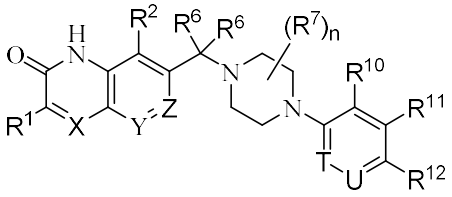
CLAIMS

WHAT IS CLAIMED IS:

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



Formula (I),

wherein:

R^1 is hydrogen, deuterium, halogen, -CN, -OR^a, -NR^cR^d, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, or heterocycloalkyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl is optionally substituted with one or more R;

R^2 is hydrogen, deuterium, halogen, -CN, -OR^a, -NR^cR^d, C_1-C_6alkyl, C_1-C_6haloalkyl, or C_1-C_6deuteroalkyl;

X is N or CR^3;

Y is N or CR^4;

Z is N or CR^5;

R^3 is hydrogen, deuterium, halogen, -CN, -OR^a, -NR^cR^d, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, or heterocycloalkyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl is optionally substituted with one or more R;

R^4 is hydrogen, deuterium, halogen, -CN, -OR^a, -NR^cR^d, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, or heterocycloalkyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl is optionally substituted with one or more R;

R^5 is hydrogen, deuterium, halogen, -CN, -OR^a, -NR^cR^d, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, or heterocycloalkyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl is optionally substituted with one or more R;

each R^6 is independently hydrogen, deuterium, halogen, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, cycloalkyl, or heterocycloalkyl; wherein the alkyl, cycloalkyl, and heterocycloalkyl is optionally substituted with one or more R;

or two R^6 are taken together to form a cycloalkyl or a heterocycloalkyl; each optionally substituted with deuterium, halogen, -CN, -OH, -OR^a, -NR^cR^d, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, or C_1-C_6heteroalkyl;

each R^7 is independently deuterium, halogen, -CN, -OH, $-OR^a$, $-NR^cR^d$, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, or C_2-C_6alkynyl;

or two R^7 on the same carbon are taken together to form an oxo;

or two R^7 on the same carbon or different carbons are taken together to form a cycloalkyl or heterocycloalkyl; each optionally substituted with one or more R;

n is 0-4;

T is N or CR^8;

U is N or CR^9;

R^8 is hydrogen, deuterium, halogen, -CN, -OH, $-OR^a$, $-NR^cR^d$, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, or heterocycloalkyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl is optionally substituted with one or more R;

R^9 is hydrogen, deuterium, halogen, -CN, -OH, $-OR^a$, $-NR^cR^d$, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, or heterocycloalkyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl is optionally substituted with one or more R;

R^{10} is hydrogen, deuterium, halogen, -CN, -OH, $-OR^a$, $-NR^cR^d$, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, or heterocycloalkyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl is optionally substituted with one or more R;

R^{11} is hydrogen, deuterium, halogen, -CN, -OH, $-OR^a$, $-NR^cR^d$, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, or heterocycloalkyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, and heterocycloalkyl is optionally substituted with one or more R;

R^{12} is cyano or halogen;

each R^a is independently C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, heterocycloalkyl, aryl, heteroaryl, C_1-C_6alkylene(cycloalkyl), C_1-C_6alkylene(heterocycloalkyl), C_1-C_6alkylene(aryl), or C_1-C_6alkylene(heteroaryl); wherein each alkyl, alkylene, alkenyl, alkynyl, cycloalkyl, heterocycloalkyl, aryl, and heteroaryl is independently optionally substituted with one or more R;

each R^b is independently hydrogen, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, heterocycloalkyl, aryl, heteroaryl, C_1-C_6alkylene(cycloalkyl), C_1-C_6alkylene(heterocycloalkyl), C_1-C_6alkylene(aryl), or C_1-C_6alkylene(heteroaryl); wherein each alkyl, alkylene, alkenyl, alkynyl, cycloalkyl, heterocycloalkyl, aryl, and heteroaryl is independently optionally substituted with one or more R; and

each R^e and R^d are independently hydrogen, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, C_1-C_6heteroalkyl, C_2-C_6alkenyl, C_2-C_6alkynyl, cycloalkyl, heterocycloalkyl, aryl, heteroaryl, C_1-C_6alkylene(cycloalkyl), C_1-C_6alkylene(heterocycloalkyl), C_1-C_6alkylene(aryl), or C_1-C_6alkylene(heteroaryl); wherein each alkyl, alkylene, alkenyl, alkynyl, cycloalkyl, heterocycloalkyl, aryl, and heteroaryl is independently optionally substituted with one or more R;

or R^e and R^d are taken together with the atom to which they are attached to form a heterocycloalkyl optionally substituted with one or more R;

each R is independently deuterium, halogen, -CN, -OH, -OC_1-C_6alkyl, -NH_2, -NHC_1-C_6alkyl, -N(C_1-C_6alkyl)$_2$, -NHC(=O)OC_1-C_6alkyl, -C(=O)C_1-C_6alkyl, -C(=O)OH, -C(=O)OC_1-C_6alkyl, -C(=O)NH_2, -C(=O)N(C_1-C_6alkyl)$_2$, -C(=O)NHC_1-C_6alkyl, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6deuteroalkyl, C_1-C_6hydroxyalkyl, C_1-C_6aminoalkyl, or C_1-C_6heteroalkyl;

or two R on the same atom are taken together to form an oxo;

provided that when X is CR^3, Y is CR^4, and Z is CR^5; then one of R^3, R^4, and R^5 is not hydrogen and R^4 is not -OMe; and

provided that when X is CH, Y is CH, and Z is CH; then R^2 is not hydrogen.

2. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein X is N.

3. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein X is CR^3.

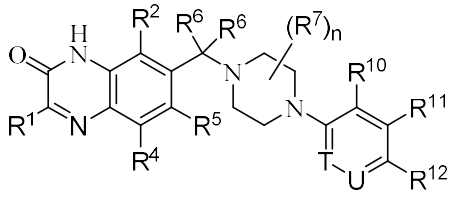
4. The compound of any one of claims 1-3, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein Y is N.

5. The compound of any one of claims 1-3, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein Y is CR^4.

6. The compound of any one of claims 1-5, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein Z is N.

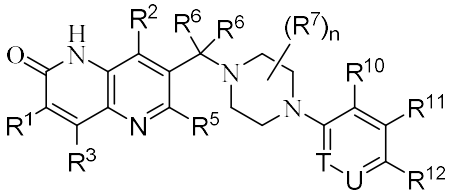
7. The compound of any one of claims 1-5, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein Z is CR^5.

8. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein the compound is of Formula (Ia):



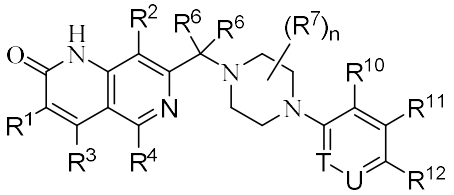
Formula (Ia).

9. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein the compound is of Formula (Ib):



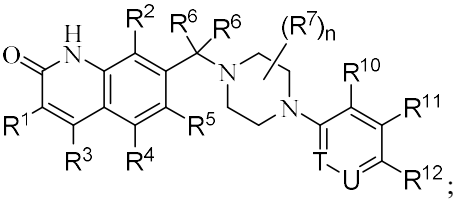
Formula (Ib).

10. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein the compound is of Formula (Ic):



Formula (Ic).

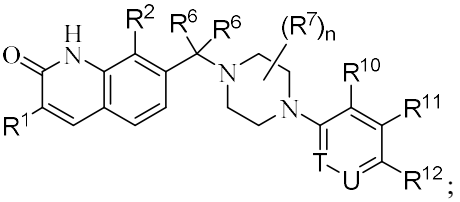
11. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein the compound is of Formula (Id):



Formula (Id);

wherein one of R^3, R^4, and R^5 is not hydrogen and R^4 is not -OMe.

12. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein the compound is of Formula (Ie):



Formula (Ie);

wherein R^2 is deuterium, halogen, -CN, -OR^a, -NR^cR^d, C_1-C_6alkyl, C_1-C_6haloalkyl, or C_1-C_6deuteroalkyl.

13. The compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^1 is halogen, C_1-C_6alkyl, C_1-C_6haloalkyl, C_2-C_6alkynyl, or cycloalkyl.

14. The compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^1 is C_1-C_6alkyl or cycloalkyl.

15. The compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^1 is C_1-C_6alkyl.

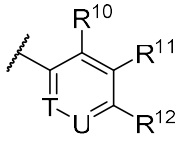
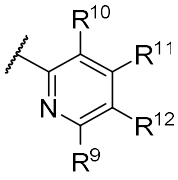
16. The compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^1 is cycloalkyl.
17. The compound of any one of claims 1-12, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^1 is halogen.
18. The compound of any one of claims 1-17, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^2 is hydrogen or halogen.
19. The compound of any one of claims 1-18, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^2 is halogen.
20. The compound of any one of claims 1-19, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^3 is hydrogen, or halogen, or C_1-C_6alkyl.
21. The compound of any one of claims 1-20, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^3 is hydrogen or halogen.
22. The compound of any one of claims 1-21, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^3 is hydrogen.
23. The compound of any one of claims 1-22, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^4 is hydrogen, or halogen, or C_1-C_6alkyl.
24. The compound of any one of claims 1-23, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^4 is hydrogen or halogen.
25. The compound of any one of claims 1-24, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^4 is hydrogen.
26. The compound of any one of claims 1-25, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^5 is hydrogen, or halogen, or C_1-C_6alkyl.
27. The compound of any one of claims 1-26, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^5 is hydrogen or halogen.
28. The compound of any one of claims 1-27, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^5 is hydrogen.
29. The compound of any one of claims 1-28, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein each R^6 is independently hydrogen, deuterium, or C_1-C_6alkyl.
30. The compound of any one of claims 1-29, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein one R^6 is hydrogen and the other R^6 is C_1-C_6alkyl.
31. The compound of any one of claims 1-29, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein each R^6 is deuterium.
32. The compound of any one of claims 1-29, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein each R^6 is independently C_1-C_6alkyl.
33. The compound of any one of claims 1-29, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein each R^6 is hydrogen.

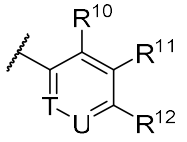
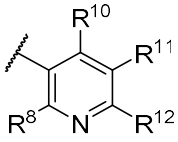
34. The compound of any one of claims 1-33, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein each R^7 is independently C_1-C_6alkyl.

35. The compound of any one of claims 1-33, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein two R^7 on the same carbon or different carbons are taken together to form a cycloalkyl.

36. The compound of any one of claims 1-35, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein n is 0 or 1.

37. The compound of any one of claims 1-35, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein n is 1 or 2.

38. The compound of any one of claims 1-37, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein  is .

39. The compound of any one of claims 1-37, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein  is .

40. The compound of any one of claims 1-39, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^8 is hydrogen, halogen, -CN, -OR^a, C_1-C_6alkyl, or C_1-C_6haloalkyl.

41. The compound of any one of claims 1-40, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^9 is hydrogen, halogen, - C_1-C_6alkyl, C_1-C_6haloalkyl, or cycloalkyl.

42. The compound of any one of claims 1-41, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^{10} is hydrogen, halogen, C_1-C_6alkyl, or C_1-C_6haloalkyl.

43. The compound of any one of claims 1-42, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^{11} is hydrogen, halogen, C_1-C_6alkyl, or C_1-C_6haloalkyl.

44. The compound of any one of claims 1-43, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^{12} is cyano.

45. The compound of any one of claims 1-43, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^{12} is halogen.

46. The compound of any one of claims 1-43, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, wherein R^{12} is fluoro or chloro.

47. The compound of claim 1, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, selected from a compound in table 1.

48. A pharmaceutical composition comprising a compound of any one of claims 1-47, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, and a pharmaceutically acceptable excipient.

49. Use of a compound of any one of claims 1-47, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, in the preparation of a medicament for treating cancer in a subject in need thereof.

50. The use of claim 49, wherein the cancer is breast cancer, ovarian cancer, pancreatic cancer, prostate cancer, a hematological cancer, gastrointestinal cancer, or lung cancer.

51. Use of a compound of any one of claims 1-47, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, in the preparation of a medicament for treating cancer comprising a BRCA1 and/or a BRCA2 mutation in a subject in need thereof.

52. Use of a compound of any one of claims 1-47, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, in the preparation of a medicament for treating a cancer comprising a mutation in a gene conferring homologous repair deficiency in a subject in need thereof.

53. The use of claim 52, wherein the mutation in a gene conferring homologous repair deficiency comprises ATM, BRCA1, BRCA2, BARD1, BRIP1, CDK12, CHEK1, CHEK2, FANCL, PALB2, RAD51B, RAD51C, RAD51D, or RAD54L, or any combinations thereof.

54. The use of any one of claims 49-53, wherein the cancer is bladder cancer, brain & CNS cancer, breast cancer, cervical cancer, colorectal cancer, esophagus cancer, Hodgkin lymphoma, non-Hodgkin lymphoma, kidney cancer, leukemia, lung cancer, melanoma, myeloma, oral cavity cancer, ovarian cancer, pancreatic cancer, prostate cancer, skin cancer, stomach cancer, thyroid cancer, or uterus cancer.

55. The use of any one of claims 49-54, wherein the cancer is metastatic cancer.

56. The use of any one of claims 49-55, wherein the cancer has metastasized in the brain.

57. Use of a compound of any one of claims 1-47, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, in the preparation of a medicament for treating a cancer that is present in the brain in a subject in need thereof.

58. Use of a compound of any one of claims 1-47, or a pharmaceutically acceptable salt, solvate, or stereoisomer thereof, in the preparation of a medicament for treating a brain cancer in a subject in need thereof.