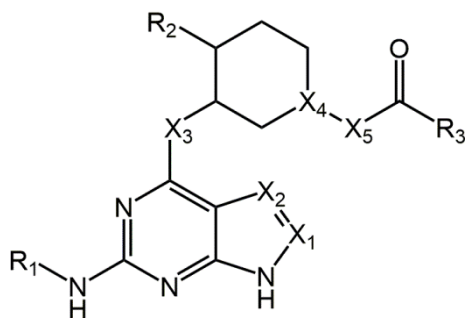


Claims:

1. A compound represented by the following Chemical Formula 1, or a pharmaceutically acceptable salt thereof:

5 [Chemical Formula 1]



in Chemical Formula 1,

R₁ is benzothiazolyl, isothiazolyl, isoxazolyl, phenyl, or pyrazolyl;

10 wherein R₁ is unsubstituted, or substituted with a substituent selected from the group consisting of piperazinyl unsubstituted or substituted with C₁₋₄ alkyl; benzyl unsubstituted or substituted with C₁₋₄ alkoxy; one or two C₁₋₄ alkyl unsubstituted or substituted with morpholino, -N(C₁₋₄ alkyl)₂, C₁₋₄ alkoxy, cyano, or -CONH(C₁₋₄ alkyl); C₁₋₄ haloalkyl; C₃₋₆ cycloalkyl; morpholino; -CO-(morpholino); morpholino and halogen; -N(C₁₋₄ alkyl)₂; -NHCO(C₂₋₄ alkenyl); -NHCO(pyrrolidinyl); C₁₋₄ alkoxy unsubstituted or substituted with -N(C₁₋₄ alkyl)₂; C₆₋₁₀ aryloxy; pyrazolyl unsubstituted or substituted with one or two C₁₋₄ alkyl; pyrrolidinyl; tetrahydropyranyl; and halogen,

R₂ is hydrogen, C₁₋₄ alkyl, or halogen;

20 R₃ is C₁₋₄ alkyl unsubstituted or substituted with cyano, or halogen; C₂₋₆ alkenyl unsubstituted or substituted with one or two substituents independently selected from the group consisting of cyano, C₃₋₆ cycloalkyl, and -N(C₁₋₄ alkyl)₂; or C₂₋₄ alkynyl unsubstituted or substituted with C₃₋₆ cycloalkyl,

X₁ is CR₄ or N,

wherein R₄ is hydrogen, C₁₋₄ alkyl, or halogen,

X₂ is CR₅,

25 wherein R₅ is hydrogen, C₁₋₄ alkyl, C₁₋₄ alkoxy, C₁₋₄ haloalkyl, halogen, cyano, or C₁₋₄ alkylthio,

X₃ is NR₆, O, or S,

wherein R₆ is hydrogen or C₁₋₄ alkyl,

X₄ is CH, or N, and

X₅ is a bond, or NH.

5

2. The compound or a pharmaceutically acceptable salt thereof according to claim 1,
wherein R₁ is

unsubstituted benzothiazolyl;

isothiazolyl substituted by C₁₋₄ alkyl;

10 isoxazolyl unsubstituted or substituted by C₁₋₄ alkyl;

pyrazolyl substituted by benzyl substituted by C₁₋₄ alkoxy, one or two C₁₋₄ alkyl
unsubstituted or substituted by morpholino, -N(C₁₋₄ alkyl)₂, C₁₋₄ alkoxy, cyano, or -CONH(C₁₋₄
alkyl), C₁₋₄ haloalkyl, C₃₋₆ cycloalkyl, or tetrahydropyranyl; or

15 phenyl substituted by piperazinyl substituted by C₁₋₄ alkyl, morpholino, -CO-
(morpholino), morpholino and halogen, -N(C₁₋₄ alkyl)₂, -NHCO(C₂₋₄ alkenyl), -
NHCO(pyrrolidinyl), C₁₋₄ alkoxy substituted by -N(C₁₋₄ alkyl)₂, phenoxy, pyrazolyl unsubstituted
or substituted by one or two C₁₋₄ alkyl, or pyrrolidinyl.

3. The compound or a pharmaceutically acceptable salt thereof according to claim 1,

20 wherein R₂ is hydrogen, methyl, or fluoro.

4. The compound or a pharmaceutically acceptable salt thereof according to claim 1,

wherein R₃ is -CH₂Cl, -CH₂CN, -CH=CH₂, -CH=CHCH₃, -C(CN)=CHCH(CH₃)₂, -
C(CN)=CH(cyclopentyl), -C(CN)=CH(cyclopropyl), -C(CN)=CHC(CH₃)₃, -
25 C(CN)=CHCH(CH₃)₂, -C≡CCH₃, -C≡CCH₂CH₃, or -C≡C-(cyclopropyl).

5. The compound or a pharmaceutically acceptable salt thereof according to claim 1,
wherein X₁ is CH, or N.

30 6. The compound or a pharmaceutically acceptable salt thereof according to claim 1,

wherein X_2 is CR_5 , and R_5 is hydrogen, methyl, fluoro, chloro, cyano, or methylthio.

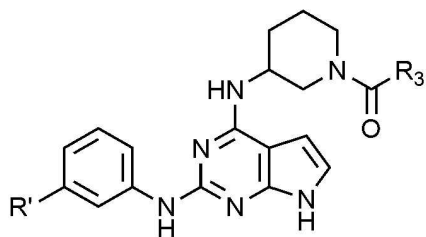
7. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein X_3 is NH, $N(CH_3)$, S, or O.

5

8. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein X_4 is N, and X_5 is a bond, or X_4 is CH, and X_5 is NH.

10 9. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein the compound represented by Chemical Formula 1 is represented by the following Chemical Formula 1-1:

[Chemical Formula 1-1]



15

in Chemical Formula 1-1,

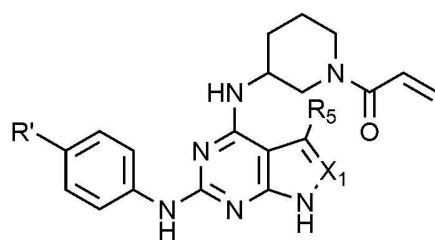
R' is -NHCO(C₂₋₄ alkenyl); -NHCO(pyrrolidinyl); or pyrazolyl unsubstituted or substituted with two C₁₋₄ alkyl,

R₃ is C₁₋₄ alkyl unsubstituted or substituted with cyano; or C₂₋₄ alkenyl unsubstituted or substituted with cyano or -N (C₁₋₄ alkyl).

20

10. The compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein the compound represented by Chemical Formula 1 is represented by the following Chemical Formula 1-2:

[Chemical Formula 1-2]



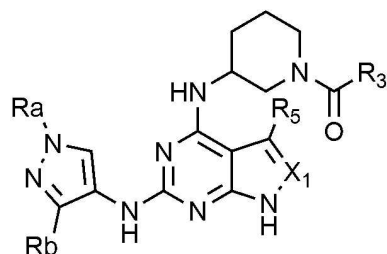
in Chemical Formula 1-2,

X₁ is CH, or N,

R' is piperazinyl unsubstituted or substituted with C₁₋₄ alkyl; morpholino; -CO-
 5 (molpolino); -N(C₁₋₄ alkyl)₂; C₁₋₄ alkoxy unsubstituted or substituted with -N(C₁₋₄ alkyl)₂;
 phenoxy; pyrazolyl unsubstituted or substituted with one or two C₁₋₄ alkyl; or pyrrolidinyl, and
 R₅ is hydrogen or halogen.

11. The compound or a pharmaceutically acceptable salt thereof according to claim 1,
 10 wherein the compound represented by Chemical Formula 1 is represented by the following
 Chemical Formula 1-3:

[Chemical Formula 1-3]



in Chemical Formula 1-3,

15 X₁ is CH, or N,

Ra is benzyl unsubstituted or substituted with C₁₋₄ alkoxy; C₁₋₄ alkyl unsubstituted or
 substituted with morpholino, -N(C₁₋₄ alkyl)₂, C₁₋₄ alkoxy, cyano, or -CONH(C₁₋₄ alkyl); C₁₋₄
 haloalkyl; C₃₋₆ cycloalkyl; or tetrahydropyranyl,

Rb is hydrogen or C₁₋₄ alkyl,

20 R₃ is C₂₋₄ alkenyl unsubstituted or substituted with cyano or -N(C₁₋₄ alkyl)₂; or C₂₋₄
 alkynyl, and

R₅ is hydrogen or halogen.

12. The compound or a pharmaceutically acceptable salt thereof according to claim 1

wherein the compound represented by Chemical Formula 1 is selected from the group consisting of:

- 1) (R)-1-(3-(2-(4-(4-methylpiperazin-1-yl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 5 2) (R)-N-(3-(4-(1-acryloylpiperidin-3-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-2-ylamino)phenyl)pyrrolidine-1-carboxamide,
- 3) (S)-N-(3-(4-(1-acryloylpiperidin-3-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-2-ylamino)phenyl)pyrrolidine-1-carboxamide,
- 4) (R)-1-(3-(2-(4-morpholinophenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 10 5) (R)-1-(3-(2-(4-(pyrrolidin-1-yl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 6) (R)-1-(3-(2-(4-(3,5-dimethyl-1H-pyrazol-1-yl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 15 7) (R)-1-(3-(2-(4-(2-(diethylamino)ethoxy)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 8) (R)-1-(3-(2-(4-(morpholine-4-carbonyl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 9) (R)-1-(3-(2-(4-(dimethylamino)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 20 10) (R)-1-(3-(2-(3-(3,5-dimethyl-1H-pyrazol-1-yl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 11) (S)-1-(3-(2-(4-(4-methylpiperazin-1-yl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 25 12) (R)-1-(3-(2-(benzo[d]thiazol-6-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 13) (R)-1-(3-(2-(4-phenoxyphenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 14) (R)-1-(3-(2-(1-methyl-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 30

- 15) (R)-1-(3-(2-(1-(2,2-difluoroethyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 16) (R)-1-(3-(2-(1-(difluoromethyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 5 17) (R)-1-(3-(2-(1-(2-methoxyethyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 18) (R)-1-(3-(2-(1-(2-morpholinoethyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 19) (R)-1-(3-(2-(1-(2-(diethylamino)ethyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 10 20) (R)-1-(3-(2-(1-(3-methoxybenzyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 21) (R)-1-(3-(2-(1-ethyl-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 15 22) (R)-1-(3-(2-(1,3-dimethyl-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 23) (R)-1-(3-(2-(isoxazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 24) (R)-2-(4-(4-(1-acryloylpiperidin-3-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-2-ylamino)-1H-pyrazol-1-yl)-N-methylacetamide,
- 20 25) (R)-1-(3-(2-(1-(2,2-difluoroethyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)but-2-yn-1-one,
- 26) (R)-N-(3-(4-(1-(2-cyanoacetyl)piperidin-3-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-2-ylamino)phenyl)acrylamide,
- 25 27) 1-((3R,4R)-4-methyl-3-(methyl(2-(4-(4-methylpiperazin-1-yl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 28) 3-((3R,4R)-4-methyl-3-(methyl(2-(4-(4-methylpiperazin-1-yl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)-3-oxopropanenitrile,
- 29) N-(3-(2-(4-(4-methylpiperazin-1-yl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)cyclohexyl)acrylamide,
- 30

- 30) (R)-1-(3-(6-(4-(4-methylpiperazin-1-yl)phenylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 31) (R)-1-(3-(6-(1-(2,2-difluoroethyl)-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 5 32) (R)-1-(3-(6-(1-methyl-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 33) (R)-1-(3-(6-(1-ethyl-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 34) (R)-1-(3-(6-(1-(difluoromethyl)-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 10 35) (R)-2-(4-(4-(1-acryloylpiperidin-3-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-6-ylamino)-1H-pyrazol-1-yl)-N-methylacetamide,
- 36) (R)-1-(3-(5-chloro-2-(4-(4-methylpiperazin-1-yl)phenylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 15 37) (R)-1-(3-(5-chloro-2-(1-ethyl-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 38) (R)-1-(3-(5-chloro-2-(1-(difluoromethyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 39) (R)-1-(3-(5-chloro-2-(1-(2,2-difluoroethyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 20 40) (R)-1-(3-(5-chloro-2-(1-(2-morpholinoethyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 41) (R)-1-(3-(5-chloro-2-(1-(3-methoxybenzyl)-1H-pyrazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 25 42) (R)-1-(3-(3-chloro-6-(4-(4-methylpiperazin-1-yl)phenylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 43) (R)-1-(3-(3-chloro-6-(4-(3,5-dimethyl-1H-pyrazol-1-yl)phenylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 44) (R)-1-(3-(3-chloro-6-(1-(2,2-difluoroethyl)-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 30

- 45) (R)-1-(3-(3-chloro-6-(1-methyl-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 46) (R)-1-(3-(3-chloro-6-(1-ethyl-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 5 47) (R)-2-(4-(4-(1-acryloylpiperidin-3-ylamino)-3-chloro-1H-pyrazolo[3,4-d]pyrimidin-6-ylamino)-1H-pyrazol-1-yl)-N-methylacetamide,
- 48) (R)-1-(3-(3-chloro-6-(1-(tetrahydro-2H-pyran-4-yl)-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 49) (R)-1-(3-(3-chloro-6-(1-cyclopropyl-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 10 50) (R)-1-(3-(3-chloro-6-(1-isopropyl-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 51) (R)-1-(3-(3-chloro-6-(1-propyl-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 15 52) (R)-2-(4-(4-(1-acryloylpiperidin-3-ylamino)-3-chloro-1H-pyrazolo[3,4-d]pyrimidin-6-ylamino)-1H-pyrazol-1-yl)acetonitrile,
- 53) (R)-1-(3-(6-(1-*tert*-butyl-1H-pyrazol-4-ylamino)-3-chloro-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 54) (R)-1-(3-(3-chloro-6-(1-(2-morpholinoethyl)-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 20 55) (R)-1-(3-(3-chloro-6-(1-isobutyl-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 56) (R)-1-(3-(3-chloro-6-(1-(2,2,2-trifluoroethyl)-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 25 57) (R)-1-(3-(3-chloro-6-(1-(2-(diethylamino)ethyl)-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 58) (R)-1-(3-(3-chloro-6-(1-(3-methoxybenzyl)-1H-pyrazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 59) (R)-1-(3-(3-chloro-6-(isoxazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 30

- 60) (R)-2-(4-((4-((1-acryloylpiperidin-3-yl)amino)-5-chloro-7H-pyrrolo[2,3-d]pyrimidin-2-yl)amino)-1H-pyrazol-1-yl)-N-methylacetamide,
- 61) (R)-1-(3-((5-chloro-2-((4-morpholinophenyl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 5 62) (R)-1-(3-((5-chloro-2-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 63) (R)-1-(3-((5-chloro-2-((1-isobutyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 64) (R)-1-(3-((3-chloro-6-((1-(difluoromethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 10 65) (R)-1-(3-((6-((1-isobutyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 66) (R)-1-(3-((6-((1-(*tert*-butyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 15 67) (R)-1-(3-((6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 68) (R)-1-(3-((5-chloro-2-((4-(morpholine-4-carbonyl)phenyl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 69) (R)-1-(3-((5-chloro-2-((1-methyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 20 70) (R)-1-(3-((2-((1-(*tert*-butyl)-1H-pyrazol-4-yl)amino)-5-chloro-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 71) (R)-1-(3-((6-((1-(tetrahydro-2H-pyran-4-yl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 25 72) (R)-1-(3-((6-((1-(2-morpholinoethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 73) (R)-1-(3-((6-((1-propyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 74) (R)-1-(3-((6-((1-(2-methoxyethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 30

- 75) (R)-1-(3-((2-((3-methylisothiazol-5-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 76) 1-((3S,4R)-3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)-4-fluoropiperidin-1-yl)prop-2-en-1-one,
- 5 77) 1-((3S,4R)-3-((6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-fluoropiperidin-1-yl)prop-2-en-1-one,
- 78) (R)-1-(3-((2-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-5-methyl-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 79) (R)-1-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-5-methyl-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 10 80) (R)-1-(3-((2-((4-(3,5-dimethyl-1H-pyrazol-1-yl)phenyl)amino)-5-methyl-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 81) (R)-1-(3-((2-(benzo[d]thiazol-6-ylamino)-5-methyl-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 15 82) (R)-1-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-5-fluoro-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 83) (R)-1-(3-((5-fluoro-2-((3-methylisothiazol-5-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 84) 1-((3R,4R)-3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-5-fluoro-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 20 85) (R)-1-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-5-fluoro-7H-pyrrolo[2,3-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 86) 1-((3S,4R)-3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-5-fluoro-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)-4-fluoropiperidin-1-yl)prop-2-en-1-one,
- 25 87) (R)-1-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-5-fluoro-7H-pyrrolo[2,3-d]pyrimidin-4-yl)(methyl)amino)piperidin-1-yl)prop-2-en-1-one,
- 88) (R)-4-((1-acryloylpiperidin-3-yl)amino)-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile,
- 89) (R)-4-((1-acryloylpiperidin-3-yl)amino)-2-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile,
- 30

- 90) (R)-1-(3-((3-chloro-6-((1-(2,2-difluoroethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 91) (R)-1-(3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 5 92) 1-((3R,4R)-3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 93) 1-((3R,4R)-3-((3-chloro-6-((1-(2,2-difluoroethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 94) 1-((3R,4R)-3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 10 95) (R)-1-(3-((5-chloro-2-((1-(2-(diethylamino)ethyl)-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 96) (R)-1-(3-((5-chloro-2-(isoxazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 15 97) (R)-1-(3-((5-chloro-2-((2-fluoro-4-morpholinophenyl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 98) (R)-1-(3-((5-chloro-2-((3-fluoro-4-morpholinophenyl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 99) (R)-1-(3-((5-chloro-2-((5-methylisoxazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 20 100) (R)-1-(3-((5-chloro-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)(methyl)amino)piperidin-1-yl)prop-2-en-1-one,
- 101) (R)-1-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)(methyl)amino)piperidin-1-yl)prop-2-en-1-one,
- 25 102) (R)-1-(3-((2-(isoxazol-4-ylamino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)(methyl)amino)piperidin-1-yl)prop-2-en-1-one,
- 103) (R)-1-(3-((2-((1-(2,2-difluoroethyl)-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)(methyl)amino)piperidin-1-yl)prop-2-en-1-one,
- 104) (R)-1-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 30

- 105) (R)-1-(3-((6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 106) 1-((3R,4R)-3-((6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 5 107) 1-((3R,4R)-3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 108) (R)-1-(3-((3-chloro-6-((1-(2,2-difluoroethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 109) (R)-1-(3-((5-chloro-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 10 110) (R)-1-(3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 111) (R)-1-(3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 15 112) (R)-1-(3-((6-((1-(*tert*-butyl)-1H-pyrazol-4-yl)amino)-3-chloro-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 113) (R)-1-(3-((3-chloro-6-((1-isobutyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 114) (R)-1-(3-((3-chloro-6-((1-(2,2,2-trifluoroethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 20 115) (R)-1-(3-((3-chloro-6-((1-propyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 116) (R)-1-(3-((3-chloro-6-(isoxazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidin-1-yl)prop-2-en-1-one,
- 25 117) (R)-1-(3-(3-chloro-6-(5-methylisoxazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-ylamino)piperidin-1-yl)prop-2-en-1-one,
- 118) (R)-1-(3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)(methyl)amino)piperidin-1-yl)prop-2-en-1-one,
- 119) (R)-1-(3-((3-chloro-6-(isoxazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)(methyl)amino)piperidin-1-yl)prop-2-en-1-one,
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- 120) 1-((3R,4R)-3-((3-chloro-6-((1-(2,2,2-trifluoroethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 121) 1-((3R,4R)-3-((3-chloro-6-((1-propyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 5 122) 1-((3R,4R)-3-((3-chloro-6-((1-(2-(diethylamino)ethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 123) 1-((3R,4R)-3-((3-chloro-6-((1-(2-morpholinoethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 124) 1-((3R,4R)-3-((3-chloro-6-((1-isobutyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 10 125) 1-((3R,4R)-3-((3-chloro-6-((1-(3-methoxybenzyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 126) 2-(4-(((4-((3R,4R)-1-acryloyl-4-methylpiperidin-3-yl)amino)-3-chloro-1H-pyrazolo[3,4-d]pyrimidin-6-yl)amino)-1H-pyrazol-1-yl)acetonitrile,
- 15 127) 1-((3R,4R)-3-((3-chloro-6-((1-(difluoromethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 128) 1-((3R,4R)-3-((3-chloro-6-((1-methyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 129) (R)-1-(3-((6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 20 130) (R)-1-(3-((6-(isoxazol-4-ylamino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 131) (R)-1-(3-((6-((1-ethyl-1H-pyrazol-4-yl)amino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)(methylamino)piperidin-1-yl)prop-2-en-1-one,
- 25 132) 1-((3R,4R)-3-((6-((1-ethyl-1H-pyrazol-4-yl)amino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 133) 1-((3R,4R)-3-((6-((1-(2,2-difluoroethyl)-1H-pyrazol-4-yl)amino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 30 134) 2-(4-(((4-((3R,4R)-1-acryloyl-4-methylpiperidin-3-yl)amino)-3-(methylthio)-

- 1H-pyrazolo[3,4-d]pyrimidin-6-yl)amino)-1H-pyrazol-1-yl)acetonitrile,
- 135) 1-((3R,4R)-3-((6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 136) (R)-1-(3-((5-chloro-2-((3-methylisothiazol-5-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 138) 3-((3S,4R)-3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-fluoropiperidin-1-yl)-3-oxopropanenitrile,
- 139) (R)-3-(3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)-3-oxopropanenitrile,
- 140) (R,E)-1-(3-((5-chloro-2-((4-(4-methylpiperazin-1-yl)phenyl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)but-2-en-1-one,
- 141) 1-((R)-3-((5-chloro-2-((4-(4-methylpiperazin-1-yl)phenyl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)-3-cyclopropylprop-2-yn-1-ol,
- 142) 1-((R)-3-((5-chloro-2-((4-(4-methylpiperazin-1-yl)phenyl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)pent-2-yn-1-ol,
- 143) 1-((R)-3-((5-chloro-2-((4-(4-methylpiperazin-1-yl)phenyl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidin-1-yl)but-2-yn-1-ol,
- 144) (R)-1-(3-((6-((1-(2,2,2-trifluoroethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 145) (R)-1-(3-((6-((1-(2-(diethylamino)ethyl)-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 146) (R)-1-(3-((6-(isoxazol-4-ylamino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 147) (R)-1-(3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)oxy)piperidin-1-yl)prop-2-en-1-one,
- 148) (R)-4-((1-acryloylpiperidin-3-yl)oxy)-2-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile,
- 149) (R)-4-((1-acryloylpiperidin-3-yl)oxy)-2-((1-(2,2-difluoroethyl)-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile,
- 150) (R)-4-((1-acryloylpiperidin-3-yl)oxy)-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-

- pyrrolo[2,3-d]pyrimidine-5-carbonitrile,
- 151) (R)-1-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)oxy)piperidin-1-yl)prop-2-en-1-one,
- 152) (R)-1-(3-((2-((4-morpholinophenyl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)oxy)piperidin-1-yl)prop-2-en-1-one,
- 153) (R)-1-(3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)oxy)piperidin-1-yl)prop-2-en-1-one,
- 154) (R,E)-2-(3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)oxy)piperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 155) (R,E)-2-(3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)oxy)piperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 156) (R,E)-4-((1-(2-cyano-4-methylpent-2-enoyl)piperidin-3-yl)oxy)-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile,
- 157) (R,E)-4-((1-(2-cyano-3-cyclopropylacryloyl)piperidin-3-yl)oxy)-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile,
- 158) (R,E)-2-(3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)oxy)piperidine-1-carbonyl)-4-methylpent-2-enenitrile,
- 159) 1-((3R,4R)-3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)(methyl)amino)-4-methylpiperidin-1-yl)prop-2-en-1-one,
- 160) (E)-2-((3S,4R)-3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-fluoropiperidine-1-carbonyl)-4-methylpent-2-enenitrile,
- 161) (E)-2-((3S,4R)-3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-fluoropiperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 162) (R,E)-2-(3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)-4-methylpent-2-enenitrile,
- 163) (R,E)-2-(3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)-4,4-dimethylpent-2-enenitrile,
- 164) (R,E)-2-(3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-

- pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 165) (R,E)-2-(3-((3-chloro-6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)-3-cyclopentylacrylonitrile,
- 166) (R,E)-2-(3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 167) (R,E)-2-(3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)(methyl)amino)piperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 168) (R,E)-2-(3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)(methyl)amino)piperidine-1-carbonyl)-4-methylpent-2-enenitrile,
- 169) (E)-2-((3R,4R)-3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 170) (E)-2-((3R,4R)-3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidine-1-carbonyl)-4-methylpent-2-enenitrile,
- 171) (R,E)-3-cyclopropyl-2-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)acrylonitrile,
- 172) (R,E)-2-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)-4-methylpent-2-enenitrile,
- 173) (R,E)-3-cyclopropyl-2-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)thio)piperidine-1-carbonyl)acrylonitrile,
- 174) (R,E)-2-(3-((2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)thio)piperidine-1-carbonyl)-4-methylpent-2-enenitrile,
- 175) (R,E)-3-cyclopropyl-2-(3-((6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)acrylonitrile,
- 176) (R,E)-3-cyclopropyl-2-(3-((6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidine-1-carbonyl)acrylonitrile,
- 177) (R,E)-2-(3-((5-chloro-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 178) (R,E)-2-(3-((5-chloro-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-

- d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)-4-methylpent-2-enenitrile,
- 179) (R,E)-2-(3-((5-chloro-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)thio)piperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 180) (R,E)-2-(3-((5-chloro-2-((1-ethyl-1H-pyrazol-4-yl)amino)-7H-pyrrolo[2,3-d]pyrimidin-4-yl)thio)piperidine-1-carbonyl)-4-methylpent-2-enenitrile,
- 181) (R,E)-2-(3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)thio)piperidine-1-carbonyl)-3-cyclopropylacrylonitrile,
- 182) (R,E)-3-cyclopropyl-2-(3-((1-ethyl-1H-pyrazol-4-yl)amino)-5-fluoro-7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino)piperidine-1-carbonyl)acrylonitrile,
- 183) 2-chloro-1-((3R,4R)-3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)-4-methylpiperidin-1-yl)ethan-1-one,
- 184) (R)-1-(3-((6-((1-(2,2-difluoroethyl)-1H-pyrazol-4-yl)amino)-3-methyl-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 185) (R)-1-(3-((6-((1-ethyl-1H-pyrazol-4-yl)amino)-3-methyl-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 186) (R)-1-(3-((6-((1-isobutyl-1H-pyrazol-4-yl)amino)-3-methyl-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 187) (R)-1-(3-((6-((1-(*tert*-butyl)-1H-pyrazol-4-yl)amino)-3-methyl-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 188) (R)-1-(3-((6-((1-cyclopropyl-1H-pyrazol-4-yl)amino)-3-methyl-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 189) (R)-1-(3-((6-((1-ethyl-1H-pyrazol-4-yl)amino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 190) (R)-1-(3-((6-((1-(2,2-difluoroethyl)-1H-pyrazol-4-yl)amino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 191) (R)-1-(3-((6-((1-methyl-1H-pyrazol-4-yl)amino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one,
- 192) (R)-1-(3-((6-((1-(*tert*-butyl)-1H-pyrazol-4-yl)amino)-3-(methylthio)-1H-pyrazolo[3,4-d]pyrimidin-4-yl)amino)piperidin-1-yl)prop-2-en-1-one, and
- 193) 1-((3S,4R)-3-((3-chloro-6-((1-ethyl-1H-pyrazol-4-yl)amino)-1H-pyrazolo[3,4-

d]pyrimidin-4-yl)amino)-4-fluoropiperidin-1-yl)prop-2-en-1-one.

13. Use of a pharmaceutical composition comprising the compound according to any one of claims 1 to 12 or a pharmaceutically acceptable salt thereof, in the manufacture of a
- 5 medicament for the prevention or treatment of inflammatory disease, autoimmune disease, proliferative disease, hyperproliferative disease, immunity mediated disease, cancer or tumor, wherein the disease or condition is associated with JAK and/or BTK inhibition.