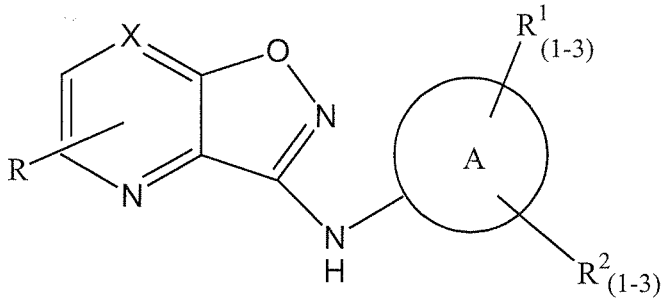
CLAIMS

What is claimed is:

1. Use of at least one compound having a structure represented by a formula:



wherein:

each X is independently selected from CR^5 or N;

A is phenyl or pyrrole;

R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) , $S(O)_{0-2}NR^3R^4$, CN or CF_3;

R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4);

R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN, or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4);

R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^4;

R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

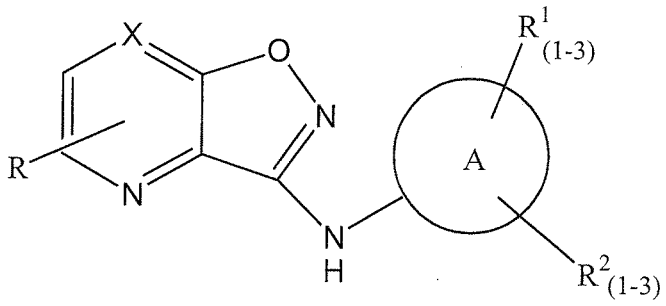
R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5;

R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for the treatment of a neurotransmission dysfunction and other disease states associated with mGluR4 activity in a mammal, wherein the dysfunction is any of Parkinson's disease, schizophrenia, psychosis, "schizophrenia-spectrum" disorder, depression, bipolar disorder, cognitive disorder, delirium, amnestic disorder, anxiety disorder, attention disorder, obesity, eating disorder, or NMDA receptor-related disorder, anxiety, motor effects after alcohol consumption, neurogenic fate commitment and neuronal survival, epilepsy, or certain cancers, for example, medulloblastoma, inflammation (for example, multiple sclerosis) and metabolic disorders (for example, diabetes) and taste enhancing associated with glutamatergic dysfunction and diseases in which mGluR4 receptor is involved.

2. Use of at least one compound having a structure represented by a formula:



wherein:

each X is independently selected from CR^5 or N;

A is phenyl or pyrrole;

R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), $S(O)_{0-2}NR^3R^4$, CN or CF_3;

R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4);

R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN, or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4);

R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^4;

R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

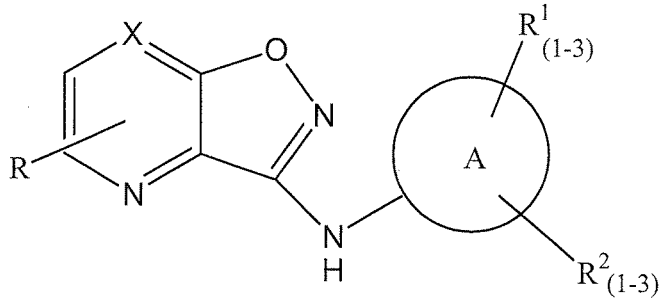
R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5;

R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof,

in the manufacture of a medicament for potentiating mGluR4 activity in a subject, in a dosage and amount effective to potentiate mGluR4 receptor activity in the subject, wherein the medicament is effective to treat a dysfunction selected from the group consisting of Parkinson's disease, schizophrenia, psychosis, "schizophrenia-spectrum" disorder, depression, bipolar disorder, cognitive disorder, delirium, amnestic disorder, anxiety disorder, attention disorder, obesity, eating disorder, or NMDA receptor-related disorder, anxiety, motor effects after alcohol consumption, neurogenic fate commitment and neuronal survival, epilepsy, or certain cancers, for example, medulloblastoma, inflammation (for example, multiple sclerosis) and metabolic disorders (for example, diabetes) and taste enhancing associated with glutamatergic dysfunction and diseases in which mGluR4 receptor is involved.

3. A compound having a structure represented by a formula:



wherein:

each X is independently selected from CR^5 or N;

A is phenyl or pyrrole;

R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), $S(O)_{0-2}NR^3R^4$, CN or CF_3;

R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) ;

R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN, or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) ;

R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^4;

R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

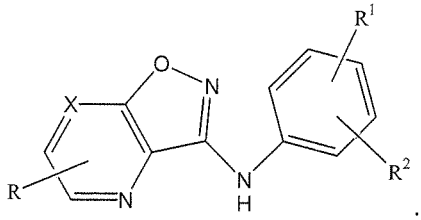
R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5;

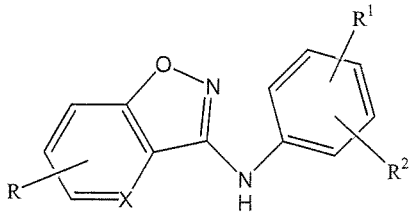
R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof.

4. The compound of claim 3, of the following formula:



5. The compound of claim 3, of the following formula :



, wherein X is N.

6. The compound of claim 3, wherein one X is CR^5 with R^5 being H, and the other X is N.

7. The compound of claim 3, wherein R^5 is O-alkyl.

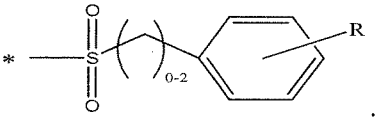
8. The compound of claim 3, wherein R is hydrogen or halogen.

9. The compound of claim 3, wherein wherein A is phenyl or pyrrole.

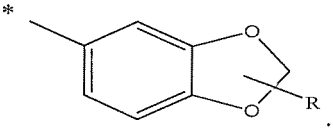
10. The compound of claim 3 or claim 27, wherein R^1 and R^2 are independently is halogen, O-alkyl, CF_3, OCF_3, OCF_2, OCF_2CF_3, CN, C_{1-10}alkyl; COC_{1-10}alkyl; OC_{1-10}alkyl; or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4).

11. The compound of claim 3, wherein A is pyrrole and R^1 is $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4).

12. The compound of claim 3, wherein A is pyrrole and R^1 is

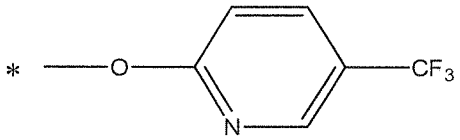
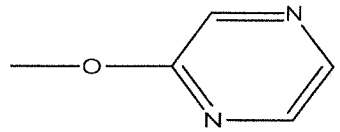


13. The compound of claim 3, wherein A is phenyl and together with R^1 and R^2 forms

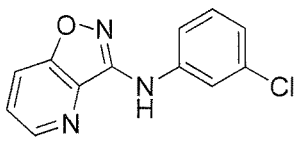
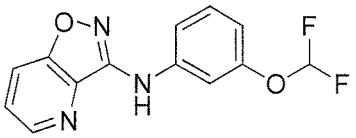
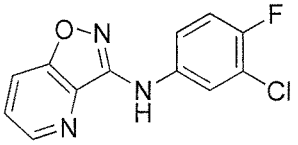
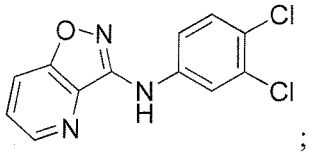
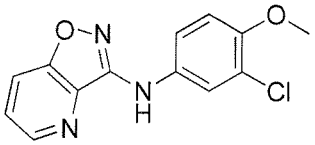
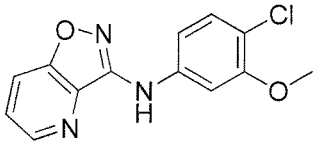
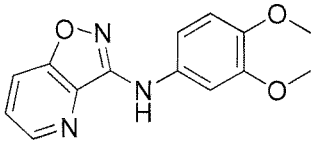
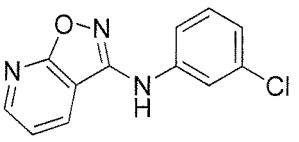
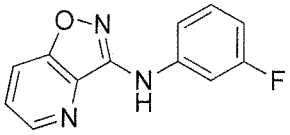
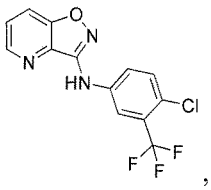
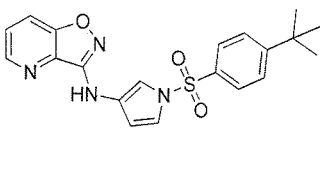
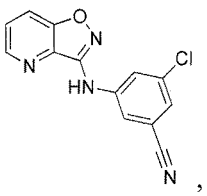
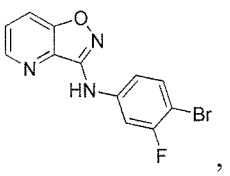
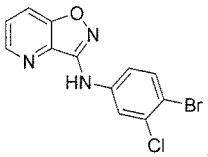
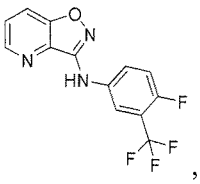
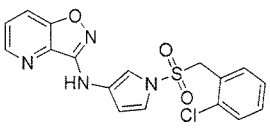
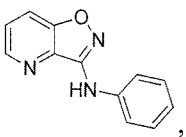
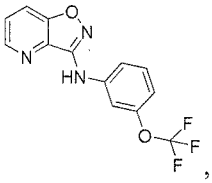
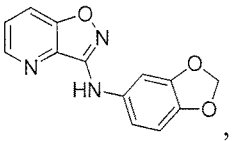
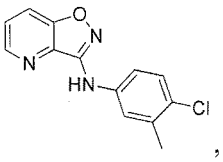
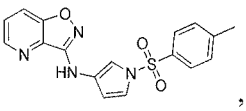


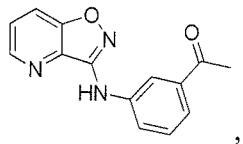
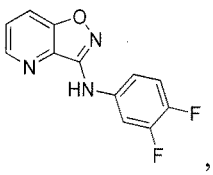
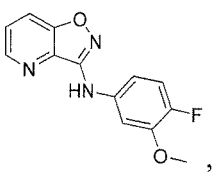
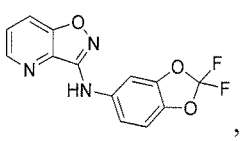
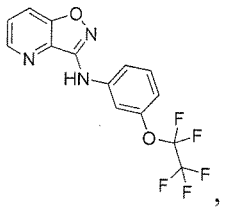
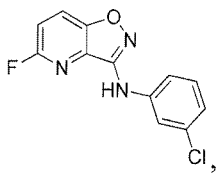
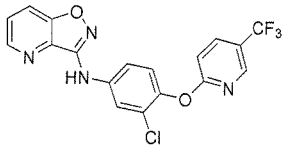
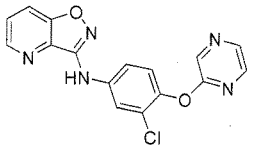
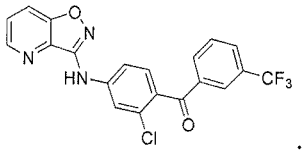
14. The compound of claim 3, wherein R^1 is halogen and R^2 is halogen; R^1 is O-alkyl and R^2 is halogen; or R^1 is O-alkyl and R^2 is O-alkyl.

15. The compound of claim 10, wherein OC_{1-10}alkyl is

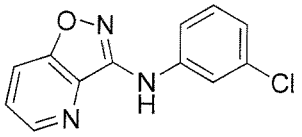
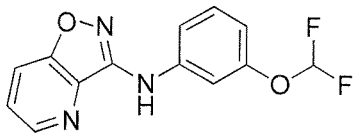
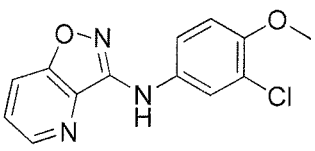
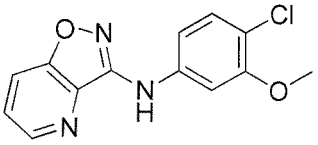
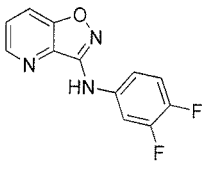
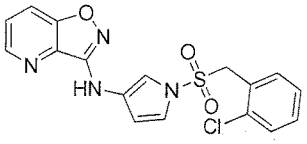

, or

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16. The compound of claim 3, of the following formula:

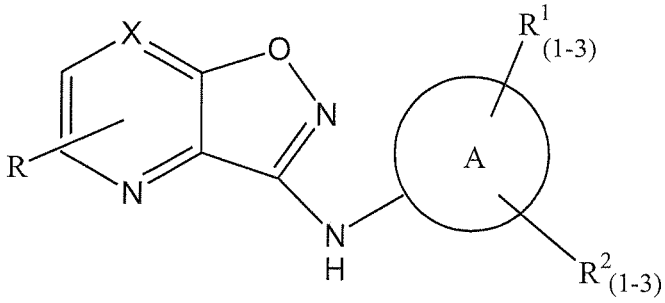

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or

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17. A compound of the following formula:


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18. A pharmaceutical composition comprising a compound having a structure represented by a formula:



wherein:

each X is independently selected from CR^5 or N;

A is phenyl or pyrrole;

R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), $S(O)_{0-2}NR^3R^4$, CN or CF_3;

R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4);

R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN, or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4);

R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^4;

R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

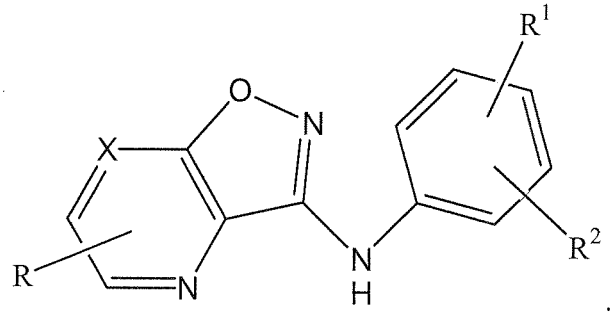
R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5;

R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof, and

a pharmaceutically acceptable carrier.

19. The composition of claim 18, wherein the compound has the following formula:

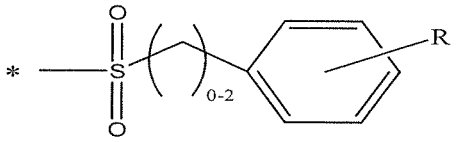


20. The composition of claim 18, wherein R^5 is O-alkyl.

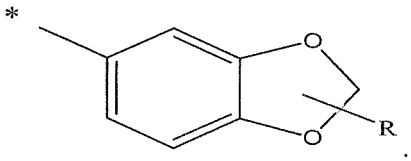
21. The composition of claim 18, wherein R is hydrogen or halogen.

22. The composition of claim 18, wherein R^1 and R^2 are independently is halogen, O-alkyl, CF_3, OCF_3, OCF_2, OCF_2CF_3, CN, $C_{1\text{-}10}$alkyl; $COC_{1\text{-}10}$alkyl; $OC_{1\text{-}10}$alkyl; or $S(O)_{0\text{-}2}C_{1\text{-}10}$ alkyl (which may contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R_4).

23. The composition of claim 18, wherein A is pyrrole and R^1 is

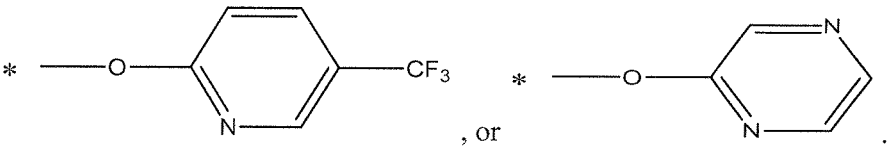


24. The composition of claim 18, wherein A is phenyl and together with R^1 and R^2 form

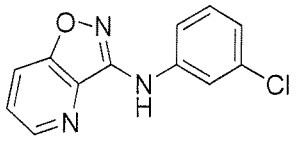
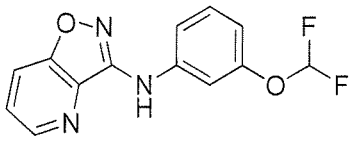
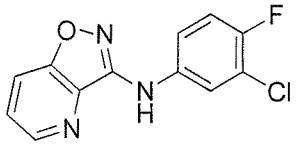
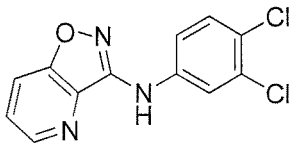
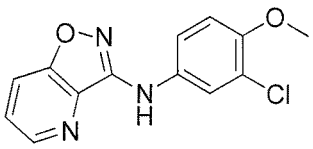
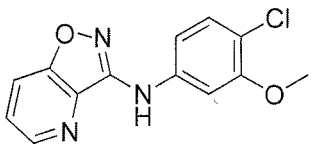
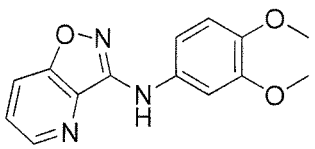
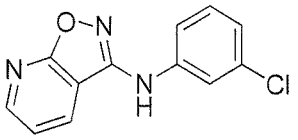
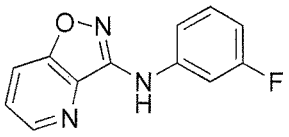


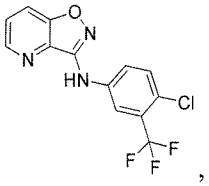
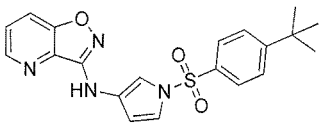
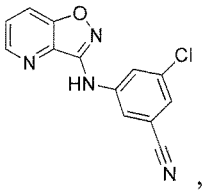
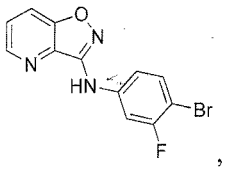
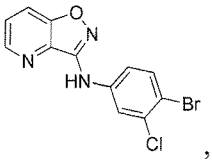
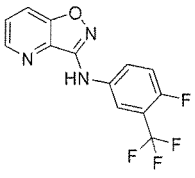
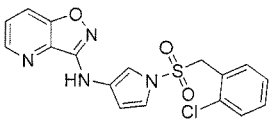
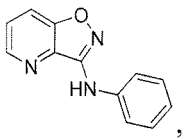
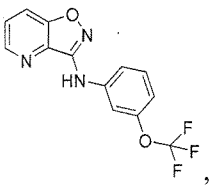
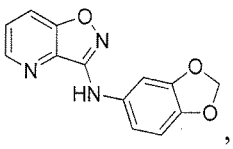
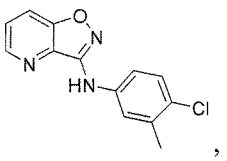
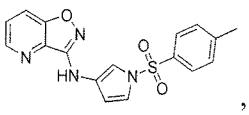
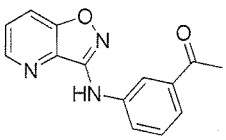
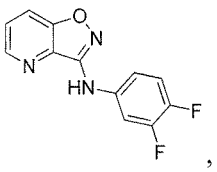
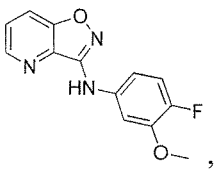
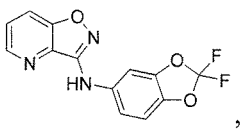
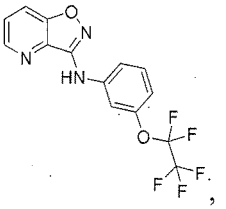
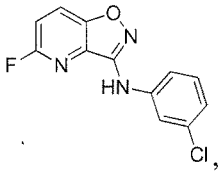
25. The composition of claim 22, wherein R^1 is halogen and R^2 is halogen; R^1 is O-alkyl and R^2 is halogen; or R^1 is O-alkyl and R^2 is O-alkyl.

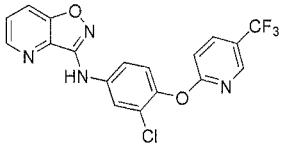
26. The composition of claim 22, wherein $OC_{1\text{-}10}$alkyl is



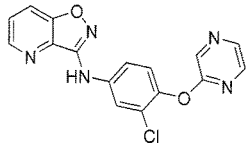
27. The composition of claim 18, wherein the compound is of the following formula:


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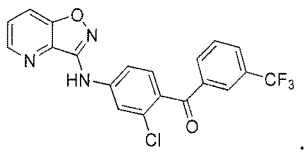

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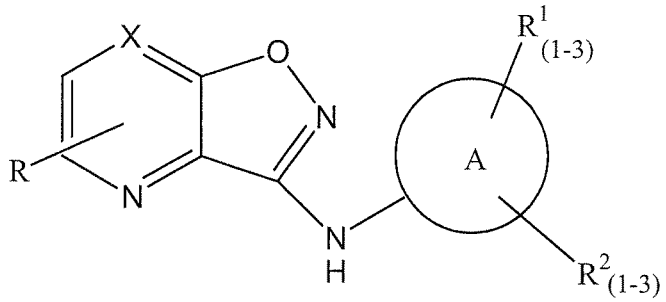


or



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28. A method for the manufacture of a medicament for potentiating mGluR4 receptor activity in a mammal comprising combining a compound having a structure represented by a formula:



wherein:

each X is independently selected from CR^5 or N;

A is phenyl or pyrrole;

R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) , $S(O)_{0-2}NR^3R^4$, CN or CF_3;

R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4);

R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN, or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with

one or more R^4);

R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^4;

R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5;

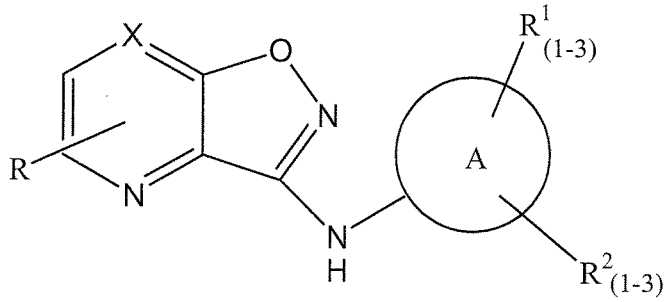
R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof,

with a pharmaceutically acceptable carrier.

29. The use of claim 2, as a taste enhancer.

30. Use of at least one compound having a structure represented by a formula:



wherein:

each X is independently selected from CR^5 or N;

A is phenyl or pyrrole;

R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), $S(O)_{0-2}NR^3R^4$, CN or CF_3;

R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4) NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; or $S(O)_{0-2}C_{1-10}$ alkyl

(optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4);

R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN, or $S(O)_{0-2}C_{1-10}$ alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4);

R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^4;

R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3;

R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5;

R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (optionally containing a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for the treatment of a neurotransmission dysfunction or other disease state associated with mGluR4 activity in a mammal in a dosage and amount effective to treat the dysfunction in the mammal,

wherein the medicament is to be co-administered with a drug selected from the group consisting of a drug having a known side-effect of increasing metabotropic glutamate receptor activity, a drug known to treat a disorder associated with increasing metabotropic glutamate receptor activity, and a drug known to treat the neurotransmission dysfunction or other disease state associated with potentiation of mGluR4,

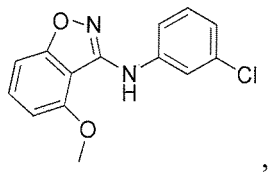
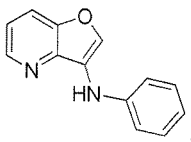
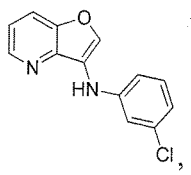
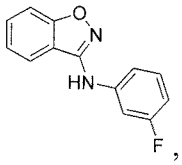
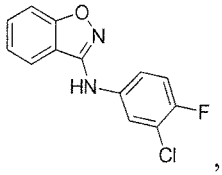
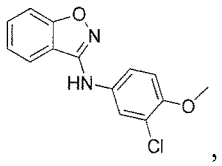
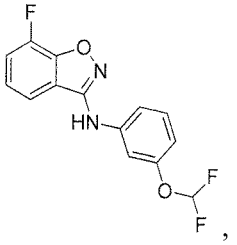
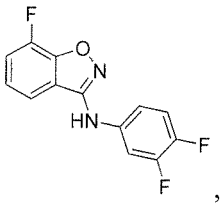
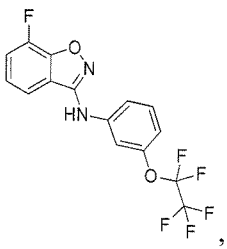
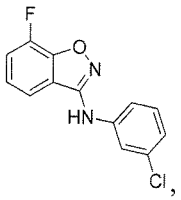
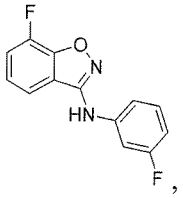
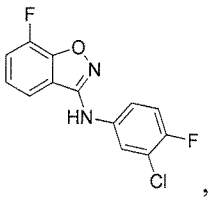
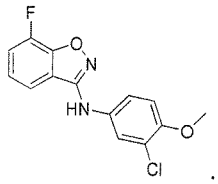
wherein the dysfunction is any of Parkinson's disease, schizophrenia, psychosis, "schizophrenia-spectrum" disorder, depression, bipolar disorder, cognitive disorder, delirium, amnestic disorder, anxiety disorder, attention disorder, obesity, eating disorder, or NMDA receptor-related disorder.

31. The use of claim 30, wherein co-administration is substantially simultaneous.

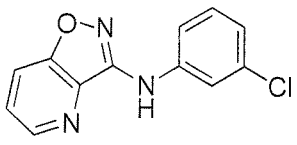
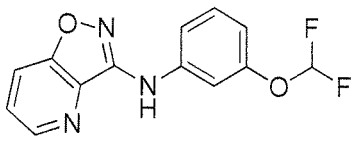
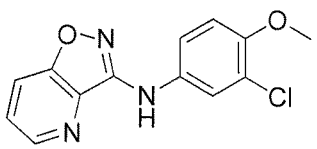
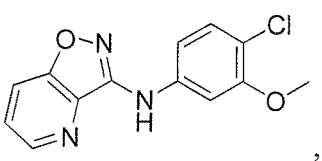
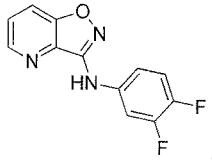
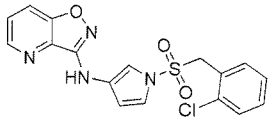
32. The use of claim 30, wherein co-administration is sequential.

33. The use of claim 30, wherein the mammal is a human.

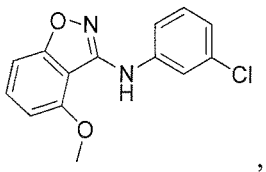
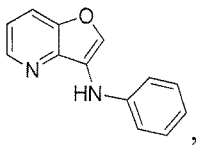
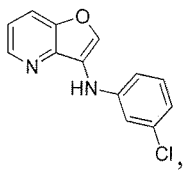
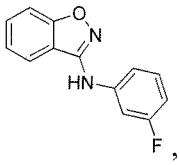
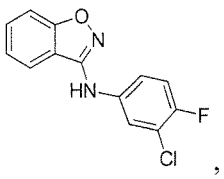
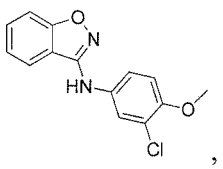
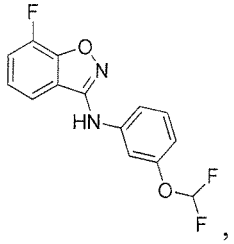
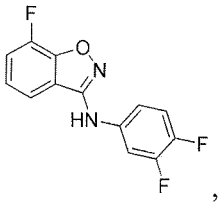
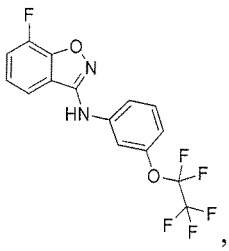
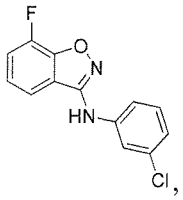
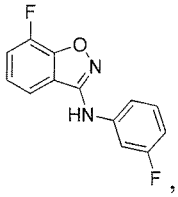
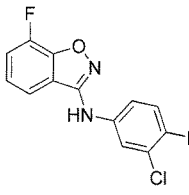
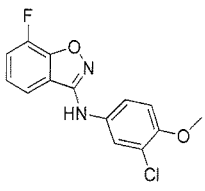
34. A compound of the following formula:


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35. The composition of claim 18, wherein the compound is of the following formula:


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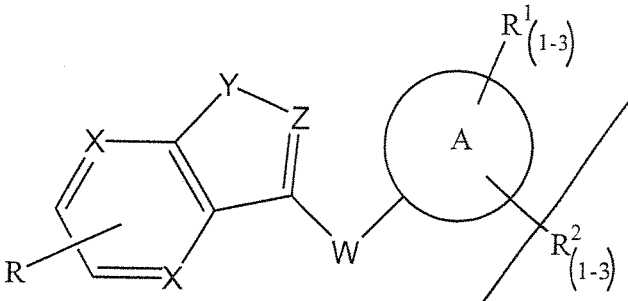
36. The composition of claim 18, wherein the compound is of the following formula:


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CLAIMS

What is claimed is:

1. Use of at least one compound having a structure represented by a formula:



wherein each X is independently selected from CR^5 or N; Y is selected from O or S,; Z is selected from CR^5 or N; W is selected from O or NH; A is selected from C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or C_3-C_{12} heterocycloalkenyl or 3-8 membered ring comprising C, O, S, and/or N; R is selected from hydrogen, halogen, $C_{1\text{-}10}$ alkyl, $C_{3\text{-}10}$ cycloalkyl, $OC_{1\text{-}10}$ alkyl (which would contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, $CONR^3R^4$, $S(O)_{0\text{-}2}NR^3R^4$, CN or CF_3; R^1 is independently selected from hydrogen, halogen, $C_{1\text{-}10}$ alkyl, $C_{3\text{-}10}$ cycloalkyl, $OC_{1\text{-}10}$ alkyl (which would contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0\text{-}2}NR^3R^4$, CN; CF_3, or $S(O)_{0\text{-}2}C_{1\text{-}10}$ alkyl (which may contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^2 is independently selected from hydrogen, halogen, $C_{1\text{-}10}$ alkyl, $C_{3\text{-}10}$ cycloalkyl, $OC_{1\text{-}10}$ alkyl (which may contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R_4), NR_3R_4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0\text{-}2}NR^3R^4$, CN or CF_3, or $S(O)_{0\text{-}2}C_{1\text{-}10}$ alkyl (which may contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8

membered ring comprising C, O, S, and/or N, optionally substituted with one or more R_4; R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5; R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable derivative thereof,

in the manufacture of a medicament for the treatment of a neurotransmission dysfunction and other disease states associated with mGluR4 activity in a mammal.

2. The use of claim 1, wherein the mammal is a human.

3. The use of claim 1, wherein the dysfunction is Parkinson's disease.

4. The use of claim 1, wherein the dysfunction is schizophrenia, psychosis, "schizophrenia-spectrum" disorder, depression, bipolar disorder, cognitive disorder, delirium, amnestic disorder, anxiety disorder, attention disorder, obesity, eating disorder, or NMDA receptor-related disorder.

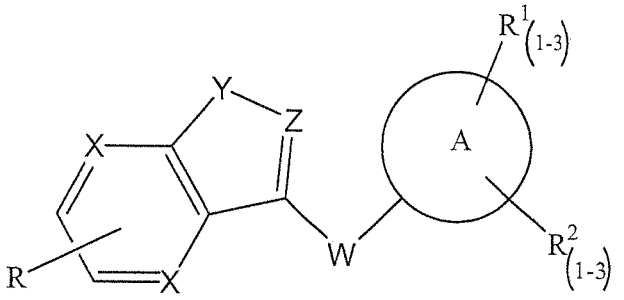
5. The use of claim 1, wherein the dysfunction is Parkinson's disease; anxiety; motor effects after alcohol consumption; neurogenic fate commitment and neuronal survival; epilepsy; or certain cancers, for example, medulloblastoma, inflammation (for example, multiple sclerosis) and metabolic disorders (for example, diabetes) and taste enhancing associated with glutamatergic dysfunction and diseases in which mGluR4 receptor is involved.

6. The use of claim 1, wherein the mammal has been diagnosed with the dysfunction.

7. The use of claim 1, wherein the mammal has been identified as having a need for treatment of the dysfunction.

8. The use of claim 1, wherein the endogenous ligand for mGluR4 potentiation is glutamate, L-SOP, or a neurotransmitter.

9. Use of at least one compound having a structure represented by a formula:



wherein each X is independently selected from CR^5 or N; Y is selected from O or S,; Z is selected from CR^5 or N; W is selected from O or NH; A is selected from C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or C_3-C_{12} heterocycloalkenyl or 3-8 membered ring comprising C, O, S, and/or N; R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3; R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4), NR_3R_4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R_4; R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12}

cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5; R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable derivative thereof,

in the manufacture of a medicament for potentiating mGluR4 activity in a subject, in a dosage and amount effective to potentiate mGluR4 receptor activity in the subject.

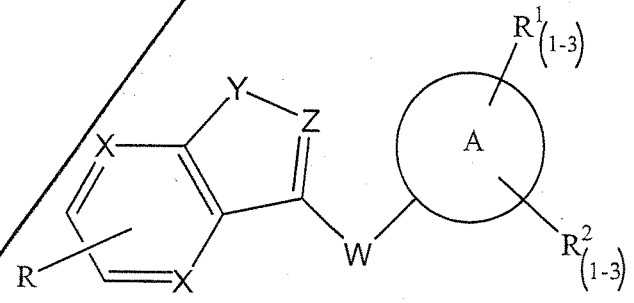
10. The use of claim 9, wherein the subject is a mammal.

11. The use of claim 9, wherein the subject is a human.

12. The use of claim 9, wherein the subject has been diagnosed with a need for potentiation of mGluR4 receptor activity.

13. The use of claim 9, wherein the subject has been identified as having a need for potentiation of mGluR4 receptor activity.

14. A method of potentiating mGluR4 activity in at least one isolated cell comprising the step of contacting the at least one isolated cell with at least one compound having a structure represented by a formula:



wherein each X is independently selected from CR^5 or N; Y is selected from O or S,; Z is selected from CR^5 or N; W is selected from O or NH; A is selected from C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or C_3-C_{12} heterocycloalkenyl or 3-8 membered ring comprising C, O, S, and/or N; R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3; R^1 is

independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4), NR_3R_4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R_4; R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5; R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable derivative thereof,

in an amount effective to potentiate mGluR4 receptor activity in the at least one isolated cell.

15. The method of claim 14 , wherein the cell is a mammalian cell.

16. The method of claim 14, wherein the cell is a human cell.

17. The method of claim 14, wherein the cell has been isolated from a subject prior to the contacting step.

18. The method of claim 14, wherein the subject is a mammal.

19. The method of claim 14, wherein the subject is a human.

20. The method of claim 14, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-5}.

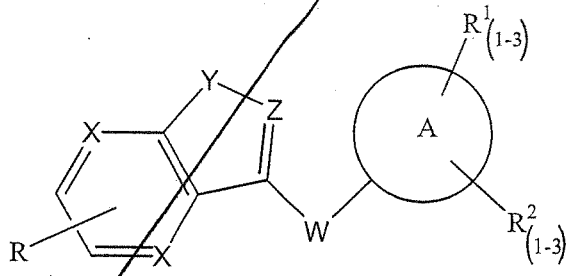
21. The method of claim 14, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-6}.

22. The method of claim 14, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-7}.

23. The method of claim 14, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-8}.

24. The method of claim 14, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-9}.

25. A compound having a structure represented by a formula:



wherein:

each X is independently selected from CR^5 or N;

Y is selected from O or S,;

Z is selected from CR^5 or N;

W is selected from O or NH;

A is selected from C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or C_3-C_{12} heterocycloalkenyl or 3-8 membered ring comprising C, O, S, and/or N; R is selected from hydrogen, halogen, $C_{1\text{-}10}$ alkyl, $C_{3\text{-}10}$ cycloalkyl, $OC_{1\text{-}10}$ alkyl (which would contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more

R^4), NR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3;

R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4);

R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4), NR_3R_4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4);

R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R_4;

R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$;

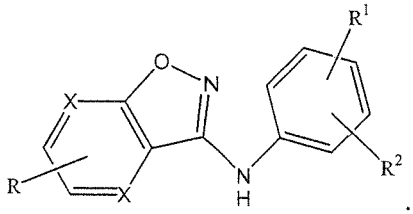
R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$;

R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5;

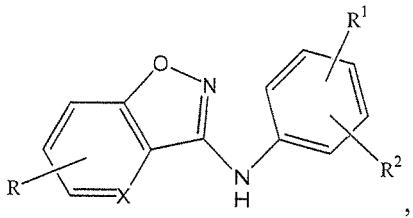
R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable derivative thereof.

26. The compound of claim 25, of the following formula:



27. The compound of claim 26, of the following formula :



, wherein X is N.

28. The compound of claim 25, wherein one X is CR^5 with R^5 being H, and the other X is N.

29. The compound of claim 25, wherein Y is O and Z is N.

30. The compound of claim 25, wherein R^5 is O-alkyl.

31. The compound of claim 25, wherein W is NH.

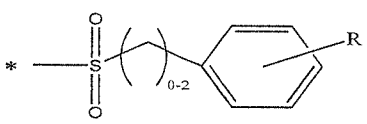
32. The compound of claim 25, wherein R is hydrogen or halogen.

33. The compound of claim 25, wherein wherein A is phenyl or pyrrole.

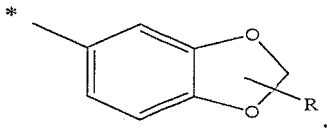
34. The compound of claim 25 or claim 27, wherein R^1 and R^2 are independently is halogen, O-alkyl, CF_3, OCF_3, OCF_2, OCF_2CF_3, CN, $C_{1\text{-}10}$alkyl; $COC_{1\text{-}10}$alkyl; $OC_{1\text{-}10}$alkyl; or $S(O)_{0\text{-}2}C_{1\text{-}10}$ alkyl (which may contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R_4).

35. The compound of claim 25, wherein A is pyrrole and R^1 is $S(O)_{0\text{-}2}C_{1\text{-}10}$ alkyl (which may contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R_4).

36. The compound of claim 25, wherein A is pyrrole and R^1 is

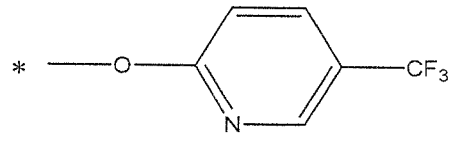
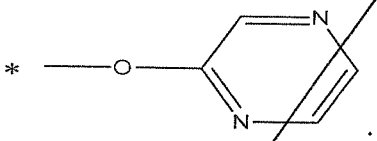


37. The compound of claim 25, wherein A is phenyl and together with R^1 and R^2 forms

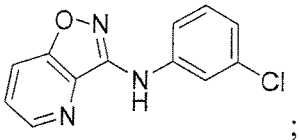
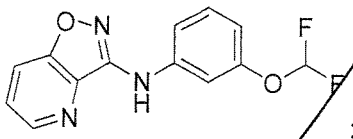
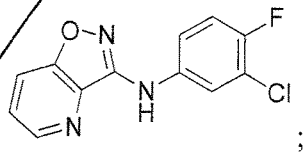
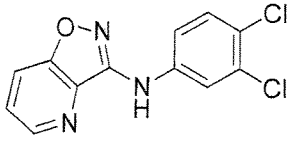
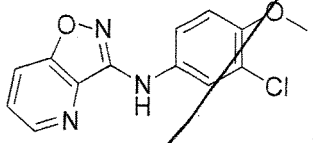
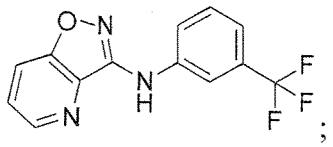
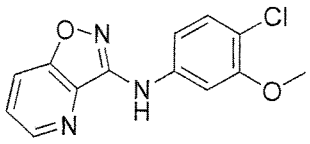
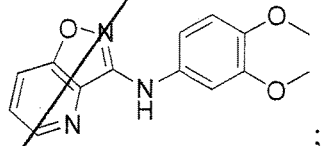
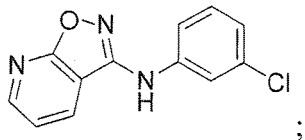
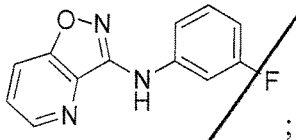
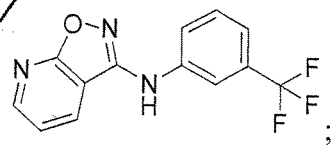
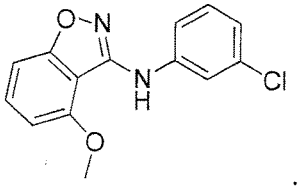


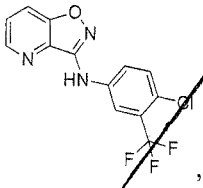
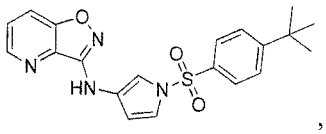
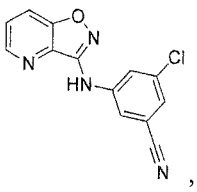
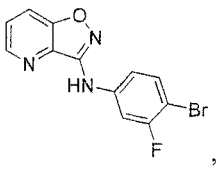
38. The compound of claim 25, wherein R^1 is halogen and R^2 is halogen; R^1 is O-alkyl and R^2 is halogen; or R^1 is O-alkyl and R^2 is O-alkyl.

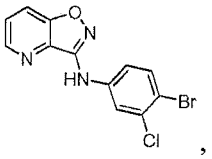
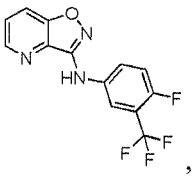
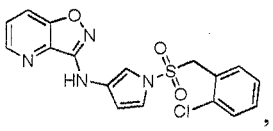
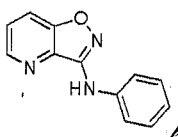
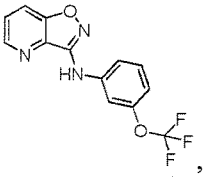
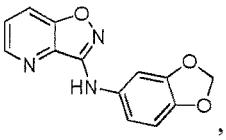
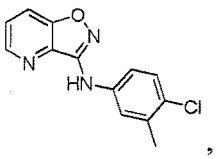
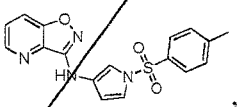
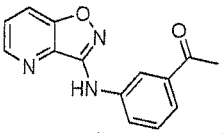
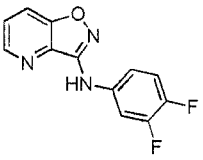
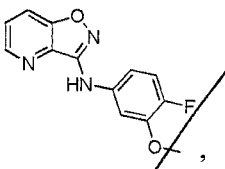
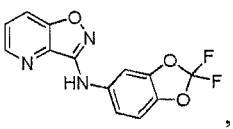
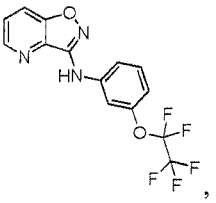
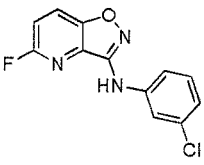
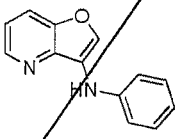
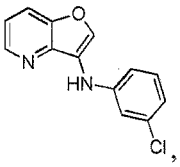
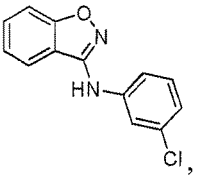
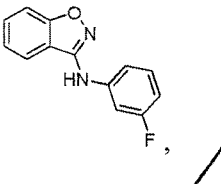
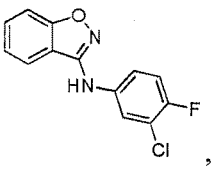
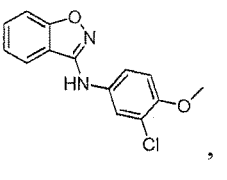
39. The compound of claim 34, wherein OC_{1-10}alkyl is


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40. The compound of claim 25, of the following formula:


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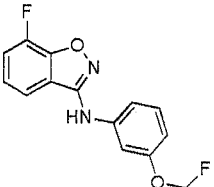
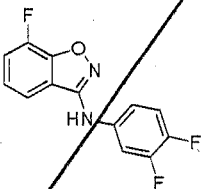
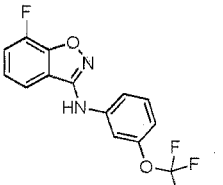
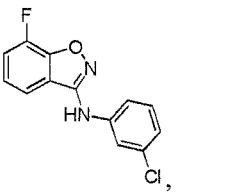
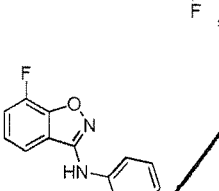
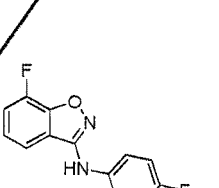
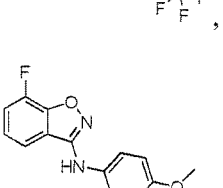
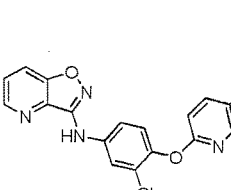
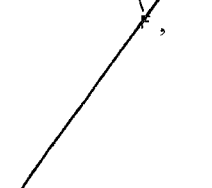
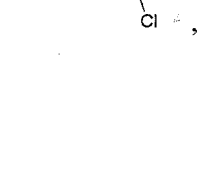
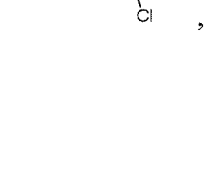

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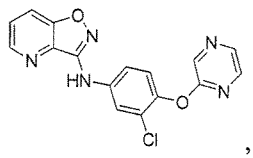
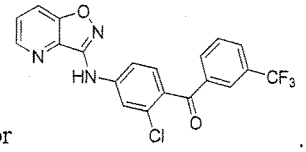
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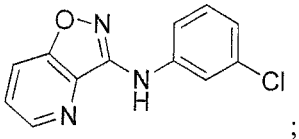
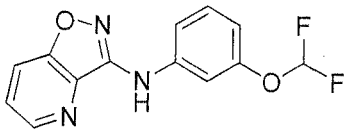
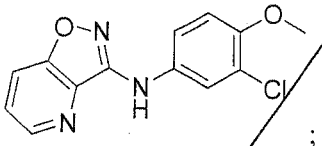
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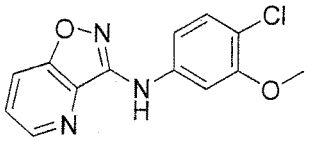
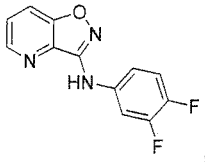
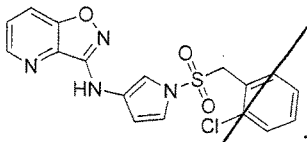
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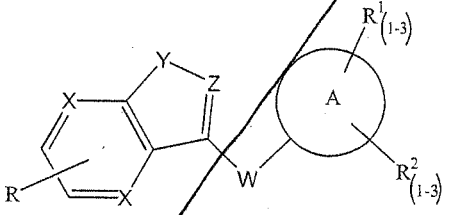
, or .

41. A compound of the following formula:


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42. A pharmaceutical composition comprising a compound having a structure represented by a formula:



wherein:

each X is independently selected from CR^5 or N;

Y is selected from O or S,;

Z is selected from CR^5 or N;

W is selected from O or NH;

A is selected from C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or C_3-C_{12} heterocycloalkenyl or 3-8 membered ring comprising C, O, S, and/or N; R is selected from hydrogen, halogen, $C_{1\text{-}10}$ alkyl, $C_{3\text{-}10}$ cycloalkyl, $OC_{1\text{-}10}$ alkyl (which would contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, $CONR^3R^4$, $S(O)_{0\text{-}2}NR^3R^4$, CN or CF_3;

R^1 is independently selected from hydrogen, halogen, $C_{1\text{-}10}$ alkyl, $C_{3\text{-}10}$ cycloalkyl, $OC_{1\text{-}10}$ alkyl (which would contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0\text{-}2}NR^3R^4$, CN; CF_3, or $S(O)_{0\text{-}2}C_{1\text{-}}$

$_{10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4);

R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4), NR_3R_4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4);

R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R_4;

R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$;

R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$;

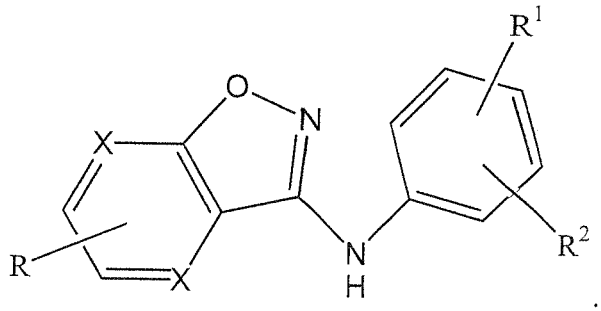
R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5;

R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable derivative thereof, and

a pharmaceutically acceptable carrier.

43. The composition of claim 42, wherein the compound has the following formula:



44. The composition of claim 42, wherein one X is CR^5 with R^5 being H, and the other X is N.

45. The composition of claim 42, wherein Y is O and Z is N.

46. The composition of claim 42, wherein R^5 is O-alkyl.

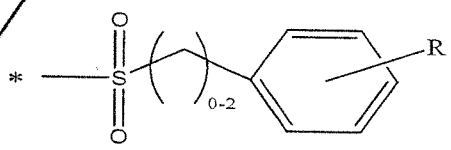
47. The composition of claim 42, wherein W is NH.

48. The composition of claim 42, wherein R is hydrogen or halogen.

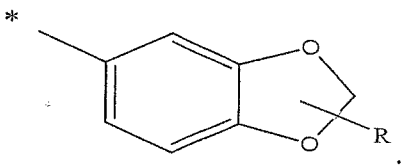
49. The composition of claim 42, wherein wherein A is phenyl or pyrrole.

50. The composition of claim 42, wherein R^1 and R^2 are independently is halogen, O-alkyl, CF_3, OCF_3, OCF_2, OCF_2CF_3, CN, $C_{1\text{-}10}$alkyl; $COC_{1\text{-}10}$alkyl; $OC_{1\text{-}10}$alkyl; or $S(O)_{0\text{-}2}C_{1\text{-}10}$ alkyl (which may contain a $C_{3\text{-}8}$ membered ring containing C, O, S or N, optionally substituted with one or more R_4).

51. The composition of claim 42, wherein A is pyrrole and R^1 is

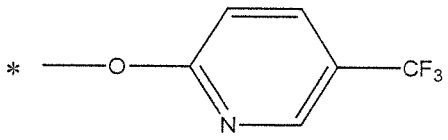
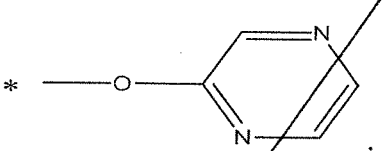


52. The composition of claim 50, wherein A is phenyl and together with R^1 and R^2 form

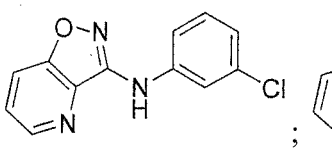
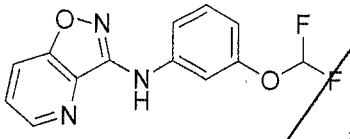
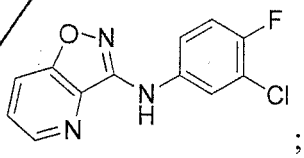
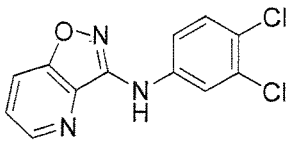
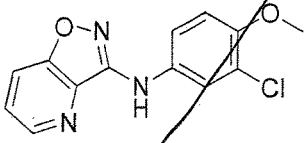
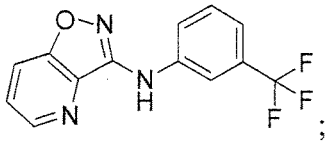
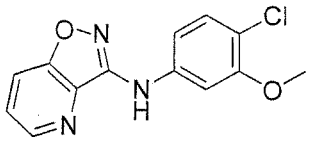
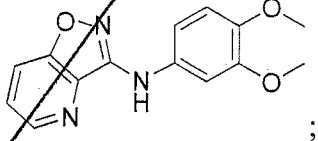
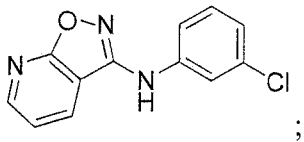
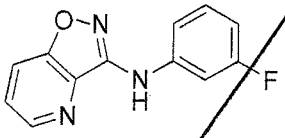
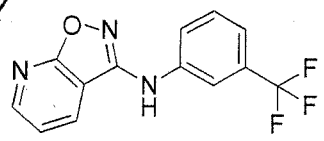
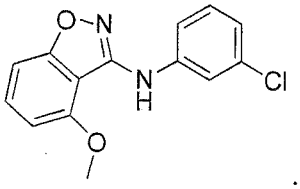


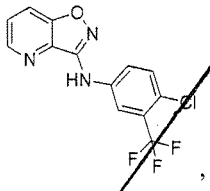
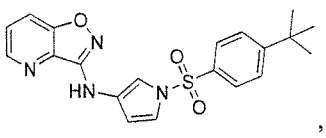
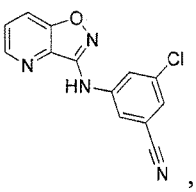
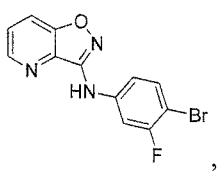
53. The composition of claim 50, wherein R^1 is halogen and R^2 is halogen; R^1 is O-alkyl and R^2 is halogen; or R^1 is O-alkyl and R^2 is O-alkyl.

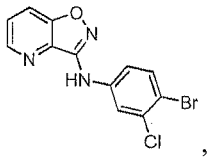
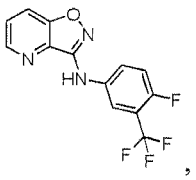
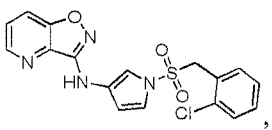
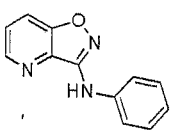
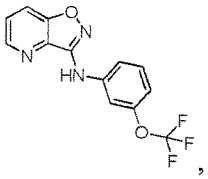
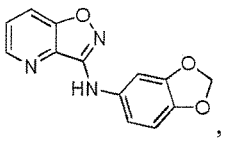
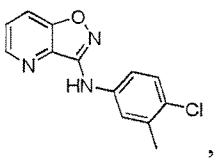
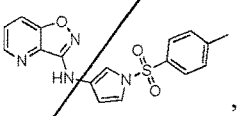
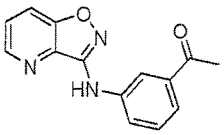
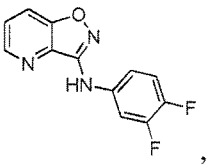
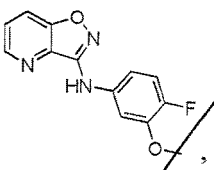
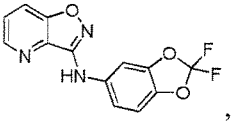
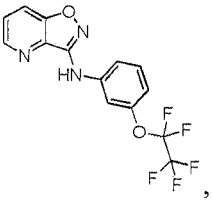
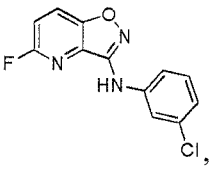
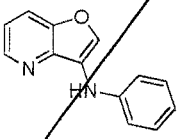
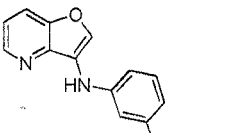
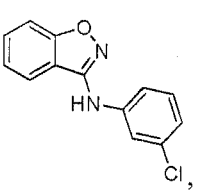
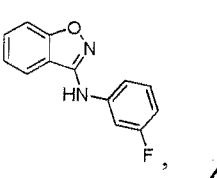
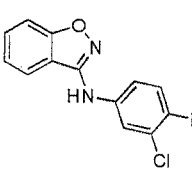
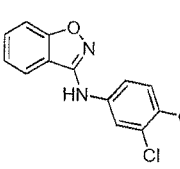
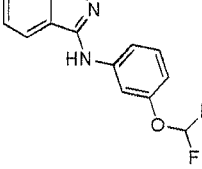
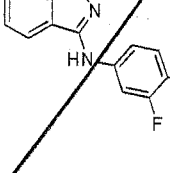
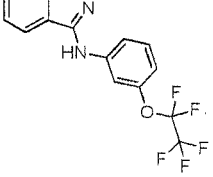
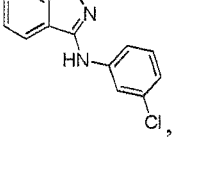
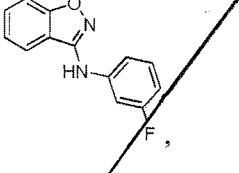
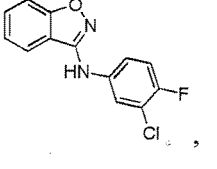
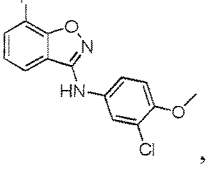
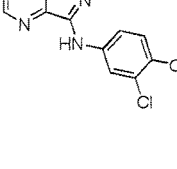
54. The composition of claim 50, wherein OC_{1-10}alkyl is


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55. The composition of claim 42, wherein the compound is of the following formula:


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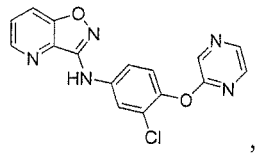
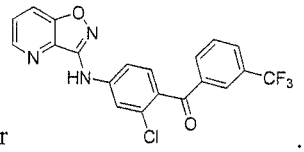

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56. A method for potentiating mGluR4 activity in at least one cell comprising the step of contacting the at least one cell with at least one compound of claim 25, 27, 34, 35 or 41, in an amount effective to potentiate mGluR4 receptor activity in the at least one cell.

57. Use of at least one compound of claim 25, 27, 34, 35 or 41, in the manufacture of a medicament for potentiating mGluR4 activity in a subject in a dosage and amount effective to potentiate mGluR4 receptor activity in the subject.

58. The use of claim 57, wherein the subject is a mammal.

59. The use of claim 57, wherein the subject is a human.

60. The use of claim 57, wherein the subject has been diagnosed with a need for potentiation of mGluR4 receptor activity.

61. The use of claim 57, wherein the subject has been identified as having a need for potentiation of mGluR4 receptor activity.

62. Use of at least one compound of claim 25, 27, 34, 35 or 41, in the manufacture of a medicament for the treatment of a disorder associated with mGluR4 neurotransmission dysfunction and other disease states in a mammal in a dosage and amount effective to treat the disorder in the mammal.

63. The use of claim 62, wherein the disorder is selected from psychosis, schizophrenia, conduct disorder, disruptive behavior disorder, bipolar disorder, psychotic episodes of anxiety, anxiety associated with psychosis, psychotic mood disorders such as severe major depressive disorder; mood disorders associated with psychotic disorders, acute mania, depression associated with bipolar disorder, mood disorders associated with schizophrenia, behavioral manifestations of mental retardation, conduct disorder, autistic disorder; movement disorders, Tourette's syndrome, akinetic-rigid syndrome, movement disorders associated with Parkinson's disease, tardive

dyskinesia, drug induced and neurodegeneration based dyskinesias, attention deficit hyperactivity disorder, cognitive disorders, dementias, and memory disorders.

64. The use of claim 62, wherein the disorder is Parkinson's disease.

65. The use of claim 62, wherein the disorder is a neurological and/or psychiatric disorder associated with mGluR4 receptor activity dysfunction.

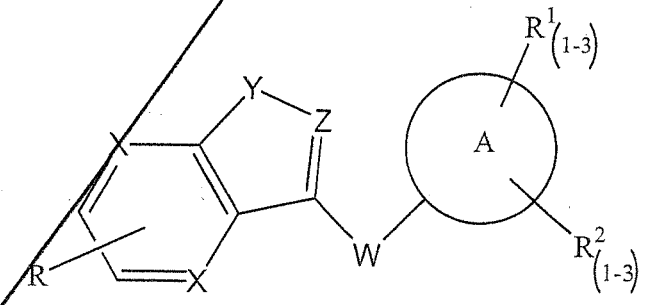
66. The use of claim 62, wherein the disorder is a neurological or psychiatric disorder associated with mGluR4 neurotransmission dysfunction selected from: schizophrenia, psychosis, "schizophrenia-spectrum" disorders, depression, bipolar disorder, cognitive disorders, delirium, amnestic disorders, anxiety disorders, attention disorders, obesity, eating disorders, and NMDA receptor-related disorders.

67. The use of claim 62, wherein the mammal is a human.

68. The use of claim 62, wherein the mammal has been diagnosed with the disorder.

69. The use of claim 62, wherein the mammal has been identified as having a need for treatment of the disorder.

70. A method for the manufacture of a medicament for potentiating mGluR4 receptor activity in a mammal comprising combining a compound having a structure represented by a formula:



wherein each X is independently selected from CR^5 or N; Y is selected from O or S,; Z is selected from CR^5 or N; W is selected from O or NH; A is selected from C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or C_3-C_{12} heterocycloalkenyl or 3-8 membered ring comprising C, O, S, and/or N; R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N,

optionally substituted with one or more R^4), NR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3; R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4), NR_3R_4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S and/or N, optionally substituted with one or more R_4; R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5; R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable derivative thereof,

with a pharmaceutically acceptable carrier.

71. The use of claim 9, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-5}.

72. The use of claim 9, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-6}.

73. The use of claim 9, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-7}.

74. The use of claim 9, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-8}.

75. The use of claim 9, wherein the compound exhibits potentiation of mGluR4 with an EC_{50} of less than about 1.0×10^{-9}.

76. The use of claim 9, wherein the compound is combined with a pharmaceutically acceptable carrier.

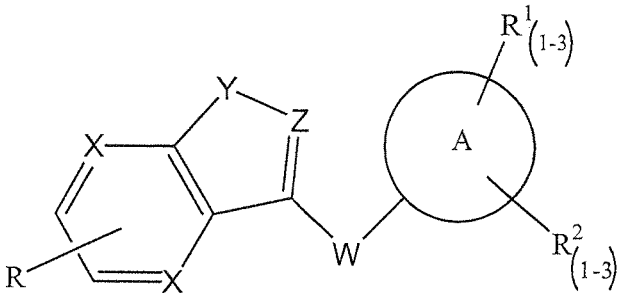
77. The use of claim 9, as a taste enhancer.

78. The use of claim 9, wherein the subject suffers from a disorder associated with mGluR4 receptor activity dysfunction.

79. The use of claim 78, wherein the disorder is a neurological and/or psychiatric disorder or other disease state associated with mGluR4 receptor activity dysfunction.

80. The use of claim 78, wherein the disorder is Parkinson's disease.

81. Use of at least one compound having a structure represented by a formula:



wherein each X is independently selected from CR^5 or N; Y is selected from O or S,; Z is selected from CR^5 or N; W is selected from O or NH; A is selected from C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or C_3-C_{12} heterocycloalkenyl or 3-8 membered ring comprising C, O, S, and/or N; R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3; R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4), NR_3R_4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R_4; R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5; R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N,

optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable derivative thereof in the manufacture of a medicament for the treatment of a neurotransmission dysfunction or other disease state associated with mGluR4 activity in a mammal in a dosage and amount effective to treat the dysfunction in the mammal, wherein the medicament is to be co-administered with a drug selected from the group consisting of a drug having a known side-effect of increasing metabotropic glutamate receptor activity,

a drug known to treat a disorder associated with increasing metabotropic glutamate receptor activity, and

a drug known to treat the neurotransmission dysfunction or other disease state associated with potentiation of mGluR4.

82. The use of claim 81, wherein co-administration is substantially simultaneous.

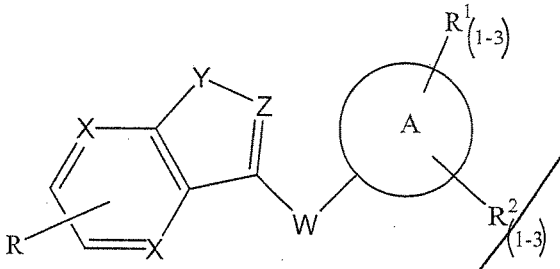
83. The use of claim 81, wherein co-administration is sequential.

84. The use of claim 81, wherein the mammal is a human.

85. The use of claim 81, wherein the dysfunction is Parkinson's disease.

86. The use of claim 81, wherein the dysfunction is schizophrenia, psychosis, "schizophrenia-spectrum" disorder, depression, bipolar disorder, cognitive disorder, delirium, amnestic disorder, anxiety disorder, attention disorder, obesity, eating disorder, or NMDA receptor-related disorder.

87. A kit comprising a compound having a structure represented by a formula:



wherein each X is independently selected from CR^5 or N; Y is selected from O or S,; Z is selected from CR^5 or N; W is selected from O or NH; A is selected from C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or C_3-C_{12} heterocycloalkenyl or 3-8 membered ring comprising C, O, S, and/or N; R is selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3; R^1 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which would contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), NR^3R^4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN; CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^2 is independently selected from hydrogen, halogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4), NR_3R_4, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$, CN or CF_3, or $S(O)_{0-2}C_{1-10}$ alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R_4); R^1 and R^2 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R_4; R^3 is selected from hydrogen, C_{1-6} alkyl, C_{3-10} cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^4 is selected from hydrogen, C_{1-6} alkyl, C_{3-10}

cycloalkyl, aryl, benzyl, heteroaryl, halogen, CN, CF_3, COR^3R^4, CR^3R^4, $CONR^3R^4$, $S(O)_{0-2}NR^3R^4$; R^3 and R^4 can optionally cyclize to form a ring comprising C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkenyl or aryl or heteroaryl or C_3-C_{12} heterocycloalkyl or 3-8 membered ring comprising C, O, S, and/or N, optionally substituted with one or more R^5; R^5 is selected from hydrogen, halogen, OC_{1-10} alkyl (which may contain a C_{3-8} membered ring containing C, O, S or N, optionally substituted with one or more R^4), CN, CF_3;

or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable derivative thereof,

and one or more of:

a. a drug having a known side-effect of increasing metabotropic glutamate receptor activity,

b. a drug known to treat a disorder associated with increasing metabotropic glutamate receptor activity, and/or

c. a drug known to treat the neurotransmission dysfunction or other disease state.

88. The kit of claim 87, wherein the compound(s) and the drug(s) are coformulated.

89. The kit of claim 87, wherein the compound(s) and the drug(s) are copackaged.