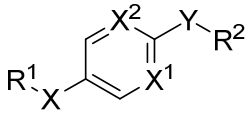
WHAT IS CLAIMED IS:

1. A compound of Formula (A),



or a pharmaceutically acceptable salt thereof, wherein:

R^1 is $–NR^AR^B$, $–C(=O)NR^AR^B$, $–OC(=O)NR^AR^B$, an optionally substituted 5-10 membered heteroaryloxy, or an optionally substituted 5-10 membered heteroaryl;

each R^A and R^B are independently hydrogen, C1-C6 haloalkyl, optionally substituted C1-C6 alkyl, or optionally substituted C3-C10 cycloalkyl;

X is $–(CH_2)_a$C3-C8 cycloalkylene-$(CH_2)_b$- optionally substituted with 1-3 substituents independently selected from halogen, C1-C6 alkyl, and C1-C6 alkoxy; $–(CH_2)_a$C5-C8 cycloalkenylene-$(CH_2)_b$- optionally substituted with 1-2 substituents independently selected from halogen and C1-C6 alkyl; $–(CH_2)_a$phenylene-$(CH_2)_b$-; $–(CH_2)_a$heteroarylene-$(CH_2)_b$-; $–(CH_2)_a$heterocyclylene-$(CH_2)_b$-; and C2-C6 alkylene;

a and b are independently 0, 1, or 2;

X^1 is N or CR^{X1};

X^2 is N or CR^{X2};

R^{X1} and R^{X2} are independently selected from hydrogen, halogen, cyano, C1-C6 alkyl, C1-C6 alkoxy, C1-C6 haloalkyl, C1-C6 haloalkoxy, C3-C6 cycloalkyl, and C3-C6 cycloalkoxy;

Y is $–NR^C–$, $*–C(=O)NR^C(CR^DR^E)_n–$, $*–NR^CC(=O)(CR^DR^E)_n$ –, or –O–, wherein * indicates the point of connection to the X^1-X^2 ring;

R^C is hydrogen or C1-C6 alkyl;

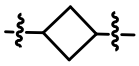
n is 0, 1, or 2;

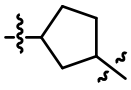
each R^D and R^E are independently hydrogen, fluoro, or C1-C6 alkyl; and

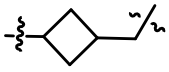
R^2 is optionally substituted phenyl, optionally substituted 5-10 membered heteroaryl, or optionally substituted 5-9 membered heterocyclyl.

2. The compound of Claim 1, wherein X is $–(CH_2)_a$C3-C8 cycloalkylene-$(CH_2)_b$- optionally substituted with 1-3 substituents independently selected from halogen, C1-C6 alkyl, and C1-C6 alkoxy.

3. The compound of Claim 1 or 2, wherein X is unsubstituted –$(CH_2)_a$(4-8 membered heterocyclylene)-$(CH_2)_b$-.

4. The compound of Claim 1 or 2, wherein X is .

5. The compound of Claim 1 or 2, wherein X is .

6. The compound of Claim 1 or 2, wherein X is .

7. The compound of any one of Claims 1-6, wherein R^1 is an optionally substituted 5-10 membered heteroaryloxy.

8. The compound of any one of Claims 1-6, wherein R^1 is –OC(=O)NR^AR^B.

9. The compound of any one of Claims 1-6 or 8, wherein R^A and R^B are independently hydrogen, optionally substituted C1-C6 alkyl, C1-C6 haloalkyl, or optionally substituted C3-C10 cycloalkyl.

10. The compound of any one of Claims 1-9, wherein R^2 is an optionally substituted 5-6 membered heteroaryl.

11. The compound of any one of Claims 1-9, wherein R^2 is an optionally substituted 5-9 membered heterocyclyl.

12. The compound of any one of Claims 1-9, wherein R^2 is an optionally substituted phenyl.

13. The compound of any one of Claims 1-12, wherein the R^2 group is substituted with 1-3 substituents selected from the group consisting of -SO_2NH_2, -(S(=NH)(=O))C1-C6 alkyl, -(S(=NH)(=O))C1-C6 haloalkyl, -(S(=NH)(=O))C3-C6 cycloalkyl, -F, cyano, -CH_2OMe, -CO_2NH_2, methyl, -CH_2OCF_3, pyrazolyl optionally substituted with 1-2 methyl, pyrazolyl optionally substituted with 1-2 substituents selected from methyl and isopropoxymethyl, 1,2,4-triazolyl optionally substituted with 1-2 methyl, and tetrazolyl optionally substituted with 1-2 methyl.

14. The compound of any one of Claims 1-12, wherein the R^2 group is substituted with one –(SO_2)R', wherein R' is selected from hydrogen, optionally substituted C1-C6 alkyl, optionally substituted C1-C6 alkoxy, optionally substituted 5-10 membered heteroaryl, optionally substituted 5-9 membered heterocyclyl, or optionally substituted C3-C8 cycloalkyl.

15. The compound of any one of Claims 1-12, wherein the R^2 group is substituted with one –(SO_2)NR'R", wherein R' and R" are each independently selected from hydrogen, substituted C1-C6 alkyl, optionally substituted C1-C6 alkoxy, optionally substituted 5-10 membered heteroaryl, optionally substituted 5-9 membered heterocyclyl, or optionally substituted C3-C8 cycloalkyl.

16. The compound of any one of Claims 1-12, wherein the R^2 group is substituted with one -$(SO_2)NR^HR^I$, wherein R^H and R^I are independently H and C1-C6 alkyl optionally substituted with hydroxyl or C1-C6 alkoxy.

17. The compound of any one of Claims 1-16, wherein X^1 and X^2 are N.

18. The compound of any one of Claims 1-17, wherein Y is –NH–.

19. The compound of any one of Claims 1-18, wherein one or more hydrogen atoms are replaced with deuterium (^2H).

20. The compound of Claim 1, wherein the compound of Formula (A) is selected from the group consisting of the compounds in Table 1, or a pharmaceutically acceptable salt thereof.

21. A pharmaceutical composition comprising a compound of any one of Claims 1-20, or a pharmaceutically acceptable salt thereof, and at least one pharmaceutically acceptable excipient.

22. Use of a therapeutically effective amount of a compound of any one of Claims 1-20 or a pharmaceutically acceptable salt thereof, or a pharmaceutical composition of Claim 21, in the manufacture of a medicament for the treatment of a CDK2-associated cancer in a subject identified or diagnosed as having a CDK2-associated cancer.

23. The use of Claim 22, wherein the cancer is breast cancer selected from the group consisting of estrogen receptor (ER)-positive/hormone receptor (HR)-positive breast cancer, HER2-negative breast cancer; ER-positive/HR-positive breast cancer, HER2-positive breast cancer; triple negative breast cancer (TNBC); and inflammatory breast cancer.

24. Use of a therapeutically effective amount of a compound of any one of Claims 1-20 or a pharmaceutically acceptable salt thereof, or a pharmaceutical composition of Claim 21, in the manufacture of a medicament for the treatment of cancer in a subject in need thereof, comprising:

determining that the cancer is associated with a dysregulation of a CDK2 gene, a CDK2 protein, or expression or activity or level of any of the same;

wherein a therapeutically effective amount of a compound of any one of Claims 1-20 or a pharmaceutically acceptable salt thereof, or a pharmaceutical composition of Claim 21 is to be administered to the subject.

25. The use of Claim 24, wherein the step of determining that the cancer in the subject is a CDK2-associated cancer includes performing an assay to detect dysregulation in (1) a cyclin A2 gene, a cyclin A2 protein, or expression or activity or level of any of the same in a sample from the subject; (2) a cyclin E1 gene, a cyclin E1 protein, or expression or activity or level of any of the same in a sample from the subject; or (3) a cyclin E2 gene, a cyclin E2 protein, or expression or activity or level of any of the same in a sample from the subject.