

wherein R^5 is optionally substituted aryl or optionally substituted ≤C6 heteroaryl;

wherein L^1 is a divalent organic groups having from 1 to 8 non-hydrogen members;

wherein p is 0 or 1;

wherein Q^1 is hydrogen, OR^{20}, SR^{20}, or $NR^{21a}R^{21b}$;

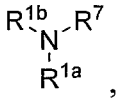
wherein R^{20} is hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein each of R^{21a} and R^{21b} is independently hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein Q^2 is O, S, or NR^4; and

wherein R^4 is hydrogen or ≤C5 alkyl; and

(b) a second compound having the structure:

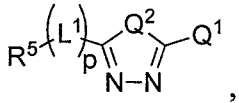


wherein each of R^{1a} and R^{1b} is independently hydrogen, optionally substituted C1-C4 alkyl, or an alkyloxy carbonyl group; and

wherein R^7 is optionally substituted and selected from monocyclic aryl, bicyclic aryl, monocyclic heteroaryl, bicyclic heteroaryl, and tricyclic heteroaryl.

[0013b] Also disclosed is a method of agonizing an ORco ion channel, comprising exposing the ORco ion channel to a composition comprising:

(a) a first compound having the structure:



wherein R^5 is optionally substituted aryl or optionally substituted ≤C6 heteroaryl;

wherein L^1 is a divalent organic groups having from 1 to 8 non-hydrogen members;

wherein p is 0 or 1;

wherein Q^1 is hydrogen, OR^{20}, SR^{20}, or $NR^{21a}R^{21b}$;

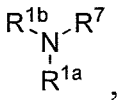
wherein R^{20} is hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein each of R^{21a} and R^{21b} is independently hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein Q^2 is O, S, or NR^4; and

wherein R^4 is hydrogen or $\leqslant$C5 alkyl; and

(b) a second compound having the structure:



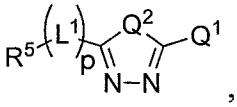
,

wherein each of R^{1a} and R^{1b} is independently hydrogen, optionally substituted C1-C4 alkyl, or an alkyloxy carbonyl group; and

wherein R^7 is optionally substituted and selected from monocyclic aryl, bicyclic aryl, monocyclic heteroaryl, bicyclic heteroaryl, and tricyclic heteroaryl.

[0013c] Also disclosed is a composition for disrupting odorant sensing comprising

(a) a first compound having the structure:



,

wherein R^5 is optionally substituted aryl or optionally substituted $\leqslant$C6 heteroaryl;

wherein L^1 is a divalent organic groups having from 1 to 8 non-hydrogen members;

wherein p is 0 or 1;

wherein Q^1 is hydrogen, OR^{20}, SR^{20}, or $NR^{21a}R^{21b}$;

wherein R^{20} is hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein each of R^{21a} and R^{21b} is independently hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein Q^2 is O, S, or NR^4; and

wherein R^4 is hydrogen or $\leqslant$C5 alkyl; and

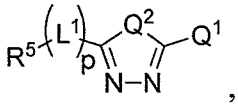
(b) a second compound having the structure:

CLAIMS

What is claimed is:

1. A method of disrupting odor sensing behavior in an organism having an ORco ion channel, comprising exposing the organism to a composition comprising:

(a) a first compound having the structure:



,

wherein R^5 is optionally substituted aryl or optionally substituted ≤C6 heteroaryl;

wherein L^1 is a divalent organic groups having from 1 to 8 non-hydrogen members;

wherein p is 0 or 1;

wherein Q^1 is hydrogen, OR^{20}, SR^{20}, or $NR^{21a}R^{21b}$;

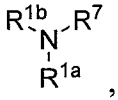
wherein R^{20} is hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein each of R^{21a} and R^{21b} is independently hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein Q^2 is O, S, or NR^4; and

wherein R^4 is hydrogen or ≤C5 alkyl; and

(b) a second compound having the structure:



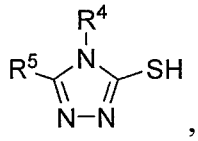
,

wherein each of R^{1a} and R^{1b} is independently hydrogen, optionally substituted C1-C4 alkyl, or an alkyloxy carbonyl group; and

wherein R^7 is optionally substituted and selected from monocyclic aryl, bicyclic aryl, monocyclic heteroaryl, bicyclic heteroaryl, and tricyclic heteroaryl.

2. The method of claim 1, wherein the organism is an insect.

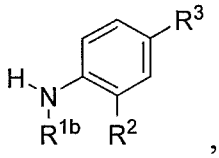
3. The method of claim 1, wherein the first compound has the structure:



,

wherein R^4 is methyl, ethyl, isopropyl, or cyclopropyl.

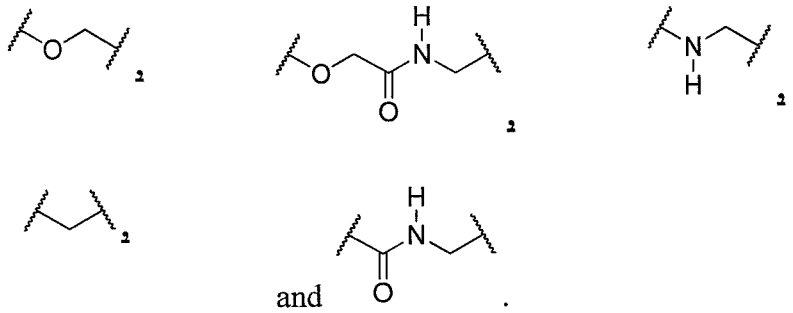
4. The method of claim 1, wherein the second compound has the structure:



,

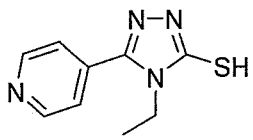
wherein R^{1b} is hydrogen or optionally substituted C1-C4 alkyl; wherein R^2 is hydrogen or methyl; and wherein R^3 is hydrogen, halo, hydroxy, nitro, halo, cyclopropyl, ≤C5 alkyl, substituted ≤C5 alkyl, ≤C5 alkenyl, or substituted ≤C5 alkenyl.

5. The method of claim 1, wherein L^1 is selected from:



and .

6. The method of claim 1, wherein the first compound has the structure: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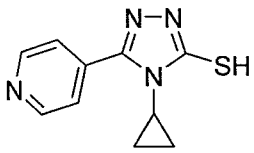
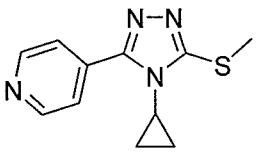
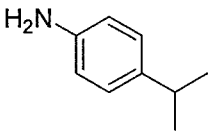

, or

; and

the second compound has the structure: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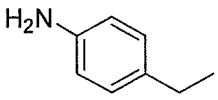
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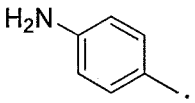
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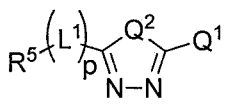
7. The method of claim 1, wherein the composition is formed as a water-soluble tablet, formulated as an aerosol, or formulated as a sprayable liquid.

8. The method of claim 1, wherein the composition further comprises an insect repellant.

9. A method of agonizing an ORco ion channel, comprising exposing the ORco ion channel to a composition comprising:

(a) a first compound having the structure:


,

wherein R^5 is optionally substituted aryl or optionally substituted ≤C6 heteroaryl;

wherein L^1 is a divalent organic groups having from 1 to 8 non-hydrogen members;

wherein p is 0 or 1;

wherein Q^1 is hydrogen, OR^{20}, SR^{20}, or $NR^{21a}R^{21b}$;

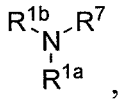
wherein R^{20} is hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein each of R^{21a} and R^{21b} is independently hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein Q^2 is O, S, or NR^4; and

wherein R^4 is hydrogen or ≤C5 alkyl; and

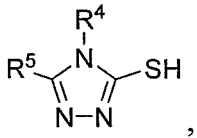
(b) a second compound having the structure:



wherein each of R^{1a} and R^{1b} is independently hydrogen, optionally substituted C1-C4 alkyl, or an alkyloxy carbonyl group; and

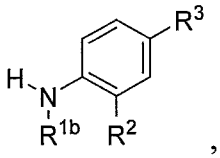
wherein R^7 is optionally substituted and selected from monocyclic aryl, bicyclic aryl, monocyclic heteroaryl, bicyclic heteroaryl, and tricyclic heteroaryl.

10. The method of claim 9, wherein the first compound has the structure:



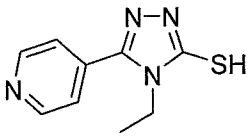
wherein R^4 is methyl, ethyl, isopropyl, or cyclopropyl.

11. The method of claim 9, wherein the second compound has the structure:



wherein R^{1b} is hydrogen or optionally substituted C1-C4 alkyl; wherein R^2 is hydrogen or methyl; and wherein R^3 is hydrogen, halo, hydroxy, nitro, halo, cyclopropyl, ≤C5 alkyl, substituted ≤C5 alkyl, ≤C5 alkenyl, or substituted ≤C5 alkenyl.

12. The method of claim 9, wherein the first compound has the structure: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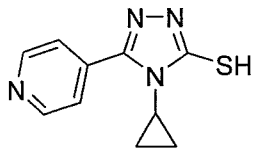
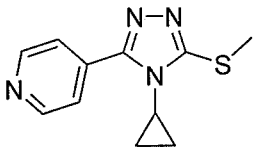
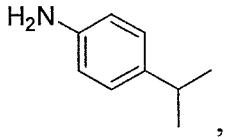

, or

; and

the second compound has the structure: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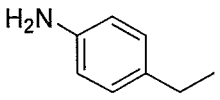
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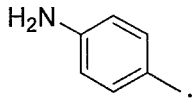
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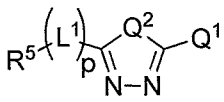
13. A composition for disrupting odorant sensing comprising

(a) a first compound having the structure:


,

wherein R^5 is optionally substituted aryl or optionally substituted ≤C6 heteroaryl;

wherein L^1 is a divalent organic groups having from 1 to 8 non-hydrogen members;

wherein p is 0 or 1;

wherein Q^1 is hydrogen, OR^{20}, SR^{20}, or $NR^{21a}R^{21b}$;

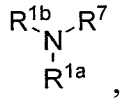
wherein R^{20} is hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein each of R^{21a} and R^{21b} is independently hydrogen, methyl, ethyl, propyl, isopropyl, cyclopropyl, butyl, i-butyl, s-butyl, t-butyl, or CH_2-isopropyl;

wherein Q^2 is O, S, or NR^4; and

wherein R^4 is hydrogen or ≤C5 alkyl; and

(b) a second compound having the structure:

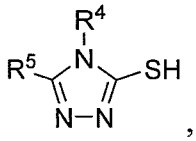


,

wherein each of R^{1a} and R^{1b} is independently hydrogen, optionally substituted C1-C4 alkyl, or an alkyloxy carbonyl group; and

wherein R^7 is optionally substituted and selected from monocyclic aryl, bicyclic aryl, monocyclic heteroaryl, bicyclic heteroaryl, and tricyclic heteroaryl.

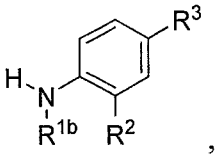
14. The composition of claim 13, wherein the first compound has the structure:



,

wherein R^4 is methyl, ethyl, isopropyl, or cyclopropyl.

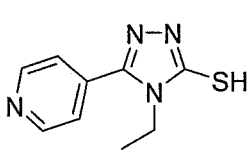
15. The composition of claim 13, wherein the second compound has the structure:



,

wherein R^{1b} is hydrogen or optionally substituted C1-C4 alkyl; wherein R^2 is hydrogen or methyl; and wherein R^3 is hydrogen, halo, hydroxy, nitro, halo, cyclopropyl, ≤C5 alkyl, substituted ≤C5 alkyl, ≤C5 alkenyl, or substituted ≤C5 alkenyl.

16. The composition of claim 13, wherein the first compound has the structure:



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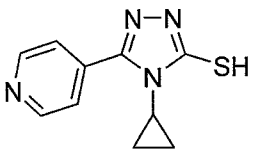
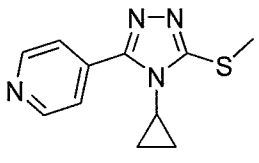
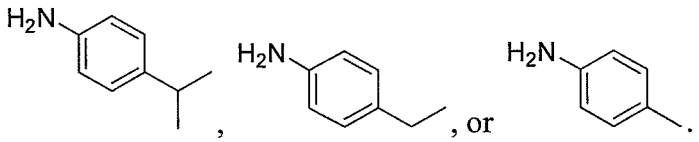


, or



; and

the second compound has the structure:



, , or .

17. The composition of claim 13, formed as a water-soluble tablet, formulated as an aerosol, or formulated as a sprayable liquid.

18. The composition of claim 13, further comprising an insect repellant.

19. An article comprising the composition of claim 13.

20. The article of claim 19, formed as clothing or netting or an insect trap.