

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: R. JOSEPH TROJAN
TROJAN LAW OFFICES
9250 WILSHIRE BLVD., STE. 325
BEVERLY HILLS, CA 90212
UNITED STATES OF AMERICA

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 16057856PCT	Date of mailing (day/month/year)
International application No. PCT/US 17/40091	International filing date (day/month/year) 29 June 2017 (29.06.2017)
Applicant WOODHAM BIOTECHNOLOGY HOLDINGS, LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:
 The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

How? Directly to the International Bureau of WIPO preferably through ePCT or on paper to, 34 chemin des Colombettes
 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:**

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90bis.1 and 90bis.3).

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Within **22 months from the priority date, the applicant may request that a supplementary international search be carried out** by a different International Searching Authority that offers this service (Rule 45bis.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer <p style="text-align: center;">Lee W. Young</p> <p style="text-align: center;">PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774</p>
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UNITED STATES OF AMERICA

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THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing
(day/month/year)

12 OCT 2017

Applicant's or agent's file reference

16057856PCT

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.

PCT/US 17/40091

International filing date
(day/month/year)

29 June 2017 (29.06.2017)

Applicant **WOODHAM BIOTECHNOLOGY HOLDINGS, LLC**

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1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

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Name and mailing address of the ISA/US

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Commissioner for Patents
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Facsimile No. 571-273-8300

Authorized officer

Lee W. Young

Telephone No. PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 16057856PCT	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> FOR FURTHER ACTION </div> <div> see Form PCT/ISA/220 as well as, where applicable, item 5 below. </div> </div>	
International application No. PCT/US 17/40091	International filing date (<i>day/month/year</i>) 29 June 2017 (29.06.2017)	(Earliest) Priority Date (<i>day/month/year</i>) 17 June 2016 (17.06.2016)
Applicant WOODHAM BIOTECHNOLOGY HOLDINGS, LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed.
☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 4A

- ☒ as suggested by the applicant.
☐ as selected by this Authority, because the applicant failed to suggest a figure.
☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 17/40091

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(8) - G01N 27/453; G01N 27/447 (2017.01)
 CPC - G01N 27/44778; G01N 27/44726; G01N 27/44713; G01N 27/44747; G01N 27/44739

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

See Search History Document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

See Search History Document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

See Search History Document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,994,166 A (Fernwood et al.) 19 February 1991 (19.02.1991) entire document especially figure 2; col 1, ln 6-10; col 6, ln 32-49; col 5, ln 1-26	1-13
A	US 5,449,446 A (Verma et al.) 12 September 1995 (12.09.1995) entire document especially col 3, ln 61 to col 4, ln 2	1-13
A	US 2015/0060279 A1 (Margalit et al.) 05 March 2015 (05.03.2015) entire document especially para [0032]; abstract	1-13
A	US 4,840,714 A (Littlehales) 20 Jun 1989 (20.06.1989) entire document	1-13
A	US 7,615,354 B2 (Faupel et al.) 10 November 2009 (10.11.2009) entire document	1-13
P/A	US 2016/0231272 A1 (McKee et al.) 11 August 2016 (11.08.2016) entire document	1-13
E/X	US 9,702,851 B1 (Woodham et al.) 11 July 2017 (11.07.2017) entire document especially claims 1-11	1-13
E/X	US 9,753,008 B2 (Woodham et al.) 05 September 2017 (05.09.2017) entire document especially claims 1-18	1-13

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

30 September 2017

Date of mailing of the international search report

12 OCT 2017

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
 P.O. Box 1450, Alexandria, Virginia 22313-1450
 Facsimile No. 571-273-8300

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
 PCT OSP: 571-272-7774

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To: R. JOSEPH TROJAN
TROJAN LAW OFFICES
9250 WILSHIRE BLVD., STE. 325
BEVERLY HILLS, CA 90212
UNITED STATES OF AMERICA

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

12 OCT 2017

Applicant's or agent's file reference
16057856PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US 17/40091

International filing date (day/month/year)

29 June 2017 (29.06.2017)

Priority date (day/month/year)

17 June 2016 (17.06.2016)

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - G01N 27/453; G01N 27/447 (2017.01)

CPC - G01N 27/44778; G01N 27/44726; G01N 27/44713; G01N 27/44747; G01N 27/44739

Applicant WOODHAM BIOTECHNOLOGY HOLDINGS, LLC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-8300

Date of completion of this opinion

30 September 2017

Authorized officer

Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US 17/40091

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).
3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. ☐ forming part of the international application as filed:
 - ☐ in the form of an Annex C/ST.25 text file.
 - ☐ on paper or in the form of an image file.
 - b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. ☐ furnished subsequent to the international filing date for the purposes of international search only:
 - ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
 - ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 17/40091

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-13	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	1-13	YES
	Claims	NONE	NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims	NONE	NO

2. Citations and explanations:

Claims 1-13 meet the criteria set out under PCT Article 33 (2)-(3) because the prior art does not teach or fairly suggest the claimed invention.

Regarding claims 1 and 8:

US 4,994,166 A to Fernwood et al. (hereinafter 'Fernwood') discloses the particular field to which this invention applies is slab gel electrophoresis and the transfer of electropherograms onto the surface of a treated paper or membrane for analytical or preparative purposes (col 1, ln 6-10; figure 2). Fernwood further discloses a gel and membrane combination unit device for electrophoretic separation and transfer biomolecules to blotting membrane supporting plates 36 and 37 (figure 2) are preferably made from an electrically insulating material such as glass (col 6, ln 32-49) blotting electrode 42 is constructed as a first gel matrix supporting plate, it is not disclosed to be made of a semi-conductive polymer. Moreover, its paired with an array of wires 41, not second conductive plate, that function as the opposing blotting electrode. Fernwood, in fact, teaches away from using a second conducting plate to function as the opposing blotting electrode (col 5, ln 1-26). Fernwood does not teach first gel matrix supporting plate having at least one region made from an opaque semi-conductive polymer; a second gel matrix supporting plate substantially parallel to the first gel matrix supporting plate, the second gel matrix supporting plate having at least one region made from an opaque semi-conductive polymer or first separation phase electrode in the upper buffer chamber; a second separation phase electrode in the lower buffer chamber; a first transfer phase electrode; a second transfer phase electrode; an electrophoresis gel matrix and blotting member combination unit having a first gel matrix supporting plate having at least one region made from an opaque semi-conductive polymer

US 5,449,446 A to Verma et al. (hereinafter 'Verma') teaches a single integrated apparatus capable of executing molecular separation in a gel and subsequent molecular transfer to a suitable membrane and for photographing the results and the apparatus of the invention includes a power source, an electrophoresis-electroblot-transilluminator unit, a viewing hood, a camera hood, an integral UV radiation source for sample detection and an integral UV radiation source for cross-linking (col 3, ln 61 to col 4, ln 2), but does not teach first gel matrix supporting plate having at least one region made from an opaque semi-conductive polymer; a second gel matrix supporting plate substantially parallel to the first gel matrix supporting plate, the second gel matrix supporting plate having at least one region made from an opaque semi-conductive polymer; a gel matrix between the first and second gel matrix supporting plates, wherein the gel matrix is capable of separating biomolecules such as proteins by size within the gel matrix when an electric current flows between electrodes of opposite polarity on opposing sides of the gel matrix; and, a blotting membrane between the gel matrix and at least one of the first and second gel matrix supporting plate or first separation phase electrode in the upper buffer chamber; a second separation phase electrode in the lower buffer chamber; a first transfer phase electrode; a second transfer phase electrode; an electrophoresis gel matrix and blotting member combination unit having a first gel matrix supporting plate having at least one region made from an opaque semi-conductive polymer

US 2015/0060279 A1 to Margalit et al. (hereinafter 'Margalit') teaches a method for performing electro-blotting on a protein sample may include providing an anodic assembly and a cathodic assembly. An anodic assembly may include an anode and a source of ions for electrophoresis. (abstract; para [0032]), but does not teach first gel matrix supporting plate having at least one region made from an opaque semi-conductive polymer; a second gel matrix supporting plate substantially parallel to the first gel matrix supporting plate, the second gel matrix supporting plate having at least one region made from an opaque semi-conductive polymer; a gel matrix between the first and second gel matrix supporting plates, wherein the gel matrix is capable of separating biomolecules such as proteins by size within the gel matrix when an electric current flows between electrodes of opposite polarity on opposing sides of the gel matrix; and a blotting membrane between the gel matrix and at least one of the first and second gel matrix supporting plate; first separation phase electrode in the upper buffer chamber; a second separation phase electrode in the lower buffer chamber; a first transfer phase electrode; a second transfer phase electrode; an electrophoresis gel matrix and blotting member combination unit having a first gel matrix supporting plate having at least one region made from an opaque semi-conductive polymer

Regarding claims 2-7 and 9-13, these are dependent claims depending from claim 1 or 8, and therefore, meet the criteria set out under PCT Article 33 (2)-(3)

Claims 1-13 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.