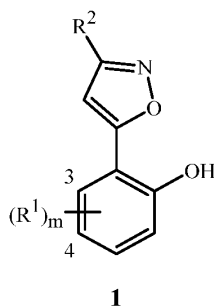


CLAIMS

What is claimed is:

1. A method for preparing a compound of Formula **1**



wherein

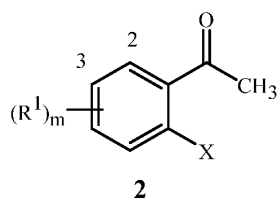
each R¹ is independently halogen, cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

R² is cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl; and

m is 0, 1, 2 or 3;

the method comprising

treating a compound of Formula **2**



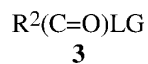
wherein

each R¹ is independently halogen, cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

m is 0, 1, 2 or 3; and

X is halogen;

with a compound of Formula **3**

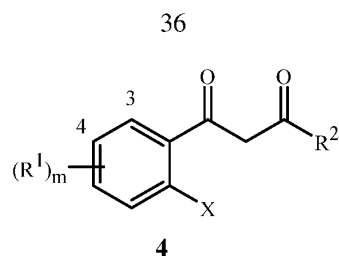


wherein

R² is cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl; and

LG is chloro, C₁–C₄ alkoxy or -O(C=O)R²

in the presence of an alkali metal base to provide a compound of Formula **4** or an alkali metal salt thereof



wherein

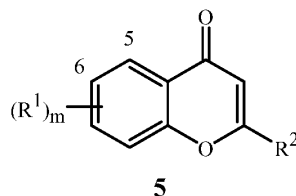
each R¹ is independently halogen, cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

R² is cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

m is 0, 1, 2 or 3; and

X is halogen;

heating the compound of Formula 4 or the alkali metal salt thereof to provide a compound of Formula 5



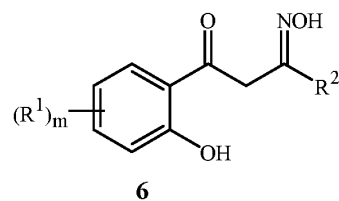
wherein

each R¹ is independently halogen, cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

R² is cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl; and

m is 0, 1, 2 or 3;

treating the compound of Formula 5 with a hydroxylamine salt to provide a compound of Formula 6



wherein

each R¹ is independently halogen, cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

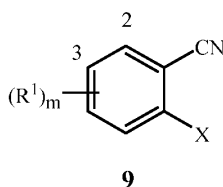
R² is cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl; and

m is 0, 1, 2 or 3; and

treating the compound of Formula 6 with acid.

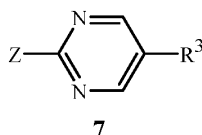
2. The method of Claim 1 wherein R² is C₁–C₄ haloalkyl; and m is 0, 1 or 2.

3. The method of Claim 2 wherein each R^1 is independently halogen or cyano; and R^2 is C_1 - C_2 fluoroalkyl.
4. The method of Claim 3 wherein
 R^1 is halogen;
 R^2 is C_1 fluoroalkyl;
 m is 1; and
 R^1 is attached to the remainder of Formula 1 at the 3-position.
5. The method of Claim 4 wherein R^1 is chlorine; and R^2 is CHF_2 .
6. The method of Claim 1 wherein the compound of Formula 2 is prepared by treating a compound of Formula 9



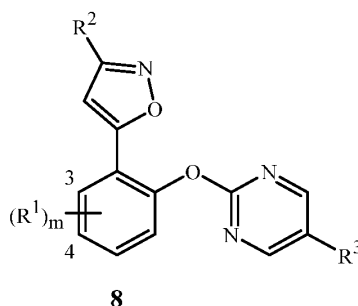
wherein
each R^1 is independently halogen, cyano, C_1 - C_4 alkyl or C_1 - C_4 haloalkyl;
 X is halogen; and
 m is 0, 1, 2 or 3;
with a methyl magnesium halide followed by treatment with water or aqueous acid.

7. The method of Claim 1 further comprising treating the compound of Formula 1 with a compound of Formula 7



wherein
 Z is halogen or SO_2R^4 ;
 R^3 is halogen, C_1 - C_4 alkyl or C_1 - C_4 haloalkyl; and
 R^4 is C_1 - C_4 alkyl
in the presence of a second base to provide a compound of Formula 8

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wherein

each R^1 is independently halogen, cyano, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl;

R^2 is cyano, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl;

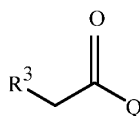
R^3 is halogen, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl; and

m is 0, 1, 2 or 3.

8. The method of Claim 7 wherein R^3 is chlorine.

9. The method of Claim 7 wherein Z is SO_2R^4 .

10. The method of Claim 9 wherein the compound of Formula 7 is prepared by treating a compound of Formula 10



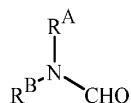
10

wherein

R^3 is halogen, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl; and

Q is Cl or OH

in the presence of a halogenating agent and a compound of Formula 11

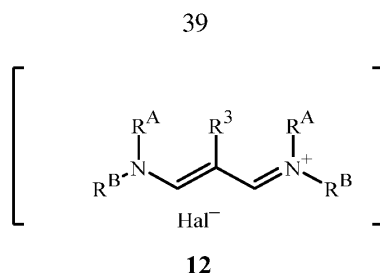


11

wherein

R^A and R^B are each independently C_1 – C_4 alkyl; or

R^A and R^B are taken together to be $-(CH_2)_4-$, $-(CH_2)_5-$ or $-CH_2CH_2OCH_2CH_2-$ to provide an intermediate of Formula 12



wherein

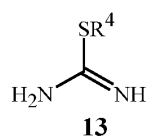
R^3 is halogen, $\text{C}_1\text{--C}_4$ alkyl or $\text{C}_1\text{--C}_4$ haloalkyl; and

R^{A} and R^{B} are each independently $\text{C}_1\text{--C}_4$ alkyl; or

R^{A} and R^{B} are taken together to be $-(\text{CH}_2)_4-$, $-(\text{CH}_2)_5-$ or $-\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2-$; and

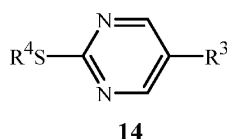
Hal^- is chloride or bromide ion;

treating the intermediate of Formula **12** with an acid salt of a compound of Formula **13**



wherein R^4 is $\text{C}_1\text{--C}_4$ alkyl

in the presence of a base to provide a compound of Formula **14**



wherein

R^3 is halogen, $\text{C}_1\text{--C}_4$ alkyl or $\text{C}_1\text{--C}_4$ haloalkyl;

R^4 is $\text{C}_1\text{--C}_4$ alkyl; and

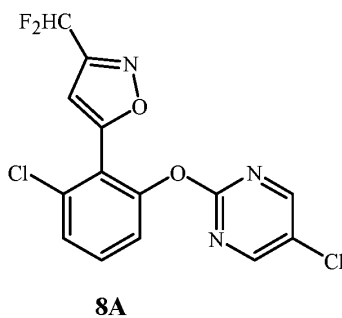
treating the compound of Formula **14** with an oxidant.

11. The method of Claim 7 wherein the compound of Formula **8** is selected from the group consisting of

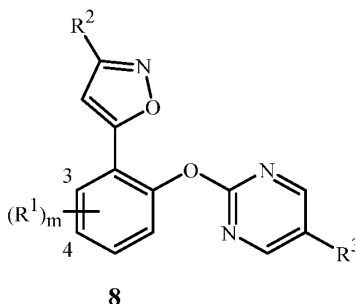
2-[2-(3-bromo-5-isoxazolyl)phenoxy]-5-chloropyrimidine,
 5-chloro-2-[2-[3-(difluoromethyl)-5-isoxazolyl]phenoxy]pyrimidine,
 5-chloro-2-[2-[3-(trifluoromethyl)-5-isoxazolyl]phenoxy]pyrimidine,
 5-chloro-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-fluorophenoxy]pyrimidine,
 5-bromo-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-fluorophenoxy]pyrimidine,
 5-chloro-2-[2-[3-(trifluoromethyl)-5-isoxazolyl]-3-chlorophenoxy]pyrimidine,
 5-chloro-2-[2-[3-(trifluoromethyl)-5-isoxazolyl]-3-fluorophenoxy]pyrimidine,
 5-chloro-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-chlorophenoxy]pyrimidine,
 5-bromo-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-chlorophenoxy]pyrimidine,

5-bromo-2-[2-[3-(trifluoromethyl)-5-isoxazolyl]-3-chlorophenoxy]pyrimidine and
5-chloro-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-bromophenoxy]pyrimidine.

12. The method of Claim 11 wherein the compound of Formula **8** is the compound of Formula **8A**



13. A method for preparing a compound of Formula **8**



wherein

each R^1 is independently halogen, cyano, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl;

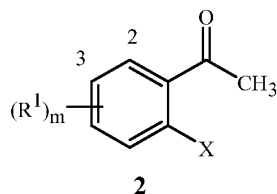
R^2 is cyano, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl;

R^3 is halogen, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl; and

m is 0, 1, 2 or 3;

the method comprising

treating a compound of Formula **2**



wherein

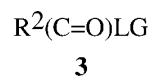
each R^1 is independently halogen, cyano, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl;

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m is 0, 1, 2 or 3; and

X is halogen;

with a compound of Formula 3

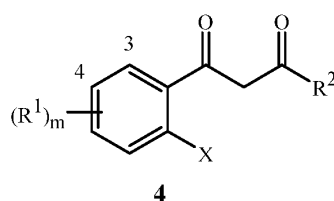


wherein

R² is cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl; and

LG is chloro, C₁–C₄ alkoxy or -O(C=O)R²

in the presence of a base to provide a salt of a compound of Formula 4



wherein

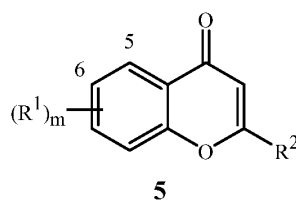
each R¹ is independently halogen, cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

R² is cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

m is 0, 1, 2 or 3; and

X is halogen;

heating the salt of the compound of Formula 4 to provide a compound of Formula 5



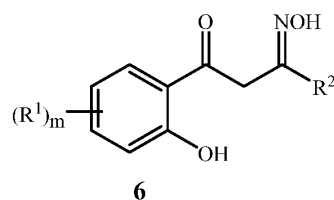
wherein

each R¹ is independently halogen, cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

R² is cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl; and

m is 0, 1, 2 or 3;

treating the compound of Formula 5 with a hydroxylamine salt to provide a compound of Formula 6



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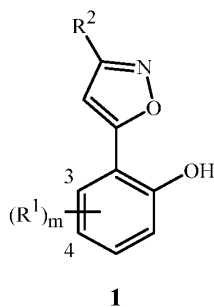
wherein

each R^1 is independently halogen, cyano, C_1-C_4 alkyl or C_1-C_4 haloalkyl;

R^2 is cyano, C_1-C_4 alkyl or C_1-C_4 haloalkyl; and

m is 0, 1, 2 or 3;

treating the compound of Formula 6 with acid to provide a compound of Formula 1



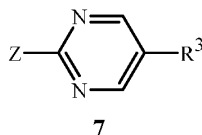
wherein

each R^1 is independently halogen, cyano, C_1-C_4 alkyl or C_1-C_4 haloalkyl;

R^2 is cyano, C_1-C_4 alkyl or C_1-C_4 haloalkyl; and

m is 0, 1, 2 or 3; and

treating the compound of Formula 1 with a compound of Formula 7



wherein

Z is halogen or SO_2R^4 ;

R^3 is halogen, C_1-C_4 alkyl or C_1-C_4 haloalkyl;

R^4 is C_1-C_4 alkyl

in the presence of a second base.

14. The method of Claim 13 wherein

R^2 is C_1-C_4 haloalkyl; and

m is 0, 1 or 2.

15. The method of Claim 14 wherein

each R^1 is independently halogen or cyano;

R^2 is C_1-C_2 fluoroalkyl; and

R^3 is halogen.

16. The method of Claim 15 wherein

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R^1 is halogen;

R^2 is C_1 fluoroalkyl;

m is 1; and

R^1 is attached to the remainder of Formula **1** at the 3-position.

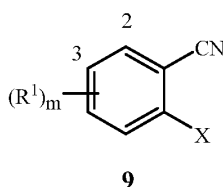
17. The method of Claim 16 wherein

R^1 is chlorine;

R^2 is CHF_2 ; and

R^3 is chlorine.

18. The method of Claim 14 wherein the compound of Formula **2** is prepared by treating a compound of Formula **9**



wherein

each R^1 is independently halogen, cyano, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl;

X is halogen;

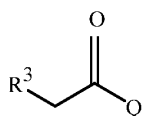
and

m is 0, 1, 2 or 3;

with a methyl magnesium halide followed by treatment with water or aqueous acid.

19. The method of Claim 13 wherein Z is SO_2R^4 .

20. The method of Claim 19 wherein the compound of Formula **7** is prepared by treating a compound of Formula **10**



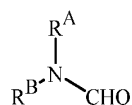
wherein

R^3 is halogen, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl; and

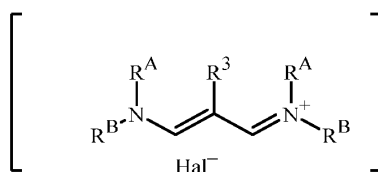
Q is Cl or OH

in the presence of a halogenating agent and a compound of Formula **11**

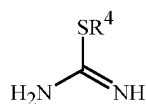
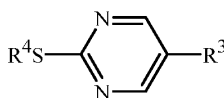
44

**11**

wherein

 R^{A} and R^{B} are each independently $\text{C}_1\text{--C}_4$ alkyl; or R^{A} and R^{B} are taken together to be $-(\text{CH}_2)_4-$, $-(\text{CH}_2)_5-$ or $-\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2-$ to provide an intermediate of Formula **12****12**

wherein

 R^3 is halogen, $\text{C}_1\text{--C}_4$ alkyl or $\text{C}_1\text{--C}_4$ haloalkyl; and R^{A} and R^{B} are each independently $\text{C}_1\text{--C}_4$ alkyl; or R^{A} and R^{B} are taken together to be $-(\text{CH}_2)_4-$, $-(\text{CH}_2)_5-$ or $-\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2-$; and Hal^- is chloride or bromide ion;treating the intermediate of Formula **12** with an acid salt of a compound of Formula **13****13**wherein R^4 is $\text{C}_1\text{--C}_4$ alkylin the presence of a base to provide a compound of Formula **14****14**

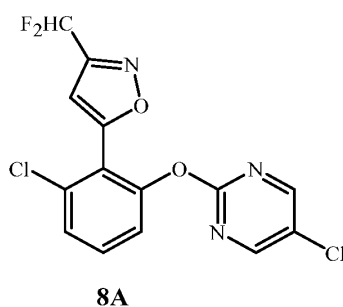
wherein

 R^3 is halogen, $\text{C}_1\text{--C}_4$ alkyl or $\text{C}_1\text{--C}_4$ haloalkyl; R^4 is $\text{C}_1\text{--C}_4$ alkyl; andtreating the compound of Formula **14** with an oxidant.

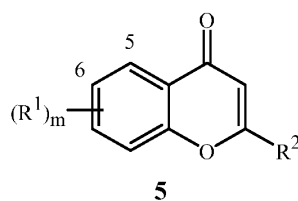
21. The method of Claim 13 wherein the compound of Formula **8** is selected from the group consisting of

2-[2-(3-bromo-5-isoxazolyl)phenoxy]-5-chloropyrimidine,
 5-chloro-2-[2-[3-(difluoromethyl)-5-isoxazolyl]phenoxy]pyrimidine,
 5-chloro-2-[2-[3-(trifluoromethyl)-5-isoxazolyl]phenoxy]pyrimidine,
 5-chloro-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-fluorophenoxy]pyrimidine,
 5-bromo-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-fluorophenoxy]pyrimidine,
 5-chloro-2-[2-[3-(trifluoromethyl)-5-isoxazolyl]-3-chlorophenoxy]pyrimidine,
 5-chloro-2-[2-[3-(trifluoromethyl)-5-isoxazolyl]-3-fluorophenoxy]pyrimidine,
 5-chloro-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-chlorophenoxy]pyrimidine,
 5-bromo-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-chlorophenoxy]pyrimidine,
 5-bromo-2-[2-[3-(trifluoromethyl)-5-isoxazolyl]-3-chlorophenoxy]pyrimidine and
 5-chloro-2-[2-[3-(difluoromethyl)-5-isoxazolyl]-3-bromophenoxy]pyrimidine.

22. The method of Claim 21 wherein the compound of Formula **8** is the compound of Formula **8A**



23. A method for preparing a compound of Formula **5**

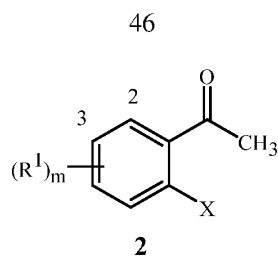


wherein

each R¹ is independently halogen, cyano, C₁–C₄ alkyl or C₁–C₄ haloalkyl;

R² is C₁–C₄ haloalkyl; and

m is 0, 1, 2 or 3; the method comprising
 treating a compound of Formula **2**



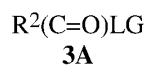
wherein

each R^1 is independently halogen, cyano, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl;

m is 0, 1, 2 or 3; and

X is halogen;

with a compound of Formula **3A**

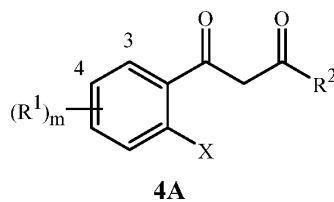


wherein

R^2 is C_1 – C_4 haloalkyl; and

LG is chloro, C_1 – C_4 alkoxy or $-O(C=O)R^2$

in the presence of an alkali metal base to provide a compound of Formula **4** or an alkali metal salt thereof



wherein

each R^1 is independently halogen, cyano, C_1 – C_4 alkyl or C_1 – C_4 haloalkyl;

R^2 is C_1 – C_4 haloalkyl;

m is 0, 1, 2 or 3; and

X is halogen; and

heating the compound of Formula **4A** or the alkali metal salt thereof.

24. The method of Claim 23 wherein R^2 is C_1 – C_2 haloalkyl; and m is 0, 1 or 2.

25. The method of Claim 24 wherein each R^1 is independently halogen or cyano; and R^2 is C_1 – C_2 fluoroalkyl.

26. The method of Claim 25 wherein

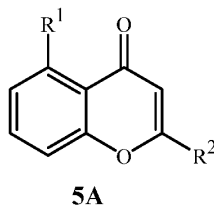
R^1 is halogen;

R^2 is C_1 fluoroalkyl;

m is 1; and

R^1 is attached to the remainder of Formula **1** at the 3-position.

27. The method of Claim 26 wherein R^1 is chlorine; and R^2 is CHF_2 .
28. A compound of Formula **5A**

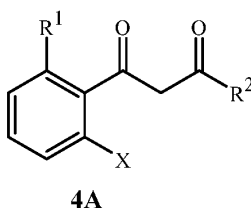


wherein

R^1 is halogen, cyano, $\text{C}_1\text{--C}_4$ alkyl or $\text{C}_1\text{--C}_4$ haloalkyl; and

R^2 is $\text{C}_1\text{--C}_2$ haloalkyl; wherein when R^1 is fluoro, R^2 is other than trifluoromethyl.

29. The compound of Claim 28 wherein R^2 is $\text{C}_1\text{--C}_2$ fluoroalkyl.
30. The compound of Claim 29 wherein R^1 is halogen; and R^2 is C_1 fluoroalkyl.
31. The compound of Claim 30 wherein R^1 is chlorine; and R^2 is CHF_2 .
32. A compound of Formula **4A** or an alkali metal salt thereof



wherein

R^1 is halogen, cyano, $\text{C}_1\text{--C}_4$ alkyl or $\text{C}_1\text{--C}_4$ haloalkyl;

R^2 is $\text{C}_1\text{--C}_2$ haloalkyl; and

X is halogen; wherein when R^1 is fluoro, R^2 is other than trifluoromethyl.

33. The compound of Claim 32 wherein R^2 is $\text{C}_1\text{--C}_2$ fluoroalkyl.
34. The compound of Claim 33 wherein R^1 is halogen; and R^2 is C_1 fluoroalkyl.
35. The compound of Claim 34 wherein R^1 is chlorine; and R^2 is CHF_2 .
36. The compound of Claim 35 that is the compound of Formula **4C** or its sodium salt

