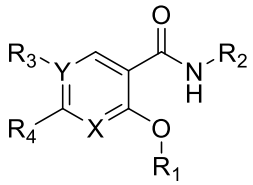
Claims

1. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

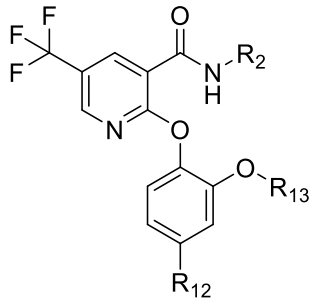
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound of formula (I) is a compound of formula (I-F):



(I-F);

wherein:

R_2 is selected from the group consisting of aryl and heteroaryl, wherein the aryl or heteroaryl is optionally substituted with a substituent group selected from the group consisting of cyano, heterocycloalkyl, -S(=O)-R_9, -S(=O)$_2$-R_9, -S(=O)(=NR_{10})-R_{11}, and -N=S(=O)-(R_{11})$_2$, wherein each R_9 is independently C_1-C_4 alkyl, -CF_3, or -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl, R_{10} is H or C_1-C_4 alkyl, and R_{11} is C_1-C_4 alkyl;

R_{12} is halogen; and

R_{13} is C_1-C_4 alkyl.

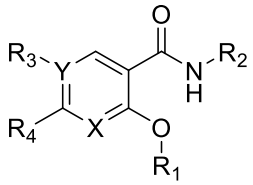
2. The compound of claim 1, wherein the aryl and heteroaryl are selected from the group consisting of phenyl, benzothiazolyl, pyridyl, pyridyl *N*-oxide, and pyrimidinyl, each of which is optionally substituted with a substituent group selected from the group consisting of cyano, heterocycloalkyl, -S(=O)-R_9, -S(=O)$_2$-R_9, -S(=O)(=NR_{10})-R_{11}, and -N=S(=O)-(R_{11})$_2$, wherein each R_9 is independently C_1-C_4 alkyl, -CF_3, or -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl, R_{10} is H or C_1-C_4 alkyl, and R_{11} is C_1-C_4 alkyl;

R_{12} is fluorine; and

R_{13} is methyl.

3. The compound of claim 2, wherein R_2 is selected from the group consisting of 1,3-benzothiazol-6-yl, 3-morpholinophenyl, 3-cyanophenyl, 4-cyanophenyl, 3-pyridyl, 4-pyridyl, 6-cyano-3-pyridyl, 3-methylsulfinylphenyl, 3-oxazol-5-ylphenyl, 3-dimethylsulfamoylphenyl, 1,3-benzothiazol-2-yl, pyrimidin-4-yl, (trifluorosulfonyl)phenyl, 3-(methylsulfonimidoyl)phenyl, 2-methoxy-4-pyridyl, 3-(N,S-dimethylsulfonimidoyl)phenyl, 2-methyl-4-pyridyl, 6-methyl-3-pyridyl, pyridazine-4-yl, and dimethyl(oxo)-λ^6-sulfanylidene]amino]phenyl.

4. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

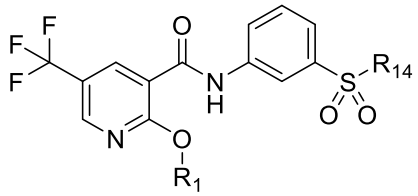
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-G):



(I-G);

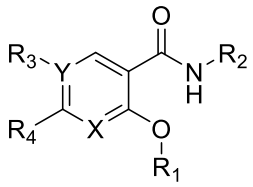
wherein:

R_1 is phenyl substituted with one or more of C_1-C_8 alkyl, halogen, and C_1-C_8 alkoxyl, and wherein the C_1-C_8 alkoxyl is optionally substituted with one or more halogen; and

R_{14} is C_1-C_4 alkyl.

5. The compound of claim 4, wherein R_1 is selected from the group consisting of 2,4-dichlorophenyl, 2,4-dimethylphenyl, 2-chloro-4-methoxyphenyl, 2-propylphenyl, 2-methoxy-4-methylphenyl, 2-methoxy-4-chlorophenyl, 2-isopropoxyphenyl, 4-difluoromethoxyphenyl, 2,4-dimethoxyphenyl, 2-chloro-4-methoxyphenyl, 3,4-difluorophenyl, and 2-chloro-4-fluorophenyl.

6. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl,

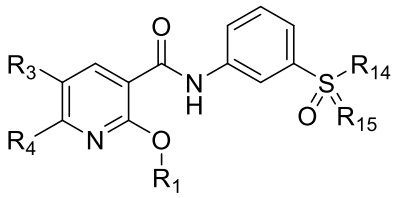
arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-H-i):



(I-H-i);

wherein:

R_1 is selected from the group consisting of phenyl, pyridyl, and 1,3-benzothiazol-4yl, wherein the phenyl and pyridyl can be unsubstituted or substituted with one or more of halogen, C_1-C_8 alkyl, -O-R_5, wherein R_5 is selected from the group consisting of C_1-C_8 alkyl, -CF_3, -CHF_2, and -$(CH_2)_p$-CF_3, wherein p is an integer selected from the group consisting of 1, 2, 3, 4, 5, 6, 7, and 8, -S-CF_3, -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl;

R_3 and R_4 are H or -CF_3, provided that if R_3 is H, then R_4 is -CF_3 and if R_4 is H, then R_3 is -CF_3;

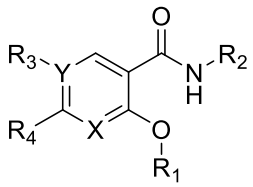
R_{14} is C_1-C_4 alkyl; and

R_{15} is O or NR_{10}, wherein R_{10} is H or C_1-C_4 alkyl.

7. The compound of claim 6, wherein R_1 is selected from the group consisting of phenyl, 4-fluorophenyl, 4-fluoro-2-methoxyphenyl, 2-chloro-4-fluorophenyl, 2-methyl-4-trifluromethoxyphenyl, 4-trifluoromethoxyphenyl, difluoromethoxyphenyl, 3-fluoro-4-trifluoromethoxyphenyl, 3-fluorophenyl, 2,5-

difluorophenyl, 4-methylphenyl, 3-chloro-5-flurophenyl, 2-isopropylphenyl, 3,4-difluorophenyl, 2,4-difluorophenyl, 3,5-difluorophenyl, 4-(2,2,2-trifluoroethoxy)phenyl, 4-(trifluoromethylsulfanyl)phenyl, 2-dimethylaminophenyl, 2-trifluromethylphenyl, 2,4-dimethoxyphenyl, 3,4,5-trifluorophenyl, 3,5-dichlorophenyl, 6-trifluoromethyl-3-pyridyl, 1,3-benzothiazol-4-yl, 4-difluoromethoxyphenyl, 2-chloro-4-fluorophenyl, 2-chloro-4-methoxyphenyl, and 2-chlorophenyl.

8. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

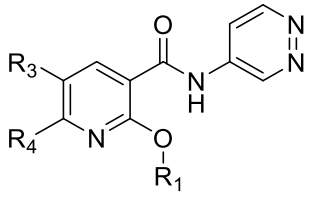
R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl,

substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-H-ii):



(I-H-ii);

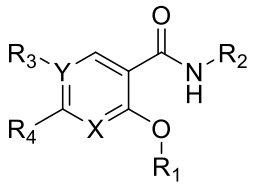
wherein:

R_1 is selected from the group consisting of phenyl, pyridyl, and 1,3-benzothiazol-4yl, wherein the phenyl and pyridyl can be unsubstituted or substituted with one or more of halogen, C_1-C_8 alkyl, -O-R_5, wherein R_5 is selected from the group consisting of C_1-C_8 alkyl, -CF_3, -CHF_2, and -$(CH_2)_p$-CF_3, wherein p is an integer selected from the group consisting of 1, 2, 3, 4, 5, 6, 7, and 8, -S-CF_3, -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl; and

R_3 and R_4 are H or -CF_3, provided that if R_3 is H, then R_4 is -CF_3 and if R_4 is H, then R_3 is -CF_3.

9. The compound of claim 8, wherein R_1 is selected from the group consisting of 2,4-dichlorophenyl, 4-difluoromethoxyphenyl, and 2-chloro-4-methoxyphenyl.

10. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-,

and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

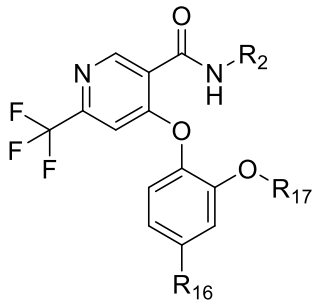
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-I):



(I-I);

wherein:

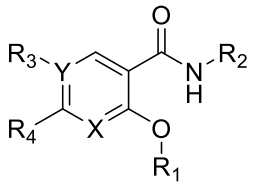
R_2 is selected from the group consisting of phenyl, pyridazinyl, and pyridyl, wherein the phenyl can be substituted with one or more of halogen, -S(=O)-R_9, -S(=O)$_2$-R_9, and -S(=O)(=NR_{10})-R_{11}, wherein each R_9 is independently C_1-C_4 alkyl, -CF_3, or -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl, R_{10} is H or C_1-C_4 alkyl, and R_{11} is C_1-C_4 alkyl;

R_{16} is halogen; and

R_{17} is C_1-C_4 alkyl.

11. The compound of claim 10, wherein R_2 is selected from the group consisting of 3-methylsulfinylphenyl, 2-fluoro-5-methylsulfonylphenyl, 3-(N,S-dimethylsulfonimidoyl)phenyl, pyridazinyl, and pyridyl.

12. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

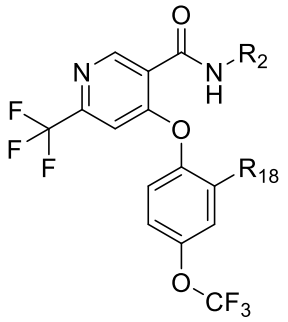
R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl,

substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-J):



(I-J);

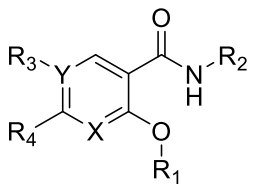
wherein:

R_2 is selected from the group consisting of phenyl and pyridyl, wherein the phenyl is substituted with one or more of halogen, -C(=O)-R_8, wherein R_8 is selected from the group consisting of -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl, and C_1-C_4 alkyl, -S(=O)-R_9, -$S(=O)_2$-R_9, -S(=O)(=NR_{10})-R_{11}, and -N=S(=O)-$(R_{11})_2$, wherein each R_9 is independently C_1-C_4 alkyl, -CF_3, or -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl, R_{10} is H or C_1-C_4 alkyl, and R_{11} is C_1-C_4 alkyl; and

R_{18} is halogen.

13. The compound of claim 12, wherein R_2 is selected from the group consisting of 3-methylsulfonylphenyl, 3-methylsulfinylphenyl, 3-(dimethylsulfamoyl)phenyl, 2-fluoro-5-methylsulfonylphenyl, 3-(methylsulfonimidoyl)phenyl, 3-carbamoylphenyl, 3(N,S-dimethylsulfonimidoyl)phenyl, 3-pyridyl, and 4-pyridyl.

14. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

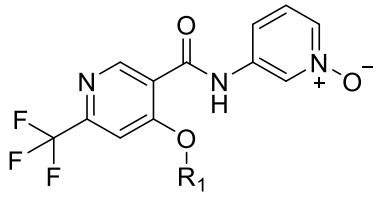
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-K):



(I-K);

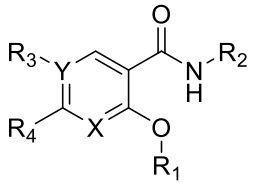
wherein:

R_1 is phenyl substituted with one or more of halogen, C_1-C_8 alkyl, -O-R_5, wherein R_5 is selected from the group consisting of C_1-C_8 alkyl, -CF_3, -CHF_2, and -

$(CH_2)_p$-CF_3, wherein p is an integer selected from the group consisting of 1, 2, 3, 4, 5, 6, 7, and 8.

15. The compound of claim 14, wherein R_1 is selected from the group consisting of 4-fluoro-2-methoxyphenyl, 4-fluoro-2-methylphenyl, 4-difluoromethoxyphenyl, 4-trifluoromethoxyphenyl, 2,4-dimethoxyphenyl, 2,4-difluorophenyl, and 3,4-difluorophenyl.

16. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

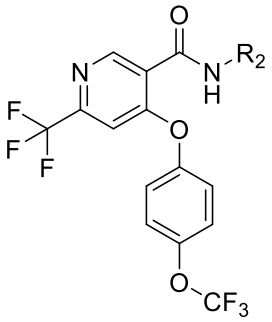
R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl,

substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

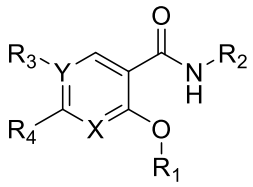
and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-L):



(I-L);

wherein R_2 is selected from the group consisting of phenyl, pyridyl, and pyridazin-4-yl, wherein the phenyl is substituted with -$S(=O)_2$-R_9, -$S(=O)(=NR_{10})$-R_{11}, and -$N=S(=O)$-$(R_{11})_2$, wherein each R_9 is independently C_1-C_4 alkyl or -NR_6R_7, wherein R_6 and R_7 are each H, R_{10} is H or C_1-C_4 alkyl, and R_{11} is C_1-C_4 alkyl.

17. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one

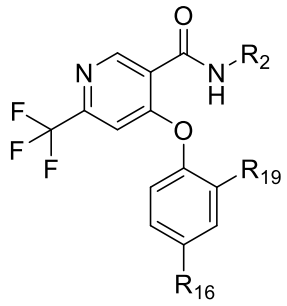
or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-M-i):



(I-M-i);

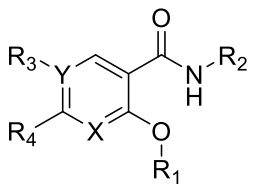
wherein:

R_2 is 3-(N,S-dimethylsulfonimidoyl)phenyl or pyridizin-4-yl;

R_{16} is halogen; and

R_{19} is C_1-C_4 alkyl.

18. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

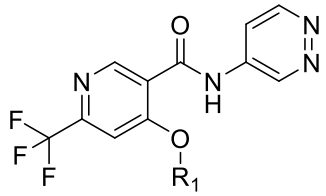
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

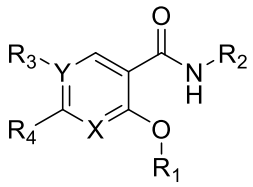
and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-M-ii):



(I-M-ii);

wherein R_1 is selected from the group consisting of 4-trifluoromethoxyphenyl, 4-difluoromethoxyphenyl, 2-chloro-4-trifluoromethoxyphenyl, 2,4-dimethoxyphenyl, and 2,4-difluorophenyl.

19. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

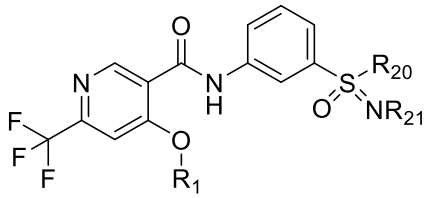
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-M-iii):



(I-M-iii);

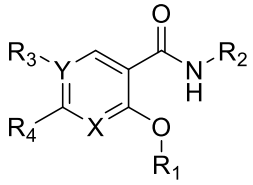
wherein:

R_1 is selected from the group consisting of 4-difluoromethoxyphenyl, 2,4-dimethoxyphenyl, and 2,4-difluorophenyl;

R_{20} is C_1-C_4 alkyl; and

R_{21} is H or C_1-C_4 alkyl.

20. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

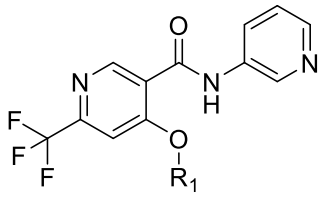
R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and

trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

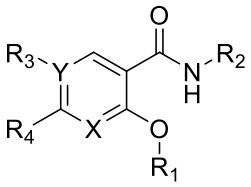
and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-M-iv):



(I-M-iv);

wherein R_1 is selected from the group consisting of 4-difluoromethoxyphenyl, 4-trifluoromethoxyphenyl, 2-chloro-4-trifluoromethoxyphenyl, 2,4-dimethoxyphenyl, and 2,4-difluorophenyl.

21. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one

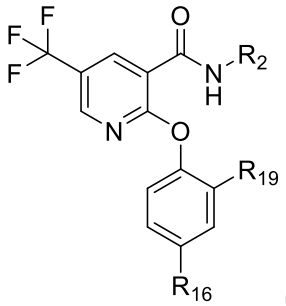
or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-N):



(I-N);

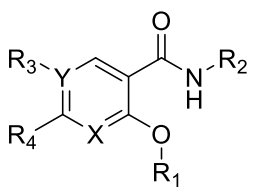
wherein:

R_2 is selected from the group consisting of 3-(N,S-dimethylsulfonimidoyl)phenyl, 3-(methylsulfonimidoyl)phenyl, and pyridazine-4-yl;

R_{16} is halogen; and

R_{19} is C_1-C_4 alkyl.

22. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

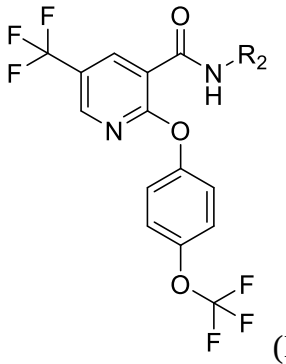
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

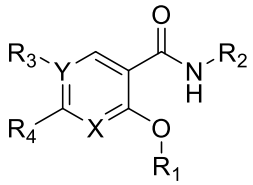
and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-O):



(I-O);

wherein R_2 is selected from the group consisting of phenyl, pyridyl, and pyridazin-4-yl, wherein the phenyl is substituted with $-S(=O)_2-R_9$, $-S(=O)(=NR_{10})-R_{11}$, and $-N=S(=O)-(R_{11})_2$, wherein each R_9 is independently C_1-C_4 alkyl or $-NR_6R_7$, wherein R_6 and R_7 are each H, R_{10} is H or C_1-C_4 alkyl, and R_{11} is C_1-C_4 alkyl.

23. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

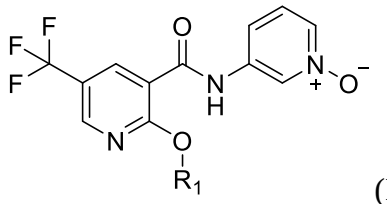
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, $-NO_2$, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

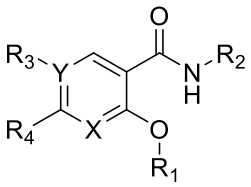
and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-P):



(I-P);

wherein R_1 is selected from the group consisting of 4-fluoro-2-methylphenyl, 4-fluoro-2-methoxyphenyl, 2,4-difluorophenyl, 4-difluoromethoxyphenyl, 2,4-dimethoxyphenyl, 2-chloro-4-methoxyphenyl, 3,4-diflurophenyl, and 2-chloro-4-fluorophenyl.

24. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

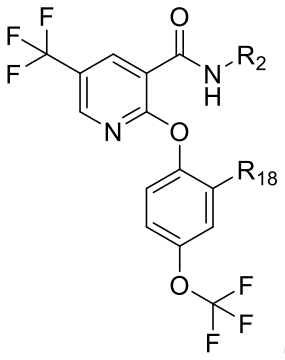
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-Q):



(I-Q);

wherein:

R_2 is selected from the group consisting of phenyl, pyridyl, pyrazolyl, pyrimidinyl, pyridazinyl, thiadiazolyl, pyrazolyl, and 1,2,4-triazolyl;

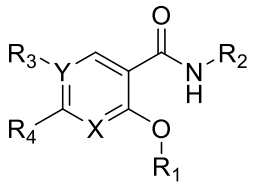
wherein:

phenyl is substituted with one or more groups selected from the group consisting of unsubstituted or substituted C_1-C_8 alkyl, halogen, cyano, oxo, -O-R_5, wherein R_5 is selected from the group consisting of C_1-C_8 alkyl, -CF_3, and -CHF_2, -$(CH_2)_q$-OH, wherein q is an integer selected from the group consisting of 1, 2, 3, 4, 5, 6, 7, and 8, -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl, morpholinyl, oxazolyl, -C(=O)-R_8, wherein R_8 is selected from the group consisting of -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl, and C_1-C_4 alkyl, -S(=O)-R_9, -$S(=O)_2$-R_9, -S(=O)(=NR_{10})-R_{11}, and -N=S(=O)-$(R_{11})_2$, wherein each R_9 is independently C_1-C_4 alkyl, -CF_3, or -NR_6R_7, wherein R_6 and R_7 are selected from the group consisting of H and C_1-C_4 alkyl,R_{10} is H or C_1-C_4 alkyl, and R_{11} is C_1-C_4 alkyl;

pyridyl is unsubstituted or substituted with C_1-C_8 alkyl, oxo, C_1-C_8 alkoxyl, and halogen; and

R_{18} is halogen.

25. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

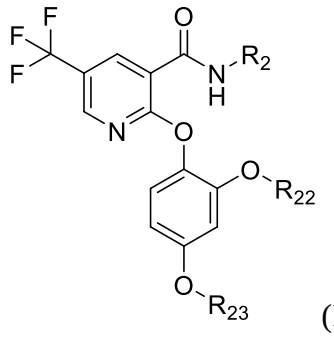
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-R):



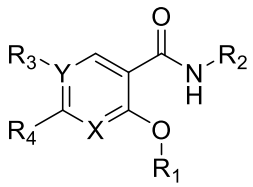
(I-R);

wherein:

R_2 is 3-(methylsulfonimidoyl)phenyl or pyridazin-4-yl; and

R_{22} and R_{23} are each C_1-C_4 alkyl.

26. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

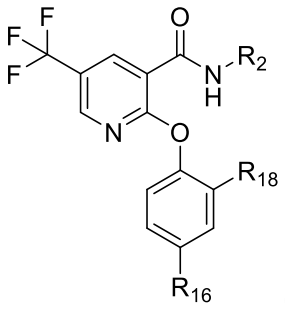
R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound is a compound of formula (I-S):



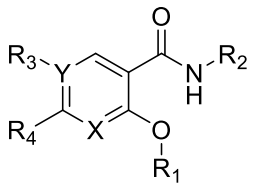
(I-S);

wherein:

R_2 is 3-(methylsulfonimidoyl)phenyl or pyridazin-4-yl; and

R_{16} and R_{18} are each halogen.

27. A compound of formula (I):



(I);

wherein:

X is -CH- or nitrogen;

Y is carbon or nitrogen, provided that at least one of X and Y is nitrogen;

R_1 is aryl or heteroaryl, wherein the aryl or heteroaryl is unsubstituted or substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl,

halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, sulfanyl, trifluoromethylsulfanyl, and arylalkoxyl;

R_2 is selected from the group consisting of aryl, heteroaryl, and heterocycle, wherein the aryl, heteroaryl, and heterocycle unsubstituted or are substituted with one or more groups selected from the group consisting of mono-, di-, and trihalo-C_1-C_4 alkyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_{10} cycloalkyl, halogen, heteroaryl, cyano, amino, nitro, aryloxyl, aryl, C_1-C_8 alkoxyl, mono-, di-, or trihaloalkoxyl, arylalkoxyl, oxo, alkylsulfinyl, alkylsulfonyl, alkyliminosulfanonyl, alkylsulfoxide, sulfonamide, morpholinyl, and oxazolyl;

R_3, when Y is carbon, is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, C_3-C_8 cycloalkyl, -NO_2, and is absent when Y is nitrogen;

R_4 is selected from the group consisting of hydrogen, cyano, halogen, C_1-C_8 alkoxyl, mono-, di-, and trihalo-C_1-C_4 alkyl, mono-, di-, and trihalo-C_1-C_4 alkoxyl, substituted or unsubstituted C_1-C_8 alkyl, and morpholinyl, provided that R_3 and R_4 are not hydrogen at the same time; or

R_3 and R_4 together form a C_3-C_5 carbocyclic ring including carbon atoms to which R_3 and R_4 are attached;

and pharmaceutically acceptable salts thereof, wherein the compound of formula (I) is selected from the group consisting of:

N-(1,3-benzothiazol-6-yl)-2-(4-fluoro-2-methoxy-phenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**1**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(3-morpholinophenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**2**);

N-(3-cyanophenyl)-2-(4-fluoro-2-methoxy-phenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**3**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(3-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**4**);

N-(4-cyanophenyl)-2-(4-fluoro-2-methoxy-phenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**5**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(4-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**6**);

N-(6-cyano-3-pyridyl)-2-(4-fluoro-2-methoxy-phenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**7**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfinylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**8**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(3-oxazol-5-ylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**9**);

N-[3-(dimethylsulfamoyl)phenyl]-2-(4-fluoro-2-methoxy-phenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**10**);

N-(1,3-benzothiazol-2-yl)-2-(4-fluoro-2-methoxy-phenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**11**);

2-(4-fluoro-2-methoxy-phenoxy)-N-pyrimidin-4-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**12**);

2-(4-fluoro-2-methoxy-phenoxy)-5-(trifluoromethyl)-N-[3-(trifluoromethylsulfonyl)phenyl]pyridine-3-carboxamide (**13**);

2-(4-fluoro-2-methoxy-phenoxy)-N-[3-(methylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**14**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(2-methoxy-4-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**15**);

N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-2-(4-fluoro-2-methoxy-phenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**16**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(2-methyl-4-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**17**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(6-methyl-3-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**18**);

2-(4-fluoro-2-methoxy-phenoxy)-N-pyridazin-4-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**19**);

N-[3-[[dimethyl(oxo)-λ^6-sulfanylidene]amino]phenyl]-2-(4-fluoro-2-methoxy-phenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**20**);

2-(2,4-dichlorophenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**21**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(3-morpholinophenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**22**);

2-(2-chloro-4-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**23**);

N-(3-methylsulfonylphenyl)-2-(2-propylphenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**24**);

2-(2-methoxy-4-methyl-phenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**25**);

2-(4-chloro-2-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**26**);

2-(2-isopropoxyphenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**27**);

2-(4-(difluoromethoxy)phenoxy)-N-(pyridin-3-yl)-5-(trifluoromethyl)nicotinamide (**28**);

2-(2,4-dimethoxyphenoxy)-N-(pyridin-3-yl)-5-(trifluoromethyl)nicotinamide (**29**);

2-(2-chloro-4-methoxyphenoxy)-N-(pyridin-3-yl)-5-(trifluoromethyl)nicotinamide (**30**);

2-(3,4-difluorophenoxy)-N-(pyridin-3-yl)-5-(trifluoromethyl)nicotinamide (**31**);

2-(2-chloro-4-fluorophenoxy)-N-(pyridin-3-yl)-5-(trifluoromethyl)nicotinamide (**32**);

2-(2,6-dimethylphenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**33**);

2-(4-fluorophenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**34**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**35**);

2-(2-chloro-4-fluoro-phenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**36**);

N-(3-methylsulfonylphenyl)-2-[2-methyl-4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**37**);

N-(3-methylsulfonylphenyl)-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**38**);

2-[4-(difluoromethoxy)phenoxy]-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**39**);

2-[3-fluoro-4-(trifluoromethoxy)phenoxy]-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**40**);

N-(3-methylsulfonylphenyl)-2-phenoxy-5-(trifluoromethyl)pyridine-3-carboxamide (**41**);

2-(3-fluorophenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**42**);

2-(2,5-difluorophenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**43**);

2-(4-methylphenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**44**);

2-(3-chloro-5-fluoro-phenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**45**);

2-(2-isopropylphenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**46**);

2-(3,4-difluorophenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**47**);

2-(2,4-difluorophenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**48**);

2-(3,5-difluorophenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**49**);

N-(3-methylsulfonylphenyl)-2-[4-(2,2,2-trifluoroethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**50**);

N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)-2-[4-(trifluoromethylsulfanyl)phenoxy]pyridine-3-carboxamide (**51**);

2-[2-(dimethylamino)phenoxy]-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**52**);

N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)-2-[2-(trifluoromethyl)phenoxy]pyridine-3-carboxamide (**53**);

2-(2,4-dimethoxyphenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**54**);

N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)-2-(3,4,5-trifluorophenoxy)pyridine-3-carboxamide (**55**);

2-(3,5-dichlorophenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**56**);

N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)-2-[[6-(trifluoromethyl)-3-pyridyl]oxy]pyridine-3-carboxamide (**57**);

2-(1,3-benzothiazol-4-yloxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**58**);

2-[4-(difluoromethoxy)phenoxy]-N-[3-(methylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**59**);

2-(2-chloro-4-fluoro-phenoxy)-N-[3-(methylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**60**);

2-(2-chloro-4-methoxy-phenoxy)-N-[3-(methylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**61**);

2-(2-chlorophenoxy)-N-[3-(methylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**62**);

2-(2,4-dichlorophenoxy)-N-pyridazin-4-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**63**);

2-[4-(difluoromethoxy)phenoxy]-N-pyridazin-4-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**64**);

2-(2-chloro-4-methoxy-phenoxy)-N-pyridazin-4-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**65**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**66**);

4-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**67**);

4-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfinylphenyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**68**);

4-(4-fluoro-2-methoxy-phenoxy)-N-(2-fluoro-5-methylsulfonyl-phenyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**69**);

N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-4-(4-fluoro-2-methoxy-phenoxy)-6-(trifluoromethyl)pyridine-3-carboxamide (**70**);

4-(4-fluoro-2-methoxy-phenoxy)-N-pyridazin-4-yl-6-(trifluoromethyl)pyridine-3-carboxamide (**71**);

4-(4-fluoro-2-methoxy-phenoxy)-N-(4-pyridyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**72**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-[2-(dimethylamino)-4-pyridyl]-6-(trifluoromethyl)pyridine-3-carboxamide (**73**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(3-methylsulfonylphenyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**74**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(3-methylsulfinylphenyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**75**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-[3-(dimethylsulfamoyl)phenyl]-6-(trifluoromethyl)pyridine-3-carboxamide (**76**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(2-fluoro-5-methylsulfonyl-phenyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**77**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(3-pyridyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**78**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(4-pyridyl)-6-(trifluoromethyl)pyridine-3-carboxamide (**79**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-[3-(methylsulfonimidoyl)phenyl]-6-(trifluoromethyl)pyridine-3-carboxamide (**80**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-6-(trifluoromethyl)pyridine-3-carboxamide (**82**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(1-oxidopyridin-1-ium-3-yl)-6-(trifluoromethyl)pyridine-3-carboxamide (**83**);

4-(4-fluoro-2-methoxy-phenoxy)-N-(1-oxidopyridin-1-ium-3-yl)-6-(trifluoromethyl)pyridine-3-carboxamide (**84**);

4-(4-fluoro-2-methyl-phenoxy)-N-(1-oxidopyridin-1-ium-3-yl)-6-(trifluoromethyl)pyridine-3-carboxamide (**85**);

4-[4-(difluoromethoxy)phenoxy]-N-(1-oxidopyridin-1-ium-3-yl)-6-(trifluoromethyl)pyridine-3-carboxamide (**86**);

N-(1-oxidopyridin-1-ium-3-yl)-4-[4-(trifluoromethoxy)phenoxy]-6-(trifluoromethyl)pyridine-3-carboxamide (**87**);

4-(2,4-dimethoxyphenoxy)-N-(1-oxidopyridin-1-ium-3-yl)-6-(trifluoromethyl)pyridine-3-carboxamide (**88**);

4-(2,4-difluorophenoxy)-N-(1-oxidopyridin-1-ium-3-yl)-6-(trifluoromethyl)pyridine-3-carboxamide (**89**);

3-(4-(3,4-difluorophenoxy)-6-(trifluoromethyl)nicotinamido)pyridine 1-oxide (**90**);

N-[3-(methylsulfonimidoyl)phenyl]-4-[4-(trifluoromethoxy)phenoxy]-6-(trifluoromethyl)pyridine-3-carboxamide (**91**);

N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-4-[4-(trifluoromethoxy)phenoxy]-6-(trifluoromethyl)pyridine-3-carboxamide (**92**);

4-(4-fluoro-2-methyl-phenoxy)-N-[3-(methylsulfonimidoyl)phenyl]-6-(trifluoromethyl)pyridine-3-carboxamide (**93**);

N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-4-(4-fluoro-2-methyl-phenoxy)-6-(trifluoromethyl)pyridine-3-carboxamide (**94**);

4-(4-fluoro-2-methyl-phenoxy)-N-pyridazin-4-yl-6-(trifluoromethyl)pyridine-3-carboxamide (**95**);

N-pyridazin-4-yl-4-[4-(trifluoromethoxy)phenoxy]-6-(trifluoromethyl)pyridine-3-carboxamide (**96**);

4-[4-(difluoromethoxy)phenoxy]-N-pyridazin-4-yl-6-(trifluoromethyl)pyridine-3-carboxamide (**97**);

4-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-pyridazin-4-yl-6-(trifluoromethyl)pyridine-3-carboxamide (**98**);

4-(2,4-dimethoxyphenoxy)-N-pyridazin-4-yl-6-(trifluoromethyl)pyridine-3-carboxamide (**99**);

4-(2,4-difluorophenoxy)-N-pyridazin-4-yl-6-(trifluoromethyl)pyridine-3-carboxamide (**100**);

4-[4-(difluoromethoxy)phenoxy]-N-[3-(methylsulfonimidoyl)phenyl]-6-(trifluoromethyl)pyridine-3-carboxamide (**101**);

4-(2,4-dimethoxyphenoxy)-N-[3-(methylsulfonimidoyl)phenyl]-6-(trifluoromethyl)pyridine-3-carboxamide (**102**);

4-(2,4-difluorophenoxy)-N-[3-(methylsulfonimidoyl)phenyl]-6-(trifluoromethyl)pyridine-3-carboxamide (**103**);

4-(4-(difluoromethoxy)phenoxy)-N-(pyridin-3-yl)-6-(trifluoromethyl)nicotinamide (**104**);

N-(pyridin-3-yl)-4-(4-(trifluoromethoxy)phenoxy)-6-(trifluoromethyl)nicotinamide (**105**)

4-(2-chloro-4-(trifluoromethoxy)phenoxy)-N-(pyridin-3-yl)-6-(trifluoromethyl)nicotinamide (**106**);

4-(2,4-dimethoxyphenoxy)-N-(pyridin-3-yl)-6-(trifluoromethyl)nicotinamide (**107**);

4-(2,4-difluorophenoxy)-N-(pyridin-3-yl)-6-(trifluoromethyl)nicotinamide (**108**);

2-(4-fluoro-2-methyl-phenoxy)-N-(2-methoxy-4-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**109**);

2-(4-fluoro-2-methyl-phenoxy)-N-(2-oxo-1H-pyridin-4-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**110**);

5-bromo-2-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)pyridine-3-carboxamide (**111**);

5-cyclopropyl-2-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)pyridine-3-carboxamide (**112**);

2-(4-fluoro-2-methyl-phenoxy)-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**113**);

N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-2-(4-fluoro-2-methyl-phenoxy)-5-(trifluoromethyl)pyridine-3-carboxamide (**114**);

2-(4-fluoro-2-methyl-phenoxy)-N-[3-(methylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**115**);

2-(4-fluoro-2-methyl-phenoxy)-N-pyridazin-4-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**116**);

2-(4-fluoro-2-methoxy-phenoxy)-6-methyl-N-(3-methylsulfonylphenyl)pyridine-3-carboxamide (**117**);

2-(4-fluoro-2-methoxy-phenoxy)-5,6-dimethyl-N-(3-methylsulfonylphenyl)pyridine-3-carboxamide (**118**);

5-chloro-2-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)pyridine-3-carboxamide (**119**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)-6,7-dihydro-5H-cyclopenta[b]pyridine-3-carboxamide (**120**);

N-(3-methylsulfinylphenyl)-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**121**);

N-(3-sulfamoylphenyl)-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**122**);

N-[3-(methylsulfonimidoyl)phenyl]-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**123**);

N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**124**);

N-(3-ethylsulfonylphenyl)-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**125**);

N-(3-pyridyl)-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**126**);

N-(4-pyridyl)-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**127**);

N-pyridazin-4-yl-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**128**);

N-[3-[[dimethyl(oxo)-λ^6-sulfanylidene]amino]phenyl]-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**129**);

N-[3-(methylsulfonimidoyl)phenyl]-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide enantiomer A (**130**);

N-[3-(methylsulfonimidoyl)phenyl]-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide, enantiomer B (**131**);

N-(1-oxidopyridin-1-ium-3-yl)-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**132**);

2-(4-fluoro-2-methyl-phenoxy)-N-(1-oxidopyridin-1-ium-3-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**133**);

2-(4-fluoro-2-methoxy-phenoxy)-N-(1-oxidopyridin-1-ium-3-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**134**);

2-(2,4-difluorophenoxy)-N-(1-oxidopyridin-1-ium-3-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**135**);

3-(2-(4-(difluoromethoxy)phenoxy)-5-(trifluoromethyl)nicotinamido)pyridine 1-oxide (**136**);

3-(2-(2,4-dimethoxyphenoxy)-5-(trifluoromethyl)nicotinamido)pyridine 1-oxide (**137**);

3-(2-(2-chloro-4-methoxyphenoxy)-5-(trifluoromethyl)nicotinamido)pyridine 1-oxide (**138**);

3-(2-(3,4-difluorophenoxy)-5-(trifluoromethyl)nicotinamido)pyridine 1-oxide (**139**);

2-(2-chloro-4-fluoro-phenoxy)-N-(1-oxidopyridin-1-ium-3-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**140**);

N-(1-oxidopyridin-1-ium-4-yl)-2-[4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**141**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(3-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**142**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(3-ethylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**143**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**144**);

4-pyridyl 2-[2-chloro-4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxylate (**145**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(3-cyanophenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**146**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(1-methylpyrazol-4-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**147**);

N-(3-carbamoylphenyl)-2-[2-chloro-4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**148**);

N-(3-acetylphenyl)-2-[2-chloro-4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**149**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(1-methyl-2-oxo-4-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**150**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-[3-(dimethylcarbamoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**151**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(4-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**152**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(4-methylsulfonylphenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**153**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-[3-(dimethylsulfamoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**154**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(3,4-difluorophenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**155**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(6-methoxy-3-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**156**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-pyrimidin-5-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**157**);

N-(2-chloro-4-pyridyl)-2-[2-chloro-4-(trifluoromethoxy)phenoxy]-5-(trifluoromethyl)pyridine-3-carboxamide (**158**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(6-fluoro-3-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**159**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-[3-(hydroxymethyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**160**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-pyridazin-4-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**161**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(2-fluoro-5-methylsulfonyl-phenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**162**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(3-fluorophenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**163**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(2-methyl-4-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**164**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(2-fluoro-4-pyridyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**165**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(thiadiazol-5-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**166**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(2-methylpyrazol-3-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**167**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(2-methyl-5-methylsulfonyl-phenyl)-5-(trifluoromethyl)pyridine-3-carboxamide (**168**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(2-methyl-1,2,4-triazol-3-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**169**);

2-[2-chloro-4-(trifluoromethoxy)phenoxy]-N-(1-methyl-1,2,4-triazol-3-yl)-5-(trifluoromethyl)pyridine-3-carboxamide (**170**);

2-(2,4-dimethoxyphenoxy)-N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**171**);

2-(2,4-dimethoxyphenoxy)-N-[3(methylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**172**);

2-(2,4-dimethoxyphenoxy)-N-pyridazin-4-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**173**);

2-(2,4-difluorophenoxy)-N-[3-(methylsulfonimidoyl)phenyl]-5-(trifluoromethyl)pyridine-3-carboxamide (**174**);

2-(2,4-difluorophenoxy)-N-[3-(N,S-dimethylsulfonimidoyl)phenyl]-5(trifluoromethyl)pyridine-3-carboxamide (**175**);

2-(2,4-difluorophenoxy)-N-pyridazin-4-yl-5-(trifluoromethyl)pyridine-3-carboxamide (**176**);

5-cyano-2-(4-fluoro-2-methoxy-phenoxy)-6-methyl-N-(3-methylsulfonylphenyl)pyridine-3-carboxamide (**177**);

5-fluoro-2-(4-fluoro-2-methoxy-phenoxy)-6-methoxy-N-(3-methylsulfonylphenyl)pyridine-3-carboxamide (**178**);

5-(difluoromethoxy)-2-(4-fluoro-2-methoxy-phenoxy)-N-(3-methylsulfonylphenyl)pyridine-3-carboxamide (**179**);

N-(3-methylsulfonylphenyl)-5-nitro-2-[4-(trifluoromethoxy)phenoxy]pyridine-3-carboxamide (**180**); and

5-chloro-N-(3-methylsulfonylphenyl)-2-[4-(trifluoromethoxy)phenoxy]pyridine-3-carboxamide (**181**).

28. Use of the compound of any of claims 1-27 in the manufacture of a medicament for modulating a $Na_v1.8$ sodium ion channel, wherein a modulating-effective amount of the compound is to be administered to a subject in need thereof.

29. Use of the compound of any of claims 1-27 in the manufacture of a medicament for inhibiting $Na_v1.8$, wherein an inhibiting-effective amount of the compound is to be administered to a subject in need thereof.

30. Use of the compound of any of claims 1-27 in the manufacture of a medicament for the treatment and/or reduction of symptoms of a condition, disease, or disorder associated with an increased $Na_v1.8$ activity or expression, wherein a therapeutically effective amount of the compound is to be administered to a subject in need of treatment thereof to treat and/or reduce the symptoms of the condition, disease, or disorder.

31. Use of the compound of any of claims 1-27 in the manufacture of a medicament for the treatment of a condition, disease, or disorder associated with an increased $Na_v1.8$ activity or expression in a subject afflicted with such a disorder.

32. The use of claim 30 or 31, wherein the condition, disease, or disorder associated with an increased $Na_v1.8$ activity or expression is selected from the group consisting of pain, respiratory diseases, neurological disorders, and psychiatric diseases, and combinations thereof.

33. The use of claim 32, wherein the pain is selected from the group consisting of neuropathic pain, inflammatory pain, visceral pain, cancer pain, chemotherapy pain, trauma pain, surgical pain, post-surgical pain, childbirth pain, labor pain, neurogenic bladder, ulcerative colitis, chronic pain, persistent pain, peripherally mediated pain, centrally mediated pain, chronic headache, migraine headache, sinus headache, tension headache, phantom limb pain, dental pain, peripheral nerve injury, and combinations thereof.

34. The use of claim 32, wherein the disease or condition is selected from the group consisting of HIV-treatment induced neuropathy, trigeminal neuralgia, post-herpetic neuralgia, eudynia, heat sensitivity, tosarcoidosis, irritable bowel syndrome, Crohn's disease, multiple sclerosis (MS), amyotrophic lateral sclerosis (ALS), diabetic neuropathy, peripheral neuropathy, arthritis, rheumatoid arthritis, osteoarthritis, atherosclerosis, paroxysmal dystonia, myasthenia syndromes, myotonia, malignant hyperthermia, cystic fibrosis, pseudoaldosteronism, rhabdomyolysis, hypothyroidism, bipolar depression, anxiety, schizophrenia, sodium channel toxi related illnesses, familial erythromelalgia, primary erythromelalgia, familial rectal pain, cancer, epilepsy, partial and general tonic seizures, restless leg syndrome, arrhythmias, fibromyalgia, neuroprotection under ischaemic conditions cause by stroke or neural trauma, tach-arrhythmias, atrial fibrillation, ventricular fibrillation, and Pitt Hopkins Syndrome (PTHS).

35. The use of claim 30 or 31, further comprising one or more additional therapeutic agents to be administered to the subject.

36. The use of claim 35, wherein the one or more additional therapeutic agents is selected from the group consisting of acetaminophen, one or more NSAIDs, opioid analgesics, and combinations thereof