

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT2885386

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
PHILIP N. BENFEY PH.D	02/13/2008
RICHARD WETHERELL TWIGG III	02/12/2008
ROBERT L. CLARK, JR. PH.D	12/20/2007
SCOTT J. KENNEDY	12/10/2007
GREGORY FRICKE	12/10/2007
RECEIVING PARTY DATA	
Name:	GRASSROOTS BIOTECHNOLOGY, INC.
Street Address:	307 HILLSBOROUGH STREET
City:	CHAPEL HILL
State/Country:	NORTH CAROLINA
Postal Code:	27514
PROPERTY NUMBERS Total: 1	
Property Type	Number
Patent Number:	8312673
CORRESPONDENCE DATA	
Fax Number:	(314)726-7501
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
Phone:	314-726-7500
Email:	BGPefile@hdp.com
Correspondent Name:	HARNES, DICKEY & PIERCE, P.L.C.
Address Line 1:	7700 BONHOMME AVENUE
Address Line 2:	SUITE 400
Address Line 4:	ST. LOUIS, MISSOURI 63105
ATTORNEY DOCKET NUMBER:	5089-000073-US-DVB
NAME OF SUBMITTER:	BRIAN G. PANKA
SIGNATURE:	/BRIAN G. PANKA/
DATE SIGNED:	06/05/2014
Total Attachments: 31	
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PATENT ASSIGNMENT AGREEMENT

THIS AGREEMENT dated as of February 13, 2008 (“Effective Date”), by and between Philip N. Benfey, Ph.D., residing at 307 Hillsborough Rd., Chapel Hill, NC 27514, (hereinafter referred to as “Assignor”) and GrassRoots Biotechnology, Inc., a Delaware corporation, with its principal offices at 307 Hillsborough Street, Chapel Hill, North Carolina 27514 (hereinafter referred to as “Assignee”).

STATEMENT OF PURPOSE

Assignor is one of the inventors of a discovery entitled, “A Rootarray for testing responses to stimuli at high temporal and spatial resolution” and identified as Duke University File #2680 (the “Invention”).

Duke University has released to Assignor and other inventors Duke University’s rights to the Invention pursuant to an Invention Assignment Agreement dated on or about the Effective Date (the “Assignment Agreement”).

Assignor owns a majority of the outstanding capital stock of Assignee and desires to enable Assignee to exploit the Invention.

Assignee desires to develop and commercialize the Invention and Assignor is willing to assign his entire interest in the Invention to Assignee pursuant to the terms of this Agreement.

NOW, THEREFORE, in consideration of the premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Definitions. For purposes of this Agreement, the following terms shall have the following definitions:

(a) “PTO” shall mean the United States Patent and Trademark Office.

(b) “Patents” shall mean the patents and patent applications listed on **Exhibit A**. In addition, “Patents” shall also mean the following related to those patent applications set forth on **Exhibit A**:

- (i) all letters patent of the United States or any other country and all applications for letters patent of the United States or any other country;
- (ii) all re-issues, continuations, divisions, continuations-in-part, renewals, or extensions thereof;

- (iii) the inventions disclosed or claimed in the patent applications, including the right to make, use, practice and/or sell (or license or otherwise transfer or dispose of) the inventions disclosed or claimed therein;
- (iv) the right (but not the obligation) to make and prosecute applications; and
- (v) all additions, improvements, and accessions to, all substitutions for and replacements of, and all products and proceeds (including insurance proceeds) of any and all of the foregoing, and all books and records and technical information and data describing or used in connection with any and all such rights, interests, assets or property.

(c) "**Patent Rights**" shall mean any and all past present or future rights in, to and associated with the Patents throughout the world, whether arising under federal law, state law, common law, foreign law, or otherwise, including but not limited to the following: all such rights arising out of or associated with the Patents; the right (but not the obligation) to register claims under any federal, state or foreign patent law or regulation; the right (but not the obligation) to sue or bring opposition or bring cancellation proceedings in the name of the Assignors or Assignee for any and all past, present and future infringements of or any other damages or injury to the Patents or the Patent Rights, and the rights to damages or profits due or accrued arising out of or in connection with any such past, present or future infringement, damage or injury.

2. Assignment. Assignor hereby grants, assigns, transfers, and conveys to Assignee Assignor's entire right, title, and interest in and to the Patents and Patent Rights.

3. Consideration.

4. Representations, Warranties, and Covenants of Assignor. Assignor represents and warrants to, and covenants and agrees with, Assignee as follows:

(a) Schedules of Patents, Licenses, and Assignments. To Assignor's knowledge, **Exhibit A** is a true and complete list of all Patent Rights related to the Invention. Except for the Assignment Agreement, Assignor is not a party to any and, to Assignor's knowledge, there are no licenses or other agreements pursuant to which any persons, have the right to use or have any right, title, or interest in any of the Patent Rights.

(b) Title. Assignor has not created any lien, security interest or other encumbrance on the Patent Rights.

(c) Validity and Enforceability. Assignor has not received written notice of any claim by any third party that any of the Patent Rights are invalid or unenforceable.

(d) Exclusive Right to Use. Assignor acknowledges that upon execution of this Agreement, he shall have no future rights in or to the Patent Rights.

(e) No Infringements. To the best of Assignor's knowledge and belief, there is at present no infringement or unauthorized or improper use of the Patents or related Patent Rights. In the event any such infringement or unauthorized or improper use by any third party comes to the attention of the Assignor, Assignor shall promptly notify Assignee.

5. Cooperation. Assignor agrees to cooperate with Assignee such that Assignee may enjoy to the fullest extent the Patents and Patent Rights conveyed in this Agreement. Such cooperation includes the execution and filing by the parties of Assignments of Application with the PTO. Such cooperation includes the prompt execution by the Assignor of all papers that are deemed necessary or desirable by Assignee to perfect the right, title, and interest conveyed in this Agreement. Such cooperation also includes prompt assistance and cooperation by Assignee in the prosecution of legal proceedings involving the Patents.

6. Severability. If any of the provisions of this Agreement are determined to be invalid or unenforceable in part, the remaining provisions, and the enforceable portions of any partially unenforceable provisions, will nevertheless be binding and enforceable.

7. Notices. Any notice required or permitted to be given under this Agreement will be sufficient if in writing, and if sent by registered or certified mail, postage prepaid, to the following:

If to Assignor:

Philip N. Benfey, Ph.D.
307 Hillsborough Road
Chapel Hill, NC 27514

If to Assignee:

GrassRoots Biotechnology, Inc.
307 Hillsborough St.
Chapel Hill, North Carolina 27514

8. Waiver. The waiver by Assignee of a breach by the Assignor of any provisions of this Agreement will not operate and be construed as a waiver of any subsequent breach by the Assignor.

9. Binding Effect. This Agreement will be binding upon and will inure to the benefit of the parties, their respective heirs, representatives, successors, and assigns.

10. Entire Agreement. This Agreement and all exhibits and attachments will be deemed to express, embody and supersede all previous understandings, agreements, and commitments, whether written or oral, between the parties with respect to the subject matter hereof and to fully and finally set forth the entire agreement between the parties. All exhibits referenced herein are hereby incorporated by reference.

11. Governing Law. This Agreement will be governed by the substantive laws of the State of North Carolina, without regard to its principles governing conflict of laws.

12. Gender. All references to gender will be interchangeable with the masculine, feminine, and neuter, as applicable.

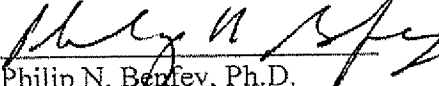
13. Headings. The headings in this Agreement are included for convenience of reference, and in the event of any conflict between such headings and the text of this Agreement, the text will control.

14. Modification. This agreement supersedes all prior agreements between the parties and constitutes the entire agreement between the parties on the subjects herein. The provisions of this Agreement may not be amended, deleted, or modified unless in a writing signed by all parties hereto.

15. Jurisdiction; Venue. Any suit, action or proceeding or any judgment entered by any court in respect thereof, will be brought in North Carolina, and the parties hereby submit to the jurisdiction of such courts for the purpose of any such suit, action, or proceeding. The parties hereby irrevocably consent to the service of process in any suit, action or proceeding in said courts by the mailing thereof by registered or certified mail, postage prepaid, to the parties' respective addresses pursuant to Section 7 of this Agreement. Each party hereby irrevocably waives any objections which it may now or hereafter have to the laying of venue of any suit, action or proceeding arising out of or relating to this Agreement if brought in North Carolina, and hereby further irrevocably waives any claim that any such suit, action or proceeding brought in any such court has been brought in an inconvenient forum.

IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed by its duly authorized officer effective as of the date first written above.

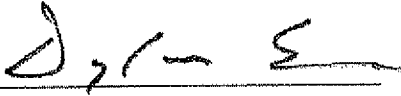
ASSIGNOR:


Philip N. Berney, Ph.D.

Date: 2/13/08

ASSIGNEE:

GRASSROOTS BIOTECHNOLOGY, INC.

By: 

Name: Douglas Eisner

Title: COO

Date: 2/13/08

EXHIBIT A

Patent Application Name	Application No.	Inventors	Filing Date
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	U.S. Utility Application: 11/942,185	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	PCT Application Application No.: To be assigned	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007

PATENT ASSIGNMENT AGREEMENT

THIS AGREEMENT dated as of February 12, 2008 ("Effective Date"), by and between Richard Wetherell Twigg III, residing at 2315 Huron Street, Durham, NC, 27707, (hereinafter referred to as "Assignor") and GrassRoots Biotechnology, Inc., a Delaware corporation, with its principal offices at 307 Hillsborough Street, Chapel Hill, North Carolina 27514 (hereinafter referred to as "Assignee").

STATEMENT OF PURPOSE

Assignor is one of the inventors of a discovery entitled, "A Rootarray for testing responses to stimuli at high temporal and spatial resolution" and identified as Duke University File #2680 (the "Invention").

Duke University has released to Assignor and other inventors Duke University's rights to the Invention pursuant to an Invention Assignment Agreement ("Duke Assignment Agreement"), dated on or about December 10, 2007.

Assignee desires to develop and commercialize the Invention and Assignor is willing to assign his entire interest in the Invention to Assignee pursuant to the terms of this Agreement.

NOW, THEREFORE, in consideration of the premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Definitions. For purposes of this Agreement, the following terms shall have the following definitions:

(a) "PTO" shall mean the United States Patent and Trademark Office.

(b) "Patents" shall mean the patents and patent applications listed on Exhibit

A. In addition, "Patents" shall also mean the following related to those patent applications set forth on Exhibit A:

- (i) all letters patent of the United States or any other country and all applications for letters patent of the United States or any other country;
- (ii) all re-issues, continuations, divisions, continuations-in-part, renewals, or extensions thereof;
- (iii) the inventions disclosed or claimed in the patent applications, including the right to make, use, practice and/or sell (or license or otherwise transfer or dispose of) the inventions disclosed or claimed therein;

- (iv) the right (but not the obligation) to make and prosecute applications; and
- (v) all additions, improvements, and accessions to, all substitutions for and replacements of, and all products and proceeds (including insurance proceeds) of any and all of the foregoing, and all books and records and technical information and data describing or used in connection with any and all such rights, interests, assets or property.

(c) **“Patent Rights”** shall mean any and all past present or future rights in, to and associated with the Patents throughout the world, whether arising under federal law, state law, common law, foreign law, or otherwise, including but not limited to the following: all such rights arising out of or associated with the Patents; the right (but not the obligation) to register claims under any federal, state or foreign patent law or regulation; the right (but not the obligation) to sue or bring opposition or bring cancellation proceedings in the name of the Assignors or Assignee for any and all past, present and future infringements of or any other damages or injury to the Patents or the Patent Rights, and the rights to damages or profits due or accrued arising out of or in connection with any such past, present or future infringement, damage or injury.

2. Assignment. Assignor hereby grants, assigns, transfers, and conveys to Assignee Assignor’s entire right, title, and interest in and to the Patents and Patent Rights (**“Assignment”**).

3. Consideration.

4. Representations, Warranties, and Covenants of Assignor. Assignor represents and warrants to, and covenants and agrees with, Assignee as follows:

(a) Schedules of Patents, Licenses, and Assignments. To Assignor's knowledge, **Exhibit A** is a true and complete list of all Patent Rights related to the Invention. Except for the Assignment Agreement, Assignor is not a party to any and, to Assignor's knowledge, there are no licenses or other agreements pursuant to which any persons, have the right to use or have any right, title, or interest in any of the Patent Rights.

(b) Title. Assignor has not created any lien, security interest or other encumbrance on the Patent Rights.

(c) Validity and Enforceability. Assignor has not received written notice of any claim by any third party that any of the Patent Rights are invalid or unenforceable.

(d) Exclusive Right to Use. Assignor acknowledges that upon execution of this Agreement, he shall have no future rights in or to the Patent Rights.

(e) No Infringements. To the best of Assignor's knowledge and belief, there is at present no infringement or unauthorized or improper use of the Patents or related Patent Rights. In the event any such infringement or unauthorized or improper use by any third party comes to the attention of the Assignor, Assignor shall promptly notify Assignee.

5. Cooperation. Assignor agrees to cooperate with Assignee such that Assignee may enjoy to the fullest extent the Patents and Patent Rights conveyed in this Agreement. Such cooperation includes the execution and filing by the parties of Assignments of Application with the PTO. Such cooperation includes the prompt execution by the Assignor of all papers that are deemed necessary or desirable by Assignee to perfect the right, title, and interest conveyed in this Agreement. Such cooperation also includes prompt assistance and cooperation by Assignee in the prosecution of legal proceedings involving the Patents.

6. Severability. If any of the provisions of this Agreement are determined to be invalid or unenforceable in part, the remaining provisions, and the enforceable portions of any partially unenforceable provisions, will nevertheless be binding and enforceable.

7. Notices. Any notice required or permitted to be given under this Agreement will be sufficient if in writing, and if sent by registered or certified mail, postage prepaid, to the following:

If to Assignor:

Richard Wetherell Twigg III
2315 Huron Street
Durham, NC, 27707

If to Assignee:

GrassRoots Biotechnology, Inc.
307 Hillsborough St.
Chapel Hill, North Carolina 27514

8. Waiver. The waiver by Assignee of a breach by the Assignor of any provisions of this Agreement will not operate and be construed as a waiver of any subsequent breach by the Assignor.

9. Binding Effect. This Agreement will be binding upon and will inure to the benefit of the parties, their respective heirs, representatives, successors, and assigns.

10. Entire Agreement. This Agreement and all exhibits and attachments will be deemed to express, embody and supersede all previous understandings, agreements, and commitments, whether written or oral, between the parties with respect to the subject matter hereof and to fully and finally set forth the entire agreement between the parties. All exhibits referenced herein are hereby incorporated by reference.

11. Governing Law. This Agreement will be governed by the substantive laws of the State of North Carolina, without regard to its principles governing conflict of laws.

12. Gender. All references to gender will be interchangeable with the masculine, feminine, and neuter, as applicable.

13. Headings. The headings in this Agreement are included for convenience of reference, and in the event of any conflict between such headings and the text of this Agreement, the text will control.

14. Modification. This agreement supersedes all prior agreements between the parties and constitutes the entire agreement between the parties on the subjects herein. The provisions of this Agreement may not be amended, deleted, or modified unless in a writing signed by all parties hereto.

15. Jurisdiction; Venue. Any suit, action or proceeding or any judgment entered by any court in respect thereof, will be brought in North Carolina, and the parties hereby submit to the jurisdiction of such courts for the purpose of any such suit, action, or proceeding. The parties hereby irrevocably consent to the service of process in any suit, action or proceeding in said courts by the mailing thereof by registered or certified mail, postage prepaid, to the parties' respective addresses pursuant to Section 7 of this Agreement. Each party hereby irrevocably waives any objections which it may now or hereafter have to the laying of venue of any suit,

action or proceeding arising out of or relating to this Agreement if brought in North Carolina, and hereby further irrevocably waives any claim that any such suit, action or proceeding brought in any such court has been brought in an inconvenient forum.

IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed by its duly authorized officer effective as of the date first written above.

ASSIGNOR:

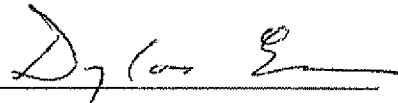


Richard Wetherell Twigg III

Date: 02/12/08 RWT

ASSIGNEE:

GRASSROOTS BIOTECHNOLOGY, INC.

By: 

Name: Douglas Eisner

Title: COO

Date: 2/12/08

EXHIBIT A

Patent Application Name	Application No.	Inventors	Filing Date
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	U.S. Utility Application: 11/942,185	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	PCT Application Application No.: To be assigned	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007

PATENT ASSIGNMENT AGREEMENT

THIS AGREEMENT dated as of December 20, 2007 ("**Effective Date**"), by and between Robert L. Clark, Jr., Ph.D., residing at 104 Commons Way, Chapel Hill, NC 27516, (hereinafter referred to as "**Assignor**") and GrassRoots Biotechnology, Inc., a Delaware corporation, with its principal offices at 307 Hillsborough Street, Chapel Hill, North Carolina 27514 (hereinafter referred to as "**Assignee**").

STATEMENT OF PURPOSE

Assignor is one of the inventors of a discovery entitled, "A Rootarray for testing responses to stimuli at high temporal and spatial resolution" and identified as Duke University File #2680 (the "**Invention**").

Duke University has released to Assignor and other inventors Duke University's rights to the Invention pursuant to an Invention Assignment Agreement dated December 20, 2007 on or about the Effective Date (the "**Assignment Agreement**").

Assignee desires to develop and commercialize the Invention and Assignor is willing to assign his entire interest in the Invention to Assignee pursuant to the terms of this Agreement.

NOW, THEREFORE, in consideration of the premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Definitions. For purposes of this Agreement, the following terms shall have the following definitions:

(a) "**PTO**" shall mean the United States Patent and Trademark Office.

(b) "**Patents**" shall mean the patents and patent applications listed on **Exhibit**

A. In addition, "**Patents**" shall also mean the following related to those patent applications set forth on **Exhibit A**:

- (i) all letters patent of the United States or any other country and all applications for letters patent of the United States or any other country;
- (ii) all re-issues, continuations, divisions, continuations-in-part, renewals, or extensions thereof;
- (iii) the inventions disclosed or claimed in the patent applications, including the right to make, use, practice and/or sell (or license or otherwise transfer or dispose of) the inventions disclosed or claimed therein;

- (iv) the right (but not the obligation) to make and prosecute applications; and
- (v) all additions, improvements, and accessions to, all substitutions for and replacements of, and all products and proceeds (including insurance proceeds) of any and all of the foregoing, and all books and records and technical information and data describing or used in connection with any and all such rights, interests, assets or property.

(c) **"Patent Rights"** shall mean any and all past present or future rights in, to and associated with the Patents throughout the world, whether arising under federal law, state law, common law, foreign law, or otherwise, including but not limited to the following: all such rights arising out of or associated with the Patents; the right (but not the obligation) to register claims under any federal, state or foreign patent law or regulation; the right (but not the obligation) to sue or bring opposition or bring cancellation proceedings in the name of the Assignors or Assignee for any and all past, present and future infringements of or any other damages or injury to the Patents or the Patent Rights, and the rights to damages or profits due or accrued arising out of or in connection with any such past, present or future infringement, damage or injury.

2. Assignment. Assignor hereby grants, assigns, transfers, and conveys to Assignee Assignor's entire right, title, and interest in and to the Patents and Patent Rights ("**Assignment**").

3. Consideration.

4. Representations, Warranties, and Covenants of Assignor. Assignor represents and warrants to, and covenants and agrees with, Assignee as follows:

(a) Schedules of Patents, Licenses, and Assignments. To Assignor's knowledge, **Exhibit A** is a true and complete list of all Patent Rights related to the Invention. Except for the Assignment Agreement, Assignor is not a party to any and, to Assignor's

knowledge, there are no licenses or other agreements pursuant to which any persons, have the right to use or have any right, title, or interest in any of the Patent Rights.

(b) Title. Assignor has not created any lien, security interest or other encumbrance on the Patent Rights.

(c) Validity and Enforceability. Assignor has not received written notice of any claim by any third party that any of the Patent Rights are invalid or unenforceable.

(d) Exclusive Right to Use. Assignor acknowledges that upon execution of this Agreement, he shall have no future rights in or to the Patent Rights.

(e) No Infringements. To the best of Assignor's knowledge and belief, there is at present no infringement or unauthorized or improper use of the Patents or related Patent Rights. In the event any such infringement or unauthorized or improper use by any third party comes to the attention of the Assignor, Assignor shall promptly notify Assignee.

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7. Notices. Any notice required or permitted to be given under this Agreement will be sufficient if in writing, and if sent by registered or certified mail, postage prepaid, to the following:

If to Assignor:

Robert L. Clark, Jr., Ph.D.
104 Commons Way
Chapel Hill, NC 27516

If to Assignee:

GrassRoots Biotechnology, Inc.
307 Hillsborough St.
Chapel Hill, North Carolina 27514

8. Waiver. The waiver by Assignee of a breach by the Assignor of any provisions of this Agreement will not operate and be construed as a waiver of any subsequent breach by the Assignor.

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IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed by its duly authorized officer effective as of the date first written above.

ASSIGNOR:

Robert L. Clark, Jr.
Robert L. Clark, Jr., Ph.D.

Date: 12/20/07

ASSIGNEE:

GRASSROOTS BIOTECHNOLOGY, INC.

By: Douglas Eisner

Name: Douglas Eisner

Title: CSO

Date: 12/30/07

EXHIBIT A

Patent Application Name	Application No.	Inventors	Filing Date
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	U.S. Utility Application: 11/942,185	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	PCT Application Application No.: To be assigned	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007

PATENT ASSIGNMENT AGREEMENT

THIS AGREEMENT dated as of December 10, 2007 ("Effective Date"), by and between Scott J. Kennedy, residing at 2402 Vestavia Dr., Durham, NC 27704, (hereinafter referred to as "Assignor") and GrassRoots Biotechnology, Inc., a Delaware corporation, with its principal offices at 307 Hillsborough Street, Chapel Hill, North Carolina 27514 (hereinafter referred to as "Assignee").

STATEMENT OF PURPOSE

Assignor is one of the inventors of a discovery entitled, "A Rootarray for testing responses to stimuli at high temporal and spatial resolution" and identified as Duke University File #2680 (the "Invention").

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(b) "Patents" shall mean the patents and patent applications listed on **Exhibit**

A. In addition, "Patents" shall also mean the following related to those patent applications set forth on **Exhibit A**:

- (i) all letters patent of the United States or any other country and all applications for letters patent of the United States or any other country;
- (ii) all re-issues, continuations, divisions, continuations-in-part, renewals, or extensions thereof;
- (iii) the inventions disclosed or claimed in the patent applications, including the right to make, use, practice and/or sell (or license or otherwise transfer or dispose of) the inventions disclosed or claimed therein;

- (iv) the right (but not the obligation) to make and prosecute applications; and
- (v) all additions, improvements, and accessions to, all substitutions for and replacements of, and all products and proceeds (including insurance proceeds) of any and all of the foregoing, and all books and records and technical information and data describing or used in connection with any and all such rights, interests, assets or property.

(c) **“Patent Rights”** shall mean any and all past present or future rights in, to and associated with the Patents throughout the world, whether arising under federal law, state law, common law, foreign law, or otherwise, including but not limited to the following: all such rights arising out of or associated with the Patents; the right (but not the obligation) to register claims under any federal, state or foreign patent law or regulation; the right (but not the obligation) to sue or bring opposition or bring cancellation proceedings in the name of the Assignors or Assignee for any and all past, present and future infringements of or any other damages or injury to the Patents or the Patent Rights, and the rights to damages or profits due or accrued arising out of or in connection with any such past, present or future infringement, damage or injury.

2. Assignment. Assignor hereby grants, assigns, transfers, and conveys to Assignee Assignor’s entire right, title, and interest in and to the Patents and Patent Rights (**“Assignment”**).

3. Consideration.

4. Representations, Warranties, and Covenants of Assignor. Assignor represents and warrants to, and covenants and agrees with, Assignee as follows:

(a) Schedules of Patents, Licenses, and Assignments. To Assignor’s knowledge, **Exhibit A** is a true and complete list of all Patent Rights related to the Invention. Except for the Assignment Agreement, Assignor is not a party to any and, to Assignor’s

knowledge, there are no licenses or other agreements pursuant to which any persons, have the right to use or have any right, title, or interest in any of the Patent Rights.

(b) Title. Assignor has not created any lien, security interest or other encumbrance on the Patent Rights.

(c) Validity and Enforceability. Assignor has not received written notice of any claim by any third party that any of the Patent Rights are invalid or unenforceable.

(d) Exclusive Right to Use. Assignor acknowledges that upon execution of this Agreement, he shall have no future rights in or to the Patent Rights.

(e) No Infringements. To the best of Assignor's knowledge and belief, there is at present no infringement or unauthorized or improper use of the Patents or related Patent Rights. In the event any such infringement or unauthorized or improper use by any third party comes to the attention of the Assignor, Assignor shall promptly notify Assignee.

5. Cooperation. Assignor agrees to cooperate with Assignee such that Assignee may enjoy to the fullest extent the Patents and Patent Rights conveyed in this Agreement. Such cooperation includes the execution and filing by the parties of Assignments of Application with the PTO. Such cooperation includes the prompt execution by the Assignor of all papers that are deemed necessary or desirable by Assignee to perfect the right, title, and interest conveyed in this Agreement. [Such cooperation also includes prompt assistance and cooperation by Assignee in the prosecution of legal proceedings involving the Patents.

6. Severability. If any of the provisions of this Agreement are determined to be invalid or unenforceable in part, the remaining provisions, and the enforceable portions of any partially unenforceable provisions, will nevertheless be binding and enforceable.

7. Notices. Any notice required or permitted to be given under this Agreement will be sufficient if in writing, and if sent by registered or certified mail, postage prepaid, to the following:

If to Assignor:

Scott J. Kennedy
2402 Vestavia Dr.
Durham, NC 27704

If to Assignee:

GrassRoots Biotechnology, Inc.
307 Hillsborough St.
Chapel Hill, North Carolina 27514

8. Waiver. The waiver by Assignee of a breach by the Assignor of any provisions of this Agreement will not operate and be construed as a waiver of any subsequent breach by the Assignor.

9. Binding Effect. This Agreement will be binding upon and will inure to the benefit of the parties, their respective heirs, representatives, successors, and assigns.

10. Entire Agreement. This Agreement and all exhibits and attachments will be deemed to express, embody and supersede all previous understandings, agreements, and commitments, whether written or oral, between the parties with respect to the subject matter hereof and to fully and finally set forth the entire agreement between the parties. All exhibits referenced herein are hereby incorporated by reference.

11. Governing Law. This Agreement will be governed by the substantive laws of the State of North Carolina, without regard to its principles governing conflict of laws.

12. Gender. All references to gender will be interchangeable with the masculine, feminine, and neuter, as applicable.

13. Headings. The headings in this Agreement are included for convenience of reference, and in the event of any conflict between such headings and the text of this Agreement, the text will control.

14. Modification. This agreement supersedes all prior agreements between the parties and constitutes the entire agreement between the parties on the subjects herein. The provisions of this Agreement may not be amended, deleted, or modified unless in a writing signed by all parties hereto.

15. Jurisdiction: Venue. Any suit, action or proceeding or any judgment entered by any court in respect thereof, will be brought in North Carolina, and the parties hereby submit to the jurisdiction of such courts for the purpose of any such suit, action, or proceeding. The parties hereby irrevocably consent to the service of process in any suit, action or proceeding in said courts by the mailing thereof by registered or certified mail, postage prepaid, to the parties' respective addresses pursuant to Section 7 of this Agreement. Each party hereby irrevocably waives any objections which it may now or hereafter have to the laying of venue of any suit, action or proceeding arising out of or relating to this Agreement if brought in North Carolina, and hereby further irrevocably waives any claim that any such suit, action or proceeding brought in any such court has been brought in an inconvenient forum.

IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed by its duly authorized officer effective as of the date first written above.

ASSIGNOR:

Scott J. Kennedy
Scott J. Kennedy

Date: 12/10/2007

ASSIGNEE:

GRASSROOTS BIOTECHNOLOGY, INC.

By: Philip N. Bentley

Name: Philip N. Bentley

Title: President

Date: 12/10/07

EXHIBIT A

Patent Application Name	Application No.	Inventors	Filing Date
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	U.S. Utility Application: 11/942,185	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	PCT Application Application No.: To be assigned	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007

PATENT ASSIGNMENT AGREEMENT

THIS AGREEMENT dated as of December 10th, 2007 ("Effective Date"), by and between Gregory Fricke, residing at 217 W. Rockway St., Durham, NC 27704, (hereinafter referred to as "Assignor") and GrassRoots Biotechnology, Inc., a Delaware corporation, with its principal offices at 307 Hillsborough Street, Chapel Hill, North Carolina 27514 (hereinafter referred to as "Assignee").

STATEMENT OF PURPOSE

Assignor is one of the inventors of a discovery entitled, "A Rootarray for testing responses to stimuli at high temporal and spatial resolution" and identified as Duke University File #2680 (the "Invention").

Duke University has released to Assignor and other inventors Duke University's rights to the Invention pursuant to an Invention Assignment Agreement dated December 10th, 2007 on or about the Effective Date (the "Assignment Agreement").

Assignee desires to develop and commercialize the Invention and Assignor is willing to assign his entire interest in the Invention to Assignee pursuant to the terms of this Agreement.

NOW, THEREFORE, in consideration of the premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Definitions. For purposes of this Agreement, the following terms shall have the following definitions:

(a) "PTO" shall mean the United States Patent and Trademark Office.

(b) "Patents" shall mean the patents and patent applications listed on **Exhibit A**. In addition, "Patents" shall also mean the following related to those patent applications set forth on **Exhibit A**:

- (i) all letters patent of the United States or any other country and all applications for letters patent of the United States or any other country;
- (ii) all re-issues, continuations, divisions, continuations-in-part, renewals, or extensions thereof;
- (iii) the inventions disclosed or claimed in the patent applications, including the right to make, use, practice and/or sell (or license or otherwise transfer or dispose of) the inventions disclosed or claimed therein;

- (iv) the right (but not the obligation) to make and prosecute applications;
and
- (v) all additions, improvements, and accessions to, all substitutions for and replacements of, and all products and proceeds (including insurance proceeds) of any and all of the foregoing, and all books and records and technical information and data describing or used in connection with any and all such rights, interests, assets or property.

(c) "**Patent Rights**" shall mean any and all past present or future rights in, and associated with the Patents throughout the world, whether arising under federal law, state law, common law, foreign law, or otherwise, including but not limited to the following: all such rights arising out of or associated with the Patents; the right (but not the obligation) to register claims under any federal, state or foreign patent law or regulation; the right (but not the obligation) to sue or bring opposition or bring cancellation proceedings in the name of the Assignors or Assignee for any and all past, present and future infringements of or any other damages or injury to the Patents or the Patent Rights, and the rights to damages or profits due or accrued arising out of or in connection with any such past, present or future infringement, damage or injury.

2. Assignment. Assignor hereby grants, assigns, transfers, and conveys to Assignee Assignor's entire right, title, and interest in and to the Patents and Patent Rights ("**Assignment**").

3. Consideration.

4. Representations, Warranties, and Covenants of Assignor. Assignor represents and warrants to, and covenants and agrees with, Assignee as follows:

(a) Schedules of Patents, Licenses, and Assignments. To Assignor's knowledge, **Exhibit A** is a true and complete list of all Patent Rights related to the Invention. Except for the Assignment Agreement, Assignor is not a party to any and, to Assignor's

knowledge, there are no licenses or other agreements pursuant to which any persons, have the right to use or have any right, title, or interest in any of the Patent Rights.

(b) Title. Assignor has not created any lien, security interest or other encumbrance on the Patent Rights.

(c) Validity and Enforceability. Assignor has not received written notice of any claim by any third party that any of the Patent Rights are invalid or unenforceable.

(d) Exclusive Right to Use. Assignor acknowledges that upon execution of this Agreement, he shall have no future rights in or to the Patent Rights.

(e) No Infringements. To the best of Assignor's knowledge and belief, there is at present no infringement or unauthorized or improper use of the Patents or related Patent Rights. In the event any such infringement or unauthorized or improper use by any third party comes to the attention of the Assignor, Assignor shall promptly notify Assignee.

5. Cooperation. Assignor agrees to cooperate with Assignee such that Assignee may enjoy to the fullest extent the Patents and Patent Rights conveyed in this Agreement. Such cooperation includes the execution and filing by the parties of Assignments of Application with the PTO. Such cooperation includes the prompt execution by the Assignor of all papers that are deemed necessary or desirable by Assignee to perfect the right, title, and interest conveyed in this Agreement. [Such cooperation also includes prompt assistance and cooperation by Assignee in the prosecution of legal proceedings involving the Patents.

6. Severability. If any of the provisions of this Agreement are determined to be invalid or unenforceable in part, the remaining provisions, and the enforceable portions of any partially unenforceable provisions, will nevertheless be binding and enforceable.

7. Notices. Any notice required or permitted to be given under this Agreement will be sufficient if in writing, and if sent by registered or certified mail, postage prepaid, to the following:

If to Assignor:

Gregory Fricke
[Inventor Address] PO Box 62061
[Inventor Address] Durham, NC 27715

If to Assignee:

GrassRoots Biotechnology, Inc.
307 Hillsborough St.
Chapel Hill, North Carolina 27514

8. Waiver. The waiver by Assignee of a breach by the Assignor of any provisions of this Agreement will not operate and be construed as a waiver of any subsequent breach by the Assignor.

9. Binding Effect. This Agreement will be binding upon and will inure to the benefit of the parties, their respective heirs, representatives, successors, and assigns.

10. Entire Agreement. This Agreement and all exhibits and attachments will be deemed to express, embody and supersede all previous understandings, agreements, and commitments, whether written or oral, between the parties with respect to the subject matter hereof and to fully and finally set forth the entire agreement between the parties. All exhibits referenced herein are hereby incorporated by reference.

11. Governing Law. This Agreement will be governed by the substantive laws of the State of North Carolina, without regard to its principles governing conflict of laws.

12. Gender. All references to gender will be interchangeable with the masculine, feminine, and neuter, as applicable.

13. Headings. The headings in this Agreement are included for convenience of reference, and in the event of any conflict between such headings and the text of this Agreement, the text will control.

14. Modification. This agreement supersedes all prior agreements between the parties and constitutes the entire agreement between the parties on the subjects herein. The provisions of this Agreement may not be amended, deleted, or modified unless in a writing signed by all parties hereto.

15. Jurisdiction: Venue. Any suit, action or proceeding or any judgment entered by any court in respect thereof, will be brought in North Carolina, and the parties hereby submit to the jurisdiction of such courts for the purpose of any such suit, action, or proceeding. The parties hereby irrevocably consent to the service of process in any suit, action or proceeding in said courts by the mailing thereof by registered or certified mail, postage prepaid, to the parties' respective addresses pursuant to Section 7 of this Agreement. Each party hereby irrevocably waives any objections which it may now or hereafter have to the laying of venue of any suit, action or proceeding arising out of or relating to this Agreement if brought in North Carolina, and hereby further irrevocably waives any claim that any such suit, action or proceeding brought in any such court has been brought in an inconvenient forum.

IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed by its duly authorized officer effective as of the date first written above.

ASSIGNOR:

Gregory K. Fricke
Gregory Fricke

Date: Dec 10, 2007

ASSIGNEE:

GRASSROOTS BIOTECHNOLOGY, INC.

By: Philip A. Bentley

Name: Philip A. Bentley

Title: President

Date: 12/10/07

EXHIBIT A

Patent Application Name	Application No.	Inventors	Filing Date
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	U.S. Utility Application: 11/942,185	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007
<i>Plant Growth and Imaging Devices and Related Methods and Computer Program Products</i>	PCT Application Application No.: To be assigned	Philip N. Benfey, Richard Twigg, Scott Kennedy, Robert L. Clark and Gregory K. Fricke	November 19, 2007