

R_3 is selected from the group consisting of H, C_1 - C_6 alkyl, -OH, C_1 - C_6 alkoxy, $-CO_2H$, or $-CONR'R'$, wherein R' for each occurrence is independently selected from H, C_1 - C_6 alkyl or a nitrogen protecting group; and

X is H, X' , $-C_1$ - C_6 alkylene- X' , or $-C_1$ - C_6 alkylene- $C(O)-X'$, wherein X' is selected from the group consisting of:

(i) C_3 - C_6 cycloalkyl;

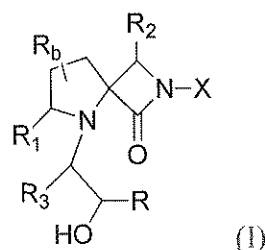
(ii) heterocyclyl including from 3 to 6 ring atoms wherein 1, 2, or 3 of the ring atoms are independently selected from the group consisting of N, NH, N(C_1 - C_3 alkyl), O, and S;

(iii) phenyl; and

(iv) heteroaryl including from 5 to 6 ring atoms wherein 1, 2, or 3 of the ring atoms are independently selected from the group consisting of N, NH, N(C_1 - C_3 alkyl), O, and S;

wherein X' is optionally substituted by one, two or three substituents independently selected from the group consisting of halogen, hydroxyl, C_1 - C_6 alkyl and C_1 - C_6 alkoxy.

[0008a] In one aspect of the present disclosure, there is provided a compound represented by formula I:



or a pharmaceutically acceptable salt thereof, wherein

R_b is selected from the group consisting of H, halogen, hydroxyl, cyano and C_1 - C_6 alkyl;

R is H or C_1 - C_6 alkyl;

R_1 is H or C_1 - C_6 alkyl;

R_2 is H or C_1 - C_6 alkyl;

R_3 is selected from the group consisting of H, C_1 - C_6 alkyl, -OH, C_1 - C_6 alkoxy, $-CO_2H$, or $-CONR'R'$, wherein R' for each occurrence is independently selected from H, C_1 - C_6 alkyl or a nitrogen protecting group; and

X is H, X', -C₁-C₆ alkylene-X', or -C₁-C₆ alkylene-C(O)-X', wherein X' is selected from the group consisting of:

(i) C₃-C₆ cycloalkyl;

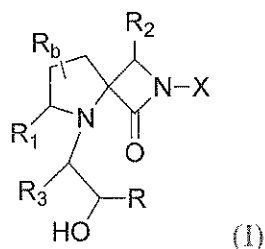
(ii) heterocyclyl including from 3 to 6 ring atoms wherein 1, 2, or 3 of the ring atoms are independently selected from the group consisting of N, NH, N(C₁-C₃ alkyl), O, and S;

(iii) phenyl; and

(iv) heteroaryl including from 5 to 6 ring atoms wherein 1, 2, or 3 of the ring atoms are independently selected from the group consisting of N, NH, N(C₁-C₃ alkyl), O, and S;

wherein X' is optionally substituted by one or more substituents independently selected from the group consisting of halogen, hydroxyl, C₁-C₆ alkyl and C₁-C₆ alkoxy.

[0008b] In another aspect of the present disclosure, there is provided a compound represented by formula I:



and pharmaceutically acceptable salts, stereoisomers, and N-oxides thereof, wherein

R_b is selected from the group consisting of H, halogen, hydroxyl, cyano and C₁-C₆ alkyl;

R is H or C₁-C₆ alkyl;

R₁ is H or C₁-C₆ alkyl;

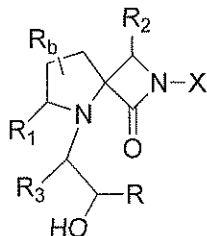
R₂ is H or C₁-C₆ alkyl;

R₃ is selected from the group consisting of H, C₁-C₆ alkyl, -OH, C₁-C₆ alkoxy, -CO₂H, or -CONR'R', wherein R' for each occurrence is selected from H, C₁-C₆ alkyl or a nitrogen protecting group; and

X is H or -C₁-C₆ alkylene-C(O)-X', wherein X' is selected from the group consisting of C₃-C₆ cycloalkyl, a 4- to 6-membered heterocycloalkyl ring having 1, 2, or 3 heteroatoms selected from O, S, or N, phenyl and 4- to 6-membered heteroaryl ring having 1, 2, or 3 heteroatoms selected from O, S, or N, wherein X' is optionally substituted by one or more

substituents selected from the group consisting of halogen, hydroxyl, C₁-C₆ alkyl and C₁-C₆ alkoxy.

[0009] In another aspect, disclosed compounds include those represented by the formula:



5 and pharmaceutically acceptable salts, stereoisomers, and N-oxides thereof, wherein

R_b is selected from the group consisting of H, halogen, hydroxyl, cyano and C₁-C₆ alkyl;

R is H or methyl;

R₁ is H or methyl;

R₂ is H or methyl;

10 R₃ is selected from the group consisting of H, C₁-C₆ alkyl, -OH, C₁-C₆ alkoxy, -CO₂H, or -CONR'R', wherein R' for each occurrence is selected from H, C₁-C₆ alkyl or a nitrogen protecting group; and

X is H or -C₁-C₆ alkylene-C(O)-NR^cR^d;

R^c and R^d, together with the nitrogen to which they are attached, form a 4-6 membered heterocyclic ring, which may have an additional heteroatom selected from O, S, or N; wherein the 4-6 membered heterocyclic ring may optionally be substituted by one or more substituents selected from the group consisting of halogen, cyano, oxo, and C₁₋₆alkyl.

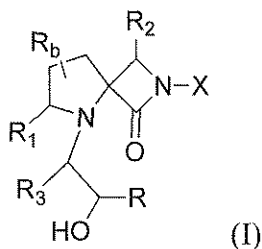
5 **[0010]** In another aspect of the present disclosure, there is provided~~Also provided herein are~~ pharmaceutically acceptable compositions comprising a disclosed compound, and a pharmaceutically acceptable excipient. For example, such compositions may be suitable for oral or intravenous administration to a patient.

10 **[0010a]** In a further aspect of the present disclosure, there is provided a use of a compound disclosed herein in the manufacture of a medicament for treating depression, Alzheimer's disease, attention deficit disorder, schizophrenia, or anxiety, in a patient in need thereof.

15 **[0011]** There is also provided~~In another aspect,~~ a method of treating a condition selected from the group consisting of autism, anxiety, depression, bipolar disorder, attention deficit disorder, attention deficit hyperactivity disorder (ADHD), schizophrenia, a psychotic disorder, a psychotic symptom, social withdrawal, obsessive-compulsive disorder, phobia, post-traumatic stress syndrome, a behavior disorder, an impulse control disorder, a substance abuse disorder, a sleep disorder, a memory disorder, a learning disorder, urinary incontinence, multiple system atrophy, progressive supra-nuclear palsy, Friedrich's ataxia, Down's syndrome, fragile X syndrome, tuberous sclerosis, olivio-ponto-cerebellar atrophy, cerebral palsy, drug-induced optic neuritis, 20 ischemic retinopathy, diabetic retinopathy, glaucoma, dementia, AIDS dementia, Alzheimer's disease, Huntington's chorea, spasticity, myoclonus, muscle spasm, Tourette's syndrome, epilepsy, cerebral ischemia, stroke, a brain tumor, traumatic brain injury, cardiac arrest, myelopathy, spinal cord injury, peripheral neuropathy, acute neuropathic pain, and chronic neuropathic, in a patient in need thereof is provided. Such methods may comprise administering to the patient a 25 pharmaceutically effective amount of a disclosed compound or pharmaceutically acceptable salts, stereoisomers, N-oxides, and hydrates thereof.

30 **[0012]** In some embodiments, a contemplated method includes treating depression. For example, depression may include one or more of major depressive disorder, dysthymic disorder, psychotic depression, postpartum depression, seasonal affective disorder, bipolar disorder, mood disorder, or depression caused by a chronic medical condition. In other embodiments, a contemplated method may treat schizophrenia. Such schizophrenia may be, for example, paranoid type schizophrenia, disorganized type schizophrenia, catatonic type schizophrenia, undifferentiated type schizophrenia, residual type schizophrenia, post-schizophrenic depression, or simple schizophrenia.

23. The pharmaceutical composition of claim 21, suitable for intravenous administration.
24. Use of a compound of any one of claims 1-20 in the manufacture of a medicament for A
~~method of treating or treating depression, Alzheimer's disease, attention deficit disorder,~~
~~schizophrenia, or anxiety, in a patient in need thereof, comprising administering to said patient:~~
~~a pharmaceutically effective amount of a compound of any one of claims 1-20.~~
25. A compound represented by formula I:



and pharmaceutically acceptable salts, stereoisomers, and N-oxides thereof, wherein

R_b is selected from the group consisting of H, halogen, hydroxyl, cyano and C₁-C₆ alkyl;

R is H or C₁-C₆ alkyl;

R₁ is H or C₁-C₆ alkyl;

R₂ is H or C₁-C₆ alkyl;

R₃ is selected from the group consisting of H, C₁-C₆ alkyl, -OH, C₁-C₆ alkoxy, -CO₂H, or -CONR'R', wherein R' for each occurrence is selected from H, C₁-C₆ alkyl or a nitrogen protecting group; and

X is H or -C₁-C₆ alkylene-C(O)-X', wherein X' is selected from the group consisting of C₃-C₆ cycloalkyl, a 4- to 6-membered heterocycloalkyl ring having 1, 2, or 3 heteroatoms selected from O, S, or N, phenyl and 4- to 6-membered heteroaryl ring having 1, 2, or 3 heteroatoms selected from O, S, or N, wherein X' is optionally substituted by one or more substituents selected from the group consisting of halogen, hydroxyl, C₁-C₆ alkyl and C₁-C₆ alkoxy.

26. The compound of claim 25, wherein R is C₁-C₂ alkyl.
27. The compound of claim 25, wherein R is methyl.
28. The compound of any one of claims 25-27, wherein R₁ is H.
29. The compound of any one of claims 25-28, wherein R₂ is H.

34. A pharmaceutical composition comprising a compound of any one of claims 25-33, and a pharmaceutically acceptable excipient.
35. The pharmaceutical composition of claim 34, suitable for oral administration.
36. The pharmaceutical composition of claim 34, suitable for intravenous administration.
37. Use of a compound of any one of claims 25-33 in the manufacture of a medicament for
~~A method of treating or treating depression, Alzheimer's disease, attention deficit disorder,~~
~~schizophrenia, or anxiety, in a patient in need thereof, comprising administering to said patient:~~
~~a pharmaceutically effective amount of a compound of any one of claims 25-33.~~