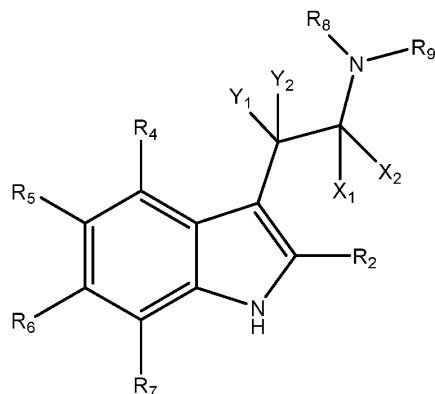


What is claimed is:

1. A compound according to Formula (III)



Formula (III)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

X₁ and X₂ are deuterium,

Y₁ and Y₂ are hydrogen or deuterium,

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₄ is independently selected from hydrogen, deuterium, hydroxyl, unsubstituted or substituted alkoxy, unsubstituted or substituted acetoxy, and phosphoryloxy,

R₅ is independently selected from hydrogen, deuterium, hydroxyl, unsubstituted or substituted alkoxy, and phosphoryloxy,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

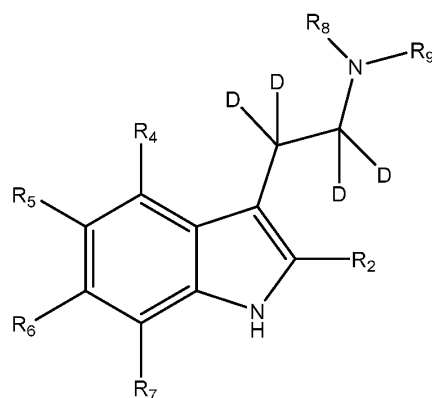
R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl,

under the proviso that when R₄ is hydroxyl and R₂, R₅, R₆, and R₇ are all hydrogen, R₈ and R₉ are not both -CD₃, and

R₈ and R₉ are not both unsubstituted methyl when R₂, R₄, R₅, R₆, and R₇ are all hydrogen.

2. The compound of claim 1, wherein when R₄ is hydroxyl, R₉ is hydrogen.
3. The compound of claim 1, wherein when R₄ is hydroxyl, R₉ is deuterium.

4. The compound of claim 1, wherein R_2 is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.
5. The compound of claim 1, wherein R_8 and R_9 are not both unsubstituted or partially or fully deuterated ethyl.
6. A compound according to Formula (III-a)



Formula (III-a)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R_2 is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R_4 is independently selected from hydrogen, deuterium, hydroxyl, unsubstituted or substituted alkoxy, unsubstituted or substituted acetoxy, and phosphoryloxy,

R_5 is independently selected from hydrogen, deuterium, hydroxyl, unsubstituted or substituted alkoxy, and phosphoryloxy,

R_6 and R_7 are selected from hydrogen, deuterium, and halogen,

R_8 is an unsubstituted or partially or fully deuterated methyl or ethyl, and

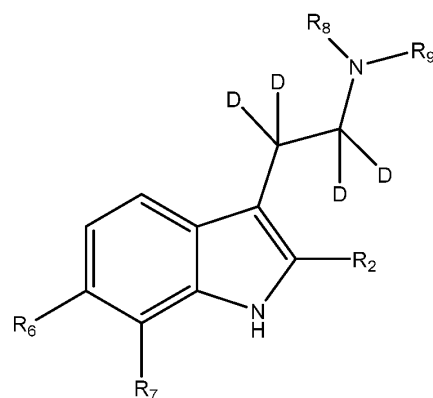
R_9 is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl,

under the proviso that when R_4 is hydroxyl and R_2 , R_5 , R_6 , and R_7 are all hydrogen, R_8 and R_9 are not both $-CD_3$, and

R_8 and R_9 are not both unsubstituted methyl when R_2 , R_4 , R_5 , R_6 , and R_7 are all hydrogen.

7. The compound of claim 6, wherein when R_4 is hydroxyl, R_9 is hydrogen or deuterium.

8. The compound of claim 6, wherein R_2 is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.
9. The compound of claim 6, wherein R_8 and R_9 are not both unsubstituted or partially or fully deuterated ethyl.
10. A compound according to Formula (III-b)



Formula (III-b)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R_2 is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

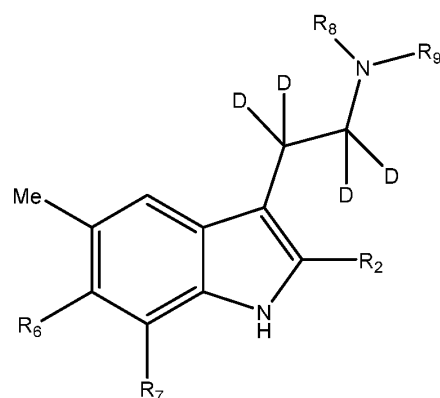
R_6 and R_7 are selected from hydrogen, deuterium, and halogen,

R_8 is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R_9 is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl,

under the proviso that R_8 and R_9 are not both unsubstituted methyl when R_2 , R_6 , and R_7 are all hydrogen.

11. The compound of claim 10, wherein R_2 is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.
12. The compound of claim 10, wherein R_8 and R_9 are not both unsubstituted or partially or fully deuterated ethyl.
13. A compound according to Formula (III-c)



Formula (III-c)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

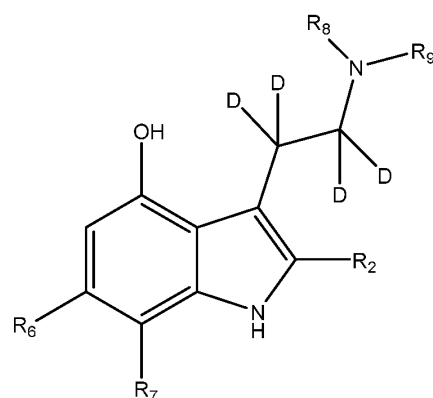
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl,

14. The compound of claim 13, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

15. The compound of claim 13, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

16. A compound according to Formula (III-d)



Formula (III-d)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl,

under the proviso that when R₂, R₆, and R₇ are all hydrogen, R₈ and R₉ are not both -CD₃,

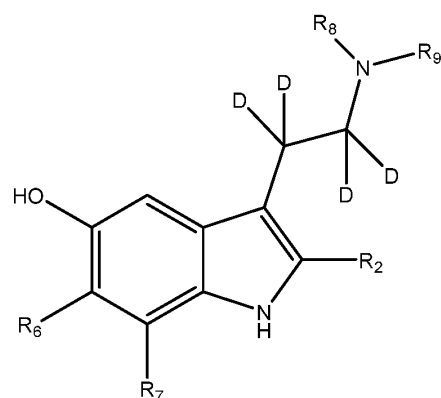
17. The compound of claim 16, wherein R₉ is hydrogen.

18. The compound of claim 16, wherein R₉ is deuterium

19. The compound of claim 16, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

20. The compound of claim 16, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

21. A compound according to Formula (III-e)



Formula (III-e)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

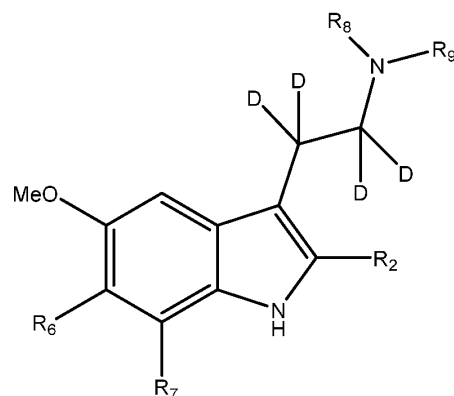
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

22. The compound of claim 21, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

23. The compound of claim 21, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

24. A compound according to Formula (III-f)



Formula (III-f)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

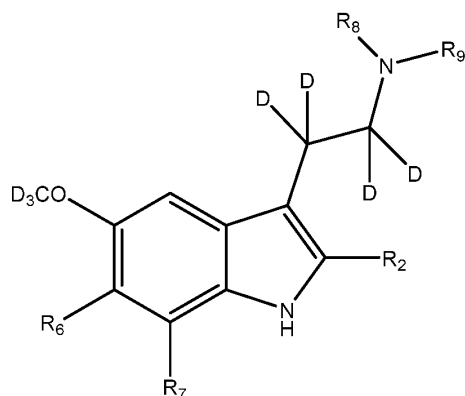
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

25. The compound of claim 24, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

26. The compound of claim 24, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

27. A compound according to Formula (III-g)



Formula (III-g)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R_2 is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R_6 and R_7 are selected from hydrogen, deuterium, and halogen,

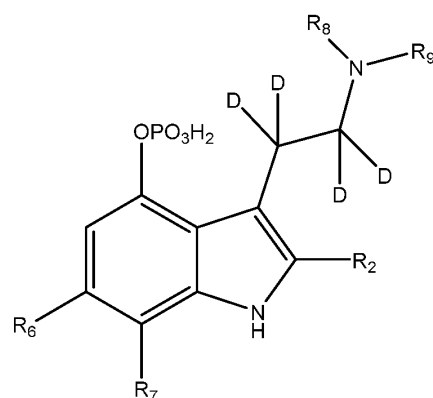
R_8 is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R_9 is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

28. The compound of claim 27, wherein R_2 is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

29. The compound of claim 27, wherein R_8 and R_9 are not both unsubstituted or partially or fully deuterated ethyl.

30. A compound according to Formula (III-h)



Formula (III-h)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

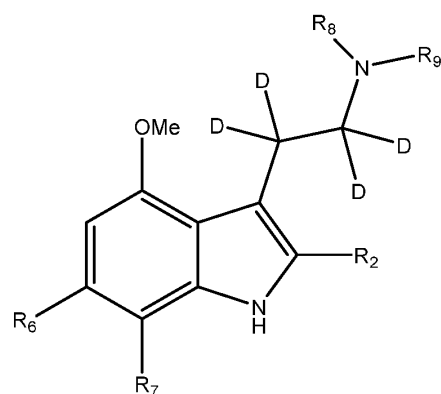
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

31. The compound of claim 30, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

32. The compound of claim 30, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

33. A compound according to Formula (III-i)



Formula (III-i)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

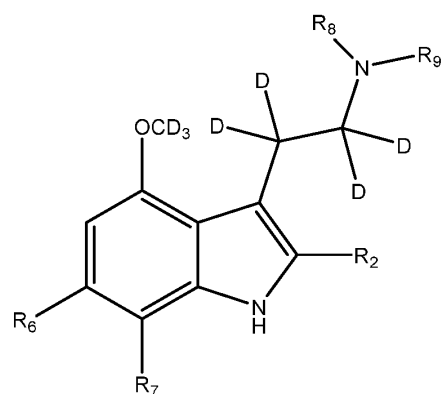
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

34. The compound of claim 33, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

35. The compound of claim 33, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

36. A compound according to Formula (III-j)



Formula (III-j)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

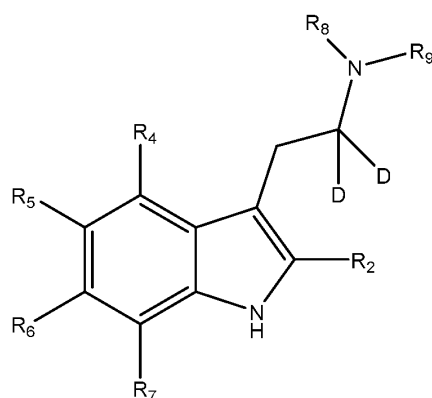
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

37. The compound of claim 36, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

38. The compound of claim 36, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

39. A compound according to Formula (III-k)



Formula (III-k)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₄ is independently selected from hydrogen, deuterium, hydroxyl, unsubstituted or substituted alkoxy, unsubstituted or substituted acetoxy, and phosphoryloxy,

R₅ is independently selected from hydrogen, deuterium, hydroxyl, unsubstituted or substituted alkoxy, and phosphoryloxy,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl,

under the proviso that when R₄ is hydroxyl and R₂, R₅, R₆, and R₇ are all hydrogen, R₈ and R₉ are not both -CD₃, and

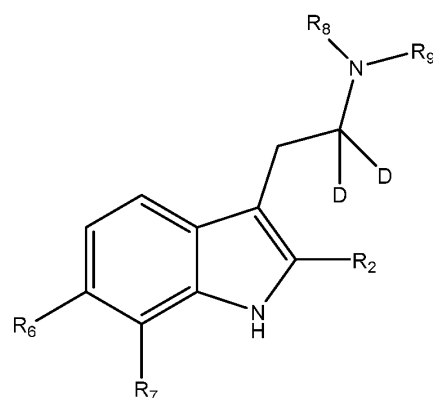
R₈ and R₉ are not both unsubstituted methyl when R₂, R₄, R₅, R₆, and R₇ are all hydrogen.

40. The compound of claim 39, wherein when R₄ is hydroxyl, R₉ is hydrogen or deuterium.

41. The compound of claim 39, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

42. The compound of claim 39, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

43. A compound according to Formula (III-l)



Formula (III-l)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

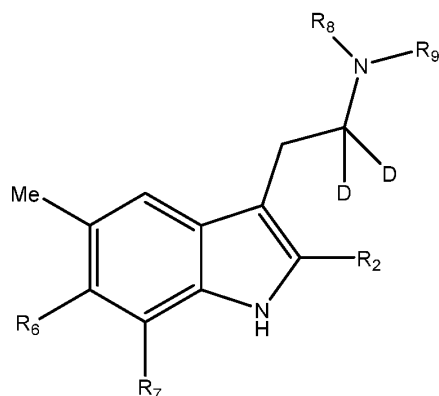
R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl,

under the proviso that R₈ and R₉ are not both unsubstituted methyl when R₂, R₆, and R₇ are all hydrogen.

44. The compound of claim 43, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

45. The compound of claim 43, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

46. A compound according to Formula (III-m)



Formula (III-m)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

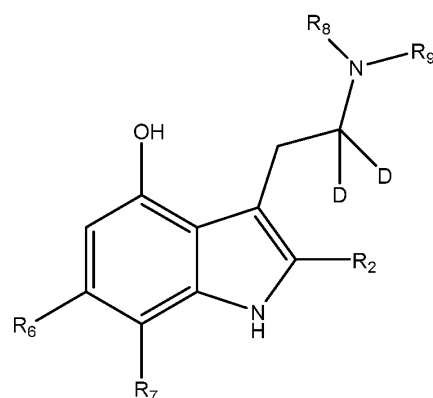
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl,

47. The compound of claim 46, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

48. The compound of claim 46, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

49. A compound according to Formula (III-n)



Formula (III-n)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl,

under the proviso that when R₂, R₆, and R₇ are all hydrogen, R₈ and R₉ are not both -CD₃,

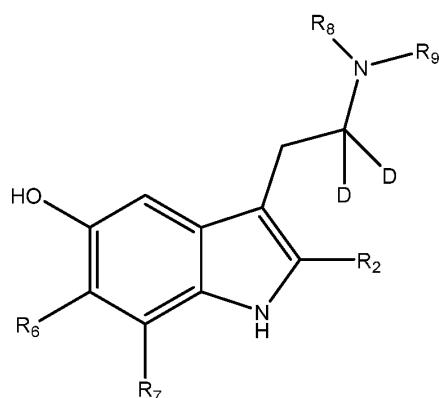
50. The compound of claim 49, wherein R₉ is hydrogen.

51. The compound of claim 49, wherein R₉ is deuterium.

52. The compound of claim 49, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

53. The compound of claim 49, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

54. A compound according to Formula (III-o)



Formula (III-o)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

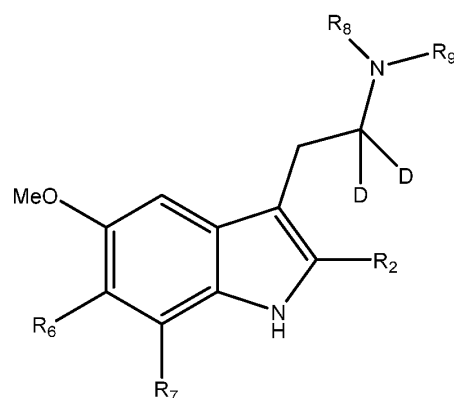
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

55. The compound of claim 54, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

56. The compound of claim 54, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

57. A compound according to Formula (III-p)



Formula (III-p)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

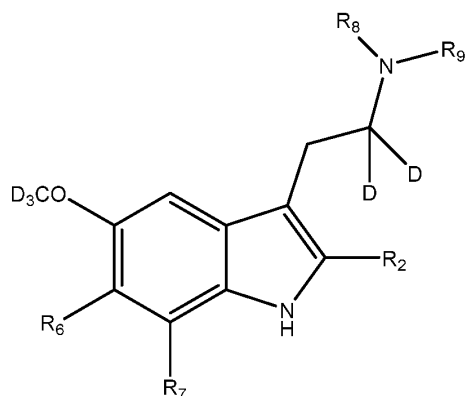
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

58. The compound of claim 57, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

59. The compound of claim 57, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

60. A compound according to Formula (III-q)



Formula (III-q)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

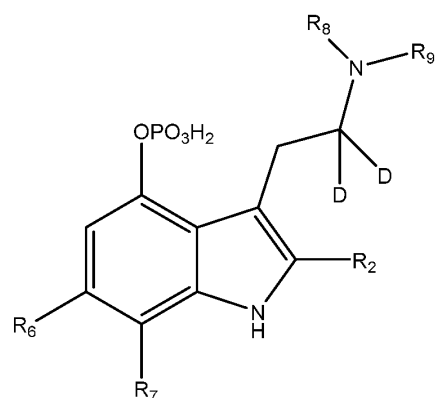
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl

61. The compound of claim 60, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

62. The compound of claim 60, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

63. A compound according to Formula (III-r)



Formula (III-r)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

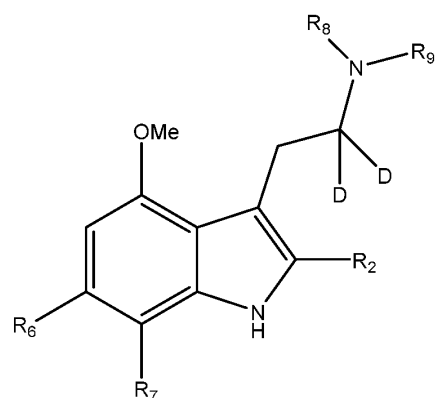
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

64. The compound of claim 63, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

65. The compound of claim 63, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

66. A compound according to Formula (III-s)



Formula (III-s)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

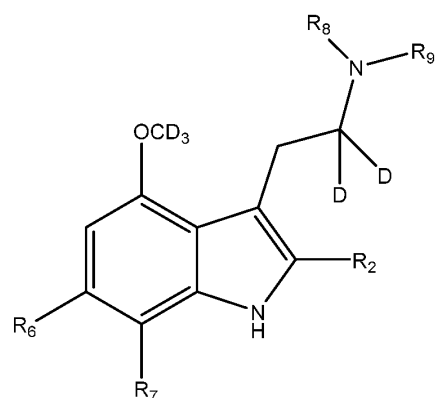
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

67. The compound of claim 66, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

68. The compound of claim 66, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

69. A compound according to Formula (III-t)



Formula (III-t)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

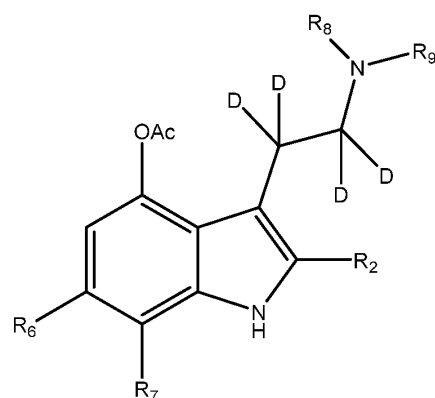
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

70. The compound of claim 69, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

71. The compound of claim 69, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

72. A compound according to Formula (III-u)



Formula (III-u)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

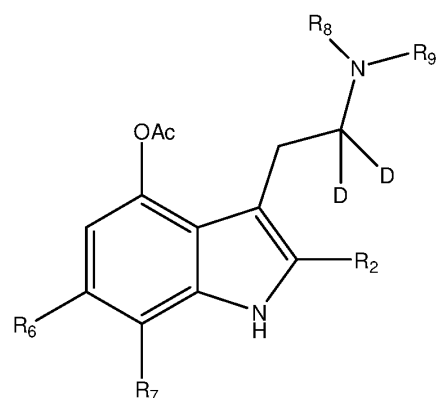
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

73. The compound of claim 72, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

74. The compound of claim 72, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

75. A compound according to Formula (III-v)



Formula (III-v)

or an optically pure stereoisomer, pharmaceutically acceptable salt, solvate, or prodrug thereof, wherein

R₂ is independently selected from hydrogen, deuterium, unsubstituted or substituted alkyl, unsubstituted or substituted allyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted heterocycloalkyl, unsubstituted or substituted aryl, and unsubstituted or substituted heteroaryl,

R₆ and R₇ are selected from hydrogen, deuterium, and halogen,

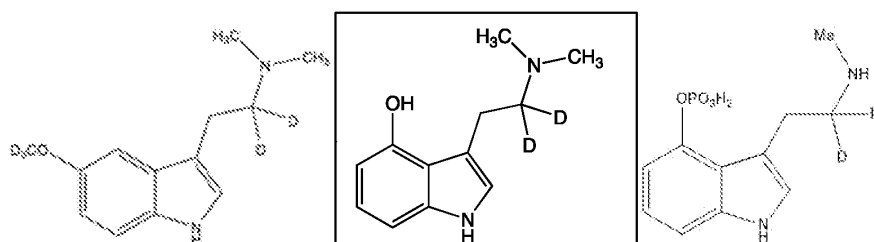
R₈ is an unsubstituted or partially or fully deuterated methyl or ethyl, and

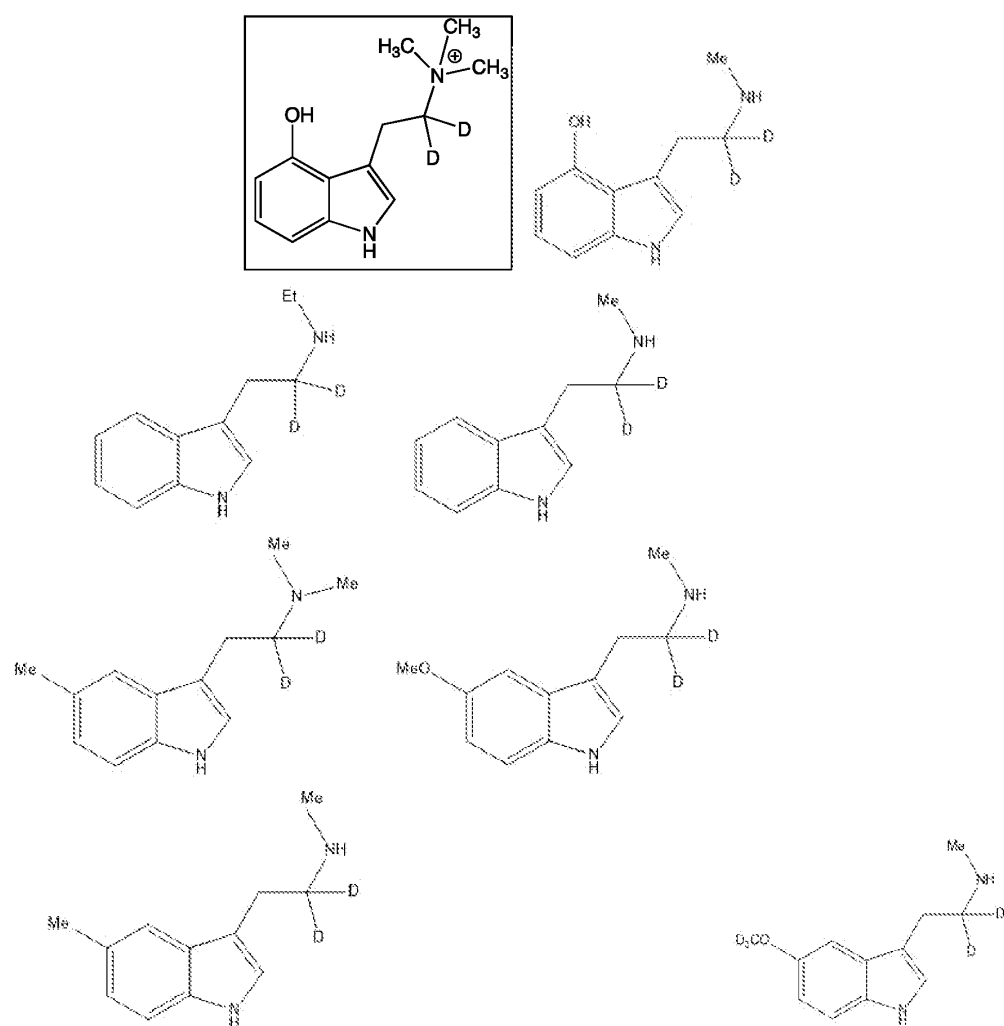
R₉ is hydrogen, deuterium, or an unsubstituted or partially or fully deuterated methyl or ethyl.

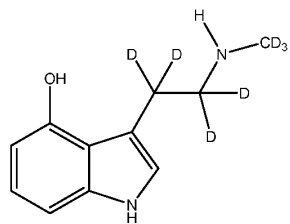
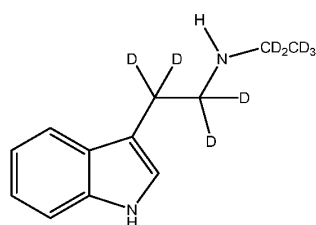
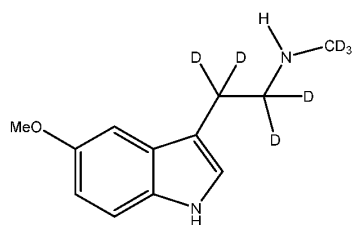
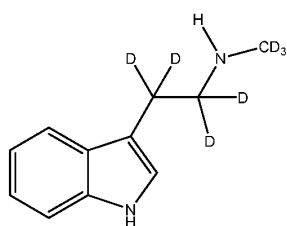
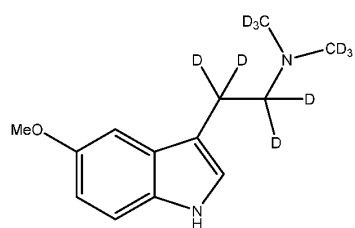
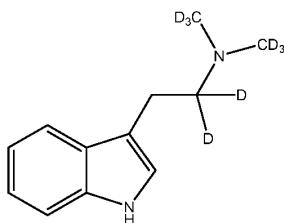
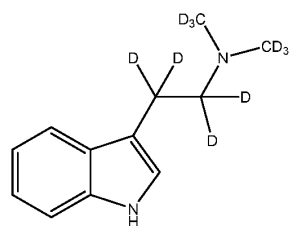
76. The compound of claim 75, wherein R₂ is independently selected from hydrogen, deuterium, halogen, and an unsubstituted or partially or fully deuterated methyl or ethyl.

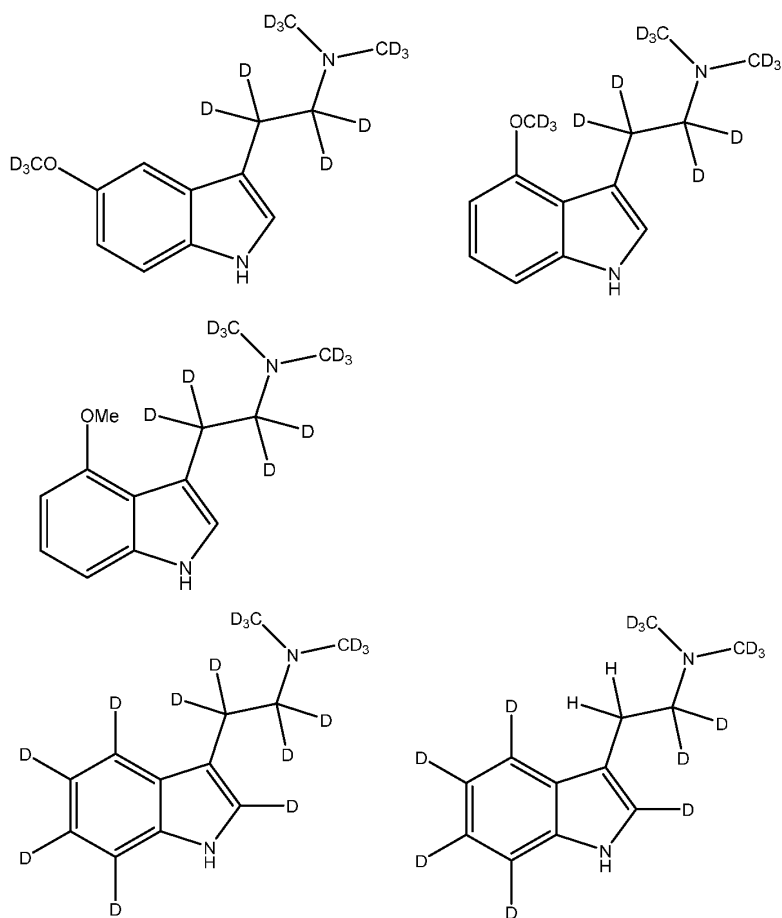
77. The compound of claim 75, wherein R₈ and R₉ are not both unsubstituted or partially or fully deuterated ethyl.

78. A compound, wherein the compound is:

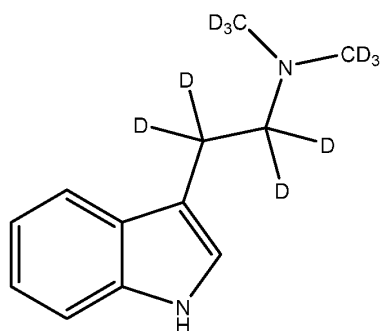








79. A compound of the following structure:



80. The compound of any one of claims 1-79, wherein said compound is an agonist of a serotonin 5-HT₂ receptor.

81. The compound of any one of claims 1-80, wherein said compound is an agonist of a

serotonin 5-HT_{2A} receptor.

82. A pharmaceutical composition comprising the compound of any one of claims 1-81 and a pharmaceutically acceptable excipient.

83. A method of treating a subject with a disease or disorder comprising administering to the subject a therapeutically effective amount of the compound according to any one of claims 1-81.

84. A method of treating a subject with a disease or disorder comprising administering to the subject a therapeutically effective amount of the compound according to any one of claims 1-81, thereby treating the subject.

85. A method of treating a subject with a disease or disorder associated with a serotonin 5-HT₂ receptor comprising administering to the subject a therapeutically effective amount of the compound according to any one of claims 1-81.

86. The method of any one of claims 83-85, wherein the disease or disorder is a neuropsychiatric disease or disorder or an inflammatory disease or disorder.

87. The method of claims 83-85, wherein the disease or disorder is central nervous system (CNS) disorders, including post-traumatic stress disorder (PTSD), major depressive disorder (MDD), treatment-resistant depression (TRD), bipolar and related disorders including bipolar I disorder, bipolar II disorder, cyclothymic disorder, obsessive-compulsive disorder (OCD), generalized anxiety disorder (GAD), social anxiety disorder, substance use disorders including alcohol use disorder, opioid use disorder, amphetamine use disorder, nicotine use disorder, and cocaine use disorder, anorexia nervosa, bulimia nervosa, Alzheimer's disease, cluster headache and migraine, attention deficit hyperactivity disorder (ADHD), pain and neuropathic pain, aphantasia, childhood-onset fluency disorder, major neurocognitive disorder, mild neurocognitive disorder, sexual dysfunction, obesity, or combinations thereof.

88. The method of claim 83-85, wherein the disease or disorder includes conditions of an autonomic nervous system (ANS).

89. The method of claims 83-85, wherein the disease or disorder includes pulmonary disorders including asthma and chronic obstructive pulmonary disorder (COPD).

90. The method of claims 83-85, wherein the disease or disorder includes cardiovascular disorders including atherosclerosis.

91. The method of claims 83-85 and 87, wherein the disease or disorder is alcohol use disorder.

92. A single-layer orally administered tablet composition comprising a tryptamine derivative or the compound of any one of claims 1-81, and a polymer.

93. The single-layer orally administered tablet composition of claim 92, wherein the

composition is adapted for maximum sustained release.

94. The single-layer orally administered tablet composition of claim 92, wherein the tablet composition comprises a combination of (i) a water-insoluble neutrally charged non-ionic matrix; (ii) a polymer carrying one or more negatively charged groups; and (iii) the tryptamine derivative or the compound of any one of claims 1-81.

95. The single-layer orally administered tablet composition of claim 94, wherein the non-ionic matrix is a cellulose-based polymer, alone or enhanced by mixing with starches; waxes; neutral gums; polymethacrylates; PVA; PVA/PVP blends; or mixtures thereof.

96. The single-layer orally administered tablet composition of claim 95, wherein the cellulose-based polymer is hydroxypropyl methylcellulose (HPMC).

97. The single-layer orally administered tablet composition of claim 94, wherein the polymer carrying one or more negatively charged groups is polyacrylic acid, polylactic acid, polyglycolic acid, polymethacrylate carboxylates, cation-exchange resins, clays, zeolites, hyaluronic acid, anionic gums, salts thereof, or mixtures thereof.

98. The single-layer orally administered tablet composition of claim 97, wherein the anionic gum is a naturally occurring material, semi-synthetic material, or combinations thereof.

99. The single-layer orally administered tablet composition of claim 98, wherein the naturally occurring material is alginic acid, pectin, xanthan gum, carrageenan, locust bean gum, gum arabic, gum karaya, guar gum, gum tragacanth, or combinations thereof.

100. The single-layer orally administered tablet composition of claim 98, wherein the semi-synthetic material is carboxymethyl-chitin, cellulose gum, or combinations thereof.

101. The single-layer orally administered tablet composition of claim 92, comprising a therapeutically effective amount of the tryptamine derivative or the compound of any one of claims 1-81 for treatment of pain.

102. The single-layer orally administered tablet composition of claim 92, comprising a therapeutically effective amount of the tryptamine derivative or the compound of any one of claims 1-81 for treatment of brain injury.

103. The single-layer orally administered tablet composition of claim 92, comprising a therapeutically effective amount of the tryptamine derivative or the compound of any one of claims 1-81 for treatment of depression.

104. The single-layer orally administered tablet composition of claim 92, comprising a therapeutically effective amount of the tryptamine derivative or the compound of any one of claims 1-81 for use in treating a disease or disorder associated with a serotonin 5-HT₂ receptor.

105. The single-layer orally administered tablet composition of claim 104, the disease or disorder is central nervous system (CNS) disorders, including post-traumatic stress disorder (PTSD), major depressive disorder (MDD), treatment-resistant depression (TRD), bipolar and related disorders including bipolar I disorder, bipolar II disorder, cyclothymic disorder, obsessive-compulsive disorder (OCD), generalized anxiety disorder (GAD), social anxiety disorder, substance use disorders including alcohol use disorder, opioid use disorder, amphetamine use disorder, nicotine use disorder, and cocaine use disorder, anorexia nervosa, bulimia nervosa, Alzheimer's disease, cluster headache and migraine, attention deficit hyperactivity disorder (ADHD), pain and neuropathic pain, aphantasia, childhood-onset fluency disorder, major neurocognitive disorder, mild neurocognitive disorder, sexual dysfunction, obesity, or combinations thereof.

106. The single-layer orally administered tablet composition of claim 104, wherein the disease or disorder includes conditions of an autonomic nervous system (ANS).

107. The single-layer orally administered tablet composition of claims 104-105, wherein the disease or disorder is alcohol use disorder.

108. The single-layer orally administered tablet composition of claim 104, the disease or disorder includes pulmonary disorders including asthma and chronic obstructive pulmonary disorder (COPD).

109. The single-layer orally administered tablet composition of claim 104, the disease or disorder includes cardiovascular disorders including atherosclerosis.

110. The single-layer orally administered tablet composition of claim 92, wherein the composition achieves a combined concentration of the tryptamine derivative or the compound of any one of claims 1-81 in plasma in a range of 10-500 ng/ml, and maintains this concentration for duration of the release period.

111. The single-layer orally administered tablet composition of claim 92, wherein the polymer comprises one or more negatively charged groups.

112. A tablet composition formulated for oral administration comprising: a tryptamine derivative or the compound of any one of claims 1-81, and a polymer.

113. The tablet composition of claim 112, wherein the polymer comprises one or more negatively charged groups.

114. The tablet composition of claim 112, wherein the polymer comprises one or more acid groups.

115. The tablet composition of claim 112, wherein the polymer comprises a water-insoluble

neutrally charged non-ionic matrix.

116. The tablet composition of claim 115, wherein the non-ionic matrix is a cellulose-based polymer, alone or enhanced by mixing with starches; waxes; neutral gums; polymethacrylates; PVA; PVA/PVP blends; or mixtures thereof.

117. The tablet composition of claim 116, wherein the cellulose-based polymer is hydroxypropyl methylcellulose (HPMC).

118. A kit for treatment of a subject comprising 1) a single-layer orally administered tablet composition of claim 92, and 2) instructions for use in the treatment of pain.

119. A kit for treatment of a subject comprising 1) a single-layer orally administered tablet composition of claim 92, and 2) instructions for use in the treatment of brain injury.

120. A kit for treatment of a subject comprising 1) a single-layer orally administered tablet composition of claim 92 and 2) instructions for use in the treatment of depression.

121. A kit for treatment of a subject comprising 1) a single-layer orally administered tablet composition of claim 92 and 2) instructions for use in the treatment of a disease or disorder associated with a serotonin 5-HT₂ receptor.

122. The kit of claim 118, wherein the polymer comprises one or more negatively charged groups.

123. The kit of claim 119, wherein the polymer comprises one or more negatively charged groups.

124. The kit of claim 120, wherein the polymer comprises one or more negatively charged groups.

125. The kit of claim 121, wherein the polymer comprises one or more negatively charged groups.