CLAIMS

1. A method for identifying a compound that binds, suppresses, blocks, inhibits, and/or modulates the activity of an olfactory receptor polypeptide that is activated by a laundry malodor causing substance~~,~~ and/or a moldy malodour causing substance ~~and/or a sweat malodor causing substance~~ comprising:

a. contacting a test substance and said laundry malodor~~,~~ and/or moldy malodour causing substance ~~and/or sweat malodor causing substance~~ to at least one olfactory receptor polypeptide selected from the group consisting of ~~OR2W1, OR1A1, OR2J3, OR4Q3, OR5K1, OR2M3, OR51E1, OR4S2, OR51I2, OR2H1, OR2W3, OR8G1, Olfr263, Olfr403, Olfr735, Olfr96, Olfr1193, Olfr641 Olfr137, Olfr173, Olfr164, Olfr1487, Olfr339, Olfr1126, Olfr558, Olfr1322, Olfr93, Olfr398, Olfr120, Olfr1364, Olfr937, Olfr46, and chimera or functional fragments thereof~~ OR1A1, OR2M3, Olfr403, Olfr164, Olfr1487, Olfr339, Olfr96 and Olfr1322; or to at least one olfactory receptor polypeptide having at least ~~90%~~ 95% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides; wherein said malodor-causing substance is ~~selected from the group consisting of~~ (4S,4aS,8aR)-4,8a-Dimethyl-1,2,3,4,5,6,7,-octahydronaphthalen-4a-ol, ~~dimethyl trisulfide (DMTS), 1-octen-3-ol, butyric acid, 3-methyl-2-hexenoic acid, 3-hydroxy-3-methyl-hexanoic acid, 3-methyl-3-sulphanyl hexanol (transpirol), and mixtures of at least two of said substances,~~ and

b. measuring the response of said at least one olfactory receptor polypeptide to the malodor-causing substance by measuring the dose-dependent response of said olfactory receptor polypeptide in the presence of increasing concentrations of the test substance in the presence of a single activating concentration of (4S,4aS,8aR)-4,8a-dimethyl-1,2,3,4,5,6,7,-octahydronaphthalen-4a-ol (EC_{80}) and absence of the test substance.

2. The method of claim 1, further comprising

c. identifying a test substance that modulates the response of said at least one olfactory receptor on the basis of the response that was measured in the presence and absence of the test substance; and

d. selecting the identified test substance as a compound that binds, suppresses, blocks, inhibits, and/or modulates the response of said at least one olfactory receptor to the malodor-causing substance.

3. The method of claim 1, wherein the polypeptide

a. comprises an amino acid sequence having at least ~~90%,~~ 95%, 98%, 99% or 100% sequence identity to SEQ ID NO: ~~2,~~ 4, ~~6, 8, 10,~~ 14, ~~16, 18, 20, 22,~~ 24, ~~26,~~ 28, ~~30, 32, 34, 36, 38,~~ 40, 42, 44, ~~46, 57, 59, 61, 63, 65, 67, 69, 71, 73,~~ or 75; and/or

b. is encoded by a nucleic acid molecule comprising a nucleotide sequence having at least ~~90%,~~ 95%, 98%, 99% or 100% sequence identity to SEQ ID NO: ~~1,~~ 3, ~~5, 7, 9, 11,~~ 13, ~~15, 17, 19, 21,~~ 23, ~~25,~~ 27, ~~29, 31, 33, 35, 37,~~ 39, 41, 43, ~~45, 56, 58, 60, 62, 64, 66, 68, 70,~~ 72, ~~74,~~ or the reverse complement thereof.

~~4. The method of any one of the claims 1 to 3, wherein said malodor-causing substance is a laundry malodor causing substance or a moldy malodour causing substance selected from the group consisting of (4S,4aS,8aR)-4,8a-Dimethyl-1,2,3,4,5,6,7,-octahydronaphthalen-4a-ol, DMTS, 1-octen-3-ol, and mixtures of at least two of said substances.~~

~~5. The method of anyone of the claims 1 to 3, wherein said malodor-causing substance is a sweat malodor causing substance selected from the group consisting of butyric acid, 3-methyl-2-hexenoic acid, 3-hydroxy-3-methyl hexanoic acid, transpirol, and mixtures of at least two of said substances.~~

~~6. The method of claim 4, wherein the olfactory receptor polypeptide is selected from the group consisting of OR2W1, OR1A1, OR2J3, OR4Q3, OR5K1, OR2M3, OR4S2, Olfr263, Olfr403, Olfr735, Olfr1193, Olfr137, Olfr173, Olfr164, Olfr1487, Olfr339, Olfr96, Olfr1322, Olfr93, Olfr398, Olfr120, Olfr1364 and Olfr937; chimera and functional fragments thereof; and olfactory receptor polypeptides having at least 90% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides.~~

7. The method of claim 6, wherein the malodour causing substance comprises (4S,4aS,8aR) 4,8a Dimethyl 1,2,3,4,5,6,7, octahydronaphthalen 4a ol and the olfactory receptor is selected from the group consisting of OR1A1, OR2M3, Olfr403, Olfr164, Olfr1487, Olfr339, Olfr96 and Olfr1322; chimera and functional fragments thereof; and olfactory receptor polypeptides having at least 90% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides.

8. The method of claim 6, wherein the malodour causing substance comprises 1 octen 3 ol and the olfactory receptor is selected from the group consisting of OR2W1, OR1A1, OR2J3, OR4Q3, OR5K1, OR2H1, OR2W3, OR8G1, Olfr263, Olfr137, Olfr735, Olfr173, Olfr93, Olfr398, Olfr120, Olfr1364, Olfr937; chimera and functional fragments thereof; and olfactory receptor polypeptides having at least 90% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides.

9. The method of claim 6, wherein the malodour causing substance comprises DMTS and the olfactory receptor is selected from the group consisting of OR2W1, OR1A1, OR5K1, OR4S2, Olfr263, Olfr1193, Olfr173 and Olfr403; chimera and functional fragments thereof; and olfactory receptor polypeptides having at least 90% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides.

10. The method of claim 5, wherein the olfactory receptor polypeptide is selected from the group consisting of OR2W1, OR1A1, OR2J3, OR5K1, OR51E1, OR51I2, Olfr263, Olfr403, Olfr641, Olfr137, Olfr173, Olfr1126, Olfr558 and Olfr46; chimera and functional fragments thereof; and olfactory receptor polypeptides having at least 90% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides.

11. The method of claim 10, wherein the malodour causing substance comprises butyric acid and the olfactory receptor is selected from the group consisting of OR51E1, and Olfr558; chimera and functional fragments thereof; and olfactory receptor polypeptides having at least 90% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides.

~~12. The method of claim 10, wherein the malodour causing substance comprises 3-methyl-2-hexenoic acid, and the olfactory receptor is selected from the group consisting of OR51I2, Olfr641, OR2W1 and Olfr263; chimera and functional fragments thereof; and olfactory receptor polypeptides having at least 90% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides.~~

~~13. The method of claim 10, wherein the malodour causing substance comprises 3-hydroxy-3-methyl-hexanoic acid, and the olfactory receptor is selected from the group consisting of OR2W1, Olfr1126 and Olfr263; chimera and functional fragments thereof; and olfactory receptor polypeptides having at least 90% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides.~~

~~14. The method of claim 10, wherein the malodour causing substance comprises transpirol and the olfactory receptor is selected from the group consisting of OR2W1, OR1A1, OR2J3, OR5K1, Olfr263, Olfr137, Olfr173, Olfr403 and Olfr46; chimera and functional fragments thereof; and olfactory receptor polypeptides having at least 90% amino acid sequence identity to at least one of the aforementioned olfactory receptor polypeptides.~~