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NOTICE OF ALLOWANCE AND FEE(S) DUE

4743 7590 12/02/2022
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EXAMINER	
RAGHU, GANAPATHIRAM	
ART UNIT	PAPER NUMBER

1652

DATE MAILED: 12/02/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/997,133	08/19/2020	Brian Michael Green	32471/M202647C	1676

TITLE OF INVENTION: METHODS FOR MAKING L-GLUFOSINATE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	03/02/2023

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

Notice of Allowability	Application No. 16/997,133	Applicant(s) Green et al.	
	Examiner GANAPATHIRAMA RAGHU	Art Unit 1652	AIA (FITF) Status Yes

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 09/27/2022.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ 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.

3. ☒ The allowed claim(s) is/are 24,27-29 and 32-45. As a result of the allowed claim(s), 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.

4. ☐ 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)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>09/01/2022</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☐ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
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/GANAPATHIRAMA RAGHU/ Primary Examiner, Art Unit 1652	11/10/2022
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AMENDMENTS TO THE CLAIMS

1.-23. (Cancelled)

24. (Currently amended) A method for making L-glufosinate, comprising:
reacting, in the presence of oxygen, D-glufosinate with a D-amino acid oxidase
(DAAO) enzyme to form PPO (2-oxo-4-(hydroxy(methyl)phosphinoyl)butyric acid); and
aminating the PPO to L-glufosinate by an L-amino acid dehydrogenase
(LAAD) enzyme in the presence of an ammonia source,
wherein at least 70% of the D-glufosinate is converted to L-glufosinate; and
wherein the method is performed ex vivo.

25. (Cancelled)

26. (Cancelled)

27. (Previously presented) The method according to claim 24, wherein
the D-glufosinate is originally present in a racemic mixture of D- and L- glufosinate or salts
thereof.

28. (Currently amended) The method according to claim 24, wherein the
DAAO enzyme has the amino acid sequence of SEQ ID NO: 2 ~~is selected from the enzyme~~
~~from *Rhodosporidium toruloides* (UniProt P80324), *Trigonopsis variabilis* (UniProt Q99042),~~
~~*Neolentinus lepideus* (GenBank KZT28066.1), *Trichoderma reesei* (GenBank XP~~
~~006968548.1), or *Trichosporon oleaginosus* (KLT40252.1).~~

29. (Currently amended) The method of claim 24, wherein the DAAO
enzyme is a mutant DAAO comprising one or more mutations at positions 54, 56, 58, 213,
and 238, using SEQ ID NO: 2 as a reference sequence.

30. (Cancelled)

31. (Cancelled)

32. (Currently amended) The method of claim ~~29~~31, wherein the mutation
at position 54 is selected from the group consisting of N54C, N54L, N54T, and N54V.

33. (Currently amended) The method of claim 2934, wherein the mutation at position 56 is T56M.

34. (Currently amended) The method of claim 2934, wherein the mutation at position 58 is selected from the group consisting of F58A, F58G, F58H, F58K, F58N, F58Q, F58R, F58S, and F58T.

35. (Currently amended) The method of claim 2934, wherein the mutation at position 213 is M213S.

36. (Previously presented) The method of claim 29, wherein the mutant DAAO comprises mutations at positions 54 and 56, using SEQ ID NO: 2 as a reference sequence.

37. (Previously presented) The method of claim 29, wherein the mutant DAAO comprises mutations F58Q or F58H, using SEQ ID NO: 2 as a reference sequence.

38. (Previously presented) The method of claim 29, wherein the mutant DAAO comprises mutations N54V and F58Q, using SEQ ID NO: 2 as a reference sequence.

39. (Previously presented) The method of claim 29, wherein the mutant DAAO comprises mutations N54V, F58Q, and M213S, using SEQ ID NO: 2 as a reference sequence.

40. (Previously presented) The method of claim 24, wherein the reacting step and the aminating step are performed in a single container.

41. (Previously presented) The method of claim 40, wherein all reagents are substantially added at the start of the reaction.

42. (Previously presented) The method of claim 40, wherein the reagents for the reacting step and the reagents for the aminating step are added to the single container at different times.

43. (Previously presented) The method of claim 24, wherein the reacting step and the aminating step are performed in separate containers.



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/997,133	08/19/2020	1616	935	098816-1200112	23	3

CONFIRMATION NO. 1676

FILING RECEIPT



0000000119398218

23342
KILPATRICK TOWNSEND & STOCKTON LLP
Mailstop: 22 - IP Docketing
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

Date Mailed: 09/02/2020

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

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Assignment For Published Patent Application

AgriMetis, LLC, Lutherville, MD

Power of Attorney: The patent practitioners associated with Customer Number 23342

Domestic Priority data as claimed by applicant

This application is a CON of 16/287,290 02/27/2019
which is a CON of 15/787,448 10/18/2017 PAT 10260078
which is a DIV of 15/445,254 02/28/2017 PAT 9834802
which claims benefit of 62/302,421 03/02/2016 ABN
and claims benefit of 62/336,989 05/16/2016 ABN
and claims benefit of 62/413,240 10/26/2016 ABN

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	098816-1200112
		Application Number	
Title of Invention	METHODS FOR MAKING L-GLUFOSINATE		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
	Continuation of	16287290	2019-02-27		
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16287290	Continuation of	15787448	2017-10-18	10260078	2019-04-16
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15787448	Division of	15445254	2017-02-28	9834802	2017-12-05
Prior Application Status	Abandoned	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
15445254	Claims benefit of provisional	62302421	2016-03-02		
Prior Application Status	Abandoned	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
15445254	Claims benefit of provisional	62336989	2016-05-16		
Prior Application Status	Abandoned	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
15445254	Claims benefit of provisional	62413240	2016-10-26		
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					

Foreign Priority Information: