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NOTICE OF ALLOWANCE AND FEE(S) DUE

23342 7590 05/21/2020
KILPATRICK TOWNSEND & STOCKTON LLP
Mailstop: 22 - IP Docketing
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

EXAMINER	
RAGHU, GANAPATHIRAM	
ART UNIT	PAPER NUMBER
1652	
DATE MAILED: 05/21/2020	

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/287,290	02/27/2019	Brian Michael Green	098816-1126127	6341

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	SMALL	\$500	\$0.00	\$0.00	\$500	08/21/2020

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 and an extra copy of the form should be submitted. 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. 16/287,290	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 05/08/2020.
☐ 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 1-3 and 28-42. 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>03/20/20, 04/27/20</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	05/13/2020
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Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Detailed Action

Applicants' response, arguments, amendments and a Terminal disclaimer filed on 05/08/2020 have been fully considered and are deemed to be persuasive to overcome the rejections previously applied; in said amendment, applicants' have cancelled claims 4-27 and added new claims 28-42. Thus, amended claims 1-3 and 28-42 are pending in this application for examination. Rejections and/or objections not reiterated from previous office action are hereby withdrawn.

The Terminal Disclaimer filed on 05/08/2020 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of allowed patent US 9,934,802 has been reviewed and accepted. The Terminal Disclaimer has been recorded.

Information disclosure statement

The information disclosure statements (IDS) submitted on 03/20/2020 and 04/27/2020 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the IDS has been considered and initialed by the examiner.

Allowable Subject Matter

Claims 1-3 and 28-42 are allowed.

The following is an examiner's statement of reasons for allowance: Following a diligent search it was determined that the prior art neither teaches nor suggests a method for making L-glufosinate, comprising: reacting D-glufosinate with a D-amino oxidase (DAAO) enzyme to form PPO (2-oxo-4-(hydroxyl(methyl)phosphinoyl)butyric acid) ... ; a

D-amino acid oxidase (DAAO) enzyme comprising the amino acid sequence set forth in SEQ ID NO: 2, wherein said enzyme comprises one or more mutations at positions 54, 56, 58, 213, and 238; wherein said mutation at position 54 is selected from the group consisting of N54C, N54L, N54T, and N54V; said mutation at position 56 is T56M; said mutation at position 58 is selected from the group consisting of F58A, F58G, F58H, F58K, F58N, F58Q, F58R, F58S, and F58T; and said mutation at position 213 is M213S ... , as claimed in allowed claims 1-3 and 28-42.

Any comments considered necessary by applicant must be submitted no later than the payment of issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GANAPATHIRAMA RAGHU whose telephone number is (571)272-4533. The examiner can normally be reached on M-F 8:30am-5pm EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Mondesi can be reached on 408-918-7584. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GANAPATHIRAMA RAGHU/
Primary Examiner, Art Unit 1652



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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
16/287,290	02/27/2019	1662	1215	098816-1126127	27	3

CONFIRMATION NO. 6341

FILING RECEIPT



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

Date Mailed: 03/13/2019

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections 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**

Inventor(s)

Brian Michael Green, Phoenix, MD;
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Applicant(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 15/787,448 10/18/2017
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.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

WHAT IS CLAIMED IS:

1. A method for making L-glufosinate, comprising:
reacting D-glufosinate with a D-amino acid oxidase (DAAO) enzyme to form PPO (2-oxo-4-(hydroxy(methyl)phosphinoyl)butyric acid);
aminating the PPO to L-glufosinate by a transaminase (TA) enzyme, using an amine group from one or more amine donors,
wherein at least 70% of the D-glufosinate is converted to L-glufosinate; and
subjecting the composition to further purification methods selected from ion exchange, extraction, salt formation, crystallization, and filtration.
2. The method of claim 1, wherein the one or more amine donors is selected from the group consisting of glutamate and L-glutamate.
3. The method of claim 1, wherein the D-glufosinate is originally present in a racemic mixture of D- and L-glufosinate or salts thereof.
4. A D-amino acid oxidase (DAAO) enzyme comprising one or more mutations at positions 54, 56, 58, 213, and 238 using SEQ ID NO: 2 as a reference sequence.
5. The DAAO enzyme of claim 4, wherein said mutation at position 54 is selected from the group consisting of N54C, N54L, N54T, and N54V.
6. The DAAO enzyme of claim 5, wherein said mutation at position 56 is T56M.
7. The DAAO enzyme of claim 4, wherein said mutation at position 58 is selected from the group consisting of F58A, F58G, F58H, F58K, F58N, F58Q, F58R, F58S, and F58T.
8. The DAAO enzyme of claim 4, wherein said mutation at position 213 is M213S.
9. The DAAO enzyme of claim 7, wherein said mutation at position 213 is M213S.
10. The DAAO enzyme of claim 4, wherein said enzyme comprises mutations F58K and M213S.
11. The DAAO enzyme of claim 4, wherein said enzyme comprises mutations at positions 54 and 56.
12. The DAAO enzyme of claim 4, wherein said enzyme comprises mutations N54T and T56M.

13. The DAAO enzyme of claim 4, wherein said enzyme comprises mutations F58Q or F58H.
14. The DAAO enzyme of claim 4, wherein said enzyme comprises mutations N54V and F58Q.
15. The DAAO enzyme of claim 4, wherein said enzyme comprises mutations N54V, F58Q, and M213S.
16. A D-amino acid oxidase (DAAO) enzyme comprising the amino acid sequence set forth in SEQ ID NO:2 wherein said enzyme comprises one or more mutations at positions 54, 56, 58, 213, and 238.
17. The DAAO enzyme of claim 16, wherein said mutation at position 54 is selected from the group consisting of N54C, N54L, N54T, and N54V.
18. The DAAO enzyme of claim 17, wherein said mutation at position 56 is T56M.
19. The DAAO enzyme of claim 16, wherein said mutation at position 58 is selected from the group consisting of F58A, F58G, F58H, F58K, F58N, F58Q, F58R, F58S, and F58T.
20. The DAAO enzyme of claim 16, wherein said mutation at position 213 is M213S.
21. The DAAO enzyme of claim 19, wherein said mutation at position 213 is M213S.
22. The DAAO enzyme of claim 16, wherein said enzyme comprises mutations F58K and M213S.
23. The DAAO enzyme of claim 16, wherein said enzyme comprises mutations at positions 54 and 56.
24. The DAAO enzyme of claim 16, wherein said enzyme comprises mutations N54T and T56M.
25. The DAAO enzyme of claim 16, wherein said enzyme comprises mutations F58Q or F58H.
26. The DAAO enzyme of claim 16, wherein said enzyme comprises mutations N54V and F58Q.

27. The DAAO enzyme of claim 16, wherein said enzyme comprises mutations N54V, F58Q, and M213S.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	098816-1126127
		Application Number	
Title of Invention	METHODS FOR MAKING L-GLUFOSINATE		

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.			
Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	23342		

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	15787448	2017-10-18		
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		

PGR2026-00026