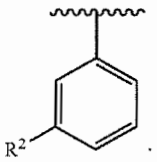
7. The composition according to claim 1, wherein n is 1.

8. The composition according to claim 1, wherein Ring A is selected from the group consisting of:



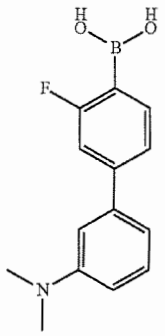
wherein R^A is Ring B.

9. The composition according to claim 1, wherein Ring B is:



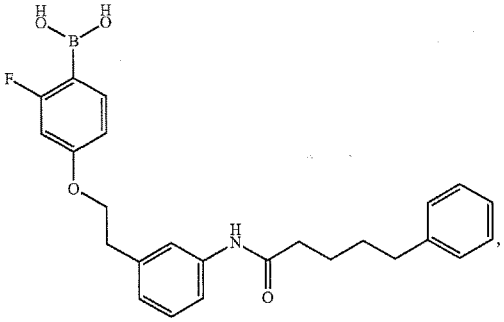
10. The composition according to claim 9, wherein R^2 is --$N(R')_2$.

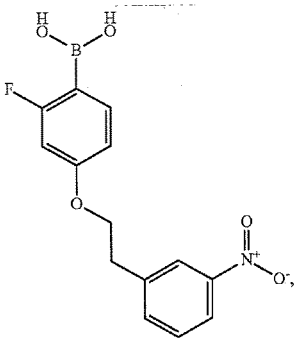
11. The composition according to claim 1, wherein the compound of formula III is:

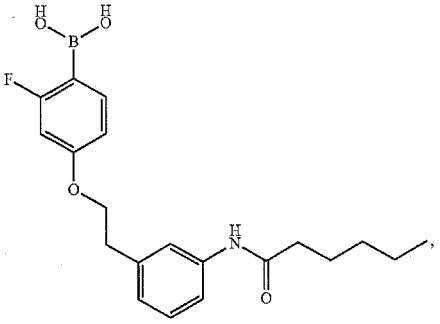


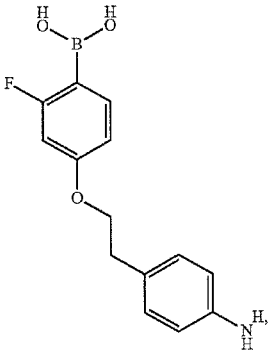
or a pharmaceutically acceptable salt thereof.

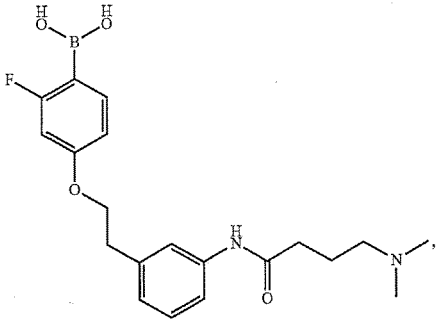
12. The composition according to claim 1, wherein the compound of formula III is selected from the group consisting of:

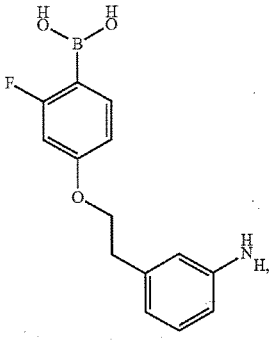


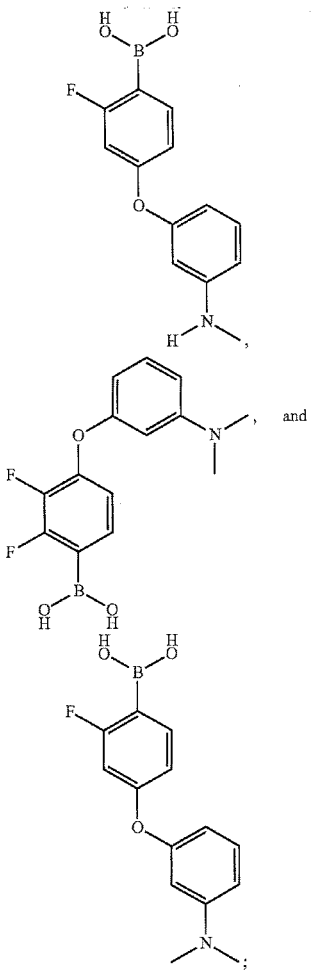












and

or a pharmaceutically acceptable salt thereof.