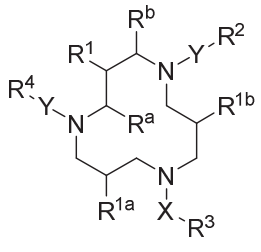
We Claim:

1. A compound of Formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein:

each of R^a and R^b is independently H or C_{1-3}alkyl;

R^1 is H, OH, C_{1-3}alkyl, OC_{1-3}alkyl, $=CH_2$, or $=NOR^5$; or R^1 is C_{3-6}cycloalkyl or C_{3-6}heterocycloalkyl and forms a spiro group with the ring carbon to which it is attached;

each of R^{1a} and R^{1b} is independently H or C_{1-3} alkyl;

R^2 is C_{1-6}alkyl, $N(R^5)_2$, C_{3-8}cycloalkyl, C_{3-7}heterocycloalkyl, C_{3-7}heterocycloalkenyl, or C_{6-10}aryl;

R^3 is H, C_{1-6}alkyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkenyl, C_{3-7}heterocycloalkyl, C_{6-10}aryl, or C_{2-6}heteroaryl;

R^4 is C_{3-8}cycloalkyl, C_{3-9}heterocycloalkyl, C_{6-10}aryl, or C_{2-6}heteroaryl;

each R^5 independently is H, C_{1-3}alkyl, or C_{0-2}alkylene-C_{6-10}aryl;

X is absent, C_{1-3}alkylene, C=O, or (C=O)O;

Y is SO or SO_2;

each heterocycloalkyl, heterocycloalkenyl, and heteroaryl group independently has 1, 2, or 3 ring heteroatoms selected from N, O, and S.

2. The compound or salt of claim 1, wherein each Y is SO.

3. The compound or salt of claim 1, wherein each Y is SO_2.

4. The compound of any one of claims 1-3, wherein R^a is H.

5. The compound of any one of claims 1-3, wherein R^a is C_{1-3}alkyl.

6. The compound of claim 5, wherein R^a is CH_3.

7. The compound of any one of claims 1-6, wherein R^b is H.

8. The compound of any one of claims 1-6, wherein R^b is C_{1-3}alkyl.

9. The compound of claim 8, wherein R^a is CH_3.

10. The compound or salt of any one of claims 1-9, wherein R^1 is H, OH, or $=NOR^5$.

11. The compound or salt of claim 10, wherein R^5 is H or CH_3.

12. The compound or salt of any one of claims 1-9, wherein R^1 is $C_{1\text{-}3}$alkyl or $OC_{1\text{-}3}$alkyl.

13. The compound or salt of claim 12, wherein R^1 is CH_3 or OCH_3.

14. The compound or salt of claim 13, wherein R^1 is CH_3 and exhibits *S* stereochemistry.

15. The compound or salt of any one of claims 1-9, wherein R^1 is $C_{3\text{-}6}$cycloalkyl or $C_{3\text{-}6}$heterocycloalkyl and forms a spiro group with the ring carbon to which it is attached.

16. The compound or salt of claim 15, wherein R^1 together with the ring atom to which it is attached forms , , or .

17. The compound or salt of any one of claims 1-9, wherein R^1 is $=CH_2$.

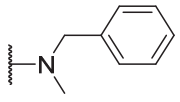
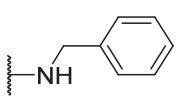
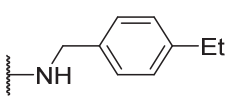
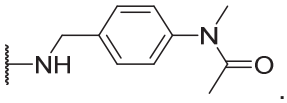
18. The compound or salt of any one of claims 1-17, wherein each of R^{1a} and R^{1b} is H.

19. The compound or salt of any one of claims 1-17, wherein at least one of of R^{1a} and R^{1b} is $C_{1\text{-}3}$alkyl.

20. The compound or salt of claim 19, wherein each of R^{1a} and R^{1b} is CH_3.

21. The compound or salt of any one of claims 1-20, wherein R^2 is $C_{1\text{-}6}$alkyl or $N(R^5)_2$.

22. The compound or salt of claim 21, wherein each R^5 independently comprises H, $C_{1\text{-}3}$alkyl, or benzyl.

23. The compound or salt of claim 21, wherein R^2 is Et, iPr, $N(CH_3)_2$, , , , .

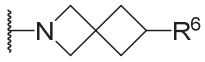
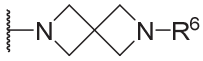
24. The compound or salt of any one claims 1-20, wherein R^2 comprises C_{3-8}cycloalkyl.

25. The compound or salt of claim 24, wherein R^2 comprises cyclopentyl or cyclohexyl.

26. The compound or salt of any one of claims 1-20, wherein R^2 is C_{3-9}heterocycloalkyl or C_{3-9}heterocycloalkenyl.

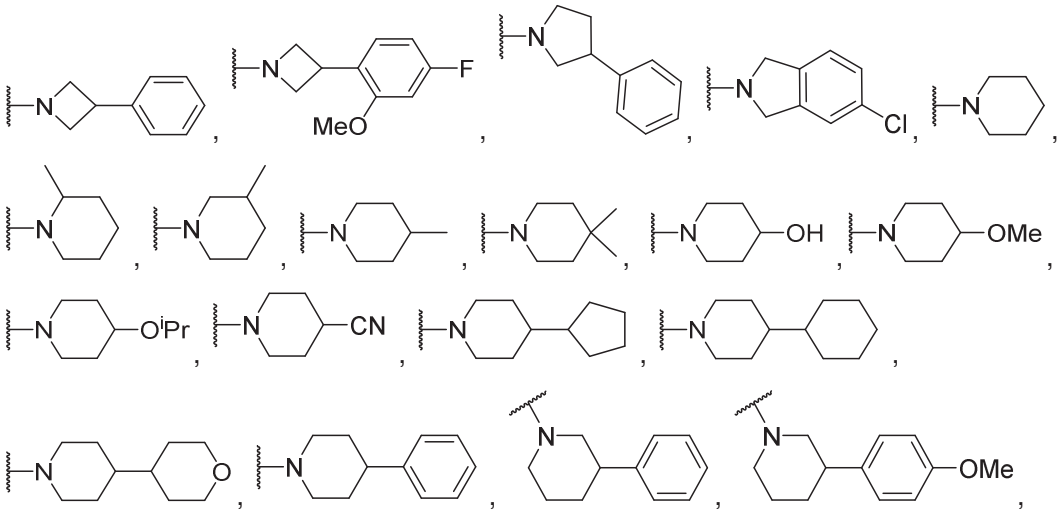
27. The compound or salt of claim 26, wherein R^2 comprises oxetanyl, azetidinyl, tetrahydrofuranyl, pyrrolidinyl, tetrahydropyranyl, pyranyl, piperidinyl, piperazinyl, azepanyl, morpholinyl, or tetrahydropyridinyl.

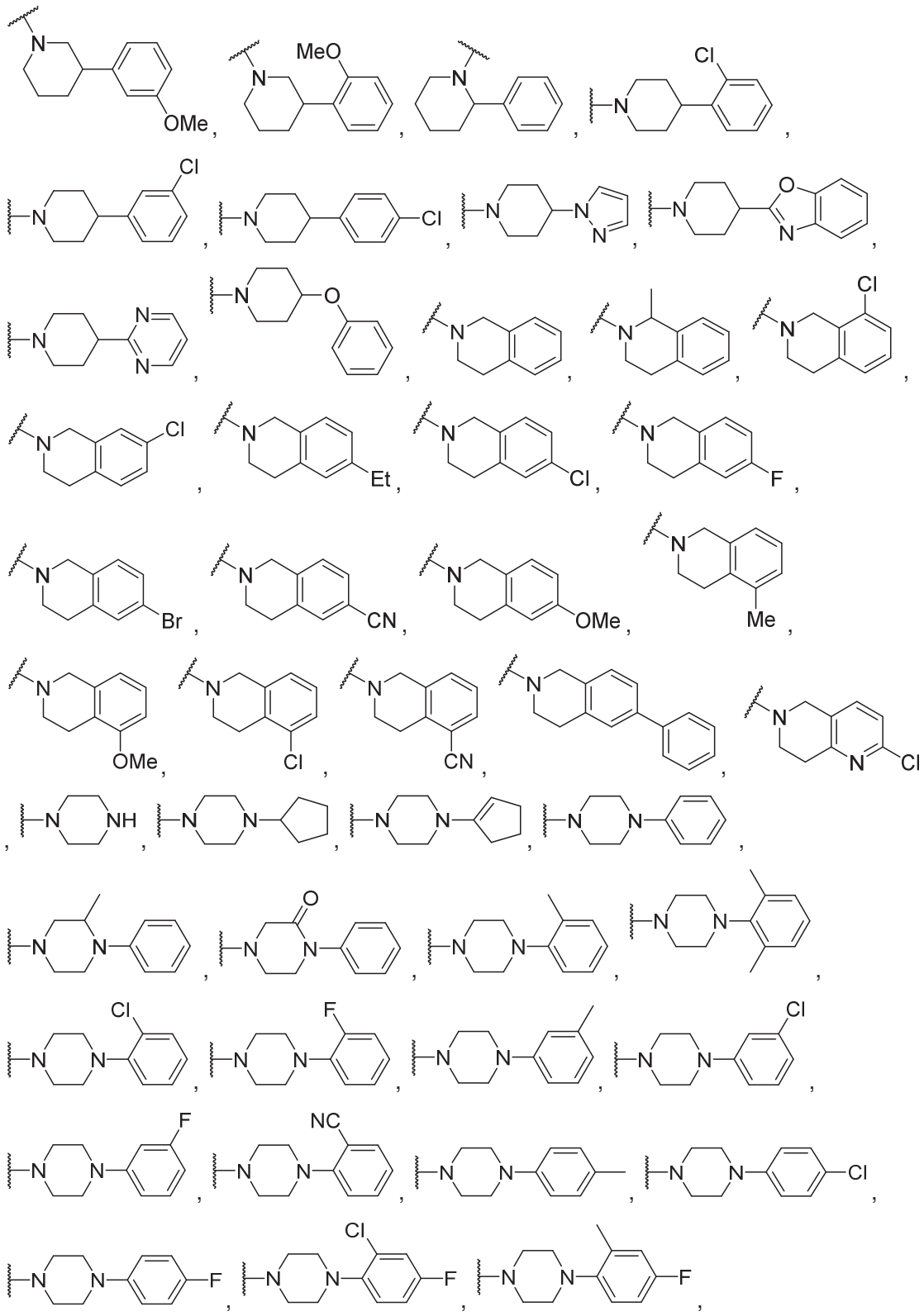
28. The compound or salt of claim 26, wherein the C_{3-7}heterocycloalkyl or C_{3-7}heterocycloalkenyl comprises a bridge or a spiro group.

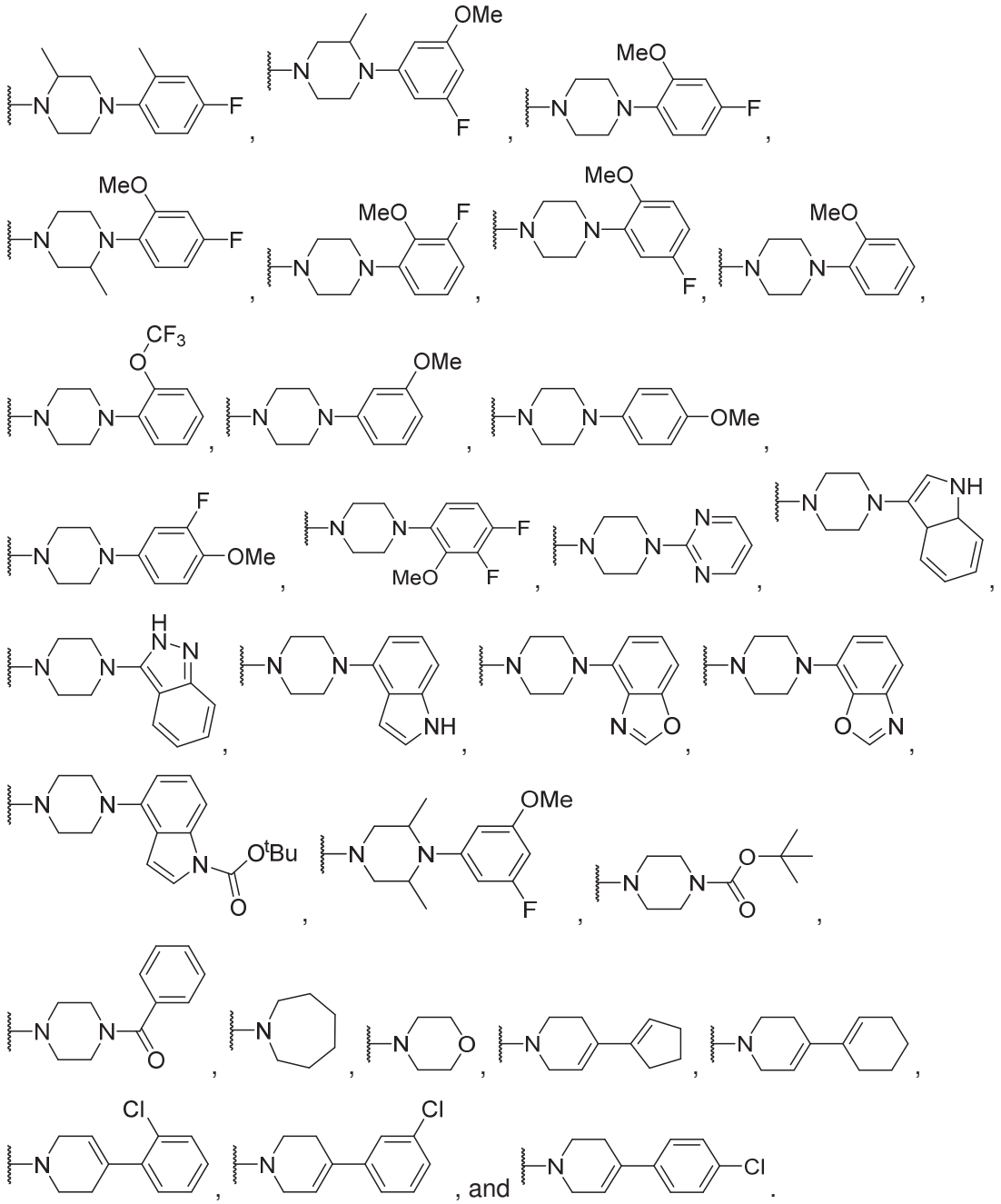
29. The compound of claim 28, wherein the C_{3-9}heterocycloalkyl comprising a bridge or a spiro group is selected from the group consisting of , , and , and R^6 is C_{1-6}alkyl, C_{3-8}cycloalkyl, or C_{6-10}aryl.

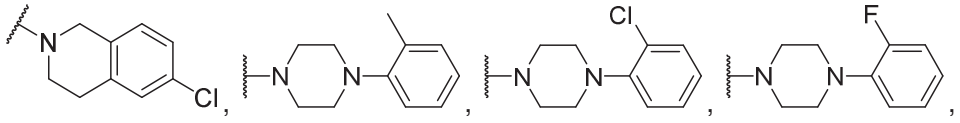
30. The compound of claim 29, wherein R^6 is phenyl optionally substituted with one to three groups independently selected from halo, C_{1-3}alkyl, C_{1-3}alkoxy, and CN.

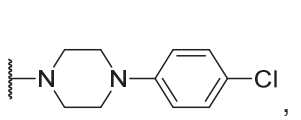
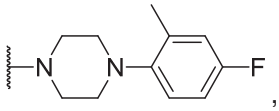
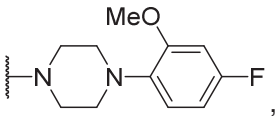
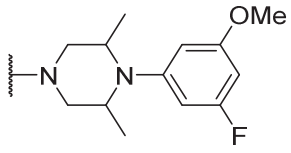
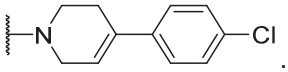
31. The compound or salt of claim 27, wherein R^2 is selected from the group consisting of



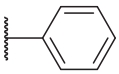
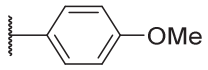




32. The compound or salt of claim 31, wherein R^2 is selected from the group consisting of 





, and .

33. The compound or salt of any one of claims 1-20, wherein R^2 is C_{6-10}aryl.

34. The compound or salt of claim 33, wherein R^2 is , , or .

35. The compound or salt of any one of claims 1-34, wherein X is absent.

36. The compound or salt of claim 35, wherein R^3 comprises C_{1-6}alkyl or H.

37. The compound or salt of claim 36, wherein R^3 is 2-methylbutyl, isopropyl, isopentyl, $CH_2CH_2OCH_3$, $CH_2C(CH_3)_2CN$, CH_2CF_3, or $CH_2CH_2CF_3$.

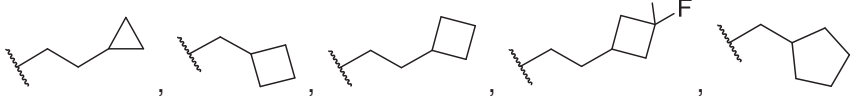
38. The compound or salt of claim 37, wherein R^3 is isobutyl.

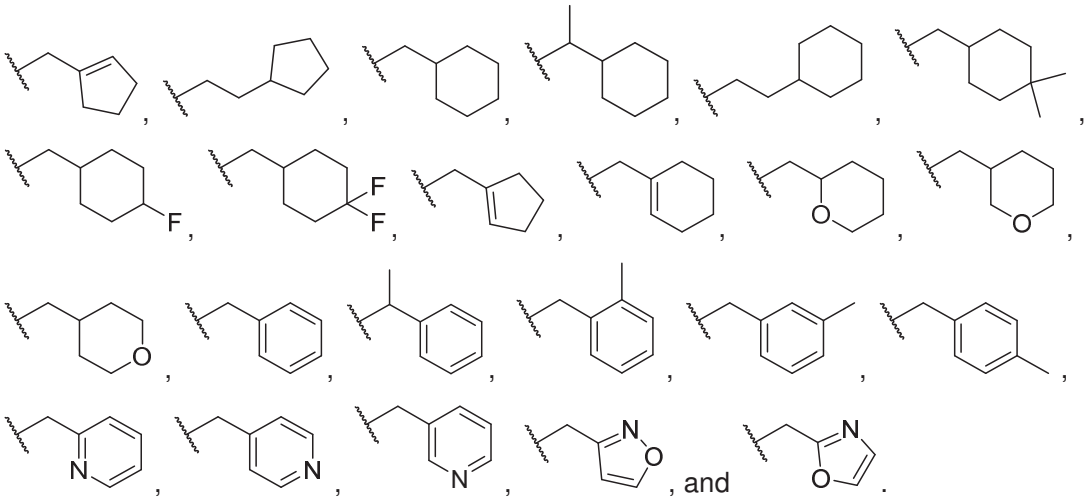
39. The compound or salt of any one of claims 1-34, wherein X is C_{1-3}alkylene.

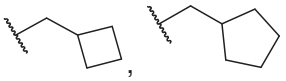
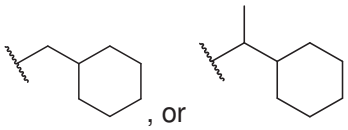
40. The compound or salt of claim 39, wherein X is CH_2, CH_2CH_2, or $CH(CH_3)$.

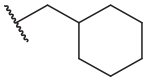
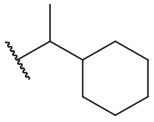
41. The compound or salt of claim 39 or 40, wherein R^3 comprises C_{3-8}cycloalkyl, C_{3-8}cycloalkenyl, C_{3-7}heterocycloalkyl, C_{6-10}aryl, or C_{2-6}heteroaryl.

42. The compound or salt of claim 41, wherein R^3 comprises cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cyclopentenyl, cyclohexenyl, tetrahydropyranyl, phenyl, pyrrolyl, pyrazolyl, imidazolyl, tetrazolyl, furanyl, thiophenyl, thiazolyl, oxazolyl, isoxazolyl, oxadiazolyl, thiadiazolyl, pyridinyl, pyrazinyl, or pyrimidinyl.

43. The compound or salt of claim 42, wherein X-R^3 is selected from the group consisting of .

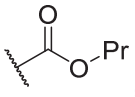
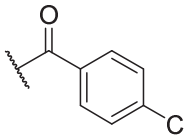
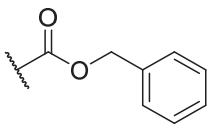


44. The compound or salt of claim 43, wherein X-R^3 is , or .

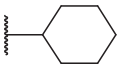
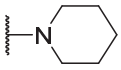
45. The compound or salt of claim 44, wherein X-R^3 is , or .

46. The compound or salt of any one of claims 1-34, wherein X is C=O or (C=O)O.

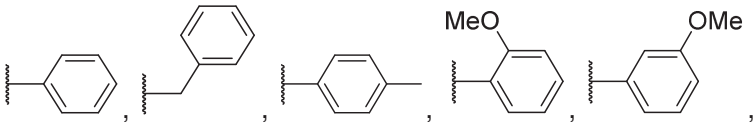
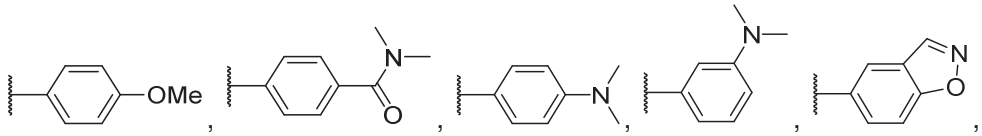
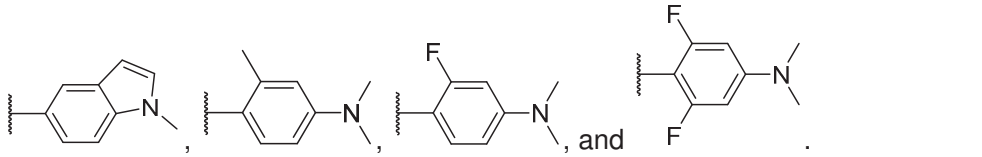
47. The compound or salt of claim 46, wherein R^3 comprises $C_{1\text{-}6}$alkyl or $C_{6\text{-}10}$aryl.

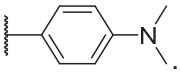
48. The compound or salt of claim 47, wherein X-R^3 is , , or .

49. The compound or salt of any one of claims 1-48, wherein R^4 comprises $C_{3\text{-}8}$cycloalkyl or $C_{3\text{-}9}$heterocycloalkyl.

50. The compound or salt of claim 49, wherein R^4 is  or .

51. The compound or salt of any one of claims 1-48, wherein R^4 comprises C_{6-10}aryl or C_{2-9}heteroaryl, and R^4 is optionally substituted with one to three groups independently selected from halo, C_{1-3}alkyl, C_{1-3}alkoxy, $C(O)N(R^N)_2$, and $N(R^N)_2$, and each R^N is independently H or C_{1-3}alkyl.

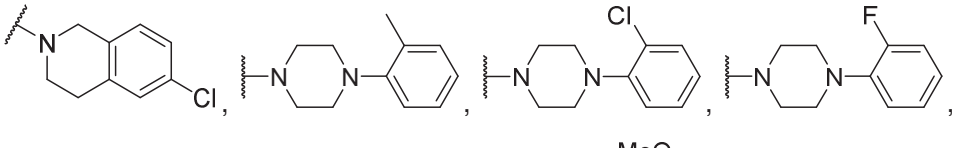
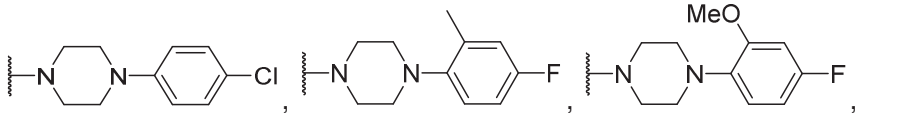
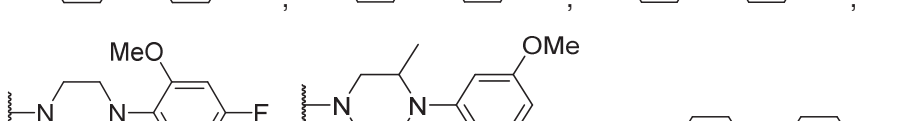
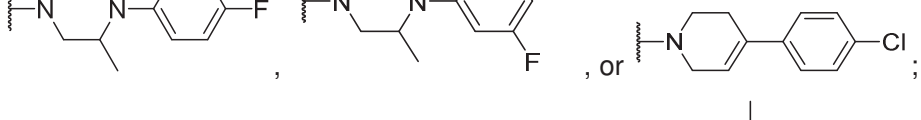
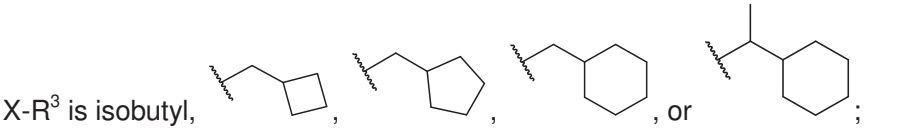
52. The compound or salt of claim 51, wherein R^4 is selected from the group consisting of , , , and .

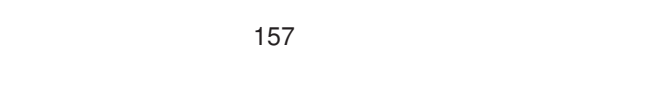
53. The compound or salt of claim 52, wherein R^4 is .

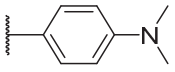
54. The compound or salt of claim 1, wherein:

R^a, R^b, R^{1a}, and R^{1b} are each H;

R^1 is $=CH_2$ or CH_3;

R^2 is , , , , , , or ;

$X\text{-}R^3$ is isobutyl, , , , or ;

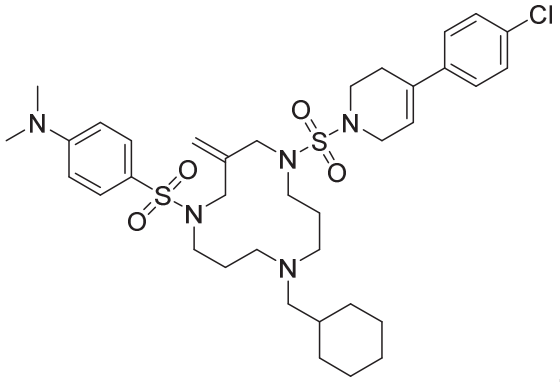
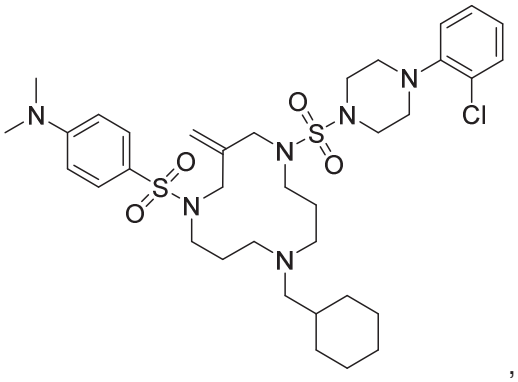
R^4 is ; and

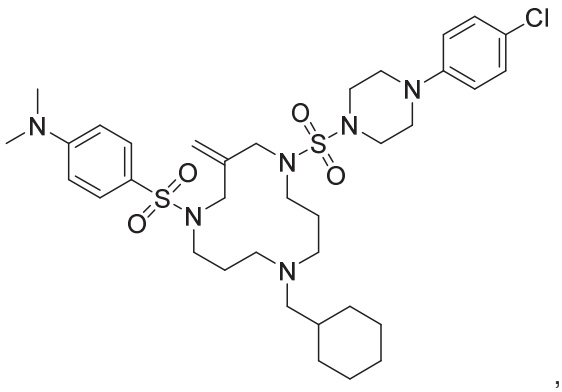
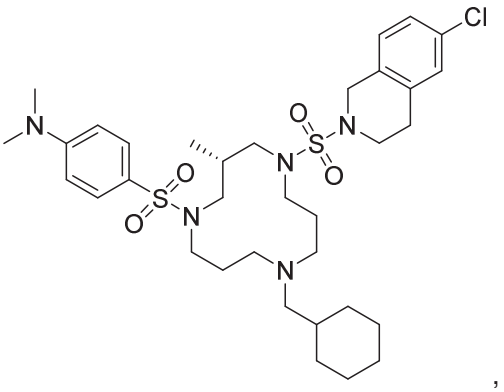
each Y is SO_2.

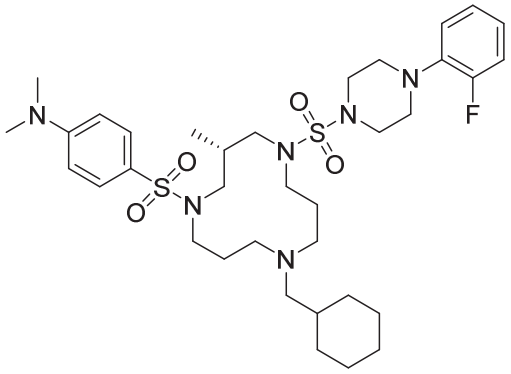
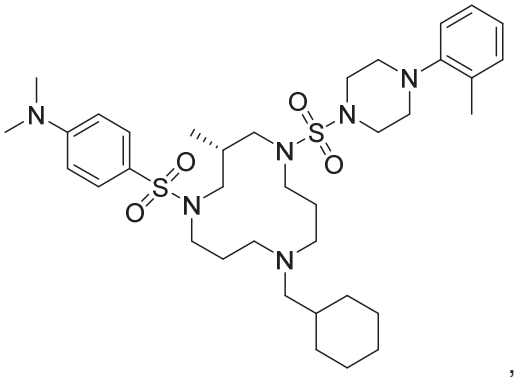
55. The compound or salt of any one of claims 1-54, wherein R^1 is in a *(S)* configuration.

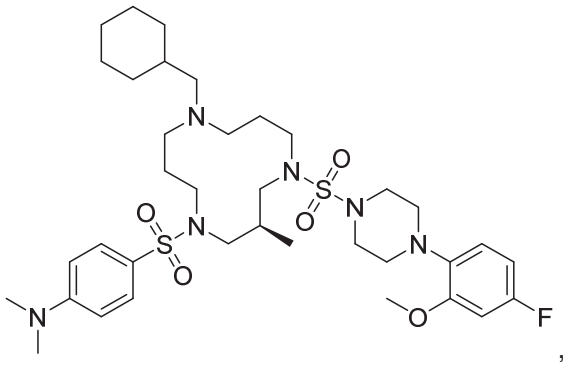
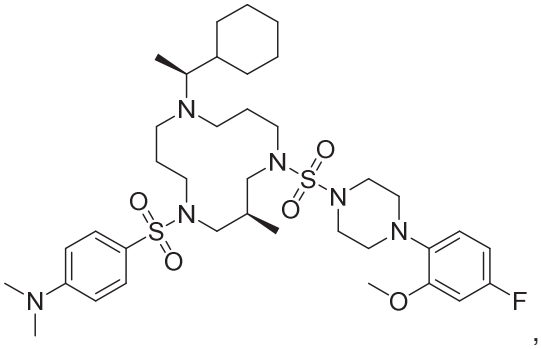
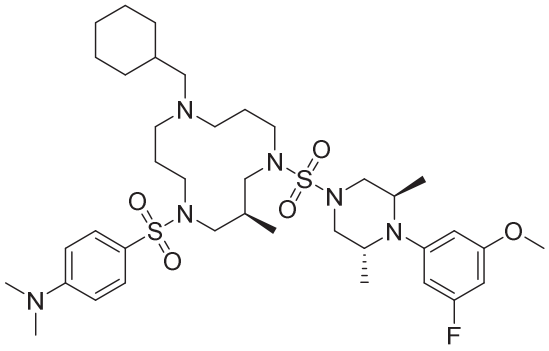
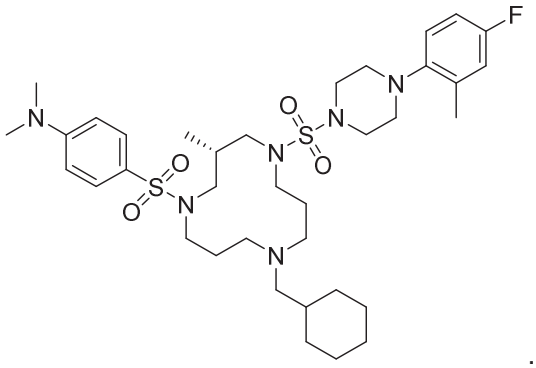
56. A compound listed in Table A, or a pharmaceutically acceptable salt thereof.

57. The compound or salt of claim 56, wherein the compound is selected from the group consisting of:

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, ,

, ,


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, and

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58. A compound selected from a compound listed in Table B, or a pharmaceutically acceptable salt thereof.

59. A pharmaceutical composition comprising the compound or salt of any one of claims 1-58 and a pharmaceutically acceptable carrier.

60. Use of the compound or salt of any one of claims 1-58, or the pharmaceutical composition of claim 59, in the manufacture of a medicament for inhibiting protein secretion in a cell ,in an amount effective to inhibit secretion.

61. The use of claim 60, wherein the protein is a checkpoint protein.

62. The use of claim 60, wherein the protein is a cell-surface protein, endoplasmic reticulum associated protein, or secredted protein involved in regulation of anti-tumor immune response.

63. The use of claim 60, wherein the protein is at least one of PD-1, PD-L1, TIM-1, LAG-3, CTLA4, BTLA, OX-40, B7H1, B7H4, CD137, CD47, CD96, CD73, CD40, VISTA, TIGIT, LAIR1, CD160, 2B4, TGFRβ and combinations thereof.

64. The use of any one of claims 60-63, wherein the contacting comprises the compound or the composition is to be administed to a subject.

65. The compound or salt of any one of claims 1-58, or the pharmaceutical composition of claim 59, for use as a medicament.

66. Use of the compound or salt of any one of claims 1-58 or the pharmaceutical composition of claim 59, in the manufacture of a medicament for treating inflammation in a subject, wherein a therapeutically effective amount of the medicament is to be administered to the subject.

67. Use of the compound or salt of any one of claims 1-58 or the pharmaceutical composition of claim 59, in the manufacture of a medicament for treating or preventing cancer or a precancerous condition in a subject, wherein a therapeutically effective amount of the medicament is to be administered to the subject.

68. The use of claim 67, wherein the cancer is melanoma, multiple myeloma, prostate cancer, lung cancer, pancreatic cancer, squamous cell carcinoma, leukemia, lymphoma, a neuroendocrine tumor, bladder cancer, or colorectal cancer.

69. The use of claim 67, wherein the cancer is non small cell lung carcinoma, squamous cell carcinoma, leukemia, acute myelogenous leukemia, chronic myelogenous leukemia, lymphoma, NPM/ALK-transformed anaplastic large cell lymphoma, diffuse large B cell lymphoma, neuroendocrine tumors, breast cancer, mantle cell lymphoma, renal cell carcinoma, rhabdomyosarcoma, ovarian cancer, endometrial cancer, small cell carcinoma, adenocarcinoma, gastric carcinoma, hepatocellular carcinoma, pancreatic cancer, thyroid carcinoma, anaplastic large cell lymphoma, hemangioma, or head and neck cancer.

70. The use of claim 67, wherein the cancer is a solid tumor.

71. The use of claim 67, wherein the cancer is head and neck cancer, squamous cell carcinoma, gastric carcinoma, or pancreatic cancer.

72. Use of the compound or salt of any one of claims 1-58 or the pharmaceutical composition of claim 59, in the manufacture of a medicament for treating an autoimmune disease in a subject, wherein a therapeutically effective amount of the medicament is to be administered to the subject.

73. The use of claim 72, wherein the autoimmune disease is psoriasis, dermatitis, systemic scleroderma, sclerosis, Crohn's disease, ulcerative colitis; respiratory distress syndrome, meningitis; encephalitis; uveitis; colitis; glomerulonephritis; eczema, asthma, chronic inflammation; atherosclerosis; leukocyte adhesion deficiency; rheumatoid arthritis; systemic lupus erythematosus (SLE); diabetes mellitus; multiple sclerosis; Reynaud's syndrome; autoimmune thyroiditis; allergic encephalomyelitis; Sjorgen's syndrome; juvenile onset diabetes; tuberculosis, sarcoidosis, polymyositis, granulomatosis and vasculitis; pernicious anemia (Addison's disease); diseases involving leukocyte diapedesis; central nervous system (CNS) inflammatory disorder; multiple organ injury syndrome; hemolytic anemia; myasthenia gravis; antigen-antibody complex mediated diseases; anti-glomerular basement membrane disease; antiphospholipid syndrome; allergic neuritis; Graves' disease; Lambert-Eaton myasthenic syndrome; pemphigoid bullous; pemphigus; autoimmune polyendocrinopathies; Reiter's disease; stiff-man syndrome; Behcet disease; giant cell arteritis; immune complex nephritis; IgA nephropathy; IgM polyneuropathies; immune thrombocytopenic purpura (ITP) or autoimmune thrombocytopenia.

74. Use of the compound or salt of any one of claims 1-58 or the pharmaceutical composition of claim 59, in the manufacture of a medicament for the treatment of an immune-related disease in a subject, wherein a therapeutically effective amount of the medicament is to be administered to the subject.

75. The use of claim 74, wherein the immune-related disease is rheumatoid arthritis, lupus, inflammatory bowel disease, multiple sclerosis, or Crohn's disease.

76. Use of the compound or salt of any one of claims 1-58 or the pharmaceutical composition of claim 59, in the manufacture of a medicament for treating neurodegenerative disease in a subject, wherein a therapeutically effective amount of the medicament is to be administered to the subject.

77. The use of claim 76, wherein the neurodegenerative disease is multiple sclerosis.

78. Use of the compound or salt of any one of claims 1-58 or the pharmaceutical composition of claim 59, in the manufacture of a medicament for treating an inflammatory disease in a subject, wherein a therapeutically effective amount of the medicament is to be administered to the subject.

79. The use of claim 78, wherein the inflammatory disease is bronchitis, conjunctivitis, myocarditis, pancreatitis, chronic cholecstitis, bronchiectasis, aortic valve stenosis, restenosis, psoriasis or arthritis.