WHAT IS CLAIMED IS:

1. A compound (R)-1-(3-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)piperidin-1-yl)prop-2-en-1-one for use in treating relapsed or refractory non-Hodgkin's lymphoma in an individual.

2. The compound of claim 1 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the non-Hodgkin's lymphoma is relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL).

3. The compound of claim 1 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the non-Hodgkin's lymphoma is relapsed or refractory diffuse large B-cell lymphoma (DLBCL), relapsed or refractory mantle cell lymphoma, ~~or~~ relapsed or refractory follicular lymphoma, or relapsed or refractory multiple myeloma.

4. The compound of claim 1 for use in treating relapsed or refractory non-Hodgkin's lymphoma for administration from 300 mg/day up to, and including, 1000 mg/day.

5. The compound of claim 1 for use in treating relapsed or refractory non-Hodgkin's lymphoma for administration from 420 mg/day up to, and including, 840 mg/day.

6. The compound of claim 1 for use in treating relapsed or refractory non-Hodgkin's lymphoma for administration of about 420 mg/day, about 560 mg/day, or about 840 mg/day.

7. The compound of claim 1 for use in treating relapsed or refractory non-Hodgkin's lymphoma for oral administration.

8. The compound of claim 1 for use in treating relapsed or refractory non-Hodgkin's lymphoma for administration once per day, twice per day, or three times per day.

9. The compound of claim 1 for administration as a maintenance therapy.

10. The compound of claim 1 for use in treating relapsed or refractory non-Hodgkin's lymphoma for administration with a second cancer treatment regimen.

11. The compound of claim 10 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the second cancer treatment regimen is for administration after mobilization of a plurality of lymphoid cells from the non-Hodgkin's lymphoma.

12. The compound of claim 10 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the second cancer treatment regimen is for administration after lymphocytosis of a plurality of lymphoid cells from the non-Hodgkin's lymphoma.

13. The compound of claim 10 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the second cancer treatment regimen comprises a chemotherapeutic agent, a steroid, an immunotherapeutic agent, a targeted therapy, or a combination thereof.

14. The compound of claim 10 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the second cancer treatment regimen comprises a B cell receptor pathway inhibitor.

15. The compound of claim 14 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the B cell receptor pathway inhibitor is a CD79A inhibitor, a CD79B inhibitor, a CD19 inhibitor, a Lyn inhibitor, a Syk inhibitor, a PI3K inhibitor, a Blnk inhibitor, a PLCγ inhibitor, a PKCβ inhibitor, or a combination thereof.

16. The compound of claim 10 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the second cancer treatment regimen comprises an antibody, B cell receptor signaling inhibitor, a PI3K inhibitor, an IAP inhibitor, an mTOR inhibitor, a radioimmunotherapeutic, a DNA damaging agent, a proteosome inhibitor, a histone deacetylase inhibitor, a protein kinase inhibitor, a hedgehog inhibitor, an Hsp90 inhibitor, a telomerase inhibitor, a Jak1/2 inhibitor, a protease inhibitor, a PKC inhibitor, a PARP inhibitor, or a combination thereof.

17. The compound of claim 10 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the second cancer treatment regimen comprises chlorambucil, ifosphamide, doxorubicin, mesalazine, thalidomide, lenalidomide, temsirolimus, everolimus, fludarabine, fostamatinib, paclitaxel, docetaxel, ofatumumab, rituximab, dexamethasone, prednisone, CAL-101, ibritumomab, tositumomab, bortezomib, pentostatin, endostatin, bendamustine, cyclophosphamide, endostatineverolimus, etoposide, hydroxydaunorubicin, vincristine, or a combination thereof.

18. A compound (R)-1-(3-(4-amino-3-(4-phenoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)piperidin-1-yl)prop-2-en-1-one for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL).

19. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL) for administration from 300 mg/day up to, and including, 1000 mg/day.

20. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL) for administration from 420 mg/day up to, and including, 840 mg/day.

21. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL) for administration of about 420 mg/day, about 560 mg/day, or about 840 mg/day.

22. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL) for oral administration.

23. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL) for administration once per day, twice per day, or three times per day.

24. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL) for administration as a maintenance therapy.

25. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL) for administration with a second cancer treatment regimen.

26. The compound of claim 25 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the second cancer treatment regimen is for administration after mobilization of a plurality of lymphoid cells from the non-Hodgkin's lymphoma.

27. The compound of claim 25 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the second cancer treatment regimen is for administration after lymphocytosis of a plurality of lymphoid cells from the non-Hodgkin's lymphoma.

28. The compound of claim 25 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the second cancer treatment regimen comprises a chemotherapeutic agent, a steroid, an immunotherapeutic agent, a targeted therapy, or a combination thereof.

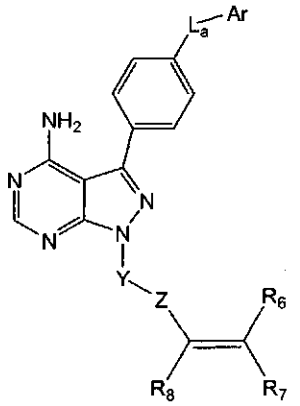
29. The compound of claim 25 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the second cancer treatment regimen comprises a B cell receptor pathway inhibitor.

30. The compound of claim 29 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the B cell receptor pathway inhibitor is a CD79A inhibitor, a CD79B inhibitor, a CD19 inhibitor, a Lyn inhibitor, a Syk inhibitor, a PI3K inhibitor, a Blnk inhibitor, a PLCγ inhibitor, a PKCβ inhibitor, or a combination thereof.

31. The compound of claim 23 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the second cancer treatment regimen comprises an antibody, B cell receptor signaling inhibitor, a PI3K inhibitor, an IAP inhibitor, an mTOR inhibitor, a radioimmunotherapeutic, a DNA damaging agent, a proteosome inhibitor, a histone deacetylase inhibitor, a protein kinase inhibitor, a hedgehog inhibitor, an Hsp90 inhibitor, a telomerase inhibitor, a Jak1/2 inhibitor, a protease inhibitor, a PKC inhibitor, a PARP inhibitor, or a combination thereof.

32. The compound of claim 25 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the second cancer treatment regimen comprises chlorambucil, ifosphamide, doxorubicin, mesalazine, thalidomide, lenalidomide, temsirolimus, everolimus, fludarabine, fostamatinib, paclitaxel, docetaxel, ofatumumab, rituximab, dexamethasone, prednisone, CAL-101, ibritumomab, tositumomab, bortezomib, pentostatin, endostatin, bendamustine, cyclophosphamide, endostatineverolimus, etoposide, hydroxydaunorubicin, vincristine, or a combination thereof.

33. A compound of Formula (D):



Formula (D)

wherein:

L_a is CH_2, O, NH or S;

Ar is a substituted or unsubstituted aryl, or a substituted or unsubstituted heteroaryl;

Y is an optionally substituted group selected from among alkyl, heteroalkyl, cycloalkyl, heterocycloalkyl, aryl, and heteroaryl;

Z is C(=O), OC(=O), NHC(=O), C(=S), $S(=O)_x$, $OS(=O)_x$, $NHS(=O)_x$, where x is 1 or 2;

R_7 and R_8 are independently H; or

R_7 and R_8 taken together form a bond;

R_6 is H; and pharmaceutically acceptable salts for use in treating relapsed or refractory non-Hodgkin's lymphoma.

34. The compound of claim 10 for use in treating relapsed or refractory non-Hodgkin's lymphoma, for administration with an anti-CD20 antibody.

35. The compound of claim 34 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the anti-CD20 antibody is rituximab or ofatumumab.

36. The compound of claim 35 for use in treating relapsed or refractory non-Hodgkin's lymphoma, for administration with rituximab and bendamustine.

37. The compound of claim 35 for use in treating relapsed or refractory non-Hodgkin's lymphoma, for administration with rituximab, fludarabine and cyclophosphamide.

38. The compound of claim 35 for use in treating relapsed or refractory non-Hodgkin's lymphoma, for administration with rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone.

39. The compound of claim 10 for use in treating relapsed or refractory non-Hodgkin's lymphoma, for administration with chlorambucil.

40. The compound of claim 10 for use in treating relapsed or refractory non-Hodgkin's lymphoma, for administration with dexamethasone.

41. The compound of claim 1 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the individual previously received at least two anticancer agents.

42. The compound of claim 41 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein at least one of the anticancer agents is an antibody, a nucleoside analog, or an alkylating agent.

43. The compound of claim 42 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the antibody is an anti-CD20 or anti-CD52 antibody.

44. The compound of claim 43 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the anti-CD20 antibody is rituximab or ofatumumab.

45. The compound of claim 43, wherein the anti-CD52 antibody is alemtuzumab.

46. The compound of claim 41 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein at least at least one of the anticancer agents is bortezomib.

47. The compound of claim 41 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the individual previously received three or four anticancer agents.

48. The compound of claim 41 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the individual is resistant to treatment with an anti-CD20 antibody.

49. The compound of claim 48 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the individual is resistant to treatment with rituximab or ofatumumab.

50. The compound of claim 41 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the relapsed or refractory non-Hodgkin's lymphoma is a relapsed or refractory follicular lymphoma, and the individual is one having previously received rituximab or ofatumumab.

51. The compound of claim 41 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the relapsed or refractory non-Hodgkin's lymphoma is a relapsed or refractory mantle cell lymphoma, and the individual is one having previously received rituximab or ofatumumab.

52. The compound of claim 41 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the relapsed or refractory non-Hodgkin's lymphoma is a relapsed or refractory mantle cell lymphoma, and the individual is one having previously received bortezomib.

53. The compound of claim 41 for use in treating relapsed or refractory non-Hodgkin's lymphoma, wherein the relapsed or refractory non-Hodgkin's lymphoma is a relapsed or refractory chronic lymphocytic leukemia or relapsed or refractory small lymphocytic lymphoma, and the individual is one having previously received rituximab, ofatumumab, or alemtuzumab.

54. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the individual has high risk relapsed or refractory chronic lymphocytic leukemia.

55. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the subject has nucleic acid deletion in chromosome 17.

56. The compound of claim 55 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the deletion is in 17p.

57. The compound of claim 56 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the deletion is in 17p13.

58. The compound of claim 18 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the subject has nucleic acid deletion in chromosome 11.

59. The compound of claim 58 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the deletion is in 11q.

60. The compound of claim 59 for use in treating relapsed or refractory chronic lymphocytic leukemia (CLL) or relapsed or refractory small lymphocytic lymphoma (SLL), wherein the deletion is in 11q22.