

AMENDMENTS TO THE CLAIMS

A complete listing of the claims, including their current status identifier, is set forth below.

1. (Currently amended) A composition comprising a culture of [[An]] an isolated *Muscodor* strain, wherein the *Muscodor* strain is capable of ~~which:~~
 - (a) ~~produces~~ producing a product comprising at least one volatile organic compound selected from the group consisting of: 3-octanone, (-) aristolene, and acetic acid ester; and
 - (b) ~~produces a product~~ producing one or more products that possess[[es]] fungicidal, bactericidal, and bacterial activity, nematicidal, and/or insecticidal activity,
~~or cell fraction, supernatant, extract, filtrate, compound, metabolite and/or volatile derived therefrom.~~
2. (Currently amended) The composition ~~isolated strain~~ according to claim 1, wherein said ~~culture~~ *Muscodor* strain produces a product that has at least about 1.5 fold more inhibitory effect on *Fusarium* growth than *Muscodor albus* strain CZ 620 (NRRL Accession No. B-30547).
3. (Currently amended) The ~~isolated culture~~ composition according to claim 2, wherein said ~~culture~~ *Muscodor* strain produces a product that has at least about 4 fold more of an effect on mortality on *Meloidogyne incognita* and *hapla* than *Muscodor albus* strain CZ 620 (NRRL Accession No. B-30547).
4. (Currently amended) The composition of claim 1, wherein the culture is [[A]] a substantially pure culture or whole cell broth ~~comprising the strain of claim 1.~~
5. (Currently amended) [[A]] The composition of claim 1, wherein the composition is a solid composition, comprising (a) ~~the substantially pure culture or whole cell broth~~

~~comprising and/or (b) a cell fraction, supernatant, compound, metabolite or volatile derived from the strain of claim 1.~~

6. (Currently amended) The ~~strain~~ composition of claim 1, wherein said *Muscodor* ~~strain is~~ culture has at least one of the identifying characteristics of *Muscodor albus* strain SA-13 (NRRL Accession No. B-50774).

7. (Currently amended) ~~A combination~~ The composition of claim 1, further comprising:
(a) ~~a first substance selected from the group consisting of a pure culture, cell fraction, supernatant, metabolite or volatile derived from the culture of claim 1; and,~~
(b) ~~at least one of (i) a second substance, wherein said second substance is a chemical or biological pesticide and (ii) at least one of a carrier, diluent, surfactant, and adjuvant.~~

[[9.]] ~~8.~~ (Currently amended) The composition ~~combination~~ according to claim [[8]] 1, ~~further comprising a second substance, wherein said second substance is a chemical or biological pesticide, wherein the combination is a composition.~~

[[10.]] ~~9.~~ (Currently amended) The composition of claim 1, wherein the isolated *Muscodor* strain is further capable of producing of claim 1 ~~wherein the product of (a) also includes at least one of Propanoic acid, 2-methyl-, methyl ester and Propanoic acid, 2-methyl-, ethyl ester.~~

[[11.]] ~~10.~~ (Currently amended) A composition having pesticidal activity comprising:

Ethanol;
Propanol;
2-Butanone, 4-hydroxy-;
Ethyl Acetate;
Propanoic acid, ethyl ester;
1-Butanol, 3-methyl-;
1-Butanol, 2-methyl-;
Propanoic acid, 2-methyl-, ethyl ester;
Butanoic acid, 2-methyl-, methyl ester;
Butanoic acid, 2-methyl-, ethyl ester;
Propanoic acid, 2-methyl-, butyl ester;

1-Butanol, 3-methyl-, acetate;
Ethyl tiglate;
Phenylethyl Alcohol; and
Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]-[.];

at least one of: Propanoic acid, 2-methyl-, methyl ester; Acetic acid, 2-methylpropyl ester;;
1-Butanol, 2-methyl-, acetate; Propanoic acid, 2-methyl-, butyl ester; Benzene, methoxy-; 3-
Octanone; Propanoic acid, 2-methyl-, 3-methylbutyl ester; Acetic acid, 2-phenylethyl ester;
(-) Aristolene; Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl)-; Azulene,
1,2,3,4,5,6,7,8-octahydro-1,4-dimethyl-7-(1-methylethenyl)-,(1S-
(1.alpha.,4.alpha.,7.alpha.)-; and Bicyclo[5.3.0]decane, 2-methylene-5-(1-methylvinyl)-8-
methyl-;

and optionally at least one of a carrier, diluent, surfactant, and adjuvant.

[[12.]] 11. (Currently amended) The composition according to claim [[11]] 10, wherein
said composition ~~artificial mixture~~ comprises

Ethanol;
Propanol;
2-Butanone, 4-hydroxy-;
Ethyl Acetate;
Propanoic acid, 2-methyl-, methyl ester;
Propanoic acid, ethyl ester;
1-Butanol, 3-methyl-;
1-Butanol, 2-methyl-;
Propanoic acid, 2-methyl-, ethyl ester;
Acetic acid, 2-methylpropyl ester;
Butanoic acid, 2-methyl-, methyl ester;
Butanoic acid, 2-methyl-, ethyl ester;
Propanoic acid, 2-methyl-,butyl ester;
1-Butanol, 3-methyl-, acetate;
1-Butanol, 2-methyl-, acetate;
Propanoic acid, 2-methyl-, butyl ester;
Benzene, methoxy-;
Ethyl tiglate;
3-Octanone;
Propanoic acid, 2-methyl-, 3-methylbutyl ester;
Phenylethyl Alcohol;
Acetic acid, 2-phenylethyl ester;
(-)Aristolene;

Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl)-;
Azulene, 1,2,3,4,5,6,7,8-octahydro-1,4-dimethyl-7-(1-
methylethenyl)-, [1S-(1.alpha.,4.alpha.,7.alpha.)]-;
Bicyclo[5.3.0]decane, 2-methylene-5-(1-methylvinyl)-8-methyl-;
and,
Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-
methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]-.

[[13.]] 12. (Currently amended) A method for modulating pest infestation and/or phytopathogenic infection in a plant in need thereof comprising applying to the plant and/or seeds thereof and/or substrate used for growing said plant an effective amount of the composition of claim [[5]] 1.

[[14.]] 13. (Currently amended) A method for modulating pest infestation and/or phytopathogenic infection in a plant in need thereof comprising applying to the plant and/or seeds thereof and/or substrate used for growing said plant an effective amount of the composition of claim [[11]] 10.

[[15.]] 14. (Currently amended) The method according to claim [[13]] 12, wherein said pest is an insect pest, fungus, bacteria, or nematode.

[[16.]] 15. (Currently amended) The method according to claim [[15]] 12, wherein said pest is an insect pest, wherein said insect pest is *Spodoptera exigua*.

[[17.]] 16. (Currently amended) The method according to claim [[15]] 12, wherein said pest is a nematode, wherein said nematode ~~and said nematode~~ is *M. incognita* or *M. hapla*.

[[18.]] 17. (Currently amended) The method according to claim [[13]] 12, wherein said phytopathogenic infection results from fungus infection, wherein said fungus is a member of the *Botrytis* spp., *Sclerotinia* spp., *Sclerotium* spp., *Macrophomina* spp., *Verticillium* spp., *Fusarium* spp., *Rhizoctonia* spp., or *Pythium* spp.

[[19.]] 18. The method according to claim [[13]] 12, wherein said phytopathogenic

infection results from bacterial infection, wherein said bacteria is a member of the *Pectobacterium* spp., *Pseudomonas* spp., *Xanthomas* spp., or *Calvibacter* spp.

20-22. (Canceled)

23. (Original) An artificial mixture having fungicidal and nematocidal activity, the mixture comprising: ethanol; ethyl acetate; 1-Propanol,2-methyl; 1-Butanol, 3-methyl; 1-Butanol, 2-methyl; and, at least one of: Propanoic acid, 2-methyl-, methyl ester and Propanoic acid, 2-methyl-, ethyl ester and optionally at least one of a carrier, diluent, surfactant, and adjuvant.

24. (Original) The artificial mixture of claim 23, wherein the mixture comprises: ethanol; ethyl acetate; 1-Propanol, 2-methyl; Propanoic acid, 2-methyl-, methyl ester; 1-Butanol, 3-methyl; 1-Butanol, 2-methyl; and Propanoic acid, 2-methyl-, ethyl ester, and optionally at least one of a carrier, diluent, surfactant, and adjuvant.

25. (Original) A method for modulating pest infestation and/or phytopathogenic infection in a plant in need thereof comprising applying to the plant and/or seeds thereof and/or substrate used for growing said plant an amount of the artificial mixture of claim 17 effective to modulate pest infestation and/or phytopathogenic infection.

26. (Original) A method for modulating pest infestation and/or phytopathogenic infection in a plant in need thereof comprising applying to the plant and/or seeds thereof and/or substrate used for growing said plant an amount of the artificial mixture of claim 23 effective to modulate pest infestation and/or phytopathogenic infection.

27. (New) The composition of claim 5, wherein the solid composition is a dried grain grown with the culture of the *Muscodor* strain.

28. (New) The composition of claim 27, wherein the dried grain is selected from barley, corn, rye, rice, and wheat.

29. (New) The composition of claim 1, wherein the culture is a solid culture.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/843,755	03/15/2013	Gary Strobel	MOI-42035-US	5689
117607	7590	04/01/2014	EXAMINER	
Marrone Bio Innovations c/o Yuko Soncoka 2121 Second Street, Ste. B-107 Davis, CA 95618			MACAULEY, SHERIDAN R	
			ART UNIT	PAPER NUMBER
			1653	
			NOTIFICATION DATE	DELIVERY MODE
			04/01/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No. 13/843,755	Applicant(s) STROBEL ET AL.	
Examiner SHERIDAN MACAULEY	Art Unit 1653	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10 October, 2013.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) Claim(s) 1-19 and 23-29 is/are pending in the application.
5a) Of the above claim(s) 10-19 and 23-29 is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 1-9, 27 and 29 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on 15 March 2013 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some** c) None of the:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date _____
- 3) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 4) Other: _____

Art Unit: 1653

9. The invention appears to employ a specific strain of fungi to obtain a specific product. The written description of that strain and the method of isolating is insufficiently reproducible. Therefore, a deposit for patent purposes is required. The specification discloses at pp. 60-61 that *Muscodor albus* strain SA-13 was deposited at NRRL under Budapest Treaty conditions on August 31, 2012.

10. For compliance with the rule, it must be averred that deposited material has been accepted for deposit under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the purpose of Patent Procedure (e.g. see 961 OG 21, 1977) and that all restrictions on the availability to the public of the material so deposited will be irrevocably removed upon the granting of a patent. See MPEP 2403.

11. Additionally, the deposit must be referred to in the body of the specification and be identified by deposit (accession) number, date of deposit, name and address of the depository and the complete taxonomic description.

12. Therefore, the claims do not comply with the requirements of 35 USC 112(a).

Claim Rejections - 35 USC § 101

13. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

14. Claims 1-9, 27 and 29 are rejected under 35 U.S.C. 101 because the claimed invention is not directed to patent eligible subject matter. Based upon an analysis with respect to the claim as a whole, claims 1-9 do not recite something significantly different than a judicial exception. The rationale for this determination is explained below.

Art Unit: 1653

15. Claims 1-9, 27 and 29 are directed to a composition of matter and recite a judicial exception (a natural product). The claims as a whole do not recite something significantly different from a natural product for the following reasons:

16. The March 4, 2014 USPTO guidance memorandum titled *Guidance For Determining Subject Matter Eligibility Of Claims Reciting Or Involving Laws of Nature, Natural Phenomena, & Natural Products (Guidance)* implements a new procedure to address changes in the law relating to subject matter eligibility under 35 U.S.C. § 101 in view of recent court decisions including *Association for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. ___, 133 S. Ct. 2107, 2116, 106 USPQ2d 1972 (2013), and *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. ___, 132 S. Ct. 1289, 101 USPQ2d 1961 (2012).

17. In order to answer the question, “Does the claim as a whole recite something *significantly different* than the judicial exception(s)?”, the following factors are analyzed. On balance, if the totality of the relevant factors weighs toward eligibility, the claim qualifies as eligible subject matter. If the totality of the relevant factors weighs against eligibility, the claim should be rejected.

Factors that weigh toward eligibility (significantly different):

- a) Claim is a product claim reciting something that initially appears to be a natural product, but after analysis is determined to be non-naturally occurring and markedly different in structure from naturally occurring products.
- b) Claim recites elements/steps in addition to the judicial exception(s) that impose meaningful limits on claim scope, i.e., the elements/steps narrow the scope of the claim so that others are not substantially foreclosed from using the judicial exception(s).
- c) Claim recites elements/steps in addition to the judicial exception(s) that relate to the judicial exception in a significant way, i.e., the elements/steps are more than nominally, insignificantly, or tangentially related to the judicial exception(s).

Art Unit: 1653

- d) Claim recites elements/steps in addition to the judicial exception(s) that do more than describe the judicial exception(s) with general instructions to apply or use the judicial exception(s).
- e) Claim recites elements/steps in addition to the judicial exception(s) that include a particular machine or transformation of a particular article, where the particular machine/transformation implements one or more judicial exception(s) or integrates the judicial exception(s) into a particular practical application. (See MPEP 2106(II)(B)(1) for an explanation of the machine or transformation factors).
- f) Claim recites one or more elements/steps in addition to the judicial exception(s) that add a feature that is more than well-understood, purely conventional or routine in the relevant field.

Factors that weigh against eligibility (not significantly different):

- g) Claim is a product claim reciting something that appears to be a natural product that is not markedly different in structure from naturally occurring products.
- h) Claim recites elements/steps in addition to the judicial exception(s) at a high level of generality such that substantially all practical applications of the judicial exception(s) are covered.
- i) Claim recites elements/steps in addition to the judicial exception(s) that must be used/taken by others to apply the judicial exception(s).
- j) Claim recites elements/steps in addition to the judicial exception(s) that are well-understood, purely conventional or routine in the relevant field.
- k) Claim recites elements/steps in addition to the judicial exception(s) that are insignificant extra-solution activity, e.g., are merely appended to the judicial exception(s).
- l) Claim recites elements/steps in addition to the judicial exception(s) that amount to nothing more than a mere field of use.

18. Regarding claims 1-6, 9 and 29, with respect to factors weighing towards eligibility, factor (a) is not satisfied. These claims recite a product that appears to be a natural product that is not markedly different in structure from naturally occurring products. Note that the claims recite a strain of *Muscodor albus*, specifically *Muscodor albus* strain SA-13, which is a naturally occurring strain, as discussed at p. 24 of the specification. Thus, the claimed fungal strain is not markedly different from what exists in nature. Factors (b) through (f) are not relevant because the claims do not include any elements in addition to the natural product. Note that claims 2, 3, 6 and 9 recite further

Art Unit: 1653

characteristics of the strain and thus do not include any elements in addition to the natural product. Claims 4, 5 and 29 recite basic properties of a fungal culture and thus also do not include any elements in addition to the natural product.

19. With respect to factors weighing against eligibility, factor (g) is satisfied because the claimed fungal strain is not markedly different from a naturally occurring fungal strain. Factors (h) through (l) are not relevant, because the claims do not include any elements in addition to the natural product.

20. In sum, when the relevant factors are analyzed, they weight against a significant difference. Accordingly, claims 1-6, 9 and 29 do not qualify as eligible subject matter.

21. Regarding claims 7, 8 and 27, with respect to factors weighing towards eligibility, factor (a) is not satisfied. The claim recites a product (a fungal strain) that appears to be a natural product that is not markedly different in structure from naturally occurring products. Each of the claims recites that the composition comprising the natural product also comprises an additional component. Claim 7 recites that the composition additionally comprises a carrier, claim 8 recites that the composition additionally comprises a chemical or biological pesticide, and claim 27 recites that the composition additionally comprises a dried grain. However, these limitations also read on a natural product, such as starch (a carrier), oxygen (a chemical pesticide), or a dried grain. Thus, factors (b) through (f) are not relevant because the claims do not include any elements in addition to the natural products, i.e., there is nothing in the claim other than the natural products.

22. With respect to factors weighing against eligibility, factor (g) is satisfied because the claimed fungal strain and the additional elements are not markedly different from naturally occurring products. Factors (h) through (l) are not relevant, because the claims do not include any elements in addition to the natural products.

23. In sum, when the relevant factors are analyzed, they weight against a significant difference. Accordingly, claims 7, 8 and 27 do not qualify as eligible subject matter.

24. Therefore, the claimed invention is not directed to patent eligible subject matter.

Claim Rejections - 35 USC § 103

25. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

26. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

27. This application currently names joint inventors. In considering patentability of the claims under pre-AIA 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein