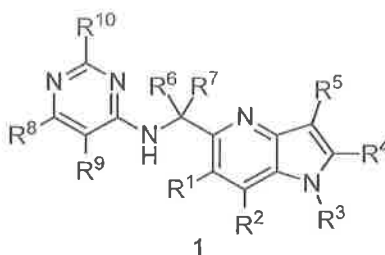


WHAT IS CLAIMED IS:

1. A compound of Formula 1,



or a pharmaceutically acceptable salt thereof, wherein:

R^1 is selected from C_{3-8} cycloalkyl, C_{2-6} heterocyclyl, C_{6-14} aryl, and C_{1-9} heteroaryl, each optionally substituted with from one to five substituents independently selected from halo, oxo, -CN, R^{11} , and R^{12} ;

R^2 , R^4 , and R^5 are each independently selected from hydrogen, halo, -OH, -CN, C_{1-3} alkyl, and C_{1-3} haloalkyl;

R^3 is selected from hydrogen, C_{1-3} alkyl, and C_{1-3} haloalkyl;

R^6 and R^7 are each independently selected from hydrogen, C_{1-3} alkyl, and C_{1-3} haloalkyl;

R^8 is selected from hydrogen, methyl, and -NH₂;

R^9 is selected from hydrogen, halo, -CN, C_{1-3} haloalkyl, -OR¹⁶, -C(O)R¹⁶, -C(O)OR¹⁶, -C(O)N(R¹⁶)R¹⁷, -C(O)N(R¹⁶)OR¹⁷, -C(O)N(R¹⁶)S(O)₂R¹⁸, -SR¹⁶, -S(O)R¹⁸, -S(O)₂R¹⁸, and -S(O)₂N(R¹⁶)R¹⁷; or

R^8 is selected from -NH- and -CH₂-, and R^8 and R^9 , together with the carbon atoms to which they are attached, form a C_{2-4} heteroarylene having 5 ring atoms and 1 to 3 heteroatoms, each of the heteroatoms being nitrogen, and wherein the C_{2-4} heteroarylene is optionally substituted with R^{12} ;

R^{10} is selected from halo, -OH, C_{1-3} alkyl, -NHR¹⁶, and -NHC(O)R¹⁶;

each R^{11} is independently selected from -OR¹³, -N(R¹³)R¹⁴, -NR¹³C(O)R¹⁴, -NHC(O)NR¹³R¹⁴, -NR¹³C(O)NHR¹⁴, -C(O)R¹³, -C(O)OR¹³, -C(O)N(R¹³)R¹⁴, -C(O)N(R¹³)OR¹⁴, -C(O)N(R¹³)S(O)₂R¹², -N(R¹³)S(O)₂R¹², -SR¹³, -S(O)R¹², -S(O)₂R¹², and -S(O)₂N(R¹³)R¹⁴;

each R^{12} is independently selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-8} cycloalkyl-(CH₂)_m-, C_{6-14} aryl-(CH₂)_m-, C_{2-6} heterocyclyl-(CH₂)_m-, and C_{1-9} heteroaryl-(CH₂)_m-, each optionally substituted with from one to five substituents independently selected from halo, oxo, -CN, C_{1-6} alkyl, C_{1-6} haloalkyl, and R^{15} ;

each R^{13} and R^{14} is independently selected from

(a) hydrogen; and

(b) C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl- $(CH_2)_m$, C_{6-14} aryl- $(CH_2)_m$, C_{2-6} heterocyclyl- $(CH_2)_m$, and C_{1-9} heteroaryl- $(CH_2)_m$, each optionally substituted with from one to five substituents independently selected from halo, oxo, -CN, C_{1-6} alkyl, C_{1-6} haloalkyl, and R^{15} ;

each R^{15} is independently selected from $-OR^{16}$, $-N(R^{16})R^{17}$, $-N(R^{16})C(O)R^{17}$, $-NHC(O)NR^{16}R^{17}$, $-NR^{16}C(O)NHR^{17}$, $-C(O)R^{16}$, $-C(O)OR^{16}$, $-C(O)N(R^{16})R^{17}$, $-C(O)N(R^{16})OR^{17}$, $-C(O)N(R^{16})S(O)_2R^{18}$, $-NR^{16}S(O)_2R^{18}$, $-SR^{16}$, $-S(O)R^{18}$, $-S(O)_2R^{18}$, and $-S(O)_2N(R^{16})R^{17}$;

each R^{16} and R^{17} is independently selected from hydrogen, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

each R^{18} is independently selected from C_{1-6} alkyl and C_{3-6} cycloalkyl;

each m is independently selected from 0, 1, 2, 3, and 4;

wherein each of the aforementioned heteroaryl moieties independently has 1 to 4 heteroatoms independently selected from N, O, and S, and each of the aforementioned heterocyclyl moieties independently has 1 to 4 heteroatoms independently selected from N, O, and S.

2. A compound or pharmaceutically acceptable salt according to claim 1, wherein R^1 is selected from pyrazolyl, thiazolyl, isoxazolyl, phenyl, pyridinyl, azetidiny, 1,2-dihydropyridinyl, piperidinyl, tetrahydropyranyl, morpholinyl, and 2-oxa-6-azaspiro[3.3]heptanyl, each optionally substituted.

3. A compound or pharmaceutically acceptable salt according to claim 1, wherein R^1 is selected from pyrazolyl, thiazolyl, isoxazolyl, pyridinyl, azetidiny, piperidinyl, tetrahydropyranyl, morpholinyl, and 2-oxa-6-azaspiro[3.3]heptanyl, each optionally substituted.

4. A compound or pharmaceutically acceptable salt according to claim 1, wherein R^1 is selected from pyrazolyl, pyridinyl, and morpholinyl, each optionally substituted.

5. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein R^2 , R^4 , and R^5 are each independently selected from hydrogen and halo.

6. A compound or pharmaceutically acceptable salt according to claim 5, wherein at most one of R^2 , R^4 , and R^5 is halo.
7. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein each of R^2 and R^4 is hydrogen.
8. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein R^3 is C_{1-3} alkyl or C_{1-3} haloalkyl.
9. A compound or pharmaceutically acceptable salt according to claim 8, wherein R^3 is methyl.
10. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein one of R^6 and R^7 is hydrogen.
11. A compound or pharmaceutically acceptable salt according to claim 10, wherein one of R^6 and R^7 is C_{1-3} alkyl.
12. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein R^8 is selected from methyl and $-NH_2$.
13. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein R^9 is selected from halo, $-CN$, and C_{1-3} haloalkyl.
14. A compound or pharmaceutically acceptable salt according to claim 13, wherein R^9 is $-CN$.
15. A compound or pharmaceutically acceptable salt according to any one of claims 1 to 11, wherein R^8 is $-NH-$, and R^8 and R^9 , together with the carbon atoms to which they are attached, form a 1*H*-imidazol-4,5-diyl or a 1*H*-pyrazol-4,5-diyl, each optionally substituted.
16. A compound or pharmaceutically acceptable salt according to any one of claims 1-15, wherein R^{10} is $-NH_2$.
17. A compound according to claim 1, which is selected from the following compounds:
(*S*)-5-Chloro-*N*⁴-(1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4-diamine;

- (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2-Amino-4-((1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-5-Chloro-*N*⁴-(1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4-diamine;
- 4-Amino-2-methyl-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-5-Fluoro-*N*⁴-(1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4-diamine;
- (*S*)-4-Amino-2-hydroxy-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2,4-Diamino-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-4-Amino-2-hydroxy-6-((1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(pyridin-2-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- 2,4-Diamino-6-(((1*S*)-1-(6-(3,5-dimethyl-1*H*-pyrazol-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2,4-Diamino-6-((1-(6-(2-hydroxypyridin-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-*N*⁶-(1-(1-Methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;
- (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(thiazol-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-*N*⁴-(1-(1-Methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-1*H*-pyrazolo[3,4-*d*]pyrimidine-4,6-diamine;

- (*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-(3-methyl-1*H*-pyrazol-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- 2,4-Diamino-6-((1-(6-(4-hydroxy-4-methylpiperidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2,4-Diamino-6-((1-(6-(4-hydroxy-4-methylpiperidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*R*)-2,4-Diamino-6-((1-(6-(4-hydroxy-4-methylpiperidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2-Amino-4-((1-(6-(2-hydroxypyridin-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)-6-methylpyrimidine-5-carbonitrile;
- (*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-(pyridin-2-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-(tetrahydro-2*H*-pyran-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(tetrahydro-2*H*-pyran-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-*N*⁶-(1-(1-Methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;
- (*S*)-5-Chloro-*N*⁴-(1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4,6-triamine;
- (*S*)-2,4-Diamino-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- 2,4-Diamino-6-(((1*S*)-1-(6-(3,5-dimethylisoxazol-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- 2-Amino-4-(((1*S*)-1-(6-(3,5-dimethylisoxazol-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)-6-methylpyrimidine-5-carbonitrile;
- (*S*)-2,4-Diamino-6-((1-(6-(1-(difluoromethyl)-1*H*-pyrazol-5-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
- (*S*)-5-Chloro-*N*⁴-(1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4,6-triamine;
- (*S*)-*N*⁶-(1-(1-Methyl-6-(pyridin-2-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;
- (*S*)-2,4-Diamino-6-((1-(6-(1-cyclopropyl-1*H*-pyrazol-5-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-*N*⁶-(1-(6-(1-Cyclopropyl-1*H*-pyrazol-5-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;

(*S*)-*N*⁶-(1-(6-(1-(Difluoromethyl)-1*H*-pyrazol-5-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;

5-Chloro-*N*⁴-(1-(6-(3,3-difluoroazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4,6-triamine;

2,4-Diamino-6-((1-(6-(3-hydroxyazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

1-(5-(1-((2,6-Diamino-5-chloropyrimidin-4-yl)amino)ethyl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-6-yl)azetidin-3-ol;

(*S*)-2,4-Diamino-6-((1-(6-(3-methoxyazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

2,4-Diamino-6-((1-(6-(3,3-difluoroazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*R*)-2,4-Diamino-6-((1-(6-(3,3-difluoroazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2,4-Diamino-6-((1-(6-(3,3-difluoroazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

2,4-Diamino-6-((1-(1-methyl-6-(2-oxa-6-azaspiro[3.3]heptan-6-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*R*)-2,4-Diamino-6-((1-(1-methyl-6-(2-oxa-6-azaspiro[3.3]heptan-6-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2,4-Diamino-6-((1-(1-methyl-6-(2-oxa-6-azaspiro[3.3]heptan-6-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*R*)-2,4-Diamino-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2,4-Diamino-6-((1-(3-hydroxy-1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

a stereoisomer of any of the aforementioned compounds; and

a pharmaceutically acceptable salt of any of the aforementioned compounds or stereoisomers.

18. A pharmaceutical composition comprising:

a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 17; and

a pharmaceutically acceptable excipient.

19. A compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 17, for use as a medicament.

20. A method of treating a disease, disorder or condition in a subject, the method comprising administering to the subject an effective amount of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 17, wherein the disease, disorder or condition is associated with PI3K δ .

21. A method of treating a disease, disorder or condition in a subject, the method comprising administering to the subject an effective amount of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 17, wherein the disease, disorder or condition is selected from immunological disorders, cancer, and cardiovascular disease.

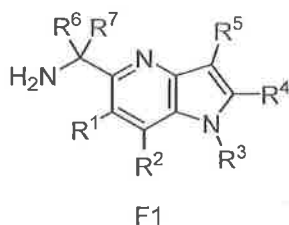
22. A method of treating a disease, disorder or condition in a subject, the method comprising administering to the subject an effective amount of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 17, wherein the disease, disorder or condition is selected from allergic rhinitis, asthma, atopic dermatitis, rheumatoid arthritis, multiple sclerosis, systemic lupus erythematosus, psoriasis, immune thrombocytopenic purpura, inflammatory bowel disease, behcet's disease, graft-versus-host disease (GVHD), chronic obstructive pulmonary disease, atherosclerosis, myocardial infarction, and thrombosis.

23. A method of treating a disease, disorder or condition in a subject, the method comprising administering to the subject an effective amount of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 17, wherein the disease, disorder or condition is selected from brain cancer, lung cancer, squamous cell cancer, bladder cancer, gastric cancer, pancreatic cancer, breast cancer, cancer of the head, neck cancer, renal cancer, kidney cancer, ovarian cancer, prostate cancer, colorectal cancer, prostate cancer, colon cancer, epidermoid cancer, esophageal cancer, testicular cancer, gynecological cancer, and thyroid cancer.

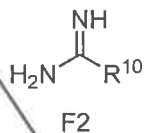
24. A combination of an effective amount of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 17, and at least one additional pharmacologically active agent.

25. A method of making a compound of Formula 1 or a pharmaceutically acceptable salt thereof as defined in claim 1, the method comprising:

reacting a compound of Formula F1,



or a salt thereof, with 2-(bis(methylthio)methylene)malononitrile and a compound of Formula F2,

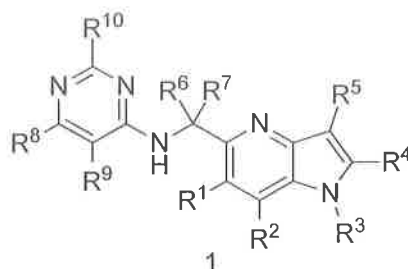


or a salt thereof, in the presence of a base, to give a compound of Formula 1 or a salt thereof in which R⁸ is -NH₂, R⁹ is -CN, and R¹⁰ is selected from -OH, C₁₋₃ alkyl, and -NHR¹⁶; and optionally converting the compound of Formula 1 to a pharmaceutically acceptable salt;

wherein R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R¹⁶ are defined as for Formula 1.

CLAIMS

1. A compound of Formula 1,



or a pharmaceutically acceptable salt thereof, wherein:

R^1 is selected from C_{3-8} cycloalkyl, C_{2-6} heterocyclyl, C_{6-14} aryl, and C_{1-9} heteroaryl, each optionally substituted with from one to five substituents independently selected from halo, oxo, -CN, R^{11} , and R^{12} ;

R^2 , R^4 , and R^5 are each independently selected from hydrogen, halo, -OH, -CN, C_{1-3} alkyl, and C_{1-3} haloalkyl;

R^3 is selected from hydrogen, C_{1-3} alkyl, and C_{1-3} haloalkyl;

R^6 and R^7 are each independently selected from hydrogen, C_{1-3} alkyl, and C_{1-3} haloalkyl;

R^8 is selected from hydrogen, methyl, and -NH₂;

R^9 is selected from hydrogen, halo, -CN, C_{1-3} haloalkyl, -OR¹⁶, -C(O)R¹⁶, -C(O)OR¹⁶, -C(O)N(R¹⁶)R¹⁷, -C(O)N(R¹⁶)OR¹⁷, -C(O)N(R¹⁶)S(O)₂R¹⁸, -SR¹⁶, -S(O)R¹⁸, -S(O)₂R¹⁸, and -S(O)₂N(R¹⁶)R¹⁷; or

R^8 is selected from -NH- and -CH₂-, and R^8 and R^9 , together with the carbon atoms to which they are attached, form a C_{2-4} heteroarylene having 5 ring atoms and 1 to 3 heteroatoms, each of the heteroatoms being nitrogen, and wherein the C_{2-4} heteroarylene is optionally substituted with R^{12} ;

R^{10} is selected from halo, -OH, C_{1-3} alkyl, -NHR¹⁶, and -NHC(O)R¹⁶;

each R^{11} is independently selected from -OR¹³, -N(R¹³)R¹⁴, -NR¹³C(O)R¹⁴, -NHC(O)NR¹³R¹⁴, -NR¹³C(O)NHR¹⁴, -C(O)R¹³, -C(O)OR¹³, -C(O)N(R¹³)R¹⁴, -C(O)N(R¹³)OR¹⁴, -C(O)N(R¹³)S(O)₂R¹², -N(R¹³)S(O)₂R¹², -SR¹³, -S(O)R¹², -S(O)₂R¹², and -S(O)₂N(R¹³)R¹⁴;

each R^{12} is independently selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-8} cycloalkyl-(CH₂)_m-, C_{6-14} aryl-(CH₂)_m-, C_{2-6} heterocyclyl-(CH₂)_m-, and C_{1-9} heteroaryl-(CH₂)_m-, each optionally substituted with from one to five substituents independently selected from halo, oxo, -CN, C_{1-6} alkyl, C_{1-6} haloalkyl, and R^{15} ;

each R^{13} and R^{14} is independently selected from

(a) hydrogen; and

(b) C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl- $(CH_2)_m$ -, C_{6-14} aryl- $(CH_2)_m$ -, C_{2-6} heterocyclyl- $(CH_2)_m$ -, and C_{1-9} heteroaryl- $(CH_2)_m$ -, each optionally substituted with from one to five substituents independently selected from halo, oxo, -CN, C_{1-6} alkyl, C_{1-6} haloalkyl, and R^{15} ;

each R^{15} is independently selected from $-OR^{16}$, $-N(R^{16})R^{17}$, $-N(R^{16})C(O)R^{17}$,

$-NHC(O)NR^{16}R^{17}$, $-NR^{16}C(O)NHR^{17}$, $-C(O)R^{16}$, $-C(O)OR^{16}$, $-C(O)N(R^{16})R^{17}$,

$-C(O)N(R^{16})OR^{17}$, $-C(O)N(R^{16})S(O)_2R^{18}$, $-NR^{16}S(O)_2R^{18}$, $-SR^{16}$, $-S(O)R^{18}$, $-S(O)_2R^{18}$,

and $-S(O)_2N(R^{16})R^{17}$;

each R^{16} and R^{17} is independently selected from hydrogen, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

each R^{18} is independently selected from C_{1-6} alkyl and C_{3-6} cycloalkyl;

each m is independently selected from 0, 1, 2, 3, and 4;

wherein each of the aforementioned heteroaryl moieties independently has 1 to 4 heteroatoms independently selected from N, O, and S, and each of the aforementioned heterocyclyl moieties independently has 1 to 4 heteroatoms independently selected from N, O, and S.

2. A compound or pharmaceutically acceptable salt according to claim 1, wherein R^1 is selected from pyrazolyl, thiazolyl, isoxazolyl, phenyl, pyridinyl, azetidiny, 1,2-dihydropyridinyl, piperidinyl, tetrahydropyranyl, morpholinyl, and 2-oxa-6-azaspiro[3.3]heptanyl, each optionally substituted with from one to five substituents independently selected from halo, oxo, -CN, R^{11} , and R^{12} .

3. A compound or pharmaceutically acceptable salt according to claim 1, wherein R^1 is selected from pyrazolyl, thiazolyl, isoxazolyl, pyridinyl, azetidiny, piperidinyl, tetrahydropyranyl, morpholinyl, and 2-oxa-6-azaspiro[3.3]heptanyl, each optionally substituted with from one to five substituents independently selected from halo, oxo, -CN, R^{11} , and R^{12} .

4. A compound or pharmaceutically acceptable salt according to claim 1, wherein R^1 is selected from pyrazolyl, pyridinyl, and morpholinyl, each optionally substituted with from one to five substituents independently selected from halo, oxo, -CN, R^{11} , and R^{12} .

5. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein R^2 , R^4 , and R^5 are each independently selected from hydrogen and halo.
6. A compound or pharmaceutically acceptable salt according to claim 5, wherein (a) R^2 , R^4 , and R^5 are each hydrogen, (b) R^4 and R^5 are each hydrogen and R^2 is halo, (c) R^2 and R^5 are each hydrogen and R^4 is halo, or (d) R^2 and R^4 are each hydrogen and R^5 is halo.
7. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein each of R^2 and R^4 is hydrogen.
8. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein R^3 is C_{1-3} alkyl or C_{1-3} haloalkyl.
9. A compound or pharmaceutically acceptable salt according to claim 8, wherein R^3 is methyl.
10. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein one of R^6 and R^7 is hydrogen.
11. A compound or pharmaceutically acceptable salt according to claim 10, wherein one of R^6 and R^7 is C_{1-3} alkyl.
12. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein R^8 is selected from methyl and $-NH_2$.
13. A compound or pharmaceutically acceptable salt according to any one of the preceding claims, wherein R^9 is selected from halo, $-CN$, and C_{1-3} haloalkyl.
14. A compound or pharmaceutically acceptable salt according to claim 13, wherein R^9 is $-CN$.
15. A compound or pharmaceutically acceptable salt according to any one of claims 1 to 11, wherein R^8 is $-NH-$, and R^8 and R^9 , together with the carbon atoms to which they are attached, form a 1*H*-imidazol-4,5-diyl or a 1*H*-pyrazol-4,5-diyl, each optionally substituted with R^{12} .

16. A compound or pharmaceutically acceptable salt according to any one of claims 1-15, wherein R¹⁰ is -NH₂.

17. A compound according to claim 1, which is selected from the following compounds:

(*S*)-5-Chloro-*N*⁴-(1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4-diamine;

(*S*)-2,4-Diamino-6-((1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2-Amino-4-((1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-5-Chloro-*N*⁴-(1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4-diamine;

4-Amino-2-methyl-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-5-Fluoro-*N*⁴-(1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4-diamine;

(*S*)-4-Amino-2-hydroxy-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2,4-Diamino-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-4-Amino-2-hydroxy-6-((1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2,4-Diamino-6-((1-(1-methyl-6-(pyridin-2-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2,4-Diamino-6-((1-(1-methyl-6-(1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

2,4-Diamino-6-(((1*S*)-1-(6-(3,5-dimethyl-1*H*-pyrazol-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(*S*)-2,4-Diamino-6-((1-(6-(2-hydroxypyridin-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;

(S)-N⁶-(1-(1-Methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;
 (S)-2,4-Diamino-6-((1-(1-methyl-6-(thiazol-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-N⁴-(1-(1-Methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-1*H*-pyrazolo[3,4-*d*]pyrimidine-4,6-diamine;
 (S)-2-Amino-4-methyl-6-((1-(1-methyl-6-(3-methyl-1*H*-pyrazol-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 2,4-Diamino-6-((1-(6-(4-hydroxy-4-methylpiperidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-2,4-Diamino-6-((1-(6-(4-hydroxy-4-methylpiperidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (R)-2,4-Diamino-6-((1-(6-(4-hydroxy-4-methylpiperidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-2-Amino-4-((1-(6-(2-hydroxypyridin-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)-6-methylpyrimidine-5-carbonitrile;
 (S)-2-Amino-4-methyl-6-((1-(1-methyl-6-(pyridin-2-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-2-Amino-4-methyl-6-((1-(1-methyl-6-(tetrahydro-2*H*-pyran-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-2,4-Diamino-6-((1-(1-methyl-6-(tetrahydro-2*H*-pyran-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-N⁶-(1-(1-Methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;
 (S)-5-Chloro-N⁴-(1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4,6-triamine;
 2,4-Diamino-6-(((1*S*)-1-(6-(3,5-dimethylisoxazol-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 2-Amino-4-(((1*S*)-1-(6-(3,5-dimethylisoxazol-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)-6-methylpyrimidine-5-carbonitrile;
 (S)-2,4-Diamino-6-((1-(6-(1-(difluoromethyl)-1*H*-pyrazol-5-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-5-Chloro-N⁴-(1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4,6-triamine;

(S)-N⁶-(1-(1-Methyl-6-(pyridin-2-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;
 (S)-2,4-Diamino-6-((1-(6-(1-cyclopropyl-1*H*-pyrazol-5-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-N⁶-(1-(6-(1-Cyclopropyl-1*H*-pyrazol-5-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;
 (S)-N⁶-(1-(6-(1-(Difluoromethyl)-1*H*-pyrazol-5-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)-9*H*-purine-2,6-diamine;
 5-Chloro-N⁴-(1-(6-(3,3-difluoroazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)pyrimidine-2,4,6-triamine;
 2,4-Diamino-6-((1-(6-(3-hydroxyazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 1-(5-(1-((2,6-Diamino-5-chloropyrimidin-4-yl)amino)ethyl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-6-yl)azetidin-3-ol;
 (S)-2,4-Diamino-6-((1-(6-(3-methoxyazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 2,4-Diamino-6-((1-(6-(3,3-difluoroazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (R)-2,4-Diamino-6-((1-(6-(3,3-difluoroazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-2,4-Diamino-6-((1-(6-(3,3-difluoroazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 2,4-Diamino-6-((1-(1-methyl-6-(2-oxa-6-azaspiro[3.3]heptan-6-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (R)-2,4-Diamino-6-((1-(1-methyl-6-(2-oxa-6-azaspiro[3.3]heptan-6-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-2,4-Diamino-6-((1-(1-methyl-6-(2-oxa-6-azaspiro[3.3]heptan-6-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (R)-2,4-Diamino-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 (S)-2,4-Diamino-6-((1-(3-hydroxy-1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile;
 a stereoisomer of any of the aforementioned compounds; and

a pharmaceutically acceptable salt of any of the aforementioned compounds or stereoisomers.

18. A compound according to claim 1, which is (*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.

19. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(1-methyl-6-morpholino-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.

20. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(6-(2-hydroxypyridin-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.

21. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(thiazol-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.

22. A compound according to claim 1, which is (*S*)-2-Amino-4-((1-(6-(2-hydroxypyridin-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)-6-methylpyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.

23. A compound according to claim 1, which is (*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-(pyridin-2-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.

24. A compound according to claim 1, which is (*S*)-2-Amino-4-methyl-6-((1-(1-methyl-6-(tetrahydro-2*H*-pyran-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.

25. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(tetrahydro-2*H*-pyran-4-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.

26. A compound according to claim 1, which is 2,4-Diamino-6-(((1*S*)-1-(6-(3,5-dimethylisoxazol-4-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.

27. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(6-(3-methoxyazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.
28. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(1-methyl-1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.
29. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(pyridin-2-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.
30. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(1-methyl-6-(1*H*-pyrazol-5-yl)-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.
31. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(6-(1-(difluoromethyl)-1*H*-pyrazol-5-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.
32. A compound according to claim 1, which is (*S*)-2,4-Diamino-6-((1-(6-(3,3-difluoroazetidin-1-yl)-1-methyl-1*H*-pyrrolo[3,2-*b*]pyridin-5-yl)ethyl)amino)pyrimidine-5-carbonitrile or a pharmaceutically acceptable salt thereof.
33. A pharmaceutical composition comprising:
a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 32; and
a pharmaceutically acceptable excipient.
34. A compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 32, for use as a medicament.

35. Use of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 32 in the manufacture of a medicament for the treatment of a disease, disorder or condition in a subject, wherein the disease, disorder or condition is associated with PI3K δ .

36. Use of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 32 in the manufacture of a medicament for the treatment of a disease, disorder or condition in a subject, wherein the disease, disorder or condition is selected from immunological disorders, cancer, and cardiovascular disease.

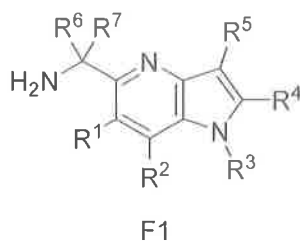
37. Use of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 32 in the manufacture of a medicament for the treatment of a disease, disorder or condition in a subject, wherein the disease, disorder or condition is selected from allergic rhinitis, asthma, atopic dermatitis, rheumatoid arthritis, multiple sclerosis, systemic lupus erythematosus, psoriasis, immune thrombocytopenic purpura, inflammatory bowel disease, behcet's disease, graft-versus-host disease (GVHD), chronic obstructive pulmonary disease, atherosclerosis, myocardial infarction, and thrombosis.

38. Use of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 32 in the manufacture of a medicament for the treatment of a disease, disorder or condition in a subject, wherein the disease, disorder or condition is selected from brain cancer, lung cancer, squamous cell cancer, bladder cancer, gastric cancer, pancreatic cancer, breast cancer, cancer of the head, neck cancer, renal cancer, kidney cancer, ovarian cancer, prostate cancer, colorectal cancer, prostate cancer, colon cancer, epidermoid cancer, esophageal cancer, testicular cancer, gynecological cancer, and thyroid cancer.

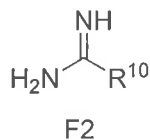
39. A combination of an effective amount of a compound or pharmaceutically acceptable salt as defined in any one of claims 1 to 32, and at least one additional pharmacologically active agent.

40. A method of making a compound of Formula 1 or a pharmaceutically acceptable salt thereof as defined in claim 1, the method comprising:

reacting a compound of Formula F1,



or a salt thereof, with 2-(bis(methylthio)methylene)malononitrile and a compound of Formula F2,



or a salt thereof, in the presence of a base, to give a compound of Formula 1 or a salt thereof in which R⁸ is -NH₂, R⁹ is -CN, and R¹⁰ is selected from -OH, C₁₋₃ alkyl, and -NHR¹⁶; and optionally converting the compound of Formula 1 to a pharmaceutically acceptable salt;

wherein R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R¹⁶ are defined as for Formula 1.