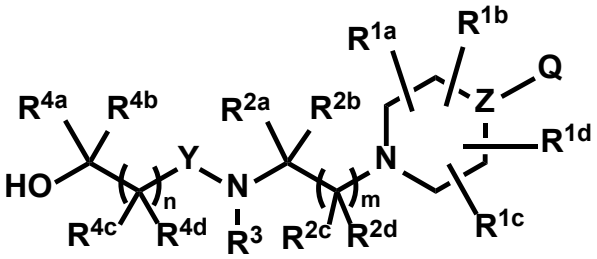
CLAIMS

1. A compound of Formula (1):



(1)

or a pharmaceutically acceptable salt thereof,

wherein

Z is a nitrogen atom or $-CR^A-$;

Y is carbonyl or sulfonyl;

m is 1, 2, 3, or 4;

n is 0, 1, 2, or 3;

provided that when Y is sulfonyl, n is not 0;

R^A is hydrogen, hydroxy, C_{1-6} alkyl, or C_{1-6} alkoxy;

R^{1a}, R^{1b}, R^{1c}, and R^{1d} are each independently hydrogen, hydroxy, halogen, or C_{1-6} alkyl optionally-substituted with the same or different 1 to 3 halogen;

R^{2a}, R^{2b}, R^{2c}, and R^{2d} are each independently, and each of R^{2c}s or each of R^{2d}s is independently when R^{2c} or R^{2d} exists plurally, hydrogen, halogen, or C_{1-6} alkyl (wherein the alkyl may be optionally substituted with the same or different 1 to 5 substituents selected from the group consisting of halogen, hydroxy, C_{3-8} cycloalkyl, and C_{1-6} alkoxy), provided that when R^{2a} and R^{2b}, or R^{2c} and R^{2d} which

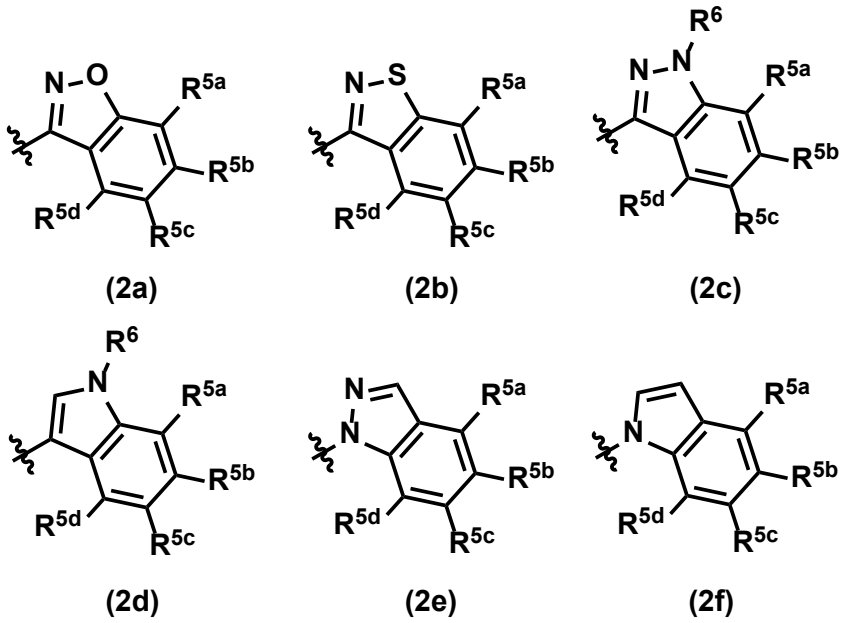
attach to the same carbon atom are each independently the said C_{1-6} alkyl, they may be combined together with the carbon atom to which they attach to form a 3- to 6-membered saturated carbocycle;

R^3 is C_{1-6} alkyl, wherein the alkyl may be optionally substituted with the same or different 1 to 5 substituents selected from the group consisting of halogen, hydroxy, cyano, C_{3-8} cycloalkyl, and C_{1-6} alkoxy;

R^{4a}, R^{4b}, R^{4c}, and R^{4d} are each independently, and each of R^{4c}s or each of R^{4d}s is independently when R^{4c} or R^{4d} exists plurally, hydrogen, halogen, C_{1-6} alkyl (wherein the alkyl may be optionally substituted with the same or different 1 to 5 substituents selected from the group consisting of halogen, hydroxy, cyano, C_{3-8} cycloalkyl, C_{1-6} alkoxy, C_{1-6} alkyl ester, and amino optionally-substituted with the same or different 1 or 2 C_{1-6} alkyl (wherein the alkyl may be optionally substituted with oxo)), C_{2-6} alkynyl, or amino (wherein the amino may be optionally substituted with the same or different 1 or 2 C_{1-6} alkyl); provided that when any two of R^{4a}, R^{4b}, R^{4c}, and R^{4d} are each independently the said C_{1-6} alkyl, they may be combined together with the carbon atom or the carbon atoms to which they attach to form a 3- to 6-membered saturated carbocycle or a 4- to 6-membered saturated heterocycle wherein when the said C_{1-6} alkyl groups have a substituent, the substituent may be included as a ring member of the carbocycle or heterocycle;

provided that when Y is sulfonyl and n is 1, any one of R^{4c} or R^{4d} is hydrogen; and when Y is sulfonyl and n is 2 or 3, any one of R^{4c} or R^{4d} which binds to the carbon atom adjacent to Y is hydrogen; and

Ring Q is a group of the following Formula (2a), (2b), (2c), (2d), (2e), or (2f):



wherein

R^{5a}, R^{5b}, R^{5c}, and R^{5d} are each independently hydrogen, halogen, cyano, C_{1-6} alkyl, C_{1-6} alkoxy (wherein the alkyl and the alkoxy may be optionally each independently substituted with the same or different 1 to 3 halogen), or amino optionally-substituted with the same or different 1 or 2 C_{1-6} alkyl; and

R^6 is hydrogen, C_{1-6} alkyl, or C_{3-8} cycloalkyl, wherein the alkyl and the cycloalkyl may be optionally each

independently substituted with the same or different 1 to 3 halogen.

2. The compound of claim 1, or a pharmaceutically acceptable salt thereof, wherein R^{1a}, R^{1b}, R^{1c}, and R^{1d} are hydrogen.

3. The compound of claim 1 or 2, or a pharmaceutically acceptable salt thereof, wherein R^{2a}, R^{2b}, R^{2c}, and R^{2d} are hydrogen.

4. The compound of any one of claims 1 to 3, or a pharmaceutically acceptable salt thereof, wherein m is 1.

5. The compound of any one of claims 1 to 4, or a pharmaceutically acceptable salt thereof, wherein R^3 is C_{1-6} alkyl.

6. The compound of any one of claims 1 to 5, or a pharmaceutically acceptable salt thereof, wherein Z is -CR^A-.

7. The compound of any one of claims 1 to 6, or a pharmaceutically acceptable salt thereof, wherein R^A is hydrogen.

8. The compound of any one of claims 1 to 7, or a pharmaceutically acceptable salt thereof, wherein R^{5a}, R^{5b}, R^{5c}, and R^{5d} are each independently hydrogen, halogen, or C_{1-6} alkyl.

9. The compound of any one of claims 1 to 8, or a pharmaceutically acceptable salt thereof, wherein R^{5a}, R^{5c}, and R^{5d} are hydrogen.

10. The compound of any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, whrein R^{5b} is hydrogen, halogen, or C_{1-6} alkyl.

11. The compound of any one of claims 1 to 10, or a pharmaceutically acceptable salt thereof, wherein R^{6} is hydrogen.

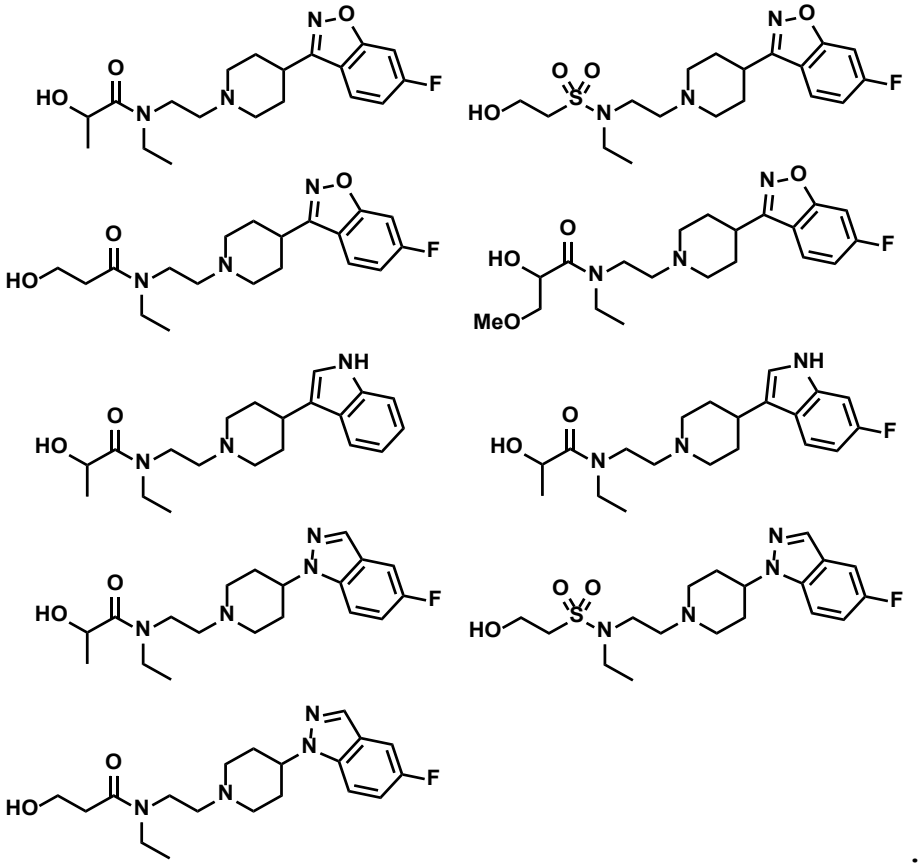
12. The compound of any one of claims 1 to 11, or a pharmaceutically acceptable salt thereof, wherein R^{4a}, R^{4b}, R^{4c}, and R^{4d} are each independently, and each of R^{4c}s or each of R^{4d}s is independently when R^{4c} or R^{4d} exists plurally, hydrogen, halogen, or C_{1-6} alkyl, wherein the alkyl may be optionally substituted with the same or different 1 to 5 subsituents selected from the group consisting of halogen, hydroxy, and C_{1-6} alkoxy.

13. The compound of any one of claims 1 to 12, or a pharmaceutically acceptable salt thereof, wherein n is 0 or 1.

14. The compound of any one of claims 1 to 13, or a pharmaceutically acceptable salt thereof, wherein Y is carbonyl.

15. The compound of any one of claims 1 to 13, or a pharmaceutically acceptable salt thereof, wherein Y is sulfonyl.

16. The compound of claim 1, or a pharmaceutically acceptable salt thereof, wherein the compound is selected from the group consisting of:



.

17. A drug comprising a compound of any one of claims 1 to 16, or a pharmaceutically acceptable salt thereof, as an active ingredient.

18. A medicament for treating a mental disease or central nervous system disease, comprising a compound of any one of claims 1 to 16, or a pharmaceutically acceptable salt thereof, as an active ingredient.

19. The medicament of claim 18, wherein the mental disease or central nervous system disease is organic, including symptomatic, mental disorders.

20. The medicament of claim 19, wherein the organic, including symptomatic, mental disorders is Alzheimer's disease, vascular dementia, dementia with Lewy bodies, dementia in Parkinson's disease, mental disorders due to other diseases such as brain damage, or other mental disorders due to brain dysfunction and to physical disease.

~~19~~21. The medicament of claim 18, wherein the mental disease or central nervous system disease is schizophrenia, a bipolar disorder, a sleep disorder, an autism spectrum disorder, major depression, treatment-resistant depression, or a psychopathic symptom or dementia associated with Alzheimer's disease or Parkinson's disease.

~~20. A method for treating a mental disease or central nervous system disease, comprising administering a therapeutically effective amount of a compound of any one of claims 1 to 16, or a pharmaceutically acceptable salt thereof, to a patient in need thereof.~~

~~21~~22. Use of a compound of any one of claims 1 to 16, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating a mental disease or central nervous system disease.

~~22~~23. A compound of any one of claims 1 to 16, or a pharmaceutically acceptable salt thereof, for use in the treatment of a mental disease or central nervous system disease.

~~23~~24. A medicament for treating a mental disease or central nervous system disease, comprising a compound of any one of claims 1 to 16, or a pharmaceutically acceptable salt thereof, in combiniation with at least one drug selected from the group consisting of a drug for treating a developmental disorder such as an autism spectrum disorder and an attention deficit hyperactivity disorder, an antipsychotic drug and a schizophrenic drug, a drug for treating a bipolar disorder, an antidepressant drug, an antianxiety drug, a drug for treating an obsessive-compulsive disorder, a drug for treating a stress disorder such as post-traumatic stress disorder, a drug for treating a mood disorder, a drug for treating an eating disorder, a drug for treating a sleep disorder such as insomnia, narcolepsy, a sleep apnea syndrome, and a circadian rhythm disorder, a drug for treating a sexual dysfunction, a drug for treating drug dependence, a drug for treating dementia such as Alzheimer's disease, a drug for treating a behavioral and psychological symptom associated with dementia, a cerebral metabolism and circulation improving drug, a drug for treating a movement disorder such as

Parkinson's disease, an analgesic drug, an antiepileptic drug, an anticonvulsant, a migraine drug, an anesthetic, and a central stimulant.

~~24~~25. A medicament for treatment of a mental disease or central nervous system disease, comprising a compound of any one of claims 1 to 16, or a pharmaceutically acceptable salt thereof, as an active ingredient, wherein the medicament is used in the treatment concomitantly with at least one drug selected from the group consisting of a drug for treating a developmental disorder such as an autism spectrum disorder and an attention deficit hyperactivity disorder, an antipsychotic drug and a schizophrenic drug, a drug for treating a bipolar disorder, an antidepressant drug, an antianxiety drug, a drug for treating an obsessive-compulsive disorder, a drug for treating a stress disorder such as a post-traumatic stress disorder, a drug for treating a mood disorder, a drug for treating an eating disorder, a drug for treating a sleep disorder such as insomnia, narcolepsy, a sleep apnea syndrome, and a circadian rhythm disorder, a drug for treating a sexual dysfunction, a drug for treating drug dependence, a drug for treating dementia such as Alzheimer's disease, a drug for treating a behavioral and psychological symptom associated with dementia, a cerebral metabolism and circulation improving drug, a drug for treating a movement

disorder such as Parkinson's disease, an analgesic drug, an antiepileptic drug, an anticonvulsant, a migraine drug, an anesthetic, and a central stimulant.