WHAT IS CLAIMED IS:

1. Use of a CDK2 inhibitor in the manufacture of a medicament for the treatment of a human subject having a ~~disease or disorder associated with~~ cyclin-dependent kinase 2 (CDK2)-associated cancer, wherein the human subject has been previously determined to:

(i)

(a) have a nucleotide sequence encoding a p16 protein comprising the amino acid sequence of SEQ ID NO:1;

(b) have a cyclin dependent kinase inhibitor 2A (CDKN2A) gene lacking one or more inactivating nucleic acid substitutions and/or deletions; and/or

(c) express a p16 protein; and

(ii)

(a) have an amplification of the cyclin E1 (CCNE1) gene; and/or

(b) have an expression level of CCNE1 in a biological sample obtained from the human subject that is higher than a control expression level of CCNE1;

wherein the control expression level of CCNE1 is the expression level of CCNE1 in a sample or samples obtained from one or more subjects that have not responded to treatment with the CDK2 inhibitor; and

wherein the CDK2 inhibitor is:

4-((8-cyclopentyl-6,6-dimethyl-7-oxo-5,6,7,8-tetrahydropyrido[2,3-d]pyrimidin-2-yl)amino)benzenesulfonamide,

8-cyclopentyl-6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-d]pyrimidin-7(6H)-one,

6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-8-phenyl-5,8-dihydropyrido[2,3-d]pyrimidin-7(6H)-one,

8-(1,1-difluorobutan-2-yl)-6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one,

6,6-dimethyl-8-((1-methyl-1*H*-pyrazol-5-yl)methyl)-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one,

6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-8-(tetrahydrofuran-3-yl)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one,

8-((1R,2R)-2-hydroxy-2-methylcyclopentyl)-2-((1-(methylsulfonyl)piperidin-4-yl)amino)pyrido[2,3-d]pyrimidin-7(8H)-one,

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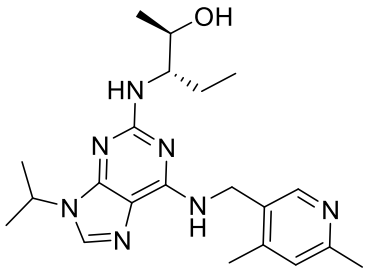
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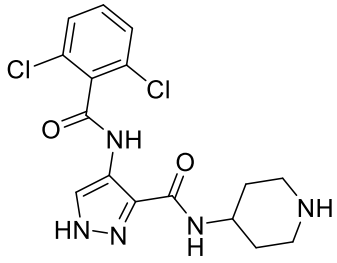
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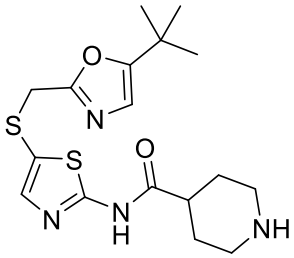
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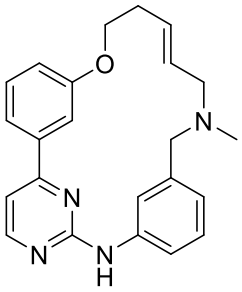
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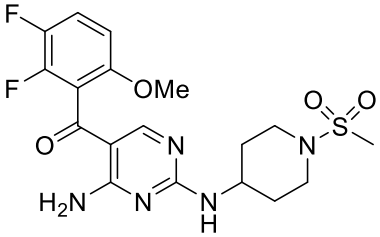
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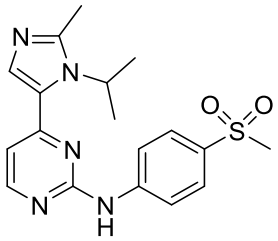
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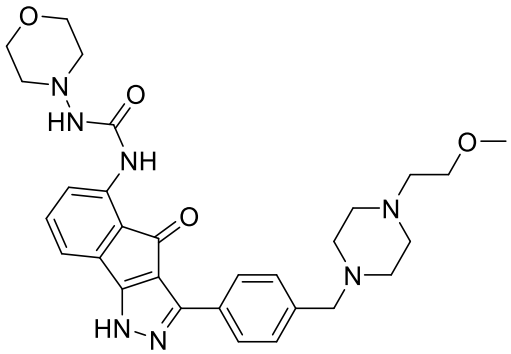
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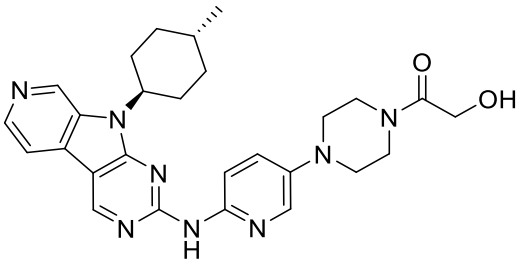
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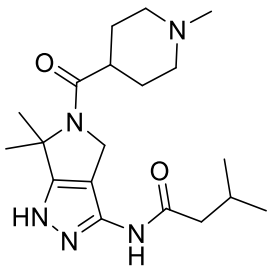
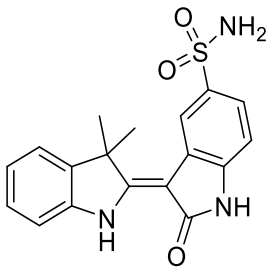
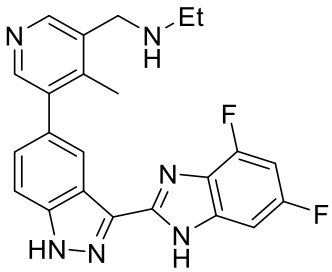
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PHA-793887, ZK-304709, or AG-24322,

or a pharmaceutically acceptable salt thereof.

2. The use of claim 1, wherein the human subject has been previously determined to:

(i)

(a) have a nucleotide sequence encoding a p16 protein comprising the amino acid sequence of SEQ ID NO:1; and/or

(b) a CDKN2A gene lacking one or more inactivating nucleic acid substitutions and/or deletions; and

(ii) have an amplification of the CCNE1 gene in a biological sample obtained from the human subject.

3. The use of claim 1, wherein the expression level of CCNE1 in the biological sample is at least 1.5, at least 2, at least 3, at least 4, at least 5, at least 6, at least 7, at least 8, at least 9, at least 10, at least 20, at least 25, at least 50, at least 75, or at least 100 times higher than the control expression level of CCNE1.

4. The use of any one of claims 1-3, wherein the CDKN2A gene encodes a protein comprising the amino acid sequence of SEQ ID NO:1.

5. Use of a CDK2 inhibitor in the manufacture of a medicament for the treatment of a human subject having a ~~disease or disorder associated with~~ cyclin-dependent kinase 2 (CDK2)-associated cancer, wherein:

(i) in a biological sample obtained from the human subject:

(a) a nucleotide sequence encoding a p16 protein comprising the amino acid sequence of SEQ ID NO:1 is present;

(b) a cyclin dependent kinase inhibitor 2A (CDKN2A) gene lacking one or more inactivating nucleic acid substitutions is present; and/or

(c) a p16 protein is present; and

(ii) in a biological sample obtained from the human subject:

(a) there is present an amplification of the cyclin E1 (CCNE1) gene; and/or

(b) there is present an expression level of CCNE1 that is higher than a control expression level of CCNE1;

wherein the control expression level of CCNE1 is the expression level of CCNE1 in a sample or samples obtained from one or more subjects that have not responded to treatment with the CDK2 inhibitor; and

wherein the CDK2 inhibitor is:

4-((8-cyclopentyl-6,6-dimethyl-7-oxo-5,6,7,8-tetrahydropyrido[2,3-d]pyrimidin-2-yl)amino)benzenesulfonamide,

8-cyclopentyl-6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-d]pyrimidin-7(6H)-one,

6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-8-phenyl-5,8-dihydropyrido[2,3-d]pyrimidin-7(6H)-one,

8-(1,1-difluorobutan-2-yl)-6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one,

6,6-dimethyl-8-((1-methyl-1*H*-pyrazol-5-yl)methyl)-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one,

6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-8-(tetrahydrofuran-3-yl)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one,

8-((1R,2R)-2-hydroxy-2-methylcyclopentyl)-2-((1-(methylsulfonyl)piperidin-4-yl)amino)pyrido[2,3-d]pyrimidin-7(8H)-one,

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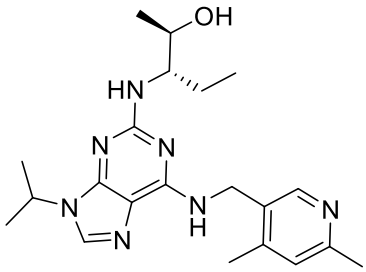
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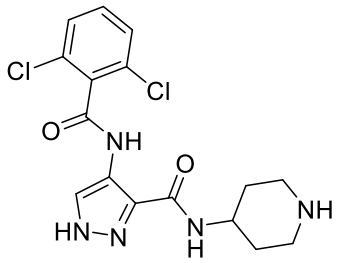
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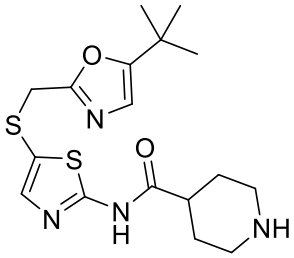
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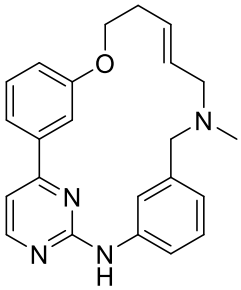
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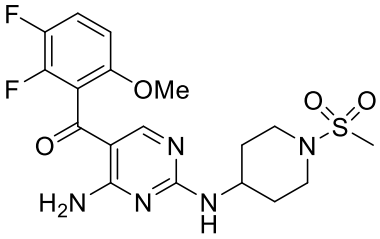
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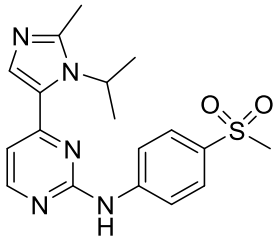
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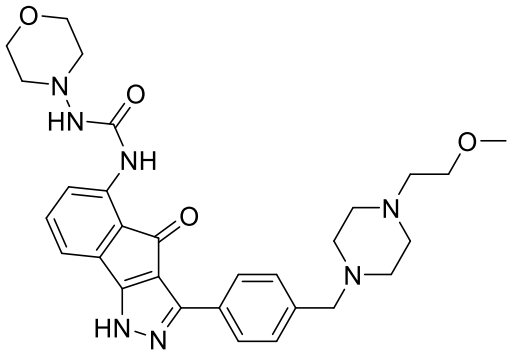
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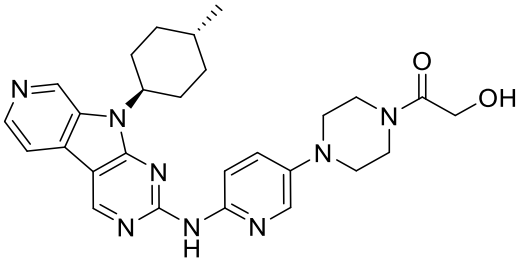
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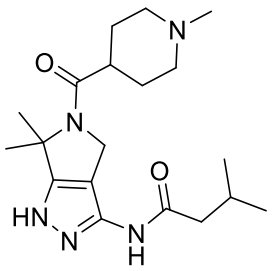
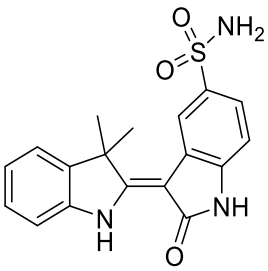
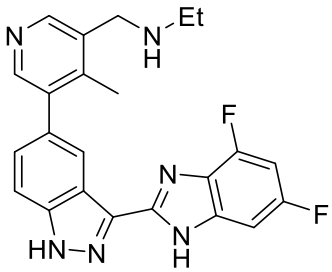
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RGB-286638,



AMG925,

PHA-793887, ZK-304709, or AG-24322,

or a pharmaceutically acceptable salt thereof.

6. The use of claim 5, comprising:

(i) in a biological sample obtained from the human subject:

(a) a nucleotide sequence encoding a p16 protein comprising the amino acid sequence of SEQ ID NO:1 is present;

(b) a CDKN2A gene lacking one or more inactivating nucleic acid substitutions and/or deletions is present; and/or

(c) a p16 protein is present; and

(d) there is present an amplification of the CCNE1 gene.

7. The use of claim 5, wherein the expression level of CCNE1 in the biological sample is at least 1.5, at least 2, at least 3, at least 4, at least 5, at least 6, at least 7, at least 8, at least 9, at least 10, at least 20, at least 25, at least 50, at least 75, or at least 100 times higher than the control expression level of CCNE1.

8. The use of any one of claims 5-7, wherein the CDKN2A gene encodes a protein comprising the amino acid sequence of SEQ ID NO:1.

9. The use of any one of claims 1-8, wherein the medicament comprises a second therapeutic agent.

10. The use of claim 9, wherein the second therapeutic agent is a BCL2 inhibitor or a CDK4/6 inhibitor.

11. An *in vitro* method of predicting the response of a human subject having a ~~disease or disorder associated with~~ cyclin-dependent kinase 2 (CDK2)-associated cancer to a CDK2 inhibitor, comprising:

(i) determining, from a biological sample obtained from the human subject:

(a) the nucleotide sequence of a cyclin dependent kinase inhibitor 2A (CDKN2A) gene;

(b) the presence of a CDKN2A gene lacking one or more inactivating nucleic acid substitutions and/or deletions; and/or

(c) the presence of a p16 protein; and

(ii) determining, from a biological sample obtained from the human subject:

(a) the copy number of the cyclin E1 (CCNE1) gene; and/or

(b) the expression level of CCNE1,

wherein

(1)

(a) the presence of a CDKN2A gene encoding a p16 protein comprising the amino acid sequence of SEQ ID NO:1;

(b) the presence of a CDKN2A gene lacking one or more inactivating nucleic acid substitutions and/or deletions; and/or

(c) the presence of a p16 protein; and

(2) an amplification of the CCNE1 gene and/or an expression level of CCNE1 that is higher than a control expression level of CCNE1,

is predictive that the human subject will respond to the CDK2 inhibitor;

wherein the control expression level of CCNE1 is the expression level of CCNE1 in a sample or samples obtained from one or more subjects that have not responded to treatment with the CDK2 inhibitor; and

wherein the CDK2 inhibitor is:

4-((8-cyclopentyl-6,6-dimethyl-7-oxo-5,6,7,8-tetrahydropyrido[2,3-d]pyrimidin-2-yl)amino)benzenesulfonamide,

8-cyclopentyl-6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-d]pyrimidin-7(6H)-one,

6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-8-phenyl-5,8-dihydropyrido[2,3-d]pyrimidin-7(6H)-one,

8-(1,1-difluorobutan-2-yl)-6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one,

6,6-dimethyl-8-((1-methyl-1*H*-pyrazol-5-yl)methyl)-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one,

6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-8-(tetrahydrofuran-3-yl)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one,

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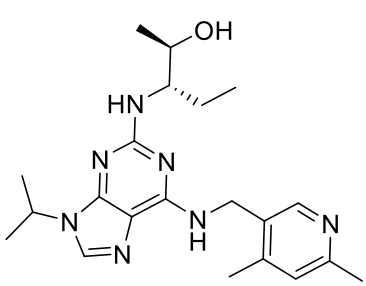
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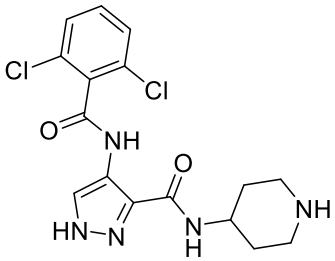
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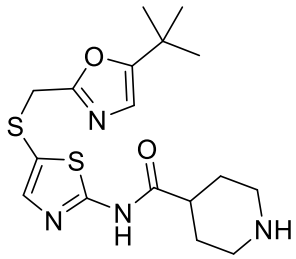
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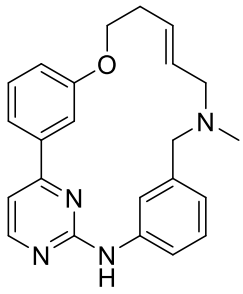
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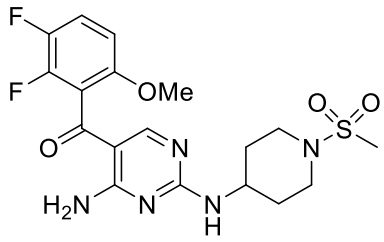


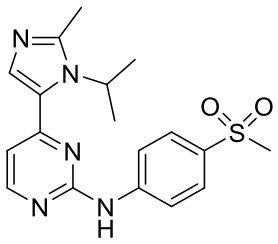
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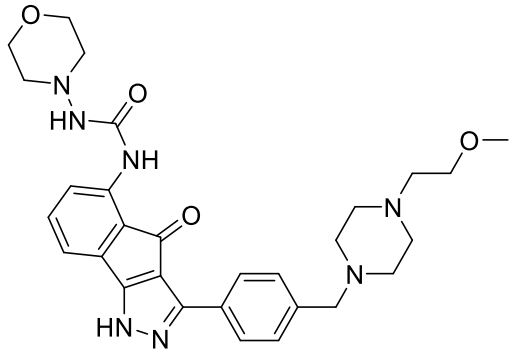
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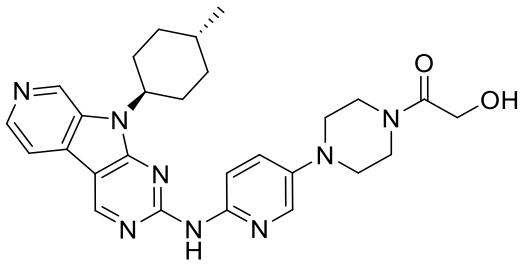




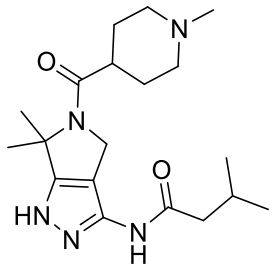


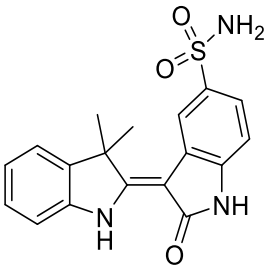
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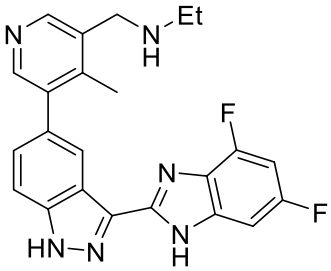




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PHA-793887, ZK-304709, or AG-24322,

or a pharmaceutically acceptable salt thereof.

12. The method of claim 11, comprising:

(i) determining, from a biological sample obtained from the human subject:

(a) the nucleotide sequence of a CDKN2A gene and/or the presence of a CDKN2A gene lacking one or more inactivating nucleic acid substitutions and/or deletions; and

(ii) determining, from a biological sample obtained from the human subject:

(a) the copy number of the CCNE1 gene,

wherein

(1)

(a) the presence of a CDKN2A gene encoding a p16 protein comprising the amino acid sequence of SEQ ID NO:1; and/or the

(b) presence of a CDKN2A gene lacking one or more inactivating nucleic acid substitutions and/or deletions, and

(2) an amplification of the CCNE1 gene,

is predictive that the human subject will respond to the CDK2 inhibitor.

13. The use of any one of claims 1-10 or the method of claim 11 or 12, wherein the amplification of the CCNE1 gene comprises a gene copy number of at least 3; at least 5; or at least 21.

~~14. The use of any one of claims 1-10 or the method of any one of claims 11-13, wherein the control expression level of CCNE1 is a pre-established cut-off value; or wherein the control expression level of CCNE1 is the expression level of CCNE1 in a sample or samples obtained from one or more subjects that have not responded to treatment with the CDK2 inhibitor.~~

~~15~~14. The use of any one of claims 1-10, and 13~~ or 14~~ or the method of any one of claims 11-~~14~~13, wherein the expression level of CCNE1 is the expression level of CCNE1 mRNA; or wherein the expression level of CCNE1 is the expression level of CCNE1 protein.

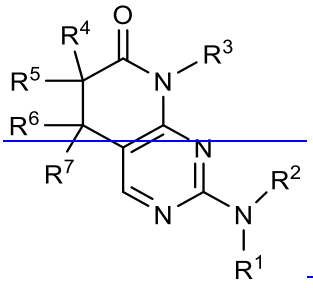
~~16~~15. The use of claim ~~15~~14, or the method of claim ~~15~~14, wherein the expression level of CCNE1 is measured by RNA sequencing, quantitative polymerase chain reaction (PCR), in situ hybridization, nucleic acid array or RNA sequencing; or wherein the expression level of CCNE1 is measured by western blot, enzyme-linked immunosorbent assay, or immunohistochemistry staining.

~~17. Use of a CDK2 inhibitor in the manufacture of a medicament for the treatment of a disease or disorder associated with cyclin-dependent kinase 2 (CDK2), in a human subject, wherein the human subject has been previously determined to have an amplification of the cyclin E1 (CCNE1) gene and/or an expression level of CCNE1 that is higher than a control expression~~

~~level of CCNE1; and wherein the medicament~~

~~is formulated such that following administration of the medicament to the human subject, a reduced level of Rb phosphorylation at the serine corresponding to amino acid position 780 of SEQ ID NO:3 is present in a biological sample obtained from the subject, as compared to a control level of Rb phosphorylation at the serine corresponding to amino acid position 780 of SEQ ID NO:3.~~

~~18. The use of any one of claims 1-10, or 13 to 16, or the method of any one of claims 11-16, wherein the CDK2 inhibitor is a compound of Formula (A-I):~~



~~(A-I)~~

~~or a pharmaceutically acceptable salt thereof, wherein:~~

~~R^1 is selected from H, C_{1-6} alkyl, and C_{1-6} haloalkyl;~~

~~R^2 is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, 5-10 membered heteroaryl-C_{1-4} alkyl, $C(=O)R^b$, $C(=O)NR^cR^d$, $C(=O)OR^a$, $C(=NR^e)R^b$, $C(=NR^e)NR^cR^d$, $S(=O)R^b$, $S(=O)NR^cR^d$, $NR^cS(=O)_2R^b$, $NR^cS(=O)_2NR^cR^d$, $S(=O)_2R^b$, and $S(=O)_2NR^cR^d$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{2A} substituents;~~

~~each R^a, R^c, and R^d is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-~~

~~10-membered heterocycloalkyl-C_{1-4}~~

alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{2A} substituents;

each R^b is independently selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, each of which are optionally substituted with 1, 2, 3, or 4 independently selected R^{2A} substituents;

each R^e is independently selected from H, CN, OH, C_{1-4} alkyl, and C_{1-4} alkoxy;

each R^f is independently selected from H, C_{1-4} alkyl, and C_{1-4} haloalkyl;

R^3 is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, each of which is optionally substituted with 1, 2, 3, or 4 independently selected R^{3A} substituents;

R^4, R^5, R^6, and R^7 have the definitions in Group (a) or (b):

Group (a):

R^4 and R^5 are independently selected from halo, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, and C_{3-6} cycloalkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, and C_{3-6} cycloalkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

or, alternatively, R^4 and R^5, together with the carbon atom to which they are attached, form a 3, 4, 5, 6, or 7 membered cycloalkyl ring or a 3, 4, 5, 6, or 7 membered heterocycloalkyl ring, each of which is optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

R^6 and R^7 are independently selected from H, D, halo, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, and C_{3-6} cycloalkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, and C_{3-6} cycloalkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

or, alternatively, R^6 and R^7, together with the carbon atom to which they are attached, form a 3, 4, 5, 6, or 7 membered cycloalkyl ring or a 3, 4, 5, 6, or 7 membered heterocycloalkyl ring, each of which is optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

~~Group (b):~~

~~R^4 and R^5 are independently selected from H, halo, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-}~~

$_6$ alkynyl, C_{1-6} haloalkyl, and C_{3-6} cycloalkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, and C_{3-6} cycloalkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

or, alternatively, R^4 and R^5, together with the carbon atom to which they are attached, form a 3, 4, 5, 6, or 7 membered cycloalkyl ring or a 3, 4, 5, 6, or 7 membered heterocycloalkyl ring, each of which is optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

R^6 and R^7 are independently selected from halo, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, and C_{3-6} cycloalkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, and C_{3-6} cycloalkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

or, alternatively, R^6 and R^7, together with the carbon atom to which they are attached, form a 3, 4, 5, 6, or 7 membered cycloalkyl ring or a 3, 4, 5, 6, or 7 membered heterocycloalkyl ring, each of which is optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

each R^{2A} is independently selected from H, D, halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, 5-10 membered heteroaryl-C_{1-4} alkyl, OR^{a1}, SR^{a1}, $C(=O)R^{b1}$, $C(=O)NR^{c1}R^{d1}$, $C(=O)OR^{a1}$, $OC(=O)R^{b1}$, $OC(=O)NR^{c1}R^{d1}$, $NR^{c1}R^{d1}$, $NR^{c1}C(=O)R^{b1}$, $NR^{c1}C(=O)OR^{b1}$, $NR^{c1}C(=O)NR^{c1}R^{d1}$, $C(=NR^e)R^{b1}$, $C(=NR^e)NR^{c1}R^{d1}$, $NR^{c1}C(=NR^e)NR^{c1}R^{d1}$, $NHOR^{a1}$, $NR^{c1}S(=O)R^{b1}$, $NR^{c1}S(=O)NR^{c1}R^{d1}$, $S(=O)R^{b1}$, $S(=O)NR^{c1}R^{d1}$, $NR^{c1}S(=O)_2R^{b1}$, $NR^{c1}S(=O)_2NR^{c1}R^{d1}$, $S(=O)_2R^{b1}$, $S(=O)(=NR^f)R^{b1}$, and $S(=O)_2NR^{c1}R^{d1}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{2B} substituents;

each R^{a1}, R^{c1}, and R^{d1} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10}

~~cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{2B} substituents;~~

~~each R^{b1} is independently selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, each of which are optionally substituted with 1, 2, 3, or 4 independently selected R^{2B} substituents;~~

~~each R^{3A} is independently selected from H, D, halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, 5-10 membered heteroaryl-C_{1-4} alkyl, OR^{a2}, SR^{a2}, $C(=O)R^{b2}$, $C(=O)NR^{c2}R^{d2}$, $C(=O)OR^{a2}$, $OC(=O)R^{b2}$, $OC(=O)NR^{c2}R^{d2}$, $NR^{c2}R^{d2}$, $NR^{c2}C(=O)R^{b2}$, $NR^{c2}C(=O)OR^{b2}$, $NR^{c2}C(=O)NR^{c2}R^{d2}$, $C(=NR^{e})R^{b2}$, $C(=NR^{e})NR^{c2}R^{d2}$, $NR^{c2}C(=NR^{e})NR^{c2}R^{d2}$, $NHOR^{a2}$, $NR^{c2}S(=O)R^{b2}$, $NR^{c2}S(=O)NR^{c2}R^{d2}$, $S(=O)R^{b2}$, $S(=O)NR^{c2}R^{d2}$, $NR^{c2}S(=O)_2R^{b2}$, $NR^{c2}S(=O)_2NR^{c2}R^{d2}$, $S(=O)_2R^{b2}$, $S(=O)(=NR^{f})R^{b2}$, and $S(=O)_2NR^{c2}R^{d2}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{3B} substituents;~~

~~each R^{a2}, R^{c2}, and R^{d2} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{3B} substituents;~~

~~each R^{b2} is independently selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, C_{6-10} aryl, 4-10 membered heterocycloalkyl, 5-10~~

membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, C_{6-10} aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, each of which are optionally substituted with 1, 2, 3, or 4 independently selected R^{3B} substituents;

each R^{2B} and R^{3B} is independently selected from H, D, halo, CN, NO_2, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, 5-6 membered heteroaryl-C_{1-4} alkyl, OR^{a23}, SR^{a23}, $C(=O)R^{b23}$, $C(=O)NR^{c23}R^{d23}$, $C(=O)OR^{a23}$, $OC(=O)R^{b23}$, $OC(=O)NR^{c23}R^{d23}$, $NR^{c23}R^{d23}$, $NR^{c23}C(=O)R^{b23}$, $NR^{c23}C(=O)OR^{b23}$, $NR^{c23}C(=O)NR^{c23}R^{d23}$, $C(=NR^{e})R^{b23}$, $C(=NR^{e})NR^{c23}R^{d23}$, $NR^{c23}C(=NR^{e})NR^{c23}R^{d23}$, $NHOR^{a23}$, $NR^{c23}S(=O)R^{b23}$, $NR^{c23}S(=O)NR^{c23}R^{d23}$, $S(=O)R^{b23}$, $S(=O)NR^{c23}R^{d23}$, $NR^{c23}S(=O)_2R^{b23}$, $NR^{c23}S(=O)_2NR^{c23}R^{d23}$, $S(=O)_2R^{b23}$, $S(=O)(=NR^{f})R^{b23}$, and $S(=O)_2NR^{c23}R^{d23}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{G} substituents;

each R^{a23}, R^{c23}, and R^{d23} is independently selected from H, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{G} substituents;

each R^{b23} is independently selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, each of which are optionally substituted with 1, 2, 3, or 4 independently selected R^{G} substituents; and

each R^{G} is independently selected from OH, NO_2, CN, halo, C_{1-3} alkyl, C_{2-3} alkenyl, C_{2-3} alkynyl, C_{1-3} haloalkyl, cyano-C_{1-3} alkyl, HO-C_{1-3} alkyl, C_{1-3} alkoxy-C_{1-3} alkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, amino, C_{1-3} alkylamino, di(C_{1-3} alkyl)amino, thio,

~~C_{1-3} alkylthio, C_{1-3} alkylsulfinyl, C_{1-3} alkylsulfonyl, carbamyl, C_{1-3} alkylcarbamyl, di(C_{1-3} alkyl)carbamyl, carboxy, C_{1-3} alkylcarbonyl, C_{1-3} alkoxycarbonyl, C_{1-3} alkylcarbonyloxy, C_{1-3} alkylcarbonylamino, C_{1-3} alkoxycarbonylamino, C_{1-3} alkylaminocarbonyloxy, C_{1-3} alkylsulfonylamino, aminosulfonyl, C_{1-3} alkylaminosulfonyl, di(C_{1-3} alkyl)aminosulfonyl, aminosulfonylamino, C_{1-3} alkylaminosulfonylamino, di(C_{1-3} alkyl)aminosulfonylamino, aminocarbonylamino, C_{1-3} alkylaminocarbonylamino, and di(C_{1-3} alkyl)aminocarbonylamino.~~

~~19. The use of claim 18 or the method of claim 19, wherein R^1 is H.~~

~~20. The use of claim 18 or 19 or the method of claim 18 or 19, wherein R^2 is selected from 4-7 membered heterocycloalkyl and phenyl, each of which is substituted with 1, 2, 3, or 4 independently selected R^{2A} substituents.~~

~~21. The use of any one of claims 18-20 or the method of any one of claims 18-20, wherein R^2 is selected from piperidin-4-yl and phenyl, each of which is optionally substituted with 1 R^{2A} substituent.~~

~~22. The use of any one of claims 18-21 or the method of any one of claims 18-21, wherein at least one R^{2A} is selected from $S(=O)_2R^{b1}$ and $S(=O)_2NR^{c1}R^{d1}$, wherein R^{b1} is C_{1-3} alkyl; and R^{c1} and R^{d1} are each independently selected from H and C_{1-3} alkyl.~~

~~23. The use of any one of claims 18-22 or the method of any one of claims 18-22, wherein R^3 is selected from C_{1-6} alkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, each of which is optionally substituted with 1 or 2 independently selected R^{3A} substituents.~~

~~24. The use of any one of claims 18-23 or the method of any one of claims 18-23, wherein R^4 and R^5, together with the carbon atom to which they are attached, form a cyclopropyl ring; or R^4 and R^5 are independently C_{1-3} alkyl.~~

~~25. The use of any one of claims 18-24 or the method of any one of claims 18-24, wherein R^6 and R^7 are each H.~~

26. The use of claim 18 or the method of claim 18, wherein:

R^1 is H;

R^2 is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, each of which is optionally substituted with 1, 2, 3, or 4 independently selected R^{2A} substituents;

R^3 is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, each of which is optionally substituted with 1, 2, 3, or 4 independently selected R^{3A} substituents;

R^4 and R^5 are each independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl;

or, alternatively, R^4 and R^5, together with the carbon atom to which they are attached form a 3, 4, 5, or 6 membered cycloalkyl ring;

R^6 and R^7 are each independently selected from H and C_{1-6} alkyl;

each R^{2A} is independently selected from halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, OR^{a1}, SR^{a1}, $C(=O)R^{b1}$, $C(=O)NR^{c1}R^{d1}$, $C(=O)OR^{a1}$, $OC(=O)R^{b1}$, $OC(=O)NR^{c1}R^{d1}$, $NR^{c1}R^{d1}$, $NR^{c1}C(=O)R^{b1}$, $NR^{c1}C(=O)OR^{b1}$, $NR^{c1}C(=O)NR^{c1}R^{d1}$, $NHOR^{a1}$, $NR^{c1}S(=O)_2R^{b1}$, $NR^{c1}S(=O)_2NR^{c1}R^{d1}$, $S(=O)_2R^{b1}$, and $S(=O)_2NR^{c1}R^{d1}$;

each R^{a1}, R^{c1}, and R^{d1} is independently selected from H, C_{1-6} alkyl, and C_{1-6} haloalkyl;

each R^{b1} is independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl;

each R^{3A} is independently selected from halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, OR^{a2}, SR^{a2}, $C(=O)R^{b2}$, $C(=O)NR^{c2}R^{d2}$, $C(=O)OR^{a2}$, $OC(=O)R^{b2}$, $OC(=O)NR^{c2}R^{d2}$, $NR^{c2}R^{d2}$, $NR^{c2}C(=O)R^{b2}$, $NR^{c2}C(=O)OR^{b2}$, $NR^{c2}C(=O)NR^{c2}R^{d2}$, $NHOR^{a2}$, $NR^{c2}S(=O)_2R^{b2}$, $NR^{c2}S(=O)_2NR^{c2}R^{d2}$, $S(=O)_2R^{b2}$, and $S(=O)_2NR^{c2}R^{d2}$;

each R^{a2}, R^{c2}, and R^{d2} is independently selected from H, C_{1-6} alkyl, and C_{1-6} haloalkyl; and

each R^{b2} is independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl.

27. The use of claim 18 or the method of claim 18, wherein:

R^1 is H;

R^2 is selected from 4-7 membered heterocycloalkyl and phenyl, each of which are substituted by 1 R^{2A} group;

R^{2A} is $S(=O)_2R^{b1}$ or $S(=O)_2NR^{c1}R^{d1}$;

R^{b1} is C_{1-3} alkyl;

R^{c1} and R^{d1} are each independently selected from H and C_{1-3} alkyl;

R^3 is selected from C_{1-6} alkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, each of which is optionally substituted with 1, 2, 3, or 4 independently selected R^{3A} substituents;

each R^{3A} is independently selected from H, halo, C_{1-6} alkyl, and C_{1-6} haloalkyl;

R^4 and R^5 are each methyl;

or R^4 and R^5, together with the carbon atom to which they are attached form, form a cyclopropyl ring; and

R^6 and R^7 are each H.

28. The compound of formula A-I as set forth in claim 18, selected from:

4-((8-cyclopentyl-6,6-dimethyl-7-oxo-5,6,7,8-tetrahydropyrido[2,3-d]pyrimidin-2-yl)amino)benzenesulfonamide;

8-cyclopentyl-6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-d]pyrimidin-7(6H)-one; and

6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-8-phenyl-5,8-dihydropyrido[2,3-d]pyrimidin-7(6H)-one;

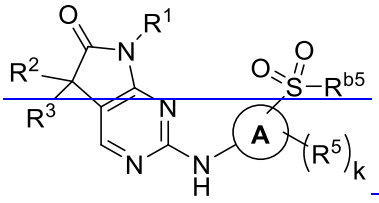
8-(1,1-difluorobutan-2-yl)-6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one;

6,6-dimethyl-8-((1-methyl-1*H*-pyrazol-5-yl)methyl)-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one; and

6,6-dimethyl-2-((1-(methylsulfonyl)piperidin-4-yl)amino)-8-(tetrahydrofuran-3-yl)-5,8-dihydropyrido[2,3-*d*]pyrimidin-7(6*H*)-one;

or a pharmaceutically acceptable salt thereof.

29. The use of any one of claims 1-10, or 13-17 16 or the method of any one of claims 11-16, wherein the CDK2 inhibitor is a compound of Formula (B-Ia):



(B-Ia)

or a pharmaceutically acceptable salt thereof, wherein:

k is n-1;

n is an integer selected from 1, 2, 3, 4, 5, and 6;

Ring moiety **A** is a 3-14 membered cycloalkyl or 4-14 membered heterocycloalkyl, wherein Ring moiety **A** is attached to the NH group of Formula (B-I) at a saturated or partially saturated ring of said 3-14 membered cycloalkyl or 4-14 membered heterocycloalkyl;

R^1 is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-14} cycloalkyl, 6-14 membered aryl, 4-14 membered heterocycloalkyl, 5-14 membered heteroaryl, C_{3-14} cycloalkyl-C_{1-4} alkyl, 6-14 membered aryl-C_{1-4} alkyl, 4-14 membered heterocycloalkyl-C_{1-4} alkyl, and 5-14 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-14} cycloalkyl, 6-14 membered aryl, 4-14 membered heterocycloalkyl, 5-14 membered heteroaryl, C_{3-14} cycloalkyl-C_{1-4} alkyl, 6-14 membered aryl-C_{1-4} alkyl, 4-14 membered heterocycloalkyl-C_{1-4} alkyl, and 5-14 membered heteroaryl-C_{1-4} alkyl are each optionally substituted by 1, 2, 3, 4, 5, or 6 independently selected R^4 substituents;

R^2 and R^3 are each independently selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, and 5-6 membered heteroaryl, wherein said C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, and 5-6 membered heteroaryl are each optionally substituted by 1, 2, 3, or 4 independently selected R^G substituents;

or R^2 and R^3, together with the carbon atom to which they are attached, form Ring **B**;

Ring **B** is a 3-7 membered cycloalkyl ring or a 4-7 membered heterocycloalkyl ring, each of which is optionally substituted by 1, 2, 3, or 4 independently selected R^G substituents;

each R^4 is independently selected from H, D, halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10

membered heterocycloalkyl-C_{1-4} alkyl, 5-10 membered heteroaryl-C_{1-4} alkyl, OR^{a4}, SR^{a4}, $NHOR^{a4}$, $C(O)R^{b4}$, $C(O)NR^{c4}R^{d4}$, $C(O)NR^{c4}(OR^{a4})$, $C(O)OR^{a4}$, $OC(O)R^{b4}$, $OC(O)NR^{c4}R^{d4}$, $NR^{c4}R^{d4}$, $NR^{c4}NR^{c4}R^{d4}$, $NR^{c4}C(O)R^{b4}$, $NR^{c4}C(O)OR^{a4}$, $NR^{c4}C(O)NR^{c4}R^{d4}$, $C(=NR^{e4})R^{b4}$, $C(=NR^{e4})NR^{c4}R^{d4}$, $NR^{c4}C(=NR^{e4})NR^{c4}R^{d4}$, $NR^{c4}C(=NR^{e4})R^{b4}$, $NR^{c4}S(O)NR^{c4}R^{d4}$, $NR^{c4}S(O)R^{b4}$, $NR^{c4}S(O)_2R^{b4}$, $NR^{c4}S(O)(=NR^{e4})R^{b4}$, $NR^{c4}S(O)_2NR^{c4}R^{d4}$, $S(O)R^{b4}$, $S(O)NR^{c4}R^{d4}$, $S(O)_2R^{b4}$, $S(O)_2NR^{c4}R^{d4}$, $OS(O)(=NR^{e4})R^{b4}$, $OS(O)_2R^{b4}$, $S(O)(=NR^{e4})R^{b4}$, SF_5, $P(O)R^{f4}R^{g4}$, $OP(O)(OR^{h4})(OR^{i4})$, $P(O)(OR^{h4})(OR^{i4})$, and $BR^{i4}R^{k4}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{4A} substituents;

each R^5 is independently selected from H, D, halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, 5-10 membered heteroaryl-C_{1-4} alkyl, OR^{a5}, SR^{a5}, $NHOR^{a5}$, $C(O)R^{b5}$, $C(O)NR^{c5}R^{d5}$, $C(O)NR^{c5}(OR^{a5})$, $C(O)OR^{a5}$, $OC(O)R^{b5}$, $OC(O)NR^{c5}R^{d5}$, $NR^{c5}R^{d5}$, $NR^{c5}NR^{c5}R^{d5}$, $NR^{c5}C(O)R^{b5}$, $NR^{c5}C(O)OR^{a5}$, $NR^{c5}C(O)NR^{c5}R^{d5}$, $C(=NR^{e5})R^{b5}$, $C(=NR^{e5})NR^{c5}R^{d5}$, $NR^{c5}C(=NR^{e5})NR^{c5}R^{d5}$, $NR^{c5}C(=NR^{e5})R^{b5}$, $NR^{c5}S(O)NR^{c5}R^{d5}$, $NR^{c5}S(O)R^{b5}$, $NR^{c5}S(O)_2R^{b5}$, $NR^{c5}S(O)(=NR^{e5})R^{b5}$, $NR^{c5}S(O)_2NR^{c5}R^{d5}$, $S(O)R^{b5}$, $S(O)NR^{c5}R^{d5}$, $S(O)_2R^{b5}$, $S(O)_2NR^{c5}R^{d5}$, $OS(O)(=NR^{e5})R^{b5}$, $OS(O)_2R^{b5}$, $S(O)(=NR^{e5})R^{b5}$, SF_5, $P(O)R^{f5}R^{g5}$, $OP(O)(OR^{h5})(OR^{i5})$, $P(O)(OR^{h5})(OR^{i5})$, and $BR^{i5}R^{k5}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5A} substituents;

each R^{4A} is independently selected from H, D, halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, 5-6 membered heteroaryl-C_{1-4} alkyl,

~~OR^{a41}, SR^{a41}, $NHOR^{a41}$, $C(O)R^{b41}$, $C(O)NR^{c41}R^{d41}$, $C(O)NR^{c41}(OR^{a41})$, $C(O)OR^{a41}$, $OC(O)R^{b41}$, $OC(O)NR^{c41}R^{d41}$, $NR^{c41}R^{d41}$, $NR^{c41}NR^{c41}R^{d41}$, $NR^{c41}C(O)R^{b41}$, $NR^{c41}C(O)OR^{a41}$, $NR^{c41}C(O)NR^{c41}R^{d41}$, $C(=NR^{e41})R^{b41}$, $C(=NR^{e41})NR^{c41}R^{d41}$, $NR^{c41}C(=NR^{e41})NR^{c41}R^{d41}$, $NR^{c41}C(=NR^{e41})R^{b41}$, $NR^{c41}S(O)NR^{c41}R^{d41}$, $NR^{c41}S(O)R^{b41}$, $NR^{c41}S(O)_2R^{b41}$, $NR^{c41}S(O)(=NR^{e41})R^{b41}$, $NR^{c41}S(O)_2NR^{c41}R^{d41}$, $S(O)R^{b41}$, $S(O)NR^{c41}R^{d41}$, $S(O)_2R^{b41}$, $S(O)_2NR^{c41}R^{d41}$, $OS(O)(=NR^{e41})R^{b41}$, $OS(O)_2R^{b41}$, $S(O)(=NR^{e41})R^{b41}$, SF_5, $P(O)R^{f41}R^{g41}$, $OP(O)(OR^{h41})(OR^{i41})$, $P(O)(OR^{h41})(OR^{i41})$, and $BR^{j41}R^{k41}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{4B} substituents;~~

~~each R^{4B} is independently selected from H, D, halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, 5-6 membered heteroaryl-C_{1-4} alkyl, OR^{a42}, SR^{a42}, $NHOR^{a42}$, $C(O)R^{b42}$, $C(O)NR^{c42}R^{d42}$, $C(O)NR^{c42}(OR^{a42})$, $C(O)OR^{a42}$, $OC(O)R^{b42}$, $OC(O)NR^{c42}R^{d42}$, $NR^{c42}R^{d42}$, $NR^{c42}NR^{c42}R^{d42}$, $NR^{c42}C(O)R^{b42}$, $NR^{c42}C(O)OR^{a42}$, $NR^{c42}C(O)NR^{c42}R^{d42}$, $C(=NR^{e42})R^{b42}$, $C(=NR^{e42})NR^{c42}R^{d42}$, $NR^{c42}C(=NR^{e42})NR^{c42}R^{d42}$, $NR^{c42}C(=NR^{e42})R^{b42}$, $NR^{c42}S(O)NR^{c42}R^{d42}$, $NR^{c42}S(O)R^{b42}$, $NR^{c42}S(O)_2R^{b42}$, $NR^{c42}S(O)(=NR^{e42})R^{b42}$, $NR^{c42}S(O)_2NR^{c42}R^{d42}$, $S(O)R^{b42}$, $S(O)NR^{c42}R^{d42}$, $S(O)_2R^{b42}$, $S(O)_2NR^{c42}R^{d42}$, $OS(O)(=NR^{e42})R^{b42}$, $OS(O)_2R^{b42}$, $S(O)(=NR^{e42})R^{b42}$, SF_5, $P(O)R^{f42}R^{g42}$, $OP(O)(OR^{h42})(OR^{i42})$, $P(O)(OR^{h42})(OR^{i42})$, and $BR^{j42}R^{k42}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{G} substituents;~~

~~each R^{5A} is independently selected from H, D, halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, 5-6 membered heteroaryl-C_{1-4} alkyl, OR^{a51}, SR^{a51}, $NHOR^{a51}$, $C(O)R^{b51}$, $C(O)NR^{c51}R^{d51}$, $C(O)NR^{c51}(OR^{a51})$, $C(O)OR^{a51}$, $OC(O)R^{b51}$, $OC(O)NR^{c51}R^{d51}$, $NR^{c51}R^{d51}$, $NR^{c51}NR^{c51}R^{d51}$, $NR^{c51}C(O)R^{b51}$,~~

$NR^{e51}C(O)OR^{a51}$, $NR^{e51}C(O)NR^{e51}R^{d51}$, $C(=NR^{e51})R^{b51}$, $C(=NR^{e51})NR^{e51}R^{d51}$, $NR^{e51}C(=NR^{e51})NR^{e51}R^{d51}$, $NR^{e51}C(=NR^{e51})R^{b51}$, $NR^{e51}S(O)NR^{e51}R^{d51}$, $NR^{e51}S(O)R^{b51}$, $NR^{e51}S(O)_2R^{b51}$, $NR^{e51}S(O)(=NR^{e51})R^{b51}$, $NR^{e51}S(O)_2NR^{e51}R^{d51}$, $S(O)R^{b51}$, $S(O)NR^{e51}R^{d51}$, $S(O)_2R^{b51}$, $S(O)_2NR^{e51}R^{d51}$, $OS(O)(=NR^{e51})R^{b51}$, $OS(O)_2R^{b51}$, $S(O)(=NR^{e51})R^{b51}$, SF_5, $P(O)R^{f51}R^{g51}$, $OP(O)(OR^{h51})(OR^{i51})$, $P(O)(OR^{h51})(OR^{i51})$, and $BR^{j51}R^{k51}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5B} substituents;

each R^{5B} is independently selected from H, D, halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, 5-6 membered heteroaryl-C_{1-4} alkyl, OR^{a52}, SR^{a52}, $NHOR^{a52}$, $C(O)R^{b52}$, $C(O)NR^{c52}R^{d52}$, $C(O)NR^{c52}(OR^{a52})$, $C(O)OR^{a52}$, $OC(O)R^{b52}$, $OC(O)NR^{c52}R^{d52}$, $NR^{c52}R^{d52}$, $NR^{c52}NR^{c52}R^{d52}$, $NR^{c52}C(O)R^{b52}$, $NR^{c52}C(O)OR^{a52}$, $NR^{c52}C(O)NR^{c52}R^{d52}$, $C(=NR^{e52})R^{b52}$, $C(=NR^{e52})NR^{c52}R^{d52}$, $NR^{c52}C(=NR^{e52})NR^{c52}R^{d52}$, $NR^{c52}C(=NR^{e52})R^{b52}$, $NR^{c52}S(O)NR^{c52}R^{d52}$, $NR^{c52}S(O)R^{b52}$, $NR^{c52}S(O)_2R^{b52}$, $NR^{c52}S(O)(=NR^{e52})R^{b52}$, $NR^{c52}S(O)_2NR^{c52}R^{d52}$, $S(O)R^{b52}$, $S(O)NR^{c52}R^{d52}$, $S(O)_2R^{b52}$, $S(O)_2NR^{c52}R^{d52}$, $OS(O)(=NR^{e52})R^{b52}$, $OS(O)_2R^{b52}$, $S(O)(=NR^{e52})R^{b52}$, SF_5, $P(O)R^{f52}R^{g52}$, $OP(O)(OR^{h52})(OR^{i52})$, $P(O)(OR^{h52})(OR^{i52})$, and $BR^{j52}R^{k52}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{G} substituents;

each R^{a4}, R^{c4}, and R^{d4} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl

~~are each optionally substituted with 1, 2, 3, or 4 independently selected R^{4A} substituents;~~
~~or, any R^{e4} and R^{d4} attached to the same N atom, together with the N atom to which they are attached, form a 5- or 6-membered heteroaryl or a 4-10 membered heterocycloalkyl group, wherein the 5- or 6-membered heteroaryl and 4-10 membered heterocycloalkyl group are each optionally substituted with 1, 2, 3, or 4 independently selected R^{4A} substituents;~~
~~each R^{b4} is independently selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, which are each optionally substituted with 1, 2, 3, or 4 independently selected R^{4A} substituents;~~
~~each R^{e4} is independently selected from H, OH, CN, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl;~~
~~each R^{f4} and R^{g4} are independently selected from H, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl;~~
~~each R^{h4} and R^{i4} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl;~~
~~each R^{j4} and R^{k4} is independently selected from OH, C_{1-6} alkoxy, and C_{1-6} haloalkoxy;~~
~~or any R^{j4} and R^{k4} attached to the same B atom, together with the B atom to which they are attached, form a 5- or 6-membered heterocycloalkyl group optionally substituted with 1, 2, 3, or 4 substituents independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl;~~

each R^{a41}, R^{c41}, and R^{d41} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{4B} substituents;

or, any R^{c41} and R^{d41} attached to the same N atom, together with the N atom to which they are attached, form a 5- or 6-membered heteroaryl or a 4-7 membered heterocycloalkyl group, wherein the 5- or 6-membered heteroaryl and 4-7 membered heterocycloalkyl group are each optionally substituted with 1, 2, 3, or 4 independently selected R^{4B} substituents;

each R^{b41} is independently selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, which are each optionally substituted with 1, 2, 3, or 4 independently selected R^{4B} substituents;

each R^{e41} is independently selected from H, OH, CN, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{f41} and R^{g41} are independently selected from H, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{h41} and R^{i41} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{j41} and R^{k41} is independently selected from OH, C_{1-6} alkoxy, and C_{1-6}

haloalkoxy;

or any R^{j41} and R^{k41} attached to the same B atom, together with the B atom to which they are attached, form a 5- or 6-membered heterocycloalkyl group optionally substituted with 1, 2, 3, or 4 substituents independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl;

each R^{a42}, R^{c42}, and R^{d42} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

or, any R^{c42} and R^{d42} attached to the same N atom, together with the N atom to which they are attached, form a 5- or 6-membered heteroaryl or a 4-7 membered heterocycloalkyl group, wherein the 5- or 6-membered heteroaryl and 4-7 membered heterocycloalkyl group are each optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

each R^{b42} is independently selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, which are each optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

each R^{e42} is independently selected from H, OH, CN, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{f42} and R^{g42} are independently selected from H, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{h42} and R^{i42} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{j42} and R^{k42} is independently selected from OH, C_{1-6} alkoxy, and C_{1-6} haloalkoxy;

or any R^{j42} and R^{k42} attached to the same B atom, together with the B atom to which they are attached, form a 5- or 6-membered heterocycloalkyl group optionally substituted with 1, 2, 3, or 4 substituents independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl;

each R^{a5}, R^{c5}, and R^{d5} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5A} substituents;

or, any R^{c5} and R^{d5} attached to the same N atom, together with the N atom to which they are attached, form a 5- or 6-membered heteroaryl or a 4-10 membered heterocycloalkyl group, wherein the 5- or 6-membered heteroaryl and 4-10 membered heterocycloalkyl group are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5A} substituents;

each R^{b5} is independently selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, which are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5A} substituents;

each R^{e5} is independently selected from H, OH, CN, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10}

~~cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl;~~

~~each R^{f5} and R^{g5} are independently selected from H, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl;~~

~~each R^{h5} and R^{i5} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl;~~

~~each R^{j5} and R^{k5} is independently selected from OH, C_{1-6} alkoxy, and C_{1-6} haloalkoxy;~~

~~or any R^{j5} and R^{k5} attached to the same B atom, together with the B atom to which they are attached, form a 5- or 6-membered heterocycloalkyl group optionally substituted with 1, 2, 3, or 4 substituents independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl;~~

~~each R^{a51}, R^{c51}, and R^{d51} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5B} substituents;~~

~~or, any R^{c51} and R^{d51} attached to the same N atom, together with the N atom to which they are attached, form a 5- or 6-membered heteroaryl or a 4-7 membered heterocycloalkyl group, wherein the 5- or 6-membered heteroaryl and 4-7 membered heterocycloalkyl group are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5B} substituents;~~

~~each R^{b51} is independently selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6~~

membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, which are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5B} substituents;

each R^{e51} is independently selected from H, OH, CN, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{f51} and R^{g51} are independently selected from H, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{h51} and R^{i51} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{j51} and R^{k51} is independently selected from OH, C_{1-6} alkoxy, and C_{1-6} haloalkoxy;

or any R^{j51} and R^{k51} attached to the same B atom, together with the B atom to which they are attached, form a 5- or 6-membered heterocycloalkyl group optionally substituted with 1, 2, 3, or 4 substituents independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl;

each R^{a52}, R^{c52}, and R^{d52} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{G} substituents;

or, any R^{c52} and R^{d52} attached to the same N atom, together with the N atom to which they are attached, form a 5- or 6-membered heteroaryl or 4-7 membered

heterocycloalkyl group, wherein the 5- or 6-membered heteroaryl and 4-7 membered heterocycloalkyl group are each optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

each R^{b52} is independently selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, which are each optionally substituted with 1, 2, 3, or 4 independently selected R^G substituents;

each R^{e52} is independently selected from H, OH, CN, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{f52} and R^{g52} are independently selected from H, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{h52} and R^{i52} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl;

each R^{j52} and R^{k52} is independently selected from OH, C_{1-6} alkoxy, and C_{1-6} haloalkoxy;

or any R^{j52} and R^{k52} attached to the same B atom, together with the B atom to which they are attached, form a 5- or 6-membered heterocycloalkyl group optionally substituted with 1, 2, 3, or 4 substituents independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl; and

each R^G is independently selected from H, D, OH, NO_2, CN, halo, C_{1-3} alkyl, C_{2-3} alkenyl, C_{2-3} alkynyl, C_{1-3} haloalkyl, cyano-C_{1-3} alkyl, HO-C_{1-3} alkyl, C_{1-3} alkoxy-C_{1-3} alkyl, C_{3-7} cycloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, amino, C_{1-3} alkylamino, di(C_{1-3} alkyl)amino, thio, C_{1-3} alkylthio, C_{1-3} alkylsulfinyl, C_{1-3} alkylsulfonyl, carbamyl, C_{1-3} alkylcarbamyl, di(C_{1-3} alkyl)carbamyl, carboxy, C_{1-3} alkylcarbonyl, C_{1-3} alkoxycarbonyl, C_{1-3} alkylcarbonyloxy, C_{1-3} alkylcarbonylamino, C_{1-3}

alkoxycarbonylamino, C_{1-3} alkylaminocarbonyloxy, C_{1-3} alkylsulfonylamino, aminosulfonyl, C_{1-3} alkylaminosulfonyl, di(C_{1-3} alkyl)aminosulfonyl, aminosulfonylamino, C_{1-3} alkylaminosulfonylamino, di(C_{1-3} alkyl)aminosulfonylamino, aminocarbonylamino, C_{1-3} alkylaminocarbonylamino, and di(C_{1-3} alkyl)aminocarbonylamino.

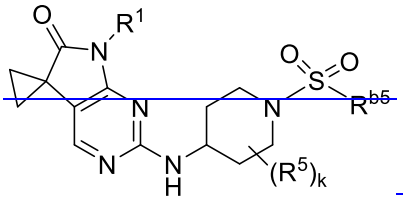
30. The use of claim 29 or the method of claim 29, wherein R^1 is selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, each of which is optionally substituted by 1, 2, 3, 4, 5, or 6 independently selected R^4 substituents.

31. The use of claim 29 or 30 or the method of claim 29 or 30, wherein each R^4 is independently selected from halo, CN, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, OR^{a4}, $C(O)R^{b4}$, $C(O)NR^{c4}R^{d4}$, $C(O)OR^{a4}$, $OC(O)R^{b4}$, $OC(O)NR^{c4}R^{d4}$, $NR^{c4}R^{d4}$, $NR^{c4}C(O)R^{b4}$, $NR^{c4}C(O)OR^{a4}$, $NR^{c4}C(O)NR^{c4}R^{d4}$, $NR^{c4}S(O)_2R^{b4}$, $NR^{c4}S(O)_2NR^{c4}R^{d4}$, $S(O)_2R^{b4}$, and $S(O)_2NR^{c4}R^{d4}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-6} haloalkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{4A} substituents.

32. The use of any one of claims 29-31 or the method of any one of claims 29-31, wherein each R^5 is independently selected from halo and C_{1-6} alkyl.

33. The use of any one of claims 29-32 or the method of any one of claims 29-32, wherein R^{b5} is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, phenyl, 4-6 membered heterocycloalkyl, and 5-6 membered heteroaryl, each of which is optionally substituted by 1 or 2 R^{5A} substituents independently selected from halo, C_{1-6} alkyl, and 4-6 membered heterocycloalkyl, wherein said 4-6 membered heterocycloalkyl is optionally substituted by 1 or 2 R^{5B} substituents independently selected from C_{1-3} alkyl.

34. The use of claim 29 or the method of claim 29, wherein the compound is a compound of Formula (B-IIc):



(B-IIc)

or a pharmaceutically acceptable salt thereof, wherein k is n-1.

35. The use of claim 29 or the method of claim 29, wherein:

k is n-1;

n is an integer selected from 1 and 2;

Ring moiety **A** is a monocyclic 4-6 membered heterocycloalkyl;

R^1 is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, phenyl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, phenyl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl are each optionally substituted by 1, 2, or 3 independently selected R^4 substituents;

R^2 and R^3, together with the carbon atom to which they are attached, form Ring **B**;

Ring **B** is a 3-7 membered cycloalkyl ring;

each R^4 is independently selected from H, halo, CN, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{3-4} cycloalkyl, OR^{a4}, $C(O)R^{b4}$, $C(O)NR^{c4}R^{d4}$, $C(O)OR^{a4}$, $OC(O)R^{b4}$, $OC(O)NR^{c4}R^{d4}$, $NR^{c4}R^{d4}$, $NR^{c4}C(O)R^{b4}$, $NR^{c4}C(O)OR^{a4}$, $NR^{c4}C(O)NR^{c4}R^{d4}$, $NR^{c4}S(O)_2R^{b4}$, $NR^{c4}S(O)_2NR^{c4}R^{d4}$, $S(O)_2R^{b4}$, and $S(O)_2NR^{c4}R^{d4}$;

each R^5 is independently selected from H, halo, CN, C_{1-3} alkyl, and C_{1-3} haloalkyl;

each R^{5A} is independently selected from H, D, halo, CN, NO_2, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, 5-6 membered heteroaryl-C_{1-4} alkyl, OR^{a51}, $C(O)R^{b51}$, $C(O)NR^{c51}R^{d51}$, $C(O)OR^{a51}$, $OC(O)R^{b51}$, $OC(O)NR^{c51}R^{d51}$,

$NR^{c51}R^{d51}$, $NR^{c51}C(O)R^{b51}$, $NR^{c51}C(O)OR^{a51}$, $NR^{c51}C(O)NR^{c51}R^{d51}$, $NR^{c51}S(O)_2R^{b51}$, $NR^{c51}S(O)_2NR^{c51}R^{d51}$, $S(O)_2R^{b51}$, and $S(O)_2NR^{c51}R^{d51}$, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5B} substituents;

each R^{5B} is independently selected from H, halo, CN, C_{1-6} alkyl, C_{1-6} haloalkyl, OH, NO_2, CN, halo, C_{1-3} alkyl, C_{2-3} alkenyl, C_{2-3} alkynyl, C_{1-3} haloalkyl, cyano-C_{1-3} alkyl, HO-C_{1-3} alkyl, C_{1-3} alkoxy-C_{1-3} alkyl, C_{3-7} cycloalkyl, C_{1-3} alkoxy, C_{1-3} haloalkoxy, amino, C_{1-3} alkylamino, di(C_{1-3} alkyl)amino, thio, C_{1-3} alkylthio, C_{1-3} alkylsulfinyl, C_{1-3} alkylsulfonyl, carbamyl, C_{1-3} alkylcarbamyl, di(C_{1-3} alkyl)carbamyl, carboxy, C_{1-3} alkylcarbonyl, C_{1-3} alkoxycarbonyl, C_{1-3} alkylcarbonyloxy, C_{1-3} alkylcarbonylamino, C_{1-3} alkoxycarbonylamino, C_{1-3} alkylaminocarbonyloxy, C_{1-3} alkylsulfonylamino, aminosulfonyl, C_{1-3} alkylaminosulfonyl, di(C_{1-3} alkyl)aminosulfonyl, aminosulfonylamino, C_{1-3} alkylaminosulfonylamino, di(C_{1-3} alkyl)aminosulfonylamino, aminocarbonylamino, C_{1-3} alkylaminocarbonylamino, and di(C_{1-3} alkyl)aminocarbonylamino;

each R^{a4}, R^{c4}, and R^{d4} is independently selected from H, C_{1-6} alkyl, and C_{1-6} haloalkyl;

each R^{b5} is independently selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, which are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5A} substituents;

each R^{a51}, R^{c51}, and R^{d51} is independently selected from H, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, wherein said C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl,

and 5-6 membered heteroaryl-C_{1-4} alkyl are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5B} substituents; and

each R^{b51} is independently selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, which are each optionally substituted with 1, 2, 3, or 4 independently selected R^{5B} substituents.

36. The use of claim 29 or the method of claim 29, wherein:

k is n-1;

n is 1 or 2;

Ring moiety **A** is 4-6 membered heterocycloalkyl;

R^1 is selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{3-10} cycloalkyl, 6-10 membered aryl, 4-10 membered heterocycloalkyl, 5-10 membered heteroaryl, C_{3-10} cycloalkyl-C_{1-4} alkyl, 6-10 membered aryl-C_{1-4} alkyl, 4-10 membered heterocycloalkyl-C_{1-4} alkyl, and 5-10 membered heteroaryl-C_{1-4} alkyl, each of which is optionally substituted by 1, 2, or 3 independently selected R^4 substituents;

each R^4 is independently selected from halo, CN, C_{1-6} alkyl, C_{1-6} haloalkyl, OR^{a4}, and $NR^{c4}R^{d4}$;

each R^{a4}, R^{c4}, and R^{d4} is independently selected from H and C_{1-6} alkyl;

R^2 and R^3, together with the carbon atom to which they are attached, form Ring **B**;

Ring **B** is a 3-4 membered cycloalkyl ring;

each R^5 is independently selected from halo, C_{1-3} alkyl, C_{1-3} haloalkyl, OR^{a5}, and $NR^{c5}R^{d5}$;

each R^{a5}, R^{c5}, and R^{d5} is independently selected from H and C_{1-6} alkyl;

R^{b5} is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, C_{3-7} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, 4-7 membered heterocycloalkyl-C_{1-4} alkyl, and 5-6 membered heteroaryl-C_{1-4} alkyl, each of which is optionally substituted with 1 or 2 independently selected R^{5A} substituents;

each R^{5A} is independently selected from halo, CN, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, 5-6 membered heteroaryl, OR^{a51}, SR^{a51}, $C(O)R^{b51}$, $C(O)NR^{c51}R^{d51}$, $C(O)OR^{a51}$, $OC(O)R^{b51}$, $OC(O)NR^{c51}R^{d51}$,

~~$NR^{c51}R^{d51}$, $NR^{c51}C(O)R^{b51}$, $NR^{c51}C(O)OR^{a51}$, $NR^{c51}C(O)NR^{c51}R^{d51}$, $NR^{c51}S(O)_2R^{b51}$, $NR^{c51}S(O)_2NR^{c51}R^{d51}$, $S(O)_2R^{b51}$, and $S(O)_2NR^{c51}R^{d51}$, wherein said C_{1-6} alkyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, phenyl, 4-7 membered heterocycloalkyl, and 5-6 membered heteroaryl are each optionally substituted with 1 or 2 independently selected R^{5B} substituents;~~

~~each R^{a51}, R^{c51}, and R^{d51} is independently selected from H, C_{1-6} alkyl, and C_{1-6} haloalkyl, wherein said C_{1-6} alkyl and C_{1-6} haloalkyl are each optionally substituted with 1 or 2 independently selected R^{5B} substituents;~~

~~each R^{b51} is independently selected from C_{1-6} alkyl and C_{1-6} haloalkyl, which are each optionally substituted with 1 or 2 independently selected R^{5B} substituents; and~~

~~each R^{5B} is independently selected from halo, CN, C_{1-6} alkyl, and C_{1-6} haloalkyl.~~

~~37. The use of claim 29 or the method of claim 29, wherein:~~

~~k is n-1;~~

~~n is 1 or 2;~~

~~Ring moiety **A** is a piperidine ring;~~

~~R^1 is selected from C_{1-6} alkyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl-C_{1-3} alkyl, phenyl, 4-10 membered heterocycloalkyl, and 5-6 membered heteroaryl, each of which is optionally substituted by 1 or 2 independently selected R^4 substituents;~~

~~each R^4 is independently selected from halo, OH, C_{1-3} alkyl, and C_{1-3} alkoxy;~~

~~R^2 and R^3, together with the carbon atom to which they are attached, form Ring **B**;~~

~~Ring **B** is a 3-4 membered cycloalkyl ring;~~

~~each R^5 is independently selected from halo and C_{1-3} alkyl; and~~

~~R^{b5} is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, phenyl, 4-6 membered heterocycloalkyl, and 5-6 membered heteroaryl, each of which is optionally substituted by 1 or 2 R^{5A} substituents independently selected from halo, C_{1-6} alkyl, and 4-6 membered heterocycloalkyl, wherein said 4-6 membered heterocycloalkyl is optionally substituted by 1 or 2 R^{5B} substituents independently selected from C_{1-3} alkyl.~~

38. The compound as set forth in claim 29, selected from

7'-cyclopentyl-2'-((2-methyl-1-(methylsulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-*d*]pyrimidin]-6'(7'*H*)-one;

7'-cyclopentyl-2'-((1-(methylsulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-*d*]pyrimidin]-6'(7'*H*)-one;

7'-cyclopentyl-2'-((1-(cyclopropylsulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-*d*]pyrimidin]-6'(7'*H*)-one;

7'-cyclopentyl-2'-((1-((tetrahydro-2H-pyran-4-yl)sulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

7'-cyclopentyl-2'-((1-(pyridin-3-ylsulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

2'-((1-((4-chlorophenyl)sulfonyl)piperidin-4-yl)amino)-7'-cyclopentylspiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

7'-cyclopentyl-2'-((1-((1-methyl-1H-pyrazol-4-yl)sulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

7'-(2-methylcyclopentyl)-2'-((1-(methylsulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

2'-((1-(methylsulfonyl)piperidin-4-yl)amino)-7'-(o-tolyl)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

7'-(1,1-difluorobutan-2-yl)-2'-((1-(methylsulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one,

7'-(1,5-dimethyl-1H-pyrazol-4-yl)-2'-((1-(methylsulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

7'-((1R,3R)-3-hydroxycyclohexyl)-2'-((1-((1-methyl-1H-pyrazol-4-yl)sulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

2'-((1-((6-(azetidin-1-yl)pyridin-2-yl)sulfonyl)piperidin-4-yl)amino)-7'-((1R,3R)-3-hydroxycyclohexyl)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

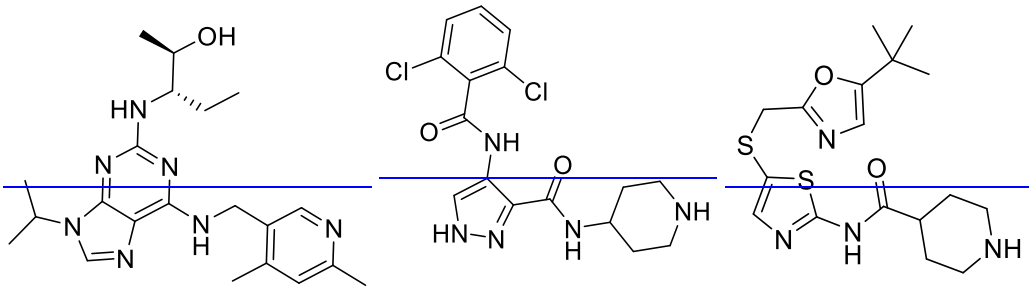
(S)-2'-((1-((1H-imidazol-2-yl)sulfonyl)piperidin-4-yl)amino)-7'-(1-cyclopropylethyl)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

(S)-7'-(1-cyclopropylethyl)-2'-((1-((6-oxo-1,6-dihydropyridin-3-yl)sulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;

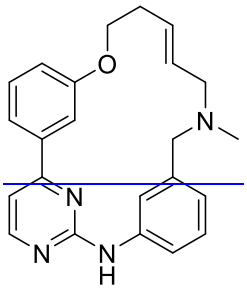
(S)-7'-(1-cyclopropylethyl)-2'-((1-((1-(1-ethylazetidin-3-yl)-1H-pyrazol-4-yl)sulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;
2'-((1-((1H-imidazol-2-yl)sulfonyl)piperidin-4-yl)amino)-7'-((trans)-2-hydroxy-2-methylcyclopentyl)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one;
2'-((1-((1H-imidazol-2-yl)sulfonyl)piperidin-4-yl)amino)-7'-(7-chloro-1,2,3,4-tetrahydroisoquinolin-6-yl)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one; and
7'-(2-chloro-5-fluorophenyl)-2'-((1-((1-ethyl-1H-imidazol-4-yl)sulfonyl)piperidin-4-yl)amino)spiro[cyclopropane-1,5'-pyrrolo[2,3-d]pyrimidin]-6'(7'H)-one,
or a pharmaceutically acceptable salt thereof.

39. The use of any one of claims 1-10, or 13-17 16 or the method of any one of claims 11-16, wherein the CDK2 inhibitor is selected from 8-((1R,2R)-2-hydroxy-2-methylcyclopentyl)-2-((1-(methylsulfonyl)piperidin-4-yl)amino)pyrido[2,3-d]pyrimidin-7(8H)-one, dinaciclib, alvociclib, seliciclib, roniciclib, milciclib, abemaciclib and trilaciclib, or a pharmaceutically acceptable salt thereof.

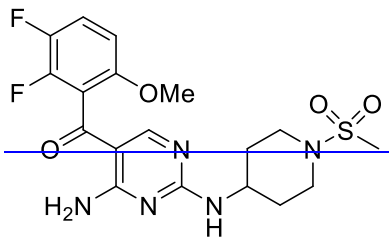
40. The use of any one of claims 1-10, or 13-17 16 or the method of any one of claims 11-16, wherein the CDK2 inhibitor is selected from one of the following compounds:



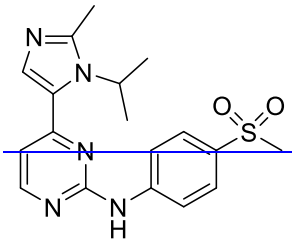
CYC065 AT7519 BMS-387032/SNS032



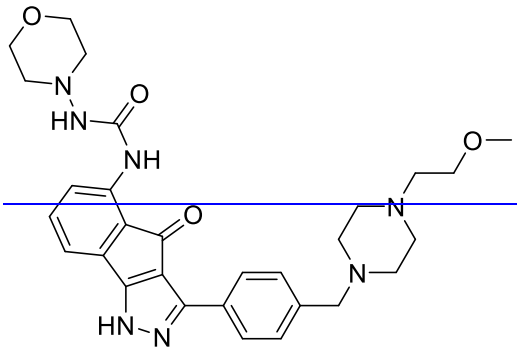
TG02



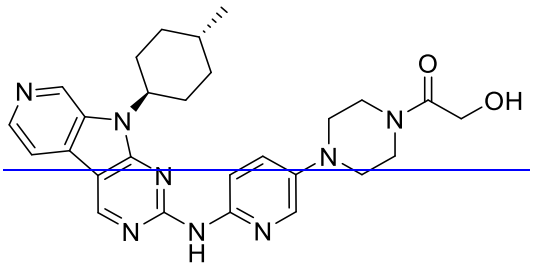
R547



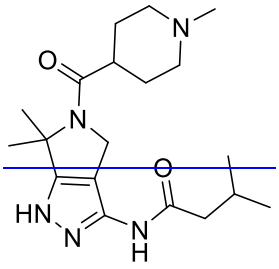
AZD5438



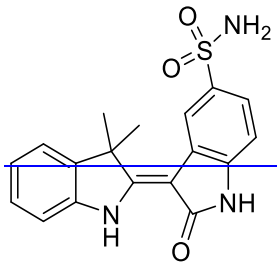
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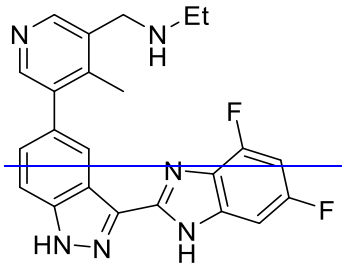
AMG925



PHA-793887



ZK-304709



AG-24322

~~and~~ ;

~~or a pharmaceutically acceptable salt thereof.~~

~~41. The use of any one of claims 1-10, 13-27, 29-37, 39, or 40 or the method of any one of claims 11-16, 18-27, 29-37, 39, or 40, wherein the disease or disorder associated with CDK2 is a cancer.~~

~~42~~16. The use of any one of claims 1-10 and 13-15~~claim 41~~ or the method of any one of claims ~~41~~11-15, wherein the CDK2-associated cancer is lung squamous cell carcinoma, lung adenocarcinoma, pancreatic adenocarcinoma, breast invasive carcinoma, uterine carcinosarcoma,

ovarian serous cystadenocarcinoma, stomach adenocarcinoma, esophageal carcinoma, bladder urothelial carcinoma, mesothelioma, or sarcoma.

~~43~~17. The use of any one of claims 1-10 and 13-15 or the method of any one of claims 11-15~~claim 41 or the method of claim 41~~, wherein the CDK2-associated cancer is lung adenocarcinoma, breast invasive carcinoma, uterine carcinosarcoma, ovarian serous cystadenocarcinoma, or stomach adenocarcinoma.

~~44~~18. The use of any one of claims 1-10 and 13-15 or the method of any one of claims 11-15~~claim 41 or the method of claim 41~~, wherein the CDK2-associated cancer is an adenocarcinoma, carcinoma, or cystadenocarcinoma.

~~45~~19. The use of any one of claims 1-10 and 13-15 or the method of any one of claims 11-15~~claim 41 or the method of claim 41~~, wherein the CDK2-associated cancer is uterine cancer, ovarian cancer, stomach cancer, esophageal cancer, lung cancer, bladder cancer, pancreatic cancer, or breast cancer.

~~46~~20. The use of any one of claims 1-10 and 13-15 or the method of any one of claims 11-15~~claim 41 or the method of claim 41~~, wherein the CDK2-associated cancer is ovarian cancer, uterine carcinosarcoma, or breast cancer.

21. The use of any one of claims 1-10 and 13-15 or the method of any one of claims 11-15, wherein the CDK2-associated cancer is endometrial cancer.

~~47~~22. The use of any one of claims 1-10 and 13-15 or the method of any one of claims 11-15~~claim 41 or the method of claim 41~~, wherein the CDK2-associated cancer comprises p27 inactivation.

~~48~~23. The use of any one of claims 1-10 and 13-15 or the method of any one of claims 11-15~~claim 41 or the method of claim 41~~, wherein the CDK2-associated cancer is a N-myc amplified neuroblastoma, a K-Ras mutant lung cancer, or a cancer with a FBW7 mutation and CCNE1 overexpression.