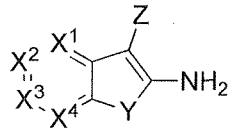
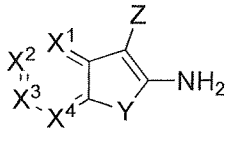
SUMMARY

The present disclosure provides a compound of formula **(I)** or a metabolite thereof, or a pharmaceutically acceptable salt or prodrug thereof, wherein X^1-X^4, Y, and Z are defined herein.



(I)

Hence, in one aspect, the present disclosure provides a compound of formula **(I)**:



(I)

wherein:

X^1 is CR^1, N, or NO;

X^2 is CR^2, N, or NO;

X^3 is CR^3, N, or NO;

X^4 is CR^4, N, or NO;

Y is O, S, or NR^8;

Z is ~~OR^5, SR^5 or~~ NR^5R^6;

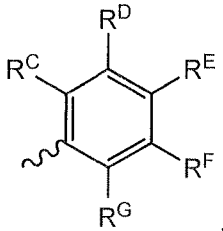
R^1, R^2, R^3 and R^4 are independently selected from the group consisting of H, optionally substituted C_1-C_6 alkyl, optionally substituted C_2-C_6 alkenyl, optionally substituted C_2-C_6 alkynyl, optionally substituted C_1-C_6 alkoxy, mono or bicyclic optionally substituted C_6-C_{14} aryl, mono or bicyclic optionally substituted heteroaryl, optionally substituted (aryl)alkyl, (alkoxy)carbonyl, (alkyl)amido, (alkyl)amino, optionally substituted mono or bicyclic cycloalkyl, optionally substituted mono or bicyclic heterocyclyl, aminoalkyl, alkylcarboxyl, (alkyl)carboxyamido, optionally substituted (aryl)amino, hydroxyl, halogen, C_1-C_6 haloalkyl, optionally substituted heterocyclyl(alkyl)-, optionally substituted heteroaryl(alkyl), hydroxyalkyl, perfluoroalkyl, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted C_3-C_8 cycloalkoxy, $N(R^7)_2$, CN, NO_2, CO_2H, $CONR^AR^B$, $S(O)_nR^7$, and optionally substituted heterocyclyloxy having 1 to 2 heteroatoms selected from the group consisting of O, $S(O)_n$, and NR^7;

n is 0 to 2;

R^A and R^B are independently selected from the group consisting of H, optionally substituted C_1-C_6 alkyl, optionally substituted mono or bicyclic C_6-C_{14} aryl, optionally substituted mono or bicyclic heteroaryl, optionally substituted (aryl)alkyl, optionally substituted mono or bicyclic C_3-C_8 cycloalkyl, optionally substituted mono or bicyclic heterocyclyl, C_1-C_6 haloalkyl, optionally substituted heterocyclyl(alkyl), optionally substituted heteroaryl(alkyl), hydroxyalkyl, and perfluoroalkyl;

R^7 is H, C_1-C_6 alkyl, mono or bicyclic C_6-C_{14} aryl, mono or bicyclic heteroaryl, (aryl)alkyl, (alkoxy)carbonyl, (alkyl)amido, (alkyl)amino, mono or bicyclic cycloalkyl, mono or bicyclic heterocyclyl, alkylcarboxyl, heterocyclyl(alkyl), heteroaryl(alkyl), hydroxyalkyl, perfluoroalkyl, aryloxy, heteroaryloxy, C_3-C_6 cycloalkoxy, or heterocyclyloxy having 1 to 2 heteroatoms selected from the group consisting of O, $S(O)_n$, and NR^A;

R^A is H, C_1-C_6 alkyl, mono or bicyclic C_6-C_{14} aryl, mono or bicyclic heteroaryl, (aryl)alkyl, (alkoxy)carbonyl, (alkyl)amido, (alkyl)amino, mono or bicyclic cycloalkyl, mono or bicyclic heterocyclyl, alkylcarboxyl, heterocyclyl(alkyl), heteroaryl(alkyl), hydroxyalkyl, perfluoroalkyl, aryloxy, heteroaryloxy, C_3-C_6 cycloalkoxy, or optionally substituted heterocyclyloxy;

R^5 is 

, wherein R^C to R^G are independently selected from the group consisting of H, halogen, C_1-C_6 haloalkyl, C_1-C_6 alkoxy, heterocycle, optionally substituted C_1-C_6 alkyl, C_3-C_8 cycloalkyl, CN, -O(aryl), C_2-C_6 alkynyl, C(O)C_1-C_6 alkyl, -O-C_1-C_6 haloalkyl, and optionally substituted aryl~~and R^6 are independently selected from the group consisting of H, optionally substituted C_1-C_6 alkyl, optionally substituted mono or bicyclic C_6-C_{14} aryl, optionally substituted mono or bicyclic heteroaryl, optionally substituted (aryl)alkyl, optionally substituted mono or bicyclic cycloalkyl, optionally substituted mono or bicyclic heterocyclyl, C_1-C_6 haloalkyl, optionally substituted heterocyclyl(alkyl), optionally substituted heteroaryl(alkyl), hydroxyalkyl, and perfluoroalkyl~~;

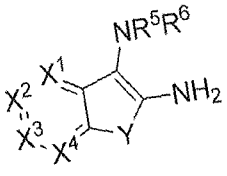
R^6 is H; and

R^8 is H or optionally substituted C_1-C_6 alkyl;

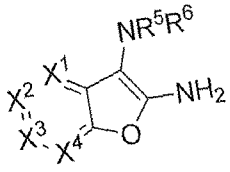
~~or a metabolite thereof,~~ or a pharmaceutically acceptable salt ~~or prodrug~~ thereof;

wherein thieno[2,3-b]pyrimidine-2,3-diamine HCl salt is excluded.

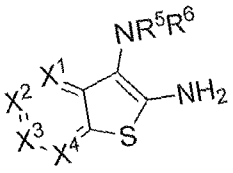
Compounds of formulae **(I-A)**, **(I-AA)**, **(I-AAA)**, **(I-B)**, **(I-BB)**, **(I-BBB)**, **(I-BBBB)**, **(I-BBBBB)**, **(I-BBBBBB)**, **(I-C)**, **(I-CC)**, **(I-D)**, **(I-DD)**, **(I-E)**, **(I-EE)**, **(I-F)**, **(I-FF)**, **(I-G)** and **(I-GG)** are also provided, wherein X^1-X^4, R^1, R^2, R^3, R^4, R^5 and R^6 are defined herein.



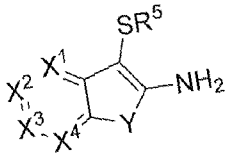
(I-A)



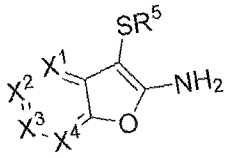
(I-AA)



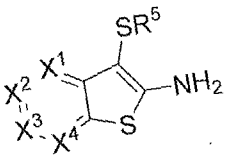
(I-AAA)



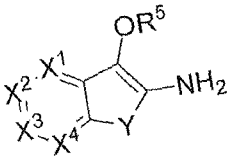
(I-B)



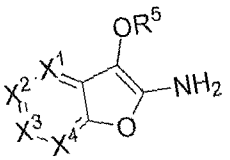
(I-BB)



(I-BBB)



(I-BBBB)



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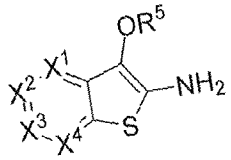
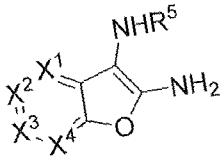
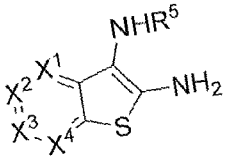


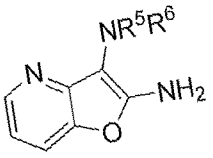
(I-BBBBBB)



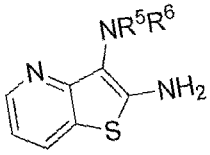
(I-C)



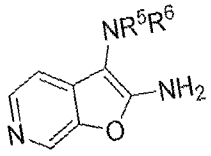
(I-CC)



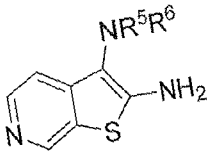
(I-D)



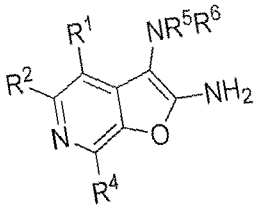
(I-DD)



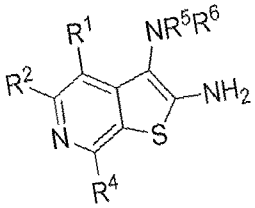
(I-E)



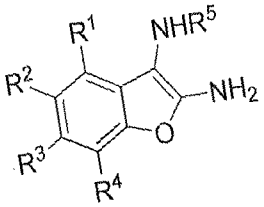
(I-EE)



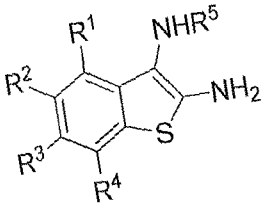
(I-F)



(I-FF)

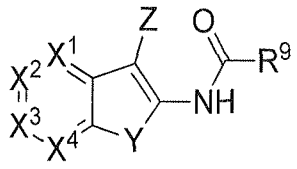


(I-G)

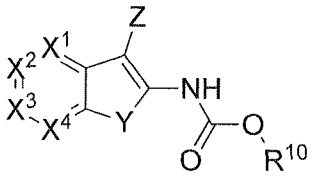


(I-GG)

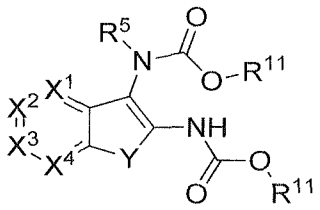
The disclosure also relates to prodrugs of compounds of formula (**I**) having a formula (**II**), (**III**) or (**IV**) are provided, wherein R^9-R^{11} are defined herein



(**II**)

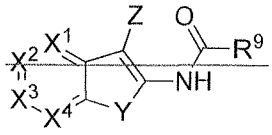


(**III**)



(**IV**)

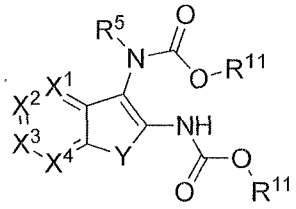
~~In another aspect, the disclosure relates to a prodrug of a compound as defined herein, wherein the prodrug is an acylated compound which has a formula (II):~~



~~(II)~~

~~wherein R^9 is optionally-substituted C_1-C_6 alkyl.~~

In another aspect, the disclosure relates to a prodrug of a compound as defined herein, wherein the prodrug is a dicarbamate compound which has a formula (**IV**):



(**IV**)

wherein R^{11} is optionally-substituted C_1-C_6 alkyl, aryl, (aryl)alkyl, heteroaryl, or (heteroaryl)alkyl.

In another aspect, the disclosure relates to a compound, which is:

N^3-(Pyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(5-Chloropyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(5,6,7,8-Tetrahydronaphthalen-1-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(5,6,7,8-Tetrahydronaphthalen-2-yl)furo[2,3-c]pyridine-2,3-diamine,

3-((3-Chlorophenyl)thio)benzo[b]thiophen-2-amine,

3-((3-Chlorophenyl)thio)benzo[b]thiophen-2-amine hydrochloride,

3-(3-Chlorophenoxy)benzo[b]thiophen-2-amine hydrochloride,

N^3-Methyl-N^3-phenylbenzo[b]thiophene-2,3-diamine hydrochloride,

N^3-(benzo[d][1,3]dioxol-5-yl)benzo[b]thiophene-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N^3-(pyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-Hexyl-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-Cyclohexyl-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N^3-(tetrahydro-2H-pyran-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N^3-((tetrahydro-2H-pyran-4-yl)methyl)furo[2,3-c]pyridine-2,3-diamine,

3-((3-Chloro-4-fluorophenyl)thio)furo[2,3-c]pyridin-2-amine,

3-((3-Chloro-4-fluorophenyl)thio)benzofuran-2-amine,

3-(3-Chloro-4-fluorophenoxy)furo[2,3-c]pyridin-2-amine,

3-(3-Chloro-4-fluorophenoxy)benzofuran-2-amine,

N^3-(1-Methyl-1H-pyrrol-3-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N3-(1H-pyrrol-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(1-Methyl-1H-pyrrol-2-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(1-Methyl-1H-indol-2-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(6-Chloropyrimidin-4-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(6-Fluoropyrimidin-4-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(2-Fluoropyrimidin-5-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine, or

N^3-(4,5-difluoropyrimidin-2-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine.

The disclosure also relates to a metabolite of a compound of formula (**I**) – (**IV**) or a prodrug of said compound of formula (**I**), or a pharmaceutically acceptable salt or a prodrug thereof.

The disclosure also relates to a composition comprising a compound or prodrug thereof as described herein and a pharmaceutically acceptable carrier is provided.

The disclosure also relates to a composition comprising a metabolite of a compound of formula (**I**) – (**IV**) or prodrug thereof as described herein and a pharmaceutically acceptable carrier is provided. In another aspect, the present disclosure relates to a composition comprising a compound as defined herein and a pharmaceutically acceptable carrier.

The disclosure also relates to a kit comprising a compound of formula (**I**) or a metabolite thereof, or a pharmaceutically acceptable salt or prodrug thereof described herein is provided.

The disclosure also relates to a method for treating a disease treatable by inhibiting a kynurenine pathway and includes administering a compound or a metabolite thereof, or a pharmaceutically acceptable salt or prodrug thereof to a subject in need thereof. The disclosure also relates to a method for regulating a kynurenine pathway and includes administering a

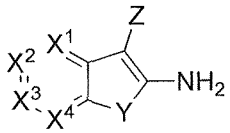
compound or a metabolite thereof, or a pharmaceutically acceptable salt or prodrug thereof as described herein to a subject in need thereof.

The disclosure also relates to a method of regulating one or more of a indoleamine 2,3-dioxygenase-1 or an indoleamine 2,3-dioxygenase-2 or a tryptophan 2,3-dioxygenase enzymes and includes administering a compound of formula (I) or a metabolite thereof, or a pharmaceutically acceptable salt or prodrug thereof as described herein to a subject in need thereof. In another embodiment, the regulating is inhibiting the kynurenine pathway or one or more of the enzymes.

The disclosure also relates to a method of regulating the kynurenine pathway by inhibiting indoleamine 2,3-dioxygenase-1 and/or indoleamine 2,3-dioxygenase-2 and/or tryptophan 2,3-dioxygenase and includes administering a compound or a metabolite thereof, or or a pharmaceutically acceptable salt or prodrug thereof as described herein to a subject in need thereof.

WHAT IS CLAIMED IS:

1. A compound of formula **(I)**:



(I)

wherein:

X^1 is CR^1, N, or NO;

X^2 is CR^2, N, or NO;

X^3 is CR^3, N, or NO;

X^4 is CR^4, N, or NO;

Y is O, S, or NR^8;

Z is ~~OR^5, SR^5 or~~ NR^5R^6;

R^1, R^2, R^3 and R^4 are independently selected from the group consisting of H, optionally substituted C_1-C_6 alkyl, optionally substituted C_2-C_6 alkenyl, optionally substituted C_2-C_6 alkynyl, optionally substituted C_1-C_6 alkoxy, mono or bicyclic optionally substituted C_6-C_{14} aryl, mono or bicyclic optionally substituted heteroaryl, optionally substituted (aryl)alkyl, (alkoxy)carbonyl, (alkyl)amido, (alkyl)amino, optionally substituted mono or bicyclic cycloalkyl, optionally substituted mono or bicyclic heterocyclyl, aminoalkyl, alkylcarboxyl, (alkyl)carboxyamido, optionally substituted (aryl)amino, hydroxyl, halogen, C_1-C_6 haloalkyl, optionally substituted heterocyclyl(alkyl)-, optionally substituted heteroaryl(alkyl), hydroxyalkyl, perfluoroalkyl, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted C_3-C_8 cycloalkoxy, $N(R^7)_2$, CN, NO_2, CO_2H, $CONR^AR^B$, $S(O)_nR^7$, and optionally substituted heterocyclyloxy having 1 to 2 heteroatoms selected from the group consisting of O, $S(O)_n$, and NR^7;

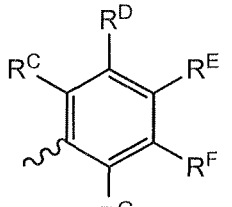
n is 0 to 2;

R^A and R^B are independently selected from the group consisting of H, optionally substituted C_1-C_6 alkyl, optionally substituted mono or bicyclic C_6-C_{14} aryl, optionally substituted mono or bicyclic heteroaryl, optionally substituted (aryl)alkyl, optionally substituted mono or bicyclic C_3-C_8 cycloalkyl, optionally substituted mono or bicyclic

heterocyclyl, C_1-C_6 haloalkyl, optionally substituted heterocyclyl(alkyl), optionally substituted heteroaryl(alkyl), hydroxyalkyl, and perfluoroalkyl;

R^7 is H, C_1-C_6 alkyl, mono or bicyclic C_6-C_{14} aryl, mono or bicyclic heteroaryl, (aryl)alkyl, (alkoxy)carbonyl, (alkyl)amido, (alkyl)amino, mono or bicyclic cycloalkyl, mono or bicyclic heterocyclyl, alkylcarboxyl, heterocyclyl(alkyl), heteroaryl(alkyl), hydroxyalkyl, perfluoroalkyl, aryloxy, heteroaryloxy, C_3-C_6 cycloalkoxy, or heterocyclyloxy having 1 to 2 heteroatoms selected from the group consisting of O, $S(O)_n$, and NR^A;

R^A is H, C_1-C_6 alkyl, mono or bicyclic C_6-C_{14} aryl, mono or bicyclic heteroaryl, (aryl)alkyl, (alkoxy)carbonyl, (alkyl)amido, (alkyl)amino, mono or bicyclic cycloalkyl, mono or bicyclic heterocyclyl, alkylcarboxyl, heterocyclyl(alkyl), heteroaryl(alkyl), hydroxyalkyl, perfluoroalkyl, aryloxy, heteroaryloxy, C_3-C_6 cycloalkoxy, or optionally substituted heterocyclyloxy;

R^5 is , wherein

R^C to R^G are independently selected from the group consisting of H, halogen, C_1-C_6 haloalkyl, C_1-C_6 alkoxy, heterocycle, optionally substituted C_1-C_6 alkyl, C_3-C_8 cycloalkyl, CN, -O(aryl), C_2-C_6 alkynyl, C(O)C_1-C_6 alkyl, -O-C_1-C_6 haloalkyl, and optionally substituted aryl~~and R^6 are independently selected from the group consisting of H, optionally substituted C_1-C_6 alkyl, optionally substituted mono or bicyclic C_6-C_{14} aryl, optionally substituted mono or bicyclic heteroaryl, optionally substituted (aryl)alkyl, optionally substituted mono or bicyclic cycloalkyl, optionally substituted mono or bicyclic heterocyclyl, C_1-C_6 haloalkyl, optionally substituted heterocyclyl(alkyl), optionally substituted heteroaryl(alkyl), hydroxyalkyl, and perfluoroalkyl~~;

R^6 is H; and

R^8 is H or optionally substituted C_1-C_6 alkyl;

~~or a metabolite thereof,~~ or a pharmaceutically acceptable salt ~~or prodrug~~ thereof;

wherein thieno[2,3-b]pyrimidine-2,3-diamine HCl salt is excluded.

2. The compound according to claim 1, wherein one or two of X^1, X^2, X^3 and X^4 is N.

3. The compound according to claim 1, wherein X^1 is CR^1, X^2 is CR^2, X^3 is CR^3, and X^4 is CR^4.

7. The compound according to claim 1, wherein R^2 is H, halogen, hydroxyl, CN, $N(R^7)_2$, mono or bicyclic optionally substituted C_6-C_{14} aryl, optionally substituted C_1-C_6 alkoxy, optionally substituted C_1-C_6 alkyl, or optionally substituted aryloxy.

8. The compound according to claim ~~26~~ 1 wherein R^2 is $N(R^7)_2$ or mono or bicyclic optionally substituted $C_6 - C_{14}$ aryl.

9. The compound according to claim 1, wherein R^3 is H, halogen, NO_2, or CN.

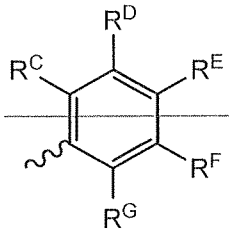
10. The compound according to claim 1, wherein R^4 is:
H, optionally substituted C_1-C_6 alkyl, optionally substituted C_2-C_6 alkenyl, optionally substituted C_2-C_6 alkynyl, optionally substituted C1-C6 alkoxy, mono or bicyclic optionally substituted C_6-C_{14} aryl, CH_2-aryl, mono or bicyclic optionally substituted heteroaryl, optionally substituted (aryl)alkyl, (alkoxy)carbonyl, (alkyl)amido, (alkyl)amino, optionally substituted mono or bicyclic cycloalkyl, optionally substituted mono or bicyclic heterocyclyl, aminoalkyl, alkylcarboxyl, (alkyl)carboxyamido, optionally substituted (aryl)amino, hydroxyl, halogen, C1-C6 haloalkyl, optionally substituted heterocyclyl(alkyl)-, optionally substituted heteroaryl(alkyl), hydroxyalkyl, perfluoroalkyl, optionally substituted aryloxy, optionally substituted heteroaryloxy, optionally substituted C_3-C_8 cycloalkoxy,

15. The compound according to claim 14, wherein R^4 is phenyl substituted with one or more C_1-C_6 alkoxy or halogen.

16. The compound according to claim 10, wherein R^4 is optionally substituted pyridine.

~~17. The compound according to claim 1, wherein R^5 or R^6 is H, optionally substituted C_1-C_6 alkyl, optionally substituted mono or bicyclic C_6-C_{14} aryl, optionally substituted mono or bicyclic heteroaryl, optionally substituted (aryl)alkyl, optionally substituted mono or bicyclic cycloalkyl, optionally substituted mono or bicyclic heterocyclyl, C_1-C_6 haloalkyl, optionally substituted heterocyclyl(alkyl), optionally substituted heteroaryl(alkyl), hydroxyalkyl, or perfluoroalkyl.~~

~~18. The compound according to claim 1, wherein R^5 or R^6 is:~~



~~wherein, R^C to R^G are independently selected from the group consisting of H, halogen, C_1-C_6 haloalkyl, C_1-C_6 alkoxy, heterocycle, optionally substituted C_1-C_6 alkyl, C_3-C_8 cycloalkyl, CN, -O(aryl), C_2-C_6 alkynyl, C(O)C_1-C_6 alkyl, -O-C_1-C_6 haloalkyl, and optionally substituted aryl.~~

~~19~~17. The compound according to claim 1, wherein R^5 ~~or R^6~~ is phenyl, 2-Br-4-F-phenyl, 2,3,4-tri-Cl-phenyl, 2,3-di-Cl-4-F-phenyl, 2,4-di-Cl-phenyl, 2-Cl-4-F-phenyl, 2-Cl-phenyl, 2-Et-phenyl, 2,4-di-F-3-Cl-phenyl, 2-F-3-CN-phenyl, 2,4-di-F-phenyl, 2-tetralin, 2,3-di-Me-phenyl, 2-Me-4-Br-phenyl, 2,4-di-Me-phenyl, 2,4-di-OMe-phenyl, 2-piperidine-phenyl, 3-Br-4,5-di-F-phenyl, 3-Br-4-F-phenyl, 3-Br-4-Me-phenyl, 3-Br-phenyl, 3-acetylene-4-F-phenyl, 3-acetylene-phenyl, 3-CF2Me-4-F-phenyl, 3-CF3-4-Br-phenyl, 3-CF3-4-Cl-phenyl, 3-CF3-4-F-phenyl, 3-CF3-phenyl, 3-CH2-cyclobutyl-phenyl, 3-CH2-cyclopropyl-phenyl, 3-CH2Ph-phenyl, 3-CHF2-phenyl, 3,4-di-Cl-phenyl, 3,5-di-Cl-4-F-phenyl, 3-Cl-4,6-di-F-phenyl, 3-Cl-4-F-phenyl, 3-Cl-4-I-phenyl, 3-Cl-4-Me-phenyl, 3-Cl-5-Me-phenyl, 3,6-di-Cl-phenyl, 3-Cl-6-F-phenyl, 3-Cl-6-OMe-phenyl, 3-Cl-phenyl, 3-CN-phenyl, 3-cyclohexyl-phenyl, 3-cyclopropyl-phenyl, 3-Et-phenyl, 3,4,6-tri-F-phenyl, 3,4-di-F-phenyl, 3,5-di-F-phenyl, 3-F-phenyl, 3-tetralin, 3-I-phenyl, 3-iPr-phenyl, 3-Me-4-Cl-phenyl, 3-Me-4-F-phenyl, 3,4-di-Me-phenyl, 3,5-di-Me-phenyl, 3-Me-phenyl, 3-OCF3-4-F-phenyl, benzo[d]dioxolane, 3-OiPr-

phenyl, 3-OMe-4-Cl-phenyl, 3,5-di-OMe-phenyl, 3-OMe-phenyl, 3-Ph-phenyl, 3-chloropyridyl, 3-pyridyl, 3,5-di-tBu-phenyl, 3-tBu-phenyl, 4-Br-phenyl, 4-acetylene-phenyl, 4-CF3-phenyl, 4-CH2Ph-phenyl, 4-Cl-phenyl, 4-CN-phenyl, 4-COMe-phenyl, 4-F-phenyl, 4-Me-phenyl, 4-morpholine-phenyl, 4-OCF3-phenyl, 4-OPh-phenyl, or 5-Cl-6-F-phenyl.

~~20~~18. The compound according to claim 1, which is selected from the group consisting of:

N^3-(3-Chloro-4-fluorophenyl)furo[3,2-b]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-Phenylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(2-Chlorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(4-Fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(4-(Trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(2,4-Dichlorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chlorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(Benzo[d][1,3]dioxol-5-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(4-Ethynylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,5-Dimethoxyphenyl)furo[2,3-c]pyridine-2,3-diamine,

4-((2-Aminofuro[2,3-c]pyridin-3-yl)amino)benzonitrile,

N^3-(*p*-tolyl)Furo[2,3-c]pyridine-2,3-diamine,

1-(4-((2-Aminofuro[2,3-c]pyridin-3-yl)amino)phenyl)ethanone,

N^3-(3-Cyclopropylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Isopropylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-2,4-difluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(2,3-Dichloro-4-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,5-Dichloro-4-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(*m*-tolyl)Furo[2,3-c]pyridine-2,3-diamine,

~~N^3-(Pyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,~~

N^3-(4-(Trifluoromethoxy)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(5-Chloro-2,4-difluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

~~N^3-(5-Chloropyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,~~

N^3-([1,1'-Biphenyl]-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(2,4-Dimethylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(2,5-Dichlorophenyl)furo[2,3-c]pyridine-2,3-diamine,

(2-Amino-3-((3-chloro-4-fluorophenyl)amino)-7-methylfuro[2,3-c]pyridin-4-yl)methanol,

4-Chloro-N^3-(3-chloro-4-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Bromo-4-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,4-Difluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(4-Fluoro-3-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-(*tert*-Butyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(4-Fluoro-3-(trifluoromethoxy)phenyl)furo[2,3-c]pyridine-2,3-diamine,

~~N^3-(5,6,7,8-Tetrahydronaphthalen-1-yl)furo[2,3-c]pyridine-2,3-diamine,~~

N^3-(3-Chloro-4-fluorophenyl)-5-methoxyfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-(Difluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-methylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-4-methoxyfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Ethynylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-(1,1-Difluoroethyl)-4-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(4-Chloro-3-methylphenyl)furo[2,3-c]pyridine-2,3-diamine,

~~N^3-(5,6,7,8-Tetrahydronaphthalen-2-yl)furo[2,3-c]pyridine-2,3-diamine,~~

N^3-(3-Chloro-4-fluorophenyl)-4,7-dimethylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-ethylfuro[2,3-c]pyridine-2,3-diamine,

7-Ethyl-N^3-(4-fluoro-3-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Benzylphenyl)furo[2,3-c]pyridine-2,3-diamine,

7-Ethyl-N^3-(3-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-propylfuro[2,3-c]pyridine-2,3-diamine,

7-Propyl-N^3-(3-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(4-Fluoro-3-(trifluoromethyl)phenyl)-7-propylfuro[2,3-c]pyridine-2,3-diamine,

7-Methyl-N^3-(3-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

7-Phenyl-N^3-(3-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-isopropylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-(Cyclopropylmethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-5-methoxy-7-methylfuro[2,3-c]pyridine-2,3-diamine,

7-Benzyl-N^3-(3-chloro-4-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-5-methylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Cyclohexylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-(Cyclobutylmethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(3-methoxyphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(4-chlorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Ethynylphenyl)-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-ethynylphenyl)-7-methylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(pyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-chlorophenyl)furo[2,3-c]pyridine-2,3-diamine,

7-Ethyl-N^3-(3-ethynylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(pyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-methoxyphenyl)furo[2,3-c]pyridine-2,3-diamine,

3-((2-Aminofuro[2,3-c]pyridin-3-yl)amino)benzonitrile,

N^3-(3-Chloro-4-fluorophenyl)-7-(3-chlorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(4-methoxyphenyl)furo[2,3-c]pyridine-2,3-diamine,

5-Butoxy-N^3-(3-chloro-4-fluorophenyl)-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridine-7-carbonitrile,

N^3-(3-Chloro-4-fluorophenyl)-5-phenoxy-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-5-ethoxy-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

5-(*tert*-Butoxy)-N^3-(3-chloro-4-fluorophenyl)-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-5-isopropoxy-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-cyclohexylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-5-ethyl-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Ethynyl-4-fluorophenyl)-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Ethynyl-4-fluorophenyl)-7-(pyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)benzofuran-6-carbonitrile,

2-Amino-3-((3-(trifluoromethyl)phenyl)amino)benzofuran-6-carbonitrile,

2-Amino-3-(m-tolylamino)benzofuran-6-carbonitrile,

2-Amino-3-((3-bromophenyl)amino)benzofuran-6-carbonitrile,

2-Amino-3-((2-chlorophenyl)amino)benzofuran-6-carbonitrile,

N^3-(3-Chloro-4-fluorophenyl)benzo[b]thiophene-2,3-diamine,

N^3-Phenylbenzo[b]thiophene-2,3-diamine,

N^3-(3-(Trifluoromethyl)phenyl)benzo[b]thiophene-2,3-diamine,

N^3-(3-Fluorophenyl)benzo[b]thiophene-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)thieno[2,3-c]pyridine-2,3-diamine,

~~3-((3-Chlorophenyl)thio)benzo[b]thiophen-2-amine,~~

5-Bromo-N^3-(3-chloro-4-fluorophenyl)benzo[b]thiophene-2,3-diamine,

N^3-(4-Chloro-3-(trifluoromethyl)phenyl)benzo[b]thiophene-2,3-diamine,

~~3-((3-Chlorophenyl)thio)benzo[b]thiophen-2-amine hydrochloride,~~

N^3-(4-Bromo-3-(trifluoromethyl)phenyl)benzo[b]thiophene-2,3-diamine,

~~3-(3-Chlorophenoxy)benzo[b]thiophen-2-amine hydrochloride,~~

N^3-(4-Fluoro-3-(trifluoromethyl)phenyl)benzo[b]thiophene-2,3-diamine,

5-Chloro-N^3-(3-chloro-4-fluorophenyl)benzo[b]thiophene-2,3-diamine hydrochloride,

5-Chloro-N^3-phenylbenzo[b]thiophene-2,3-diamine,

5-Chloro-N^3-(4-fluorophenyl)benzo[b]thiophene-2,3-diamine,

5-Chloro-N^3-(4-fluoro-3-(trifluoromethyl)phenyl)benzo[b]thiophene-2,3-diamine,

5-Chloro-N^3-(3-(trifluoromethyl)phenyl)benzo[b]thiophene-2,3-diamine hydrochloride,

N^3-(3-Chloro-4-fluorophenyl)-5-phenylbenzo[b]thiophene-2,3-diamine,

~~N^3-Methyl-N^3-phenylbenzo[b]thiophene-2,3-diamine hydrochloride,~~

2-Amino-3-((3-chloro-4-fluorophenyl)amino)benzo[b]thiophene-6-carbonitrile,

N^3-(3-Ethynylphenyl)-1-benzothiophene-2,3-diamine,

N^3-(2,3-Dimethylphenyl)-1-benzothiophene-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(pyridin-2-yl)furo[2,3-c]pyridine-2,3-diamine,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)-7-(pyridine-2-yl)furo[2,3-c]pyridine-5-carbonitrile,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)-7-phenylfuro[2,3-c]pyridine-5-carbonitrile,

N^3-(3-Methoxy-5-methylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^7-(3-Chloro-4-fluorophenyl)furo[3,2-d]pyrimidine-6,7-diamine,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridine-7-carboxylic acid,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridine-7-carboxamide,

N^3-(3-Chloro-4-fluorophenyl)-N5,N5-dimethyl-7-phenylfuro[2,3-c]pyridine-2,3,5-triamine,

N^3-(3-Cyclobutylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Cyclopentylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(trifluoromethyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-1H-pyrrolo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-phenoxyfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(pyridine-2-yloxy)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-N^7-phenylfuro[2,3-c]pyridine-2,3,7-triamine,

N^3-(3-Chloro-4-fluorophenyl)-N^7-(pyridine-3-yl)furo[2,3-c]pyridine-2,3,7-triamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(phenylethynyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-5-(2-(dimethylamino)ethoxy)-7-(pyridine-2-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-5-(3-dimethylamino)ethoxy)-7-phenylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(1-methyl-1H-pyrazol-5-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(piperidin-1-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,4-difluorophenyl)-5-fluorofuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chlorophenyl)-7-(pyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(2-Chlorophenyl)-5-fluorofuro[2,3-c]pyridine-2,3-diamine,

4-(2-Amino-3-((2-chlorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methylpicolinamide,

N^3-(3-Chlorophenyl)-5-fluorofuro[2,3-c]pyridine-2,3-diamine,

5-Fluoro-N^3-(3-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

5-Fluoro-N^3-(4-fluoro-3-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

4-(2-Amino-3-((3,4-difluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methylpicolinamide,

4-(2-Amino-3-((4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methylpicolinamide,

4-(2-Amino-3-((3-chlorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methylpicolinamide,

4-(2-Amino-3-((3-(trifluoromethyl)phenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methylpicolinamide,

4-(2-amino-3-((4-fluoro-3-(trifluoromethyl)phenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methylpicolinamide,

5-Fluoro-N^3-(4-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-methoxypyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Bromophenyl)benzo[b]thiophene-2,3-diamine,

N^3-(4-Fluorophenyl)benzo[b]thiophene-2,3-diamine,

N^3-(2-Ethylphenyl)benzo[b]thiophene-2,3-diamine hydrochloride,

N^3-(3-Chloro-4-fluorophenyl)-7-phenylbenzo[b]thiophene-2,3-diamine,

N^3-(3-Chlorophenyl)benzo[b]thiophene-2,3-diamine,

N^3-(3-Methoxyphenyl)benzo[b]thiophene-2,3-diamine,

~~N^3-(benzo[d][1,3]dioxol-5-yl)benzo[b]thiophene-2,3-diamine,~~

N^3-(4-Bromo-2-methylphenyl)benzo[b]thiophene-2,3-diamine,

N^3-(3-Chlorophenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N3-phenylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-methylpyridin-4-yl)benzo[b]thiophene-2,3-diamine,

5-Fluoro-N^3-(4-fluorophenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N^3-(2-(piperidin-1-yl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Fluorophenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-(trifluoromethyl)pyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

(4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)pyridin-2-yl)(piperidin-1-yl)methanone,

(4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)pyridin-2-yl)(morpholino)methanone,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-(pyridin-2-yl)picolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-(2-morpholinoethyl)picolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-pentylpicolinamide,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-chloro-5-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(3,5-dimethylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(3,5-difluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-styrylfuro[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(isoquinolin-4-yl)benzo[b]thiophene-2,3-diamine,

N^3-(3-Bromo-4-methylphenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-([1,1'-Biphenyl]-3-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Bromo-4-fluorophenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-(1,1-Difluoroethyl)-4-fluorophenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-2,4-difluorophenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N^3-(4-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N^3-(4-(trifluoromethoxy)phenyl)furo[2,3-c]pyridine-2,3-diamine,

~~7-(2-Methylpyridin-4-yl)-N^3-(pyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,~~

N^3-(4-Fluoro-3-(trifluoromethoxy)phenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-(Difluoromethyl)phenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

3-((2-Amino-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridin-3-yl)amino)benzonitrile,

N^3-(4-Chlorophenyl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

~~N^3-Hexyl-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

N^3-Benzyl-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

~~N^3-Cyclohexyl-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

~~7-(2-Methylpyridin-4-yl)-N^3-(tetrahydro-2H-pyran-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

~~7-(2-Methylpyridin-4-yl)-N^3-((tetrahydro-2H-pyran-4-yl)methyl)furo[2,3-c]pyridine-2,3-diamine,~~

(E)-N^3-(4-Fluorophenyl)-7-styrylfuro[2,3-c]pyridine-2,3-diamine,

(E)-N^3-(3,4-Difluorophenyl)-7-styrylfuro[2,3-c]pyridine-2,3-diamine,

(E)-N^3-(4-Fluoro-3-(trifluoromethyl)phenyl)-7-styrylfuro[2,3-c]pyridine-2,3-diamine,

2-Amino-3-((3,4-difluorophenyl)amino)-N-methylfuro[2,3-c]pyridine-7-carboxamide,

7-(Aminomethyl)-N^3-(3-chlorophenyl)furo[2,3-c]pyridine-2,3-diamine,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl acetate,

N-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)acetamide,

N^3-(2-Chlorophenyl)-7-(piperidin-4-ylmethyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,4-Difluorophenyl)-7-(pyridin-4-ylmethyl)furo[2,3-c]pyridine-2,3-diamine,

(2-Amino-3-((3,4-difluorophenyl)amino)furo[2,3-c]pyridin-7-yl)methanol,

N^3-(3-Chlorophenyl)-7-(trifluoromethyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(cyclohexyloxy)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,4-Difluorophenyl)-7-((tetrahydro-2H-pyran-4-yl)oxy)furo[2,3-c]pyridine-2,3-diamine,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)-N-methylfuro[2,3-c]pyridine-7-sulfonamide,

2-Amino-3-((3,4-difluorophenyl)amino)-N-phenylfuro[2,3-c]pyridine-7-sulfonamide,,

N^3-(4-Fluorophenyl)-5-(trifluoromethyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(2-Chlorophenyl)-5-(trifluoromethoxy)furo[2,3-c]pyridine-2,3-diamine,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-5-carbonitrile,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N,N-dimethylpicolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-ethylpicolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-isopropylpicolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-(2-methoxyethyl)picolinamide,

N-(3-(1*H*-Imidazol-1-yl)propyl)-4-(2-amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)picolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-(pyridin-3-yl)picolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-(pyridin-4-yl)picolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-(4-methylpiperazin-1-yl)picolinamide,

N^3-(3-Chloro-4-fluorophenyl)thieno[3,2-b]pyridine-2,3-diamine,

~~3-((3-Chloro-4-fluorophenyl)thio)furo[2,3-c]pyridin-2-amine,~~

~~3-((3-Chloro-4-fluorophenyl)thio)benzofuran-2-amine,~~

~~3-(3-Chloro-4-fluorophenoxy)furo[2,3-c]pyridin-2-amine,~~

~~3-(3-Chloro-4-fluorophenoxy)benzofuran-2-amine,~~

N^3-(3-Chloro-4-fluorophenyl)benzofuran-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-methylpyridin-4-yl)benzofuran-2,3-diamine,

N3-(3-Chloro-4-fluorophenyl)-7-(2,6-difluoropyridin-4-yl)benzofuran-2,3-diamine,

N3-(3-Chloro-4-fluorophenyl)-7-(2,6-difluoropyridin-4-yl)benzo[b]thiophene-2,3-diamine,

N3-(3-Chloro-4-fluorophenyl)-7-(2-fluoropyridin-4-yl)benzofuran-2,3-diamine,

N3-(3-Chloro-4-fluorophenyl)-7-(2-fluoropyridin-4-yl)benzo[b]thiophene-2,3-diamine,,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)benzofuran-7-yl)-N-methylpicolinamide,

2-Amino-3-((3-chloro-4-fluorophenyl)amino)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridin-5-ol,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-fluoropyridin-4-yl)benzofuran-2,3-diamine,

N^3-(3-chlorophenyl)-7-(2-fluoropyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Fluorophenyl)-7-(2-fluoropyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,4-Difluorophenyl)-7-(2-fluoropyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(4-Fluorophenyl)-7-(2-fluoropyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-1H-indole-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-methylpyridin-4-yl)-1H-pyrrolo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(2-methylpyridin-4-yl)-1H-indole-2,3-diamine,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)-1H-pyrrolo[2,3-c]pyridin-7-yl)-N methylpicolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)-1H-indol-7-yl)-N-methylpicolinamide,

N^3-(3-Chloro-4-fluorophenyl)-7-(4-methylpyrimidin-2-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(imidazo[1,2-a]pyridin-5-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-7-(imidazo[1,2-a]pyridin-2-yl)furo[2,3-c]pyridine-2,3-diamine,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methyl-1H-imidazole-1-carboxamide,

~~N^3-(1-Methyl-1H-pyrrol-3-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

~~7-(2-Methylpyridin-4-yl)-N3-(1H-pyrrol-3-yl)furo[2,3-c]pyridine-2,3-diamine,~~

~~N^3-(1-Methyl-1H-pyrrol-2-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

~~N^3-(1-Methyl-1H-indol-2-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

~~N^3-(6-Chloropyrimidin-4-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

~~N^3-(6-Fluoropyrimidin-4-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

~~N^3-(2-Fluoropyrimidin-5-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

~~N^3-(4,5-difluoropyrimidin-2-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,~~

N^3-(3-Chlorophenyl)-7-(2,6-difluoropyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,4-Difluorophenyl)-7-(2,6-difluoropyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2,6-Difluoropyridin-4-yl)-N3-(4-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(5-chloro-2-fluorophenyl)-7-(2,6-difluoropyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,4-Difluorophenyl)-7-(4-(methoxymethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Chloro-6-fluorophenyl)-N3-(3,4-difluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N-(4-(2-Amino-3-((3,4-difluorophenyl)amino)furo[2,3-c]pyridin-7-yl)phenyl)pyrrolidine-1 carboxamide,

N^3-(3,4-Difluorophenyl)-7-(4-fluoro-2-methylphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,4-Difluorophenyl)-7-(4-propoxyphenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3,4-Difluorophenyl)-7-(4-morpholinophenyl)furo[2,3-c]pyridine-2,3-diamine,

5-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-2-fluorophenol,

Methyl 5-(2-amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-2-chlorobenzoate,

3-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methylbenzamide,

4-(4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)picolinamido)butanoic acid,

7-(2,6-Difluoropyridin-4-yl)-N^3-(4-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Fluoropyridin-4-yl)-N^3-(4-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

5-Fluoro-7-(2-methylpyridin-4-yl)-N3-(4-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3diamine,

4-(2-Amino-3-((4-(trifluoromethyl)phenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methylpicolinamide,

4-(2-Amino-5-fluoro-3-((4-(trifluoromethyl)phenyl)amino)furo[2,3-c]pyridin-7-yl)-N-methylpicolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)-5-fluorofuro[2,3-c]pyridin-7-yl)-N-methylpicolinamide,

5-Fluoro-N^3-(4-(trifluoromethyl)phenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-6-fluorobenzo[b]thiophene-2,3-diamine,

N^3-(3-Chloro-4-fluorophenyl)-1-methyl-1H-indole-2,3-diamine,

7-(2,6-Difluoropyridin-4-yl)-N^3-(3-fluorophenyl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(2,5-Ddifluorophenyl)-7-(2,6-difluoropyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

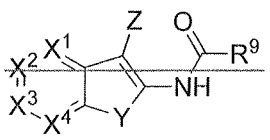
4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N-(2-hydroxyethyl)picolinamide,

4-(2-Amino-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-7-yl)-N,N diethylpicolinamide,

N^3-(3-Chloro-4-fluorophenyl)-7-(2,3-dichlorophenyl)furo[2,3-c]pyridine-2,3-diamine, or

N^3-(3-Chloro-4-fluorophenyl)-7-(naphthalen-2-yl)benzo[b]thiophene-2,3-diamine.

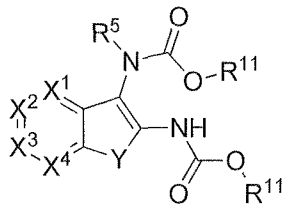
~~21. A prodrug of a compound of claim 1, wherein the prodrug is an acylated compound which has a formula (II):~~



~~(II)~~

~~wherein R^9 is optionally-substituted C_1-C_6 alkyl.~~

~~22~~19. A prodrug of a compound of claim 1, wherein the prodrug is a dicarbamate compound which has a formula (**IV**):



(**IV**)

wherein R^{11} is optionally-substituted C_1-C_6 alkyl, aryl, (aryl)alkyl, heteroaryl, or (heteroaryl)alkyl.

~~2320~~. The ~~compound~~ prodrug according to ~~any one of~~ claims ~~19 to 22~~, which is:

Benzyl (3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-2-yl)carbamate,

Benzyl (2-(((benzyloxy)carbonyl)amino)furo[2,3-c]pyridin-3-yl)(3-chloro-4-fluorophenyl)carbamate,

Ethyl (3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-2-yl)carbamate,

Ethyl (3-chloro-4-fluorophenyl)(2-((ethoxycarbonyl)amino)furo[2,3-c]pyridin-3-yl)carbamate,

Methyl (3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-2-yl)carbamate,

Methyl (3-chloro-4-fluorophenyl)(2-((methoxycarbonyl)amino)furo[2,3-c]pyridin-3-yl)carbamate,

Ethyl (3-chloro-4-fluorophenyl)(7-cyano-2-((ethoxycarbonyl)amino)furo[2,3-c]pyridin-3-yl)carbamate,

Ethyl (3-chloro-4-fluorophenyl)(7-(3-cyanophenyl)-2-((ethoxycarbonyl)amino)furo[2,3-c]pyridin-3-yl)carbamate,

Benzyl (3-((3-chloro-4-fluorophenyl)amino)-7-cyanofuro[2,3-c]pyridin-2-yl)carbamate,

Ethyl (3-chloro-4-fluorophenyl)(2-((ethoxycarbonyl)amino)-7-iodofuro[2,3-c]pyridin-3-yl)carbamate,

Ethyl (7-(4-carbamoylphenyl)-3-((3-chloro-4-fluorophenyl)amino)furo[2,3-c]pyridin-2-yl)carbamate,

Ethyl (7-((4-carbamoylphenyl)ethynyl)-2-((ethoxycarbonyl)amino)furo[2,3-c]pyridin-3-yl)(3-chloro-4-fluorophenyl)carbamate,

Ethyl (7-bromo-2-((ethoxycarbonyl)amino)furo[2,3-c]pyridin-3-yl)(3-chloro-4-fluorophenyl)carbamate,

Ethyl (3-((3-chloro-4-fluorophenyl)amino)-7-phenylfuro[2,3-c]pyridin-2-yl)carbamate,

Ethyl (3-((3-chloro-4-fluorophenyl)amino)-7-(2,6-dimethylpyridin-4-yl)furo[2,3-c]pyridin-2-yl)carbamate,

~~24~~21. The compound according to ~~any one of~~ claims 1 ~~or 23~~, which is:

7-Bromo-N^3-(3-chloro-4-fluorophenyl)benzo[b]thiophene-2,3-diamine hydrochloride,

~~3-((3-chlorophenyl)thio)benzo[b]thiophen-2-amine hydrochloride,~~

~~3-(3-chlorophenoxy)benzo[b]thiophen-2-amine hydrochloride,~~

5-chloro-N^3-(3-chloro-4-fluorophenyl)benzo[b]thiophene-2,3-diamine hydrochloride,

5-chloro-N^3-(3-(trifluoromethyl)phenyl)benzo[b]thiophene-2,3-diamine hydrochloride,

or

~~N^3-methyl-N^3-phenylbenzo[b]thiophene-2,3-diamine hydrochloride, or~~

N3-(2-Ethylphenyl)benzo[b]thiophene-2,3-diamine hydrochloride.

22. A compound, which is:

N^3-(Pyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(5-Chloropyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(5,6,7,8-Tetrahydronaphthalen-1-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(5,6,7,8-Tetrahydronaphthalen-2-yl)furo[2,3-c]pyridine-2,3-diamine,

3-((3-Chlorophenyl)thio)benzo[b]thiophen-2-amine,

3-((3-Chlorophenyl)thio)benzo[b]thiophen-2-amine hydrochloride,

3-(3-Chlorophenoxy)benzo[b]thiophen-2-amine hydrochloride,

N^3-Methyl-N^3-phenylbenzo[b]thiophene-2,3-diamine hydrochloride,

N^3-(benzo[d][1,3]dioxol-5-yl)benzo[b]thiophene-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N^3-(pyridin-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-Hexyl-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-Cyclohexyl-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N^3-(tetrahydro-2H-pyran-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N^3-((tetrahydro-2H-pyran-4-yl)methyl)furo[2,3-c]pyridine-2,3-diamine,

3-((3-Chloro-4-fluorophenyl)thio)furo[2,3-c]pyridin-2-amine,

3-((3-Chloro-4-fluorophenyl)thio)benzofuran-2-amine,

3-(3-Chloro-4-fluorophenoxy)furo[2,3-c]pyridin-2-amine,

3-(3-Chloro-4-fluorophenoxy)benzofuran-2-amine,

N3-(1-Methyl-1H-pyrrol-3-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

7-(2-Methylpyridin-4-yl)-N3-(1H-pyrrol-3-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(1-Methyl-1H-pyrrol-2-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(1-Methyl-1H-indol-2-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(6-Chloropyrimidin-4-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

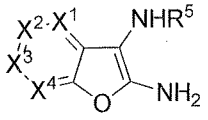
N^3-(6-Fluoropyrimidin-4-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine,

N^3-(2-Fluoropyrimidin-5-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine, or

N^3-(4,5-difluoropyrimidin-2-yl)-7-(2-methylpyridin-4-yl)furo[2,3-c]pyridine-2,3-diamine.

~~25~~23. A composition comprising a compound of any one of claims 1 to ~~24~~22 and a pharmaceutically acceptable carrier.

2624. A method of preparing a compound of formula (**I-C**), said method comprising:



(**I-C**)

wherein:

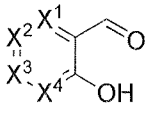
X^1 is CR^1, N, or NO;

X^2 is CR^2, N, or NO;

X^3 is CR^3, N, or NO;

X^4 is CR^4, N, or NO; and

R^5 is selected from the group consisting of H, optionally substituted C_1-C_6 alkyl, optionally substituted mono or bicyclic C_6-C_{14} aryl, optionally substituted mono or bicyclic heteroaryl, optionally substituted (aryl)alkyl, optionally substituted mono or bicyclic cycloalkyl, optionally substituted mono or bicyclic heterocyclyl, C_1-C_6 haloalkyl, optionally substituted heterocyclyl(alkyl), optionally substituted heteroaryl(alkyl), hydroxyalkyl, and perfluoroalkyl;

(i) reacting  with an an amine (R^5-NH_2);

(ii) reacting the product of step (i) with a cyanide salt; and

(iii) reacting the product of step (ii) with a Lewis acid.

~~27~~25. The method according to claim ~~26~~24, wherein said Lewis acid is selected from trimethylsilyl trifluoromethanesulfonate, $Sc(OTf)_3$, $Fe(OTf)_2$, $Ni(OTf)_2$, and $In(OTf)_3$.

~~28~~26. The method according to claim ~~26~~24, wherein said cyanide salt is selected from a group consisting of a trialkyl silyl cyanide, NaCN, KCN, and $Zn(CN)_2$.

~~29~~27. The method according to claim ~~28~~26, wherein said trialkyl silyl cyanide is TMSCN.

~~30~~28. The method according to claim ~~27~~25, wherein the product of step (i) is an imine intermediate.