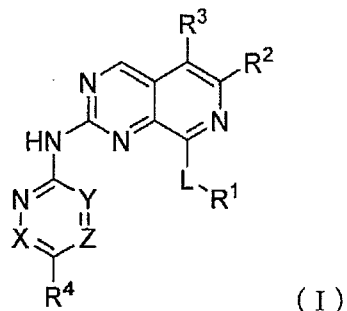


aspects:

[0018]

Aspect (1): A compound represented by Formula (I), or a pharmaceutically acceptable salt thereof:

5 [Formula 1]



[0019]

[wherein

L represents -NR⁵-, -O-, or -S-;

10 R⁵ represents a hydrogen atom or a C₁₋₆ alkyl group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms;

R¹ represents a C₁₋₈ alkyl, C₃₋₁₂ cycloalkyl, (C₃₋₁₂ cycloalkyl)-C₁₋₆ alkyl, 4- to 12-membered heterocyclyl, (4- to 12-membered heterocyclyl)-C₁₋₆ alkyl, C₆₋₁₀ aryl, (C₆₋₁₀ aryl)-C₁₋₆ alkyl, 5- to 10-membered heteroaryl, (5- to 10-membered heteroaryl)-C₁₋₆ alkyl, C₁₋₈ alkylsulfonyl, or C₁₋₈ acyl group;

20 each of the heteroatom-containing groups represented by R¹ contains one to four heteroatoms selected from oxygen, sulfur, and nitrogen atoms;

R¹ is optionally substituted with one to six substituents selected from the group consisting of a halogen atom, =O, -OH, -CN, -COOH, -COOR⁶, -R⁷, a C₃₋₆ cycloalkyl group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms, a 3- to 10-membered heterocyclyl group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms, a C₁₋₈ acyl group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms, and a C₁₋₈ alkoxy group

substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms;
R⁶ and R⁷ each independently represent a C₁₋₆ alkyl group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms;
5 R² represents a C₁₋₈ alkyl, C₃₋₈ cycloalkyl, 4- to 6-membered heterocyclyl, C₁₋₈ acyl group, -COOR⁸, or -CONR⁹R¹⁰;
each of the C₁₋₈ alkyl and C₃₋₈ cycloalkyl groups
10 represented by R² is substituted with zero or one -OH group, zero to two C₁₋₈ alkoxy groups substituted with zero or one -OH group, zero or one C₁₋₄ alkoxy group, and zero to three fluorine atoms, and zero to five fluorine atoms;
15 R² is neither an unsubstituted C₁₋₈ alkyl, nor unsubstituted C₃₋₈ cycloalkyl, nor trifluoromethyl group; R⁸, R⁹, and R¹⁰ each independently represent a hydrogen atom or a C₁₋₈ alkyl group;
the 4- to 6-membered heterocyclyl group represented by R²
20 is optionally substituted with one to four substituents selected from the group consisting of a fluorine atom, -OH, and C₁₋₄ alkyl and C₁₋₄ alkoxy groups;
each of the C₁₋₈ acyl group, -COOR⁸, and -CONR⁹R¹⁰ represented by R² is optionally substituted with one to
25 four substituents selected from the group consisting of a fluorine atom, -OH, and a C₁₋₄ alkoxy group;
R⁹ and R¹⁰ of -CONR⁹R¹⁰ represented by R² are optionally bonded via a single bond or -O- to form a ring including the nitrogen atom bonded to R⁹ and R¹⁰;
30 the heterocyclyl group represented by R² having a 4- or 5-membered ring contains one oxygen heteroatom, and the heterocyclyl group having a 6-membered ring contains one or two oxygen heteroatoms;
R³ represents a hydrogen atom, a C₁₋₈ alkyl group, or a
35 halogen atom;
X represents CR¹¹ or a nitrogen atom;
Y represents CR¹² or a nitrogen atom;

Z represents CR^{13} or a nitrogen atom;
 R^{11} to R^{13} each independently represent a hydrogen, fluorine, chlorine atom, a C_{1-6} alkyl, or C_{1-6} alkoxy group;
5 R^4 represents $-\text{A}^1-\text{A}^2-\text{A}^3$;
 A^1 represents a single bond, a C_{1-8} alkylene, C_{2-8} alkenylene, or C_{2-8} alkynylene group;
one or two sp^3 carbon atoms at any positions of A^1 are optionally replaced with one or two structures selected
10 from the group consisting of $-\text{O}-$, $-\text{NR}^{14}-$, $-\text{C}(=\text{O})-$, $-\text{C}(=\text{O})-\text{O}-$, $-\text{O}-\text{C}(=\text{O})-$, $-\text{O}-\text{C}(=\text{O})-\text{O}-$, $-\text{C}(=\text{O})-\text{NR}^{15}-$, $-\text{O}-\text{C}(=\text{O})-\text{NR}^{16}-$, $-\text{NR}^{17}-\text{C}(=\text{O})-$, $-\text{NR}^{18}-\text{C}(=\text{O})-\text{O}-$, $-\text{NR}^{19}-\text{C}(=\text{O})-\text{NR}^{20}-$, $-\text{S}(=\text{O})_p-$, $-\text{S}(=\text{O})_2-\text{NR}^{21}-$, $-\text{NR}^{22}-\text{S}(=\text{O})_2-$, and $-\text{NR}^{23}-\text{S}(=\text{O})_2-\text{NR}^{24}-$, and a structure of $-\text{O}-\text{O}-$, $-\text{O}-\text{NR}^{14}-$, $-\text{NR}^{14}-\text{O}-$, $-\text{O}-\text{CH}_2-\text{O}-$, $-\text{O}-\text{CH}_2-$
15 $\text{NR}^{14}-$, or $-\text{NR}^{14}-\text{CH}_2-\text{O}-$ is not formed in the case of replacement of two sp^3 carbon atoms;
 A^2 represents a single bond, a C_{1-7} alkylene, C_{3-12} cycloalkylene, C_{3-12} cycloalkylidene, 4- to 12-membered heterocyclylene, 4- to 12-membered heterocyclylidene, C_{6-10}
20 arylene, or 5- to 10-membered heteroarylene group;
 A^3 represents a halogen atom, $-\text{CN}$, $-\text{NO}_2$, $-\text{R}^{25}$, $-\text{OR}^{26}$, $-\text{NR}^{27}\text{R}^{28}$, $-\text{C}(=\text{O})\text{R}^{29}$, $-\text{C}(=\text{O})-\text{OR}^{30}$, $-\text{O}-\text{C}(=\text{O})\text{R}^{31}$, $-\text{O}-\text{C}(=\text{O})-\text{NR}^{32}\text{R}^{33}$, $-\text{C}(=\text{O})-\text{NR}^{34}\text{R}^{35}$, $-\text{NR}^{36}-\text{C}(=\text{O})\text{R}^{37}$, $-\text{NR}^{38}-\text{C}(=\text{O})-\text{OR}^{39}$, $-\text{S}(=\text{O})_2-\text{R}^{40}$, $-\text{S}(=\text{O})_2-\text{NR}^{41}\text{R}^{42}$, or $-\text{NR}^{43}-\text{S}(=\text{O})_2\text{R}^{44}$;
25 A^3 represents $-\text{R}^{25}$, if the A^1 end on the A^2 side has a structure selected from the group consisting of $-\text{O}-$, $-\text{NR}^{14}-$, $-\text{C}(=\text{O})-$, $-\text{C}(=\text{O})-\text{O}-$, $-\text{O}-\text{C}(=\text{O})-$, $-\text{O}-\text{C}(=\text{O})-\text{O}-$, $-\text{C}(=\text{O})-\text{NR}^{15}-$, $-\text{O}-\text{C}(=\text{O})-\text{NR}^{16}-$, $-\text{NR}^{17}-\text{C}(=\text{O})-$, $-\text{NR}^{18}-\text{C}(=\text{O})-\text{O}-$, $-\text{NR}^{19}-\text{C}(=\text{O})-\text{NR}^{20}-$, $-\text{S}(=\text{O})_p-$, $-\text{S}(=\text{O})_2-\text{NR}^{21}-$, $-\text{NR}^{22}-\text{S}(=\text{O})_2-$, and $-\text{NR}^{23}-\text{S}(=\text{O})_2-\text{NR}^{24}-$ and A^2 is a single bond;
30 R^{14} , R^{32} , R^{34} , R^{36} , R^{38} , R^{41} , and R^{43} each independently represent a hydrogen atom, a C_{1-8} alkyl, C_{1-8} acyl, C_{1-8} alkylsulfonyl, 4- to 12-membered heterocyclyl, C_{3-12} cycloalkyl, C_{6-10} aryl, 5- to 10-membered heteroaryl, (4- to 12-membered heterocyclyl)- C_{1-3} alkyl, (C_{3-12} cycloalkyl)- C_{1-3} alkyl, (C_{6-10} aryl)- C_{1-3} alkyl, or (5- to 10-membered heteroaryl)- C_{1-3} alkyl group;

R^{15} to R^{31} , R^{33} , R^{35} , R^{37} , R^{39} , R^{40} , R^{42} , and R^{44} each independently represent a hydrogen atom or a C_{1-8} alkyl, 4- to 12-membered heterocyclyl, C_{3-12} cycloalkyl, C_{6-10} aryl, 5- to 10-membered heteroaryl, (4- to 12-membered heterocyclyl)- C_{1-3} alkyl, (C_{3-12} cycloalkyl)- C_{1-3} alkyl, (C_{6-10} aryl)- C_{1-3} alkyl, or (5- to 10-membered heteroaryl)- C_{1-3} alkyl group;

A^1 , A^2 , A^3 , and R^{14} to R^{44} in A^1 , A^2 , and A^3 are each optionally substituted with one to four substituents selected from the group consisting of -OH, =O, -COOH, -SO₃H, -PO₃H₂, -CN, -NO₂, a halogen atom, a C_{1-8} alkyl group substituted with zero to two -OH groups, zero to two -OR⁴⁵ groups, and zero to six fluorine atoms, a C_{3-12} cycloalkyl group substituted with zero to two -OH groups, zero to two -OR⁴⁶ groups, and zero to six fluorine atoms, a C_{1-8} alkoxy group substituted with zero to two -OH groups, zero to two -OR⁴⁷ groups, and zero to six fluorine atoms, and a 4- to 12-membered heterocyclyl group substituted with zero to two -OH groups, zero to two -OR⁴⁹ groups, and zero to six fluorine atoms;

R^{14} to R^{44} are optionally bonded in A^1 , A^2 , or A^3 or between A^1 and A^2 , between A^1 and A^3 , or between A^2 and A^3 via a single bond, -O-, -NR⁵⁰-, or -S(=O)_p- to form a ring; R^{11} or R^{13} is optionally bonded to A^1 , A^2 , or A^3 via a single bond, -O-, -NR⁵¹-, or -S(=O)_p- to form a ring; R^{45} to R^{47} and R^{49} to R^{51} each represent a hydrogen atom or a C_{1-4} alkyl group substituted with zero or one -OH group and zero to six fluorine atoms;

p represents an integer of 0 to 2; and

each of the heteroatom-containing groups represented by A^1 , A^2 , and A^3 contains one to four heteroatoms selected from oxygen, sulfur, and nitrogen atoms].

[0020]

Aspect (2): The compound or pharmaceutically acceptable salt thereof according to Aspect (1), wherein L represents -NH-.

Aspect (3): The compound or pharmaceutically acceptable

salt thereof according to Aspect (1) or (2), wherein R^1 represents a C_{1-8} alkyl, C_{3-12} cycloalkyl, (C_{3-12} cycloalkyl)- C_{1-6} alkyl, 4- to 12-membered heterocyclyl, or (4- to 12-membered heterocyclyl)- C_{1-6} alkyl group.

5 Aspect (4): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (3), wherein R^2 is a C_{1-8} alkyl group substituted with one to four fluorine atoms.

10 Aspect (5): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (3), wherein R^2 is a C_{1-8} alkyl group substituted with zero or one -OH group and zero to two C_{1-8} alkoxy groups substituted with zero or one -OH group, zero or one C_{1-4} alkoxy group, and zero to three fluorine atoms.

15 Aspect (6): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (3), wherein R^2 is a 4- to 6-membered heterocyclyl group optionally substituted with one to four substituents selected from the group consisting of a fluorine atom, -OH, and C_{1-4} alkyl and C_{1-4} alkoxy groups.

20 Aspect (7): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (3), wherein R^2 is $-COOR^8$, $-CONR^9R^{10}$, or a C_{1-8} acyl group, optionally each group being substituted with one to four substituents selected from the group consisting of a fluorine atom, -OH, and a C_{1-8} alkoxy group.

25 Aspect (8): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (7), wherein X represents CR^{11} , Y represents CR^{12} , and Z represents CR^{13} .

30 Aspect (9): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (7), wherein X represents a nitrogen atom, Y represents CR^{12} , and Z represents CR^{13} .

35 Aspect (10): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (7), wherein X represents CR^{11} , Y represents a nitrogen atom,

and Z represents CR¹³.

Aspect (11): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (7), wherein X represents CR¹¹, Y represents CR¹², and Z

5 represents a nitrogen atom.

Aspect (12): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (11), wherein A¹ is a single bond.

Aspect (13): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (11), wherein A¹ represents a C₁₋₈ alkylene group, and no sp³ carbon atom in A¹ is replaced with another structure.

Aspect (14): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (11), wherein A¹ represents a C₁₋₈ alkylene group, and one sp³ carbon atom at any position of A¹ is replaced with -O-.

Aspect (15): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (11), wherein A¹ represents a C₁₋₈ alkylene group, and one sp³ carbon atom at any position of A¹ is replaced with -NR¹⁴-.

Aspect (16): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (11), wherein A¹ represents a C₁₋₈ alkylene group, one sp³ carbon atom at any position of A¹ is replaced with -NR¹⁴-, and one sp³ carbon atom at any other position of A¹ is optionally replaced with -O-.

Aspect (17): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (16), wherein A² represents a 4- to 12-membered heterocyclylene group; and A² is optionally substituted with one to four substituents selected from the group consisting of -OH, -COOH, -SO₃H, -PO₃H₂, -CN, -NO₂, a halogen atom, a C₁₋₈ alkyl group optionally substituted with zero to two -OH groups, zero to two -OR⁴⁵ groups, and zero to six fluorine atoms, a C₃₋₁₂ cycloalkyl group optionally substituted with zero to two -OH groups, zero to two -OR⁴⁶ groups, and zero to six fluorine atoms, a C₁₋₈ alkoxy group optionally

substituted with zero to two -OH groups, zero to two -OR⁴⁷ groups, and zero to six fluorine atoms, and a 4- to 12-membered heterocyclyl group substituted with zero to two -OH groups, zero to two -OR⁴⁹ groups, and zero to six fluorine atoms.

Aspect (18): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (16), wherein A² represents a 4- to 12-membered heterocyclylene group substituted with =O; and A² is optionally substituted with one to four substituents selected from the group consisting of -OH, =O, -COOH, -SO₃H, -PO₃H₂, -CN, -NO₂, a halogen atom, a C₁₋₈ alkyl group substituted with zero to two -OH groups, zero to two -OR⁴⁵ groups, and zero to six fluorine atoms, a C₃₋₁₂ cycloalkyl group substituted with zero to two -OH groups, zero to two -OR⁴⁶ groups, and zero to six fluorine atoms, a C₁₋₈ alkoxy group substituted with zero to two -OH groups, zero to two -OR⁴⁷ groups, and zero to six fluorine atoms, and a 4- to 12-membered heterocyclyl group substituted with zero to two -OH groups, zero to two -OR⁴⁹ groups, and zero to six fluorine atoms.

Aspect (19): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (18), wherein X represents CR¹¹, Y represents CR¹², Z represents CR¹³, and R¹¹ or R¹³ is bonded to A¹, A², or A³ via a single bond, -O-, -NR⁵¹-, or -S(=O)_p- to form a ring.

Aspect (20): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (19), wherein A³ is a hydrogen atom.

Aspect (21): The compound or pharmaceutically acceptable salt thereof according to any one of Aspects (1) to (19), wherein A³ is a halogen atom, -CN, -R²⁵, -OR²⁶, -NR²⁷R²⁸, -C(=O)R²⁹, or -C(=O)-OR³⁰, and R²⁵ to R³⁰ each independently represent a hydrogen atom, an optionally substituted C₁₋₈ alkyl group, an optionally substituted 4- to 12-membered heterocyclyl group, an optionally substituted C₃₋₁₂ cycloalkyl group, an optionally substituted (4- to 12-

yl]ethanol

1- [6- [[6- [(1R)-1-hydroxypropyl]-8-

(isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-
pyridyl]piperazin-2-one

5 (1R)-1-[2- [[5- [[4- (2-hydroxyethyl)piperazin-1-yl]methyl]-
6-methyl-2-pyridyl]amino]-8- (propylamino)pyrido[3,4-
d]pyrimidin-6-yl]ethanol

Aspect (25): A pharmaceutical composition comprising the
compound or pharmaceutically acceptable salt thereof
10 according to any one of Aspects (1) to (24) and a
pharmaceutically acceptable carrier.

Aspect (26): A pharmaceutical composition exhibiting a
CDK4/6 inhibitory activity, comprising the compound or
pharmaceutically acceptable salt thereof according to any
15 one of Aspects (1) to (24) as an active ingredient.

Aspect (27): A drug for prevention or treatment of
rheumatoid arthritis, arteriosclerosis, pulmonary
fibrosis, cerebral infarction, or cancer, the drug
comprising the compound or pharmaceutically acceptable
20 salt thereof according to any one of Aspects (1) to (24)
as an active ingredient.

Aspect (27a): Use of a drug comprising the compound or
pharmaceutically acceptable salt thereof according to any
one of Aspects (1) to (24) as an active ingredient in the
25 manufacture of a medicament for prevention or treatment
of rheumatoid arthritis, arteriosclerosis, pulmonary
fibrosis, cerebral infarction, or cancer.

Advantageous Effects of Invention

[0021]

30 The compound of the present invention exhibits a
superior CDK4/6 inhibitory activity and is useful as a
drug for prevention or treatment of rheumatoid arthritis,
arteriosclerosis, pulmonary fibrosis, cerebral
infarction, or cancer.

35 Brief Description of Drawings

[0022]

Fig. 1 is graphs showing the results (scores)

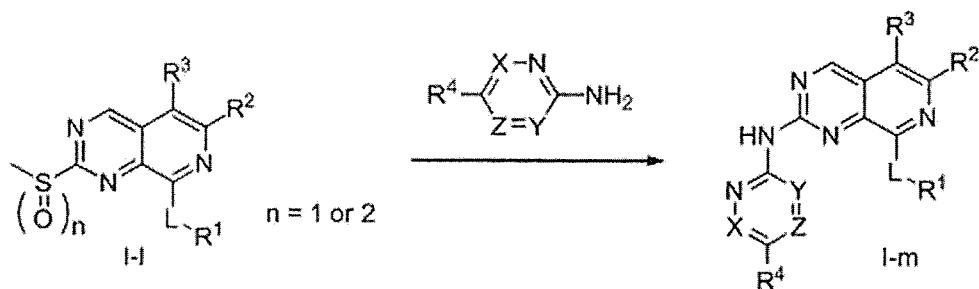
obtained through administration of the compound of the present invention to mice.

Description of Embodiments

[0023]

5 Now will be described the structures (groups) of the compound of the present invention represented by Formula

[Formula 27]



[0085]

Compound I-l is reacted with an amine derivative represented by the formula R⁴-(nitrogen-containing heteroaryl with X, Y, and Z)-NH₂ of the above scheme in an appropriate organic solvent (e.g., NMP, THF, or toluene) or under solvent-free conditions in the presence or absence of an appropriate base (e.g., sodium hydride, triethylamine, or N,N-diisopropyl-N-ethylamine) at a temperature of 0°C to the reflux temperature of the solvent, to yield compound I-m.

If L, R¹, R², or R⁴ of compound I-m is protected with an appropriate protective group, deprotection can be performed by any process known to those skilled in the art. For example, deprotection can be performed through reaction of the compound with an appropriate deprotecting reagent (e.g., TFA or hydrogen chloride for a Boc protective group, lithium hydroxide for a benzoyl protective group, or hydrogen in the presence of Pd/C for a Cbz protective group) in an appropriate organic solvent (e.g., dichloromethane, methanol, or THF) or under solvent-free conditions at a temperature of 0°C to the reflux temperature of the solvent (reference: Green's Protective Groups in Organic Synthesis, 4th edition, John Wiley & Sons Inc.).

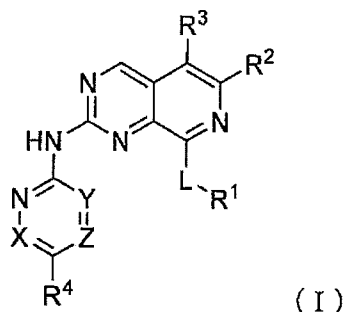
If compound I-m is protected with two or more protective groups, deprotection may be performed in an appropriate order depending on the structure of compound I-m.

In each of the reactions 9) to 13) described below, L, R¹, R², or R⁴ of compound I-m is appropriately protected depending on the corresponding reaction

CLAIMS

Claim 1. A compound represented by Formula (I) or a pharmaceutically acceptable salt thereof:

[Formula 1]



[where

L represents -NR⁵-, -O-, or -S-;

R⁵ represents a hydrogen atom or a C₁₋₆ alkyl group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms;

R¹ represents a C₁₋₈ alkyl, C₃₋₁₂ cycloalkyl, (C₃₋₁₂ cycloalkyl)-C₁₋₆ alkyl, 4- to 12-membered heterocyclyl, (4- to 12-membered heterocyclyl)-C₁₋₆ alkyl, C₆₋₁₀ aryl, (C₆₋₁₀ aryl)-C₁₋₆ alkyl, 5- to 10-membered heteroaryl, (5- to 10-membered heteroaryl)-C₁₋₆ alkyl, C₁₋₈ alkylsulfonyl, or C₁₋₈ acyl group;

each of the heteroatom-containing groups represented by R¹ contains one to four heteroatoms selected from oxygen, sulfur, and nitrogen atoms;

R¹ is optionally substituted with one to six substituents selected from the group consisting of a halogen atom, =O, -OH, -CN, -COOH, -COOR⁶, -R⁷, a C₃₋₆ cycloalkyl group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms, a 3- to 10-membered heterocyclyl group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms, a C₁₋₈ acyl group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms, and a C₁₋₈ alkoxy group substituted with zero to two -OH groups, zero to two C₁₋₈ alkoxy groups, and zero to six fluorine atoms;

R^6 and R^7 each independently represent a C_{1-6} alkyl group substituted with zero to two -OH groups, zero to two C_{1-8} alkoxy groups, and zero to six fluorine atoms;
 R^2 represents a C_{1-8} alkyl, C_{3-8} cycloalkyl, 4- to 6-membered heterocyclyl, C_{1-8} acyl group, $-COOR^8$, or $-CONR^9R^{10}$;
each of the C_{1-8} alkyl and C_{3-8} cycloalkyl groups represented by R^2 is substituted with zero or one -OH group, zero to two C_{1-8} alkoxy groups substituted with zero or one -OH group, zero or one C_{1-4} alkoxy group, and zero to three fluorine atoms, and zero to five fluorine atoms;
 R^2 is neither an unsubstituted C_{1-8} alkyl, nor unsubstituted C_{3-8} cycloalkyl, nor trifluoromethyl group;
 R^8 , R^9 , and R^{10} each independently represent a hydrogen atom or a C_{1-8} alkyl group;
the 4- to 6-membered heterocyclyl group represented by R^2 is optionally substituted with one to four substituents selected from the group consisting of a fluorine atom, -OH, and C_{1-4} alkyl and C_{1-4} alkoxy groups;
each of the C_{1-8} acyl group, $-COOR^8$, and $-CONR^9R^{10}$ represented by R^2 is optionally substituted with one to four substituents selected from the group consisting of a fluorine atom, -OH, and a C_{1-4} alkoxy group;
 R^9 and R^{10} of $-CONR^9R^{10}$ represented by R^2 are optionally bonded via a single bond or -O- to form a ring including the nitrogen atom bonded to R^9 and R^{10} ;
the heterocyclyl group represented by R^2 having a 4- or 5-membered ring contains one oxygen heteroatom, and the heterocyclyl group having a 6-membered ring contains one or two oxygen heteroatoms;
 R^3 represents a hydrogen atom, a C_{1-8} alkyl group, or a halogen atom;
 X represents CR^{11} or a nitrogen atom;
 Y represents CR^{12} or a nitrogen atom;
 Z represents CR^{13} or a nitrogen atom;
 R^{11} to R^{13} each independently represent a hydrogen,

fluorine, or chlorine atom or a C₁₋₆ alkyl or C₁₋₆ alkoxy group;

R⁴ represents -A¹-A²-A³;

A¹ represents a single bond or a C₁₋₈ alkylene, C₂₋₈ alkenylene, or C₂₋₈ alkynylene group;

one or two sp³ carbon atoms at any positions of A¹ are optionally replaced with one or two structures selected from the group consisting of -O-, -NR¹⁴-, -C(=O)-, -C(=O)-O-, -O-C(=O)-, -O-C(=O)-O-, -C(=O)-NR¹⁵-, -O-C(=O)-NR¹⁶-, -NR¹⁷-C(=O)-, -NR¹⁸-C(=O)-O-, -NR¹⁹-C(=O)-NR²⁰-, -S(=O)_p-, -S(=O)₂-NR²¹-, -NR²²-S(=O)₂-, and -NR²³-S(=O)₂-NR²⁴-, and a structure of -O-O-, -O-NR¹⁴-, -NR¹⁴-O-, -O-CH₂-O-, -O-CH₂-NR¹⁴-, or -NR¹⁴-CH₂-O- is not formed in the case of replacement of two sp³ carbon atoms;

A² represents a single bond or a C₁₋₇ alkylene, C₃₋₁₂ cycloalkylene, C₃₋₁₂ cycloalkylidene, 4- to 12-membered heterocyclylene, 4- to 12-membered heterocyclylidene, C₆₋₁₀ arylene, or 5- to 10-membered heteroarylene group;

A³ represents a halogen atom, -CN, -NO₂, -R²⁵, -OR²⁶, -NR²⁷R²⁸, -C(=O)R²⁹, -C(=O)-OR³⁰, -O-C(=O)R³¹, -O-C(=O)-NR³²R³³, -C(=O)-NR³⁴R³⁵, -NR³⁶-C(=O)R³⁷, -NR³⁸-C(=O)-OR³⁹, -S(=O)₂-R⁴⁰, -S(=O)₂-NR⁴¹R⁴², or -NR⁴³-S(=O)₂R⁴⁴;

A³ represents -R²⁵, if the A¹ end on the A² side has a structure selected from the group consisting of -O-, -NR¹⁴-, -C(=O)-, -C(=O)-O-, -O-C(=O)-, -O-C(=O)-O-, -C(=O)-NR¹⁵-, -O-C(=O)-NR¹⁶-, -NR¹⁷-C(=O)-, -NR¹⁸-C(=O)-O-, -NR¹⁹-C(=O)-NR²⁰-, -S(=O)_p-, -S(=O)₂-NR²¹-, -NR²²-S(=O)₂-, and -NR²³-S(=O)₂-NR²⁴- and A² is a single bond;

R¹⁴, R³², R³⁴, R³⁶, R³⁸, R⁴¹, and R⁴³ each independently

represent a hydrogen atom or a C₁₋₈ alkyl, C₁₋₈ acyl, C₁₋₈ alkylsulfonyl, 4- to 12-membered heterocyclyl, C₃₋₁₂ cycloalkyl, C₆₋₁₀ aryl, 5- to 10-membered heteroaryl, (4- to 12-membered heterocyclyl)-C₁₋₃ alkyl, (C₃₋₁₂ cycloalkyl)-C₁₋₃ alkyl, (C₆₋₁₀ aryl)-C₁₋₃ alkyl, or (5- to 10-membered heteroaryl)-C₁₋₃ alkyl group;

R¹⁵ to R³¹, R³³, R³⁵, R³⁷, R³⁹, R⁴⁰, R⁴², and R⁴⁴ each independently represent a hydrogen atom or a C₁₋₈ alkyl,

4- to 12-membered heterocyclyl, C₃₋₁₂ cycloalkyl, C₆₋₁₀ aryl, 5- to 10-membered heteroaryl, (4- to 12-membered heterocyclyl)-C₁₋₃ alkyl, (C₃₋₁₂ cycloalkyl)-C₁₋₃ alkyl, (C₆₋₁₀ aryl)-C₁₋₃ alkyl, or (5- to 10-membered heteroaryl)-C₁₋₃ alkyl group;

A¹, A², A³, and R¹⁴ to R⁴⁴ in A¹, A², and A³ are each optionally substituted with one to four substituents selected from the group consisting of -OH, =O, -COOH, -SO₃H, -PO₃H₂, -CN, -NO₂, a halogen atom, a C₁₋₈ alkyl group substituted with zero to two -OH groups, zero to two -OR⁴⁵ groups, and zero to six fluorine atoms, a C₃₋₁₂ cycloalkyl group substituted with zero to two -OH groups, zero to two -OR⁴⁶ groups, and zero to six fluorine atoms, a C₁₋₈ alkoxy group substituted with zero to two -OH groups, zero to two -OR⁴⁷ groups, and zero to six fluorine atoms, and a 4- to 12-membered heterocyclyl group substituted with zero to two -OH groups, zero to two -OR⁴⁹ groups, and zero to six fluorine atoms;

R¹⁴ to R⁴⁴ are optionally bonded in A¹, A², or A³ or between A¹ and A², between A¹ and A³, or between A² and A³ via a single bond, -O-, -NR⁵⁰-, or -S(=O)_p- to form a ring;

R¹¹ or R¹³ is optionally bonded to A¹, A², or A³ via a single bond, -O-, -NR⁵¹-, or -S(=O)_p- to form a ring; R⁴⁵ to R⁴⁷ and R⁴⁹ to R⁵¹ each represent a hydrogen atom or a C₁₋₄ alkyl group substituted with zero or one -OH group and zero to six fluorine atoms;

p represents an integer of 0 to 2; and each of the heteroatom-containing groups represented by A¹, A², and A³ contains one to four heteroatoms selected from oxygen, sulfur, and nitrogen atoms].

Claim 2. The compound or pharmaceutically acceptable salt thereof according to claim 1, wherein L represents -NH-.

Claim 3. The compound or pharmaceutically acceptable salt thereof according to claim 1 or 2, wherein R¹ represents a C₁₋₈ alkyl, C₃₋₁₂ cycloalkyl, (C₃₋₁₂ cycloalkyl)-C₁₋₆ alkyl, 4- to 12-membered heterocyclyl, or

(4- to 12-membered heterocyclyl)-C₁₋₆ alkyl group.

Claim 4. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 3, wherein R² is a C₁₋₈ alkyl group substituted with one to
5 four fluorine atoms.

Claim 5. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 3, wherein R² is a C₁₋₈ alkyl group substituted with zero or one -OH group and zero to two C₁₋₈ alkoxy groups
10 substituted with zero or one -OH group, zero or one C₁₋₄ alkoxy group, and zero to three fluorine atoms.

Claim 6. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 3, wherein R² is a 4- to 6-membered heterocyclyl group
15 optionally substituted with one to four substituents selected from the group consisting of a fluorine atom, -OH, and C₁₋₄ alkyl and C₁₋₄ alkoxy groups.

Claim 7. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 3, wherein R² is -COOR⁸, -CONR⁹R¹⁰, or a C₁₋₈ acyl group,
20 optionally each group being substituted with one to four substituents selected from the group consisting of a fluorine atom, -OH, and a C₁₋₈ alkoxy group.

Claim 8. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 7, wherein X represents CR¹¹, Y represents CR¹², and Z represents CR¹³.
25

Claim 9. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 7, wherein X represents a nitrogen atom, Y represents CR¹²,
30 and Z represents CR¹³.

Claim 10. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 7, wherein X represents CR¹¹, Y represents a nitrogen atom, and Z represents CR¹³.
35

Claim 11. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1

to 7, wherein X represents CR¹¹, Y represents CR¹², and Z represents a nitrogen atom.

5 Claim 12. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 11, wherein A¹ is a single bond.

 Claim 13. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 11, wherein A¹ represents a C₁₋₈ alkylene group, and no sp³ carbon atom in A¹ is replaced with another structure.

10 Claim 14. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 11, wherein A¹ represents a C₁₋₈ alkylene group, and one sp³ carbon atom at any position of A¹ is replaced with -O-.

15 Claim 15. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 11, wherein A¹ represents a C₁₋₈ alkylene group, and one sp³ carbon atom at any position of A¹ is replaced with -NR¹⁴-.

20 Claim 16. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 11, wherein A¹ represents a C₁₋₈ alkylene group, one sp³ carbon atom at any position of A¹ is replaced with -NR¹⁴-, and one sp³ carbon atom at any other position of A¹ is optionally replaced with -O-.

25 Claim 17. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 16, wherein A² represents a 4- to 12-membered heterocyclylene group; and A² is optionally substituted with one to four substituents selected from the group consisting of -OH, -COOH, -SO₃H, -PO₃H₂, -CN, -NO₂, a halogen atom, a C₁₋₈ alkyl group substituted with zero to two -OH groups, zero to two -OR⁴⁵ groups, and zero to six fluorine atoms, a C₃₋₁₂ cycloalkyl group substituted with zero to two -OH groups, zero to two -OR⁴⁶ groups, and zero to six fluorine atoms, a C₁₋₈ alkoxy group substituted with zero to two -OH groups, zero to two -OR⁴⁷ groups, and

zero to six fluorine atoms, and a 4- to 12-membered heterocyclyl group substituted with zero to two -OH groups, zero to two -OR⁴⁹ groups, and zero to six fluorine atoms.

5 Claim 18. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 16, wherein A² represents a 4- to 12-membered heterocyclylene group substituted with =O; and A² is optionally substituted with one to four substituents
10 selected from the group consisting of -OH, =O, -COOH, -SO₃H, -PO₃H₂, -CN, -NO₂, a halogen atom, a C₁₋₈ alkyl group substituted with zero to two -OH groups, zero to two -OR⁴⁵ groups, and zero to six fluorine atoms, a C₃₋₁₂ cycloalkyl group substituted with zero to two -OH groups, zero to
15 two -OR⁴⁶ groups, and zero to six fluorine atoms, a C₁₋₈ alkoxy group substituted with zero to two -OH groups, zero to two -OR⁴⁷ groups, and zero to six fluorine atoms, and a 4- to 12-membered heterocyclyl group substituted with zero to two -OH groups, zero to two -OR⁴⁹ groups, and
20 zero to six fluorine atoms.

 Claim 19. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 18, wherein X represents CR¹¹, Y represents CR¹², Z represents CR¹³, and R¹¹ or R¹³ is bonded to A¹, A², or A³
25 via a single bond, -O-, -NR⁵¹-, or -S(=O)_p- to form a ring.

 Claim 20. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 19, wherein A³ is a hydrogen atom.

30 Claim 21. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 19, wherein A³ is a halogen atom, -CN, -R²⁵, -OR²⁶, -NR²⁷R²⁸, -C(=O)R²⁹, or -C(=O)-OR³⁰, and R²⁵ to R³⁰ each independently represent a hydrogen atom, an optionally
35 substituted C₁₋₈ alkyl group, an optionally substituted 4- to 12-membered heterocyclyl group, an optionally substituted C₃₋₁₂ cycloalkyl group, an optionally

substituted (4- to 12-membered heterocyclyl)-C₁₋₃ alkyl group, or an optionally substituted (C₃₋₁₂ cycloalkyl)-C₁₋₃ alkyl group.

5 Claim 22. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 21, wherein R³ is a hydrogen atom.

10 Claim 23. The compound or pharmaceutically acceptable salt thereof according to any one of claims 1 to 21, wherein R³ represents a C₁₋₄ alkyl group, a fluorine atom, or a chlorine atom.

Claim 24. The compound, or pharmaceutically acceptable salt thereof, selected from;

6- (difluoromethyl) -N8-isopropyl-N2- (5-piperazin-1-yl-2-pyridyl)pyrido[3,4-d]pyrimidine-2,8-diamine

15 (1R) -1- [8- (isopropylamino) -2- [(5-piperazin-1-yl-2-pyridyl) amino] pyrido[3,4-d]pyrimidin-6-yl] ethanol

1- [2- [(5-piperazin-1-yl-2-pyridyl) amino] -8- (tetrahydrofuran-3-ylamino) pyrido[3,4-d]pyrimidin-6-yl] ethanol

20 1- [2- [(5-piperazin-1-yl-2-pyridyl) amino] -8- (tetrahydropyran-3-ylamino) pyrido[3,4-d]pyrimidin-6-yl] ethanol

N8-isopropyl-6- [(1R) -1-methoxyethyl] -N2- (6-piperazin-1-ylpyridazin-3-yl) pyrido[3,4-d]pyrimidine-2,8-diamine

25 N8-isopropyl-6- [(1R) -1-methoxyethyl] -N2- [5- (piperazin-1-ylmethyl) -2-pyridyl] pyrido[3,4-d]pyrimidine-2,8-diamine

1- [6- [[6- [(1R) -1-hydroxyethyl] -8- (isopropylamino) pyrido[3,4-d]pyrimidin-2-yl] amino] -3-pyridyl] piperazin-2-one

30 1- [6- [[5-chloro-6- [(1R) -1-hydroxyethyl] -8- (isopropylamino) pyrido[3,4-d]pyrimidin-2-yl] amino] -3-pyridyl] piperazin-2-one

(1R) -1- [2- [(6-piperazin-1-ylpyridazin-3-yl) amino] -8- (tetrahydropyran-4-ylamino) pyrido[3,4-d]pyrimidin-6-yl] ethanol

35 (1R) -1- [2- [(6-piperazin-1-ylpyridazin-3-yl) amino] -8- [[(3S) -tetrahydropyran-3-yl] amino] pyrido[3,4-d]pyrimidin-

- 6-yl]ethanol
(1R)-1-[2-[(6-piperazin-1-ylpyridazin-3-yl)amino]-8-
[[(3R)-tetrahydropyran-3-yl]amino]pyrido[3,4-d]pyrimidin-
6-yl]ethanol
5 (1R)-1-[2-[[5-(piperazin-1-ylmethyl)-2-pyridyl]amino]-8-
(tetrahydropyran-4-ylamino)pyrido[3,4-d]pyrimidin-6-
yl]ethanol
(1R)-1-[2-[[5-(piperazin-1-ylmethyl)-2-pyridyl]amino]-8-
[[(3S)-tetrahydropyran-3-yl]amino]pyrido[3,4-d]pyrimidin-
10 6-yl]ethanol
(1R)-1-[2-[[5-(piperazin-1-ylmethyl)-2-pyridyl]amino]-8-
[[(3R)-tetrahydropyran-3-yl]amino]pyrido[3,4-d]pyrimidin-
6-yl]ethanol
1-[[6-[[6-[(1R)-1-hydroxyethyl]-8-
15 (isopropylamino)pyrido[3,4-d]pyrimidin-2-
yl]amino]pyridazin-3-yl]piperidin-4-ol
(1R)-1-[8-(isopropylamino)-2-[(6-piperazin-1-ylpyridazin-
3-yl)amino]pyrido[3,4-d]pyrimidin-6-yl]ethanol
1-[[6-[[6-[(1R)-1-hydroxyethyl]-8-
20 (isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-
pyridyl]methyl]piperazin-2-one
6-[(1R)-1-methoxyethyl]-N2-[5-(piperazin-1-ylmethyl)-2-
pyridyl]-N8-[(3S)-tetrahydropyran-3-yl]pyrido[3,4-
d]pyrimidine-2,8-diamine
25 6-[(1R)-1-methoxyethyl]-N2-(6-piperazin-1-ylpyridazin-3-
yl)-N8-[(3S)-tetrahydropyran-3-yl]pyrido[3,4-
d]pyrimidine-2,8-diamine
6-[(1R)-1-methoxyethyl]-N2-[5-(piperazin-1-ylmethyl)-2-
pyridyl]-N8-(tetrahydropyran-4-ylmethyl)pyrido[3,4-
30 d]pyrimidine-2,8-diamine
N8-isopropyl-6-[(1R)-1-methoxyethyl]-N2-(5-piperazin-1-
ylpyrazin-2-yl)pyrido[3,4-d]pyrimidine-2,8-diamine
N8-isopropyl-6-[(1R)-1-methoxyethyl]-N2-[6-[(2S)-2-
methylpiperazin-1-yl]pyridazin-3-yl]pyrido[3,4-
35 d]pyrimidine-2,8-diamine
N8-isopropyl-6-[(1R)-1-methoxyethyl]-N2-[6-[(2R)-2-
methylpiperazin-1-yl]pyridazin-3-yl]pyrido[3,4-

- d]pyrimidine-2,8-diamine
(1R)-1-[2-[[6-(4,7-diazaspiro[2.5]octan-7-yl)pyridazin-3-yl]amino]-8-(isopropylamino)pyrido[3,4-d]pyrimidin-6-yl]ethanol
- 5 (1R)-1-[2-[[5-(4,7-diazaspiro[2.5]octan-7-yl)methyl]-2-pyridyl]amino]-8-(isopropylamino)pyrido[3,4-d]pyrimidin-6-yl]ethanol
- 2-[1-[[6-[[6-[(1R)-1-hydroxyethyl]-8-(isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-pyridyl]methyl]-4-piperidyl]propan-2-ol
- 10 (1R)-1-[2-[[5-[[4-(2-hydroxyethyl)piperazin-1-yl]methyl]-2-pyridyl]amino]-8-(isopropylamino)pyrido[3,4-d]pyrimidin-6-yl]ethanol
- (1R)-1-[2-[[5-[2-(dimethylamino)ethoxy]-2-pyridyl]amino]-8-[(3S)-tetrahydropyran-3-yl]amino]pyrido[3,4-d]pyrimidin-6-yl]ethanol
- 15 (1R)-1-[2-[[6-(4-methylpiperazin-1-yl)pyridazin-3-yl]amino]-8-[(3S)-tetrahydropyran-3-yl]amino]pyrido[3,4-d]pyrimidin-6-yl]ethanol
- 20 2-hydroxy-1-[4-[6-[[6-[(1R)-1-hydroxyethyl]-8-(isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]pyridazin-3-yl]piperazin-1-yl]ethanone
- 1-[6-[[8-(isopropylamino)-6-[(2S)-tetrahydrofuran-2-yl]pyrido[3,4-d]pyrimidin-2-yl]amino]-3-pyridyl]piperazin-2-one
- 25 (1R)-1-[8-(isopropylamino)-2-(5,6,7,8-tetrahydro-1,6-naphthyridin-2-ylamino)pyrido[3,4-d]pyrimidin-6-yl]ethanol
- 2-[4-[[6-[[6-[(1R)-1-hydroxyethyl]-8-(isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-pyridyl]methyl]piperazin-1-yl]-2-methyl-propan-1-ol
- 30 4-[6-[[6-[(1R)-1-hydroxyethyl]-8-(isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-pyridyl]-1-[(2S)-2-hydroxypropyl]-1,4-diazepan-5-one
- 35 4-[6-[[6-[(1R)-1-hydroxyethyl]-8-(isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-pyridyl]-1-[(2R)-2-hydroxypropyl]-1,4-diazepan-5-one

- N8-isopropyl-N2-[5-(piperazin-1-ylmethyl)-2-pyridyl]-6-
[(2S)-tetrahydrofuran-2-yl]pyrido[3,4-d]pyrimidine-2,8-
diamine
- 1- [6- [[6- [(1R)-1-hydroxyethyl]-8-
5 (isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-2-
methyl-3-pyridyl]piperazin-2-one
- 1- [6- [[8- (isopropylamino)-6- [(3S)-tetrahydrofuran-3-
yl]pyrido[3,4-d]pyrimidin-2-yl]amino]-3-
pyridyl]piperazin-2-one
- 10 (1R)-1-[2-(5,6,7,8-tetrahydro-1,6-naphthyridin-2-
ylamino)-8- [[(3S)-tetrahydropyran-3-yl] amino]pyrido[3,4-
d]pyrimidin-6-yl]ethanol
- 1- [6- [[8- (isopropylamino)-6- (3-methyloxetan-3-
yl)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-
15 pyridyl]piperazin-2-one
- (1R)-1-[2- [[5- [4- (dimethylamino)cyclohexoxy]-2-
pyridyl]amino]-8- [[(3S)-tetrahydropyran-3-
yl]amino]pyrido[3,4-d]pyrimidin-6-yl]ethanol
- 6- [(1R)-1-methoxyethyl]-N2-[5-(piperazin-1-ylmethyl)-2-
20 pyridyl]-N8-propyl-pyrido[3,4-d]pyrimidine-2,8-diamine
- 6- [(1R)-1-methoxyethyl]-N2-(6-piperazin-1-ylpyridazin-3-
yl)-N8-propyl-pyrido[3,4-d]pyrimidine-2,8-diamine
- 1- [[6- [[6- (difluoromethyl)-8- [(4-
methylcyclohexyl)amino]pyrido[3,4-d]pyrimidin-2-
25 yl]amino]-3-pyridyl]methyl]piperidine-4-carboxylic acid
- (1R)-1-[8-(ethylamino)-2- [[5- [[4- (2-
hydroxyethyl)piperazin-1-yl]methyl]-2-
pyridyl]amino]pyrido[3,4-d]pyrimidin-6-yl]ethanol
- (1R)-1-[2- [[5- [[4- (2-hydroxyethyl)piperazin-1-yl]methyl]-
30 2-pyridyl]amino]-8- (propylamino)pyrido[3,4-d]pyrimidin-6-
yl]ethanol
- N8-isopropyl-6- (3-methyloxetan-3-yl)-N2- (6-piperazin-1-
ylpyridazin-3-yl)pyrido[3,4-d]pyrimidine-2,8-diamine
- N8-isopropyl-6- (3-methyloxetan-3-yl)-N2- [5- (piperazin-1-
35 ylmethyl)-2-pyridyl]pyrido[3,4-d]pyrimidine-2,8-diamine
- 6- (3-methyloxetan-3-yl)-N2- [5- (piperazin-1-ylmethyl)-2-
pyridyl]-N8- [(3S)-tetrahydropyran-3-yl]pyrido[3,4-

d]pyrimidine-2,8-diamine
4- [6- [[6- [(1R)-1-hydroxyethyl] -8-
[isopropyl(methyl)amino]pyrido[3,4-d]pyrimidin-2-
yl]amino] -3-pyridyl] -1,4-diazepan-5-one
5 (1R)-1- [8- (isopropylamino) -2- [(6-methyl-5-piperazin-1-yl-
2-pyridyl)amino]pyrido[3,4-d]pyrimidin-6-yl] ethanol
(1R)-1- [2- [[6- (2-hydroxyethyl) -7,8-dihydro-5H-1,6-
naphthyridin-2-yl]amino] -8- (isopropylamino)pyrido[3,4-
d]pyrimidin-6-yl] ethanol
10 (1R)-1- [8- (isopropylamino) -2- [[6- [2- (methylamino)ethyl] -
7,8-dihydro-5H-1,6-naphthyridin-2-yl]amino]pyrido[3,4-
d]pyrimidin-6-yl] ethanol
N2- (6-piperazin-1-ylpyridazin-3-yl) -6- [(3S) -
tetrahydrofuran-3-yl] -N8- [(3S) -tetrahydropyran-3-
15 yl]pyrido[3,4-d]pyrimidine-2,8-diamine
N2- [5- (piperazin-1-ylmethyl) -2-pyridyl] -6- [(3R) -
tetrahydrofuran-3-yl] -N8- [(3S) -tetrahydropyran-3-
yl]pyrido[3,4-d]pyrimidine-2,8-diamine
(1R)-1- [2- [[6- [2- (dimethylamino)ethyl] -7,8-dihydro-5H-
20 1,6-naphthyridin-2-yl]amino] -8-
(isopropylamino)pyrido[3,4-d]pyrimidin-6-yl] ethanol
(2S)-1- [4- [[6- [[8- (ethylamino) -6- [(1R)-1-
hydroxyethyl]pyrido[3,4-d]pyrimidin-2-yl]amino] -3-
pyridyl]methyl]piperazin-1-yl]propan-2-ol
25 (2R)-1- [4- [[6- [[8- (ethylamino) -6- [(1R)-1-
hydroxyethyl]pyrido[3,4-d]pyrimidin-2-yl]amino] -3-
pyridyl]methyl]piperazin-1-yl]propan-2-ol
(1R)-1- [8- (isopropylamino) -2- [[5- [(2R)-2-methylpiperazin-
1-yl] -2-pyridyl]amino]pyrido[3,4-d]pyrimidin-6-yl] ethanol
30 (1R)-1- [8- (isopropylamino) -2- [[5- [(2S)-2-methylpiperazin-
1-yl] -2-pyridyl]amino]pyrido[3,4-d]pyrimidin-6-yl] ethanol
N8-isopropyl-N2- (5-piperazin-1-yl-2-pyridyl) -6- [(2S) -
tetrahydrofuran-2-yl]pyrido[3,4-d]pyrimidine-2,8-diamine
(1R)-1- [8- (cyclobutylamino) -2- [[5- [[4- (2-
35 hydroxyethyl]piperazin-1-yl]methyl] -2-
pyridyl]amino]pyrido[3,4-d]pyrimidin-6-yl] ethanol
(1R)-1- [8- (cyclopropylmethylamino) -2- [[5- [[4- (2-

hydroxyethyl)piperazin-1-yl)methyl]-2-
pyridyl]amino]pyrido[3,4-d]pyrimidin-6-yl]ethanol
6-(3-methyloxetan-3-yl)-N2-(5-piperazin-1-yl-2-pyridyl)-
N8-propyl-pyrido[3,4-d]pyrimidine-2,8-diamine
5 6-(3-methyloxetan-3-yl)-N2-[5-(piperazin-1-ylmethyl)-2-
pyridyl]-N8-propyl-pyrido[3,4-d]pyrimidine-2,8-diamine
N2-(5-piperazin-1-yl-2-pyridyl)-N8-propyl-6-
tetrahydrofuran-3-yl-pyrido[3,4-d]pyrimidine-2,8-diamine
N2-[5-(piperazin-1-ylmethyl)-2-pyridyl]-N8-propyl-6-
10 tetrahydrofuran-3-yl-pyrido[3,4-d]pyrimidine-2,8-diamine
N8-isopropyl-6-(3-methyloxetan-3-yl)-N2-(5-piperazin-1-
yl-2-pyridyl)pyrido[3,4-d]pyrimidine-2,8-diamine
N8-isopropyl-N2-(5-piperazin-1-yl-2-pyridyl)-6-
tetrahydrofuran-3-yl-pyrido[3,4-d]pyrimidine-2,8-diamine
15 2-[4-[[6-[[8-(isopropylamino)-6-tetrahydrofuran-3-yl]-
pyrido[3,4-d]pyrimidin-2-yl]amino]-3-
pyridyl]methyl]piperazin-1-yl]ethanol
2-[4-[[6-[[6-tetrahydrofuran-3-yl-8-[[[(3S)-
tetrahydropyran-3-yl]amino]pyrido[3,4-d]pyrimidin-2-
20 yl]amino]-3-pyridyl]methyl]piperazin-1-yl]ethanol
(1R)-1-[2-[[5-[[4-(hydroxymethyl)-1-piperidyl]methyl]-2-
pyridyl]amino]-8-(isopropylamino)pyrido[3,4-d]pyrimidin-
6-yl]ethanol
1-[6-[[6-[(1R)-1-hydroxyethyl]-8-
25 (isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-
pyridyl]methyl]piperidin-4-ol
1-[6-[[8-(tert-butylamino)-6-[(1R)-1-
hydroxyethyl]pyrido[3,4-d]pyrimidin-2-yl]amino]-3-
pyridyl]methyl]piperidin-4-ol
30 (1R)-1-[8-(tert-butylamino)-2-[[5-[[4-(hydroxymethyl)-1-
piperidyl]methyl]-2-pyridyl]amino]pyrido[3,4-d]pyrimidin-
6-yl]ethanol
1-[6-[[6-[(1R)-1-hydroxyethyl]-8-
(isobutylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-
35 pyridyl]methyl]piperidin-4-ol
(1R)-1-[2-[[5-[[4-(hydroxymethyl)-1-piperidyl]methyl]-2-
pyridyl]amino]-8-(isobutylamino)pyrido[3,4-d]pyrimidin-6-

yl]ethanol

1- [6- [[6- [(1R)-1-hydroxypropyl]-8-

(isopropylamino)pyrido[3,4-d]pyrimidin-2-yl]amino]-3-

pyridyl]piperazin-2-one

5 (1R)-1-[2-[[5-[[4-(2-hydroxyethyl)piperazin-1-yl]methyl]-
6-methyl-2-pyridyl]amino]-8-(propylamino)pyrido[3,4-
d]pyrimidin-6-yl]ethanol.

Claim 25. A pharmaceutical composition comprising
the compound or pharmaceutically acceptable salt thereof
10 according to any one of claims 1 to 24 and a
pharmaceutically acceptable carrier.

Claim 26. A pharmaceutical composition exhibiting a
CDK4/6 inhibitory activity, comprising the compound or
pharmaceutically acceptable salt thereof according to any
15 one of claims 1 to 24 as an active ingredient.

Claim 27. Use of a drug comprising the compound or
pharmaceutically acceptable salt thereof according to any
one of claims 1 to 24 as an active ingredient in the
manufacture of a medicament for prevention or treatment
20 of rheumatoid arthritis, arteriosclerosis, pulmonary
fibrosis, cerebral infarction, or cancer.