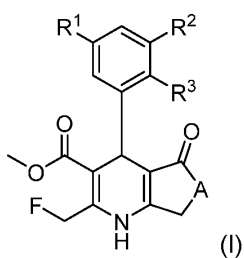


What is claimed is:

1. A compound according to formula (I) or a pharmaceutically acceptable salt or solvate thereof



wherein:

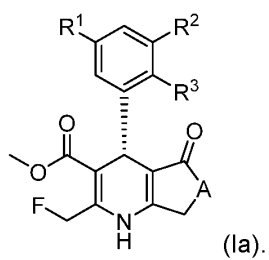
A is O or CH₂;

R¹ is H or F;

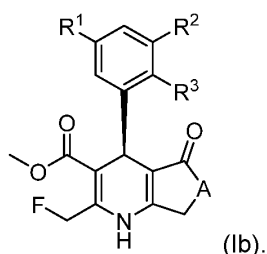
10 R² is H or F; and

R³ is OCHF₂, methyl, ethyl, or cyclopropyl each of which is optionally substituted with 1 to 3 F.

2. The compound according to claim 1 which is compound of formula (Ia) or a pharmaceutically acceptable salt or solvate thereof
- 15



3. The compound according to claim 1 which is a compound of formula (Ib) or a pharmaceutically acceptable salt or solvate thereof



5

4. The compound according to any one of claims 1-3 wherein A is O.

5. The compound according to claim 4 wherein R² is F.

10

6. The compound according to claim 4 wherein R² is H.

7. The compound according to claim 4 wherein R³ is OCHF₂.

15

8. The compound according to claim 4 wherein R³ is methyl, ethyl, or cyclopropyl each of which is substituted with 1 to 3 F.

9. The compound according to claim 4 wherein R³ is CHF₂ or CF₃.

20

10. The compound according to claim 4 wherein R³ is ethyl substituted with 1 or 2 F or cyclopropyl either unsubstituted or substituted with 2 F.

11. The compound according to any one of claims 1-3 where in A is CH₂.

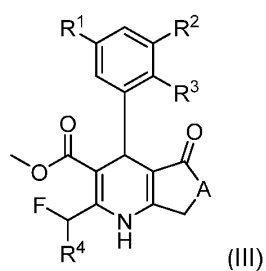
25

12. The compound according to claim 11 wherein R² is F.

13. The compound according to claim 11 or claim 12 wherein R³ is ethyl substituted with 1 to 3 F.

14. A compound according to formula (III) or a pharmaceutically acceptable salt or solvate thereof

5



wherein:

A is O or CH₂;

10 R¹ is H or F;

R² is H or F;

R³ is OCHF₂, methyl, ethyl, or cyclopropyl each of which is optionally substituted with 1 to 3 F; and

R⁴ is H or F.

15

15. The compound according to claim 14 wherein A is O.

16. The compound according to claim 15 wherein R² is F.

20 17. The compound according to claim 15 wherein R² is H.

18. The compound according to claim 15 wherein R³ is OCHF₂.

25 19. The compound according to claim 15 wherein R³ is methyl, ethyl, or cyclopropyl each of which is optionally substituted with 1 to 3 F.

20. The compound according to claim 15 wherein R³ is CHF₂ or CF₃.
21. The compound according to claim 15 wherein R³ is ethyl optionally substituted with 1 or 2 F
5 or cyclopropyl either unsubstituted or substituted with 2 F.
22. The compound according to claim 15 wherein R³ is ethyl.
23. The compound according to claim 15 wherein R⁴ is F.
10
24. The compound according to claim 15 wherein R⁴ is H.
25. The compound according to claim 14 where in A is CH₂.
- 15 26. The compound according to claim 23 wherein R² is F.
27. The compound according to claim 23 wherein R³ is ethyl substituted with 1 to 3 F.
28. The compound according to claim 23 wherein R⁴ is F.
20
29. The compound according to claim 23 wherein R⁴ is H.
30. The compound according to claim 1 selected from the group consisting of:
methyl (R)-4-(2-((R)-2,2-difluorocyclopropyl)-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-
25 tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
methyl (R)-4-(2-((S)-2,2-difluorocyclopropyl)-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-
tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
(R)-4-(2-cyclopropyl-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-
b]pyridine-3-carboxylate;
30 Methyl (R)-4-(2-((R)-2,2-difluorocyclopropyl)-3,5-difluorophenyl)-2-(fluoromethyl)-5-oxo-
1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
Methyl (R)-4-(2-((S)-2,2-difluorocyclopropyl)-3,5-difluorophenyl)-2-(fluoromethyl)-5-oxo-
1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;

- methyl (R)-4-(3,5-difluoro-2-((R)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl (R)-4-(3,5-difluoro-2-((S)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- 5 methyl (R)-4-(2-((S)-1,2-difluoroethyl)-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl (R)-4-(3-fluoro-2-((R)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- 10 methyl (R)-4-(3-fluoro-2-((S)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl (R)-4-(2-(difluoromethoxy)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl (R)-4-(3,5-difluoro-2-(trifluoromethyl)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- 15 methyl (R)-4-(2-(2,2-difluoroethyl)-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl (R)-4-(2-(2,2-difluoroethyl)-3,5-difluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro [3,4-b]pyridine-3-carboxylate;
- methyl (R)-4-(2-cyclopropyl-3,5-difluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- 20 methyl (R)-4-(2-(difluoromethyl)-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl (R)-4-(2-((R)-1,2-difluoroethyl)-3,5-difluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- 25 methyl (R)-4-(2-((S)-1,2-difluoroethyl)-3,5-difluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl (R)-4-(3-fluoro-2-(trifluoromethyl)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine -3-carboxylate;
- methyl (R)-4-(2-(difluoromethyl)-3,5-difluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- 30 methyl (R)-4-(2-(difluoromethoxy)-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl 4-(2-(difluoromethoxy)-5-fluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;

- methyl (R)-4-(2-cyclopropyl-5-fluorophenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl (R)-4-(2-cyclopropylphenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- 5 methyl (R)-4-(5-fluoro-2-(trifluoromethyl)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate;
- methyl 4-(2-ethylphenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate; and
- 10 methyl (R)-2-(fluoromethyl)-5-oxo-4-(2-(trifluoromethyl)phenyl)-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate; or a pharmaceutically acceptable salt or solvate thereof.
31. The compound according to claim 1 selected from the group consisting of
- ethyl (R)-4-(2-((R)-1,2-difluoroethyl)-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate;
- 15 methyl (R)-4-(2-((S)-1,2-difluoroethyl)-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate;
- (R)-4-(3-fluoro-2-(2,2,2-trifluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate;
- methyl (R)-4-(2-cyclopropyl-3,5-difluorophenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate;
- 20 methyl (R)-4-(2-(2,2-difluoroethyl)-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate;
- methyl (R)-4-(3-fluoro-2-((R)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate;
- 25 methyl (R)-4-(3-fluoro-2-((S)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate;
- methyl (R)-4-(2-cyclopropyl-3-fluorophenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate;
- methyl (S)-4-(3,5-difluoro-2-((S)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate; and
- 30 methyl (S)-4-(3,5-difluoro-2-((R)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-4,5,6,7-tetrahydro-1H-cyclopenta[b]pyridine-3-carboxylate; or a pharmaceutically acceptable salt or solvate thereof.

32. The compound according to claim 14, wherein the compound is methyl 2-(difluoromethyl)-4-(3-fluoro-2-(1-fluoroethyl)phenyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate or a pharmaceutically acceptable salt or solvate thereof.
- 5 33. A crystalline form of methyl (R)-4-(3-fluoro-2-((R)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate.
34. The crystalline form according to claim 33, wherein the form is Form A.
- 10 35. The crystalline form according to claim 33, wherein the form is Form B.
36. The crystalline form according to claim 33, wherein the form is Form C.
- 15 37. A crystalline hydrated form of methyl (R)-4-(3-fluoro-2-((R)-1-fluoroethyl)phenyl)-2-(fluoromethyl)-5-oxo-1,4,5,7-tetrahydrofuro[3,4-b]pyridine-3-carboxylate.
38. The crystalline hydrated form according to claim 37, wherein the hydrated form is Hydrate A.
- 20 39. The crystalline hydrated form according to claim 37, wherein the hydrated form is Hydrate B.
40. A pharmaceutical composition comprising a compound according to any one of claims 1-32 and a pharmaceutically acceptable excipient.
- 25 41. A method for the treatment of schizophrenia, bipolar disorder, major depressive disorder, substance use disorder, ADHD, Phelan-McDermid Syndrome, autism spectrum disorder, multiple sclerosis, frontotemporal dementia, Alzheimer's disease, Brugada Syndrome, Short QT syndrome, or early repolarization syndrome comprising administration of an effective amount of a compound according to any one of claims 1-32, or a pharmaceutically acceptable salt thereof to a patient in need of treatment thereof.
- 30 42. A method for the treatment of schizophrenia, bipolar disorder, major depressive disorder, substance use disorder, ADHD, Phelan-McDermid Syndrome, autism spectrum disorder, multiple sclerosis, frontotemporal dementia, Alzheimer's disease, Brugada Syndrome, Short QT syndrome, or early repolarization syndrome comprising administration of a compound
- 35

according to any one of claims 1-32, or a pharmaceutically acceptable salt thereof to a patient in need of treatment thereof.