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| APPLICATION NO.                | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--------------------------------|-------------|----------------------|---------------------|------------------|
| 18/179,136                     | 03/06/2023  | Brian Michael Green  | 32471/M202647F      | 4841             |
| 4743                           | 7590        | 01/24/2024           | EXAMINER            |                  |
| MARSHALL, GERSTEIN & BORUN LLP |             |                      | RAGHU, GANAPATHIRAM |                  |
| 233 SOUTH WACKER DRIVE         |             |                      | ART UNIT            | PAPER NUMBER     |
| 6300 WILLIS TOWER              |             |                      | 1652                |                  |
| CHICAGO, IL 60606-6357         |             |                      | NOTIFICATION DATE   | DELIVERY MODE    |
|                                |             |                      | 01/24/2024          | 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):

mgbdoCKET@marshallip.com

|                                                   |                                        |                                     |                                 |
|---------------------------------------------------|----------------------------------------|-------------------------------------|---------------------------------|
| <b>Corrected</b><br><b>Notice of Allowability</b> | <b>Application No.</b><br>18/179,136   | <b>Applicant(s)</b><br>Green et al. |                                 |
|                                                   | <b>Examiner</b><br>GANAPATHIRAMA RAGHU | <b>Art Unit</b><br>1652             | <b>AIA (FITF) Status</b><br>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 01/12/2024.  
☐ 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 1-19. 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](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto: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. <input type="checkbox"/> Notice of References Cited (PTO-892)<br>2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____<br>3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material _____<br>4. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date. _____ | 5. <input checked="" type="checkbox"/> Examiner's Amendment/Comment<br>6. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance<br>7. <input checked="" type="checkbox"/> Other <u>PTO-271</u> . |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                          |            |
|----------------------------------------------------------|------------|
| /GANAPATHIRAMA RAGHU/<br>Primary Examiner, Art Unit 1652 | 01/19/2024 |
|----------------------------------------------------------|------------|

***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' following a Notice of allowance dated 10/16/2023 have amended claims 17-18 and added a new claim 19; see claim amendments dated 01/12/2024. The amendments to claims submitted on 01/12/2024 is accepted, as amendments to claims do not change the scope of allowed claims. Please also see 271 response dated 01/19/2024 to 312 amendment enclosed with this communication. Thus, amended claims 1-19 are pending in this application for examination.

***Allowable Subject Matter***

Claims 1-19 (dated 01/12/2024) are allowed.

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<br>NUMBER | FILING or<br>371(c) DATE | GRP ART<br>UNIT | FIL FEE REC'D | ATTY. DOCKET NO | TOT CLAIMS | IND CLAIMS |
|-----------------------|--------------------------|-----------------|---------------|-----------------|------------|------------|
| 18/179,136            | 03/06/2023               |                 | 1820          | 32471/M202647F  | 18         | 1          |

CONFIRMATION NO. 4841

4743

MARSHALL, GERSTEIN & BORUN LLP  
233 SOUTH WACKER DRIVE  
6300 WILLIS TOWER  
CHICAGO, IL 60606-6357

## FILING RECEIPT



0000000054778676

Date Mailed: 03/14/2023

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)

Brian Michael Green, Lutherville, MD;  
Michelle Lorraine Gradley, Canterbury, UNITED KINGDOM;

### Applicant(s)

BASF SE, Ludwigshafen, GERMANY;

**Power of Attorney:** The patent practitioners associated with Customer Number 04743

### Domestic Priority data as claimed by applicant

This application is a CON of 17/530,018 11/18/2021  
which is a CON of 16/997,133 08/19/2020 PAT 11,560,577  
which is a CON of 16/287,290 02/27/2019 PAT 10,781,465  
which is a CON of 15/787,448 10/18/2017 PAT 10,260,078  
which is a DIV of 15/445,254 02/28/2017 PAT 9,834,802  
which claims benefit of 62/336,989 05/16/2016 ABN  
and claims benefit of 62/413,240 10/26/2016 ABN  
and claims benefit of 62/336,989 05/16/2016 ABN  
and claims benefit of 62/302,421 03/02/2016 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

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

**If Required, Foreign Filing License Granted:** 03/13/2023

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 18/179,136**

**Projected Publication Date:** To Be Determined - pending completion of Sequence Disclosures.

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

METHODS FOR MAKING L-GLUFOSINATE

**Preliminary Class**

**Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:** No

## **PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative,

this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

**LICENSE FOR FOREIGN FILING UNDER**  
**Title 35, United States Code, Section 184**  
**Title 37, Code of Federal Regulations, 5.11 & 5.15**

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

**NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

**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);  
 5                   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 to obtain a  
 composition comprising L-glufosinate, PPO, and D-glufosinate; and  
                   subjecting the composition to a purification method selected from ion exchange,  
 10   extraction, salt formation, crystallization, filtration, and combinations thereof.
2. The method according to claim 1, wherein the D-glufosinate is originally  
 present in a racemic mixture of D- and L- glufosinate or salts thereof.
3. The method according to claim 1, wherein the DAAO enzyme has the  
 amino acid sequence of SEQ ID NO: 2.
- 15                   4. The method of claim 1, 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.
5. The method of claim 4, wherein the mutation at position 54 is selected  
 from the group consisting of N54C, N54L, N54T, and N54V.
- 20                   6. The method of claim 4, wherein the mutation at position 56 is T56M.
7. The method of claim 4, wherein the mutation at position 58 is selected  
 from the group consisting of F58A, F58G, F58H, F58K, F58N, F58Q, F58R, F58S, and F58T.
8. The method of claim 4, wherein the mutation at position 213 is M213S.
9. The method of claim 4, wherein the mutant DAAO comprises mutations at  
 25   positions 54 and 56, using SEQ ID NO: 2 as a reference sequence.

10. The method of claim 4, wherein the mutant DAAO comprises mutations F58Q or F58H, using SEQ ID NO: 2 as a reference sequence.

11. The method of claim 4, wherein the mutant DAAO comprises mutations N54V and F58Q, using SEQ ID NO: 2 as a reference sequence.

5 12. The method of claim 4, wherein the mutant DAAO comprises mutations N54V, F58Q, and M213S, using SEQ ID NO: 2 as a reference sequence.

13. The method of claim 1, wherein the reacting step and the aminating step are performed in a single container.

10 14. The method of claim 13, wherein all reagents are substantially added at the start of the reaction.

15. The method of claim 13, wherein the reagents for the reacting step and the reagents for the aminating step are added to the single container at different times.

16. The method of claim 1, wherein the reacting step and the aminating step are performed in separate containers.

15 17. The method of claim 1, wherein the aerating comprises introducing oxygen, oxygen enriched air, an oxygen enriched gas stream, or air.

18. The method of claim 1, wherein the aerating is conducted intermittently or continuously.

## **Application Data Sheet**

### **Inventor Information**

|                                         |                  |
|-----------------------------------------|------------------|
| Inventor Number::                       | 1                |
| Given Name::                            | Brian            |
| Middle Name::                           | Michael          |
| Family Name::                           | Green            |
| City of Residence::                     | Lutherville      |
| State or Province of Residence::        | MD               |
| Country of Residence::                  | US               |
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| State or Province of mailing address::  | MD               |
| Country of mailing address::            | US               |
| Postal or Zip Code of mailing address:: | 21093            |
| Inventor Number::                       | 2                |
| Given Name::                            | Michelle         |
| Middle Name::                           | Lorraine         |
| Family Name::                           | Gradley          |
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| Country of mailing address::            | United Kingdom |
| Postal or Zip Code of mailing address:: | CT1 3LU        |

### **Correspondence Information**

|                                  |       |
|----------------------------------|-------|
| Correspondence Customer Number:: | 04743 |
|----------------------------------|-------|

### **Application Information**

|                                                                                                                                              |                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Application Type::                                                                                                                           | Nonprovisional                       |
| Subject Matter::                                                                                                                             | Utility                              |
| CD-ROM or CD-R?::                                                                                                                            | None                                 |
| Sequence submission?::                                                                                                                       | Yes                                  |
| Computer Readable Form (CRF)?::                                                                                                              | Yes                                  |
| Title::                                                                                                                                      | METHODS FOR MAKING L-<br>GLUFOSINATE |
| Attorney Docket Number::                                                                                                                     | 32471/M202647F                       |
| Request for Early Publication?::                                                                                                             | No                                   |
| Request for Non-Publication?::                                                                                                               | No                                   |
| Total Drawing Sheets::                                                                                                                       | 2                                    |
| Small Entity?::                                                                                                                              | No                                   |
| Petition included?::                                                                                                                         | No                                   |
| Portions or all of the application associated with this<br>Application Data Sheet may fall under a Secrecy<br>Order pursuant to 37 CFR 5.2:: | No                                   |

## Representative Information

Representative Customer Number:: 04743

## Domestic Priority Information

| Application::    | Continuity Type::             | Parent Application:: | Parent Filing Date:: | Prior Appl Status:: | Parent Patent:: | Parent Issue Date:: |
|------------------|-------------------------------|----------------------|----------------------|---------------------|-----------------|---------------------|
| This Application | Continuation of               | 17/530,018           | 11/18/21             | Pending             |                 |                     |
| 17/530,018       | Continuation of               | 16/997,133           | 08/19/20             | Patented            | 11,560,577      | 01/24/23            |
| 16/997,133       | Continuation of               | 16/287,290           | 02/27/19             | Patented            | 10,781,465      | 09/22/20            |
| 16/287,290       | Continuation of               | 15/787,448           | 10/18/17             | Patented            | 10,260,078      | 04/16/19            |
| 15/787,448       | Division of                   | 15/445,254           | 02/28/17             | Patented            | 9,834,802       | 12/05/17            |
| 15/445,254       | Claims benefit of provisional | 62/413,240           | 10/26/16             | Expired             |                 |                     |
| 15/445,254       | Claims benefit of provisional | 62/336,989           | 05/16/16             | Expired             |                 |                     |
| 15/445,254       | Claims benefit of provisional | 62/302,421           | 03/02/16             | Expired             |                 |                     |

## Foreign Priority Information

## Applicant Information

Applicant Number:: 1

Applicant Type:: Assignee