

<b>PATENT ASSIGNMENT COVER SHEET</b>
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Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT4330522

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	SECURITY INTEREST

**CONVEYING PARTY DATA**

Name	Execution Date
CAREDX, INC.	03/15/2017

**RECEIVING PARTY DATA**

<b>Name:</b>	JGB COLLATERAL, LLC
<b>Street Address:</b>	C/O JGB MANAGEMENT, INC., 21 CHARLES STREET
<b>City:</b>	WESTPORT
<b>State/Country:</b>	CONNECTICUT
<b>Postal Code:</b>	06680

**PROPERTY NUMBERS Total: 17**

Property Type	Number
Patent Number:	7026121
Patent Number:	7235358
Patent Number:	7691569
Patent Number:	7785797
Patent Number:	7879556
Patent Number:	7993832
Patent Number:	7645575
Patent Number:	7829286
Patent Number:	7892745
Patent Number:	7960121
Patent Number:	6905827
Patent Number:	7579148
Patent Number:	7604936
Patent Number:	7771950
Patent Number:	8110364
Patent Number:	8148067
Application Number:	14658061

**CORRESPONDENCE DATA**

Fax Number: (214)200-0853

*Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent*

**PATENT**

*using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.*

**Email:** ipdocketing@haynesboone.com  
**Correspondent Name:** HAYNES AND BOONE, LLP  
**Address Line 1:** 2323 VICTORY AVENUE, SUITE 700  
**Address Line 4:** DALLAS, TEXAS 75219

<b>ATTORNEY DOCKET NUMBER:</b>	52050.30
<b>NAME OF SUBMITTER:</b>	JEFFREY A. WOLFSON
<b>SIGNATURE:</b>	/Jeffrey A. Wolfson/
<b>DATE SIGNED:</b>	03/22/2017

**Total Attachments: 11**

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**INTELLECTUAL PROPERTY SECURITY AGREEMENT**

This Intellectual Property Security Agreement (“**Agreement**”) is entered into as of March 15, 2017 by and among (a) **CareDx, Inc.**, a Delaware corporation having its principal place of business at 3260 Bayshore Boulevard, Brisbane, California 94005 (“**Grantor**”) and (b) **JGB Collateral, LLC**, a Delaware limited liability company in its capacity as administrative agent (in such capacity, the “**Agent**”) for itself and the holders of the Grantor’s 9.5% Original Issue Discount Senior Secured Debentures due February 28, 2020, in the original aggregate principal amount of \$27,780,000 (collectively, the “**Debentures**”).

RECITALS

WHEREAS, pursuant to the Purchase Agreement (as defined in the Debentures), the Purchasers have severally agreed to extend the loans to the Grantor evidenced by the Debentures;

WHEREAS, in order to induce the Purchasers to extend the loans evidenced by the Debentures, Agent, Purchasers, Grantor and certain other debtors have executed a Security Agreement dated as of the date hereof (as may be amended, restated, supplemented or otherwise modified from time to time, the “**Security Agreement**”), pursuant to which the Grantor has granted a security interest in its Intellectual Property (as that term is defined in the Security Agreement) constituting Collateral (as that term is defined in the Security Agreement) (collectively, the “**Intellectual Property Collateral**”) to secure the prompt payment, performance and discharge in full of all of the Grantor’s obligations under the Debentures and other Transaction Documents (as defined therein); and

WHEREAS, Agent and Grantor desire to enter into this Agreement to more fully evidence the Agent’s security interests in the Intellectual Property Collateral.

NOW, THEREFORE, in consideration of the agreements herein contained and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto hereby agree as follows:

AGREEMENT

- (1) Grant of Security Interest. To secure its obligations to Agent and Purchasers (collectively, the “**Secured Parties**”), Grantor grants and pledges to Agent, for the benefit of the Secured Parties, a security interest in all of Grantor’s right, title and interest in, to and under all Intellectual Property Collateral, including, without limitation:
  - (a) the registered copyrights set forth on Exhibit A attached hereto (the “Copyrights”);
  - (b) the patents and patent applications set forth on Exhibit B attached hereto (the “Patents”);
  - (c) the trademarks set forth on Exhibit C attached hereto (the “Trademarks”);

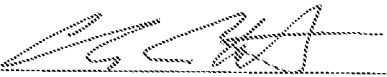
- (d) Any and all claims for damages by way of past, present and future infringements of any of the rights included above, with the right, but not the obligation, to sue for and collect such damages for said use or infringement of the intellectual property rights identified above;
  - (e) All licenses or other rights to use any of the Copyrights, Patents or Trademarks and all license fees and royalties arising from such use to the extent permitted by such license or rights;
  - (f) All amendments, extensions, renewals and extensions of any of the Copyrights, Trademarks or Patents; and
  - (g) All proceeds and products of the foregoing, including without limitation all payments under insurance or any indemnity or warranty payable in respect of any of the foregoing.
- (2) Recordation. Grantor authorizes the Commissioner for Patents, the Commissioner for Trademarks and the Register of Copyrights and any other government officials to record and register this Agreement upon request by Agent.
- (3) Loan Documents. This Agreement has been entered into pursuant to and in conjunction with the Security Agreement, which is hereby incorporated by reference. The provisions of the Security Agreement shall supersede and control over any conflicting or inconsistent provision herein. The rights and remedies of Agent with respect to the Intellectual Property Collateral are as provided by the Security Agreement and related documents, and nothing in this Agreement shall be deemed to limit such rights and remedies.
- (4) Execution in Counterparts. This Agreement may be executed in counterparts (and by different parties hereto in different counterparts), each of which shall constitute an original, but all of which when taken together shall constitute a single contract. Delivery of an executed counterpart of a signature page to this Agreement by facsimile or in electronic (i.e., "pdf" or "tif" format) shall be effective as delivery of a manually executed counterpart of this Agreement.
- (5) Successors and Assigns. This Agreement will be binding on and shall inure to the benefit of the parties hereto and their respective successors and assigns.
- (6) Governing Law. This Agreement and any claim, controversy, dispute or cause of action (whether in contract or tort or otherwise) based upon, arising out of or relating to this Agreement and the transactions contemplated hereby and thereby shall be governed by, and construed in accordance with, the laws of the United States and the State of New York, without giving effect to any choice or conflict of law provision or rule (whether of the State of New York or any other jurisdiction).

[Signature page follows.]

IN WITNESS WHEREOF, the parties have caused this Intellectual Property Security Agreement to be duly executed by its officers thereunto duly authorized as of the first date written above.

GRANTOR:

CAREDX, INC.

By: 

Name: Charles Constanti

Title: Chief Financial Officer and Secretary

AGENT:

JGB COLLATERAL, LLC

By: \_\_\_\_\_

Name: Brett Cohen

Title: President

[signature page to IP Security Agreement]

IN WITNESS WHEREOF, the parties have caused this Intellectual Property Security Agreement to be duly executed by its officers thereunto duly authorized as of the first date written above.

GRANTOR:

CAREDX, INC.

By: \_\_\_\_\_

Name: Charles Constanti

Title: Chief Financial Officer and Secretary

AGENT:

JGB COLLATERAL, LLC

By:  \_\_\_\_\_

Name: Brett Cohen

Title: President

[signature page to IP Security Agreement]

EXHIBIT A

Copyrights

None.

EXHIBIT B

Patents

PATENTS

<b>Title</b>	<b>Issue Date</b>	<b>Registration Number</b>	<b>Jurisdiction</b>
Diagnosing or monitoring transplant rejection using the expression of WDR40A	April 11, 2006	7026121	United States
Diagnosing or monitoring transplant rejection using the expression of ITGA4 (AlloMap), PF4 (AlloMap), G6B (AlloMap), MIR (AlloMap; aka MARCH8), SEMA7A (AlloMap), IL1-R2 (AlloMap), ITGAM (AlloMap), RHOU (AlloMap), KPNA6 or IKZF1	June 26, 2007	7235358	United States
Assessing immune status using the expression of PDCD1	April 6, 2010	7691569	United States
Diagnosing or monitoring transplant rejection using the expression of PDCD1	August 31, 2010	7785797	United States
Diagnosing or monitoring transplant rejection using the expression of FLT3	February 1, 2011	7879556	United States
Diagnosing the status of a transplant or immune disorder using the expression of a splice variant of CXCR3, CXCR4, FLT3 (AlloMap), IL1-R2 (AlloMap), ITGB7v1-6, MARCH8 (AlloMap), IKZF1, PRDM1v1, CD44v1, LAIR2v2	August 9, 2011	7993832	United States
Assessing cardiac transplant rejection using the expression of WDR40A	March 20, 2013	1585972	EPO DE FR GB



<b>Title</b>	<b>Issue Date</b>	<b>Registration Number</b>	<b>Jurisdiction</b>
Diagnosing or monitoring transplant rejection using the expression of PDCD1	June 5, 2013	2194145	EPO DE FR GB
Diagnosing or monitoring transplant rejection using the expression of FLT3	March 20, 2013	2253719	EPO DE FR GB
Assessing cardiac transplant rejection using the expression of ITGA4 (AlloMap), SEMA7A (AlloMap), IL1-R2 (AlloMap), ITGAM (AlloMap), RHOA (AlloMap), PRKCC	October 13, 2012	2292786	EPO DE FR GB
Diagnosing or monitoring transplant rejection using the expression of numerous genes, including PDCD1 (AlloMap) and FLT3 (AlloMap)	May 31, 2007	2003299465	Australia
Diagnosing or monitoring transplant rejection using the expression of PDCD1	June 28, 2016	2483481	Canada
Assessing cardiac transplant rejection using the expression of IGJ	January 12, 2010	7645575	United States
Diagnosing or monitoring cardiac transplant rejection using the expression of IL8	November 9, 2010	7829286	United States
Diagnosing or monitoring transplant rejection using the expression of CXCR4	February 22, 2011	7892745	United States
Diagnosing or monitoring cardiac transplant rejection using the expression of HBB	June 4, 2011	7960121	United States
Diagnosing or monitoring an autoimmune or chronic inflammatory disease using the expression of OAS3	June 14, 2005	6905827	United States

<b>Title</b>	<b>Issue Date</b>	<b>Registration Number</b>	<b>Jurisdiction</b>
Diagnosing or monitoring an autoimmune or chronic inflammatory disease using the expression of LTF	August 25, 2009	7579148	United States
Diagnosing or monitoring an autoimmune or chronic inflammatory disease using the expression of IFI6	October 20, 2009	7604936	United States
Diagnosing or monitoring an autoimmune or chronic inflammatory disease using the expression of IFI44	August 10, 2010	7771950	United States
Diagnosing or monitoring an autoimmune or chronic inflammatory disease using the expression of KLRF1	February 7, 2012	8110364	United States
Diagnosing a patient as having a longitudinally stable classification of SLE by detecting the expression of two or more interferon-response genes.	April 3, 2012	8148067	United States
Diagnosing or monitoring an autoimmune or chronic inflammatory disease using the expression of OAS3	May 13, 2011	2003587333	Japan
Diagnosing or monitoring lupus using the expression of IFI6	May 17, 2013	2009269351	Japan
System for detecting expression of numerous genes	November 12, 2004	20033132	South Africa
Compositions for assessing immune status or detecting transplant rejection	May 30, 2007	20049420	South Africa

#### PATENT APPLICATIONS

<b>Title</b>	<b>Application Date</b>	<b>Application Number</b>	<b>Jurisdiction</b>
Methods of monitoring immunosuppressive therapies in a transplant recipient	March 13, 2015	14/658,061	United States

<b>Title</b>	<b>Application Date</b>	<b>Application Number</b>	<b>Jurisdiction</b>
Methods of monitoring immunosuppressive therapies in a transplant recipient	March 13, 2015	2015229083	Australia
Methods of monitoring immunosuppressive therapies in a transplant recipient	March 13, 2015	BR1120160210387	Brazil
Methods of monitoring immunosuppressive therapies in a transplant recipient	March 13, 2015	TBD	Canada
Methods of monitoring immunosuppressive therapies in a transplant recipient	March 13, 2015	201580024879.6	China
Methods of monitoring immunosuppressive therapies in a transplant recipient	March 13, 2015	15761889.3	EPO

EXHIBIT C

Trademarks

TRADEMARKS

<b>Mark</b>	<b>Registration Date</b>	<b>Registration Number</b>	<b>Jurisdiction</b>
AlloMap	June 3, 2008	3442169	United States
AlloMap	September 12, 2006	3143352	United States
AlloMap	October 19, 2005	003923984	European Community
AlloMap	June 30, 2006	004439287	European Community
AlloMap	September 5, 2005	1053815	Australia
AlloMap	June 19, 2013	TMA853666	Canada
AlloMap	December 22, 2005	4917709	Japan
AlloMap	May 12, 2006	4952272	Japan
AlloMap	November 19, 2005	229407	Norway
AlloMap	September 13, 2005	537106	Switzerland
AlloSure	June 21, 2016	4984156	United States
ImmunoMap	May 5, 2005	1053816	Australia
XDx	May 27, 2008	3437631	United States
XDx (stylized)	August 14, 2007	826191290	Brazil
XDx (stylized)	June 4, 2008	003608049	European Community
XDx Expression Diagnostics & Design	January 16, 2007	3199533	United States
CareDx	October 18, 2016	5064628	United States
CareDx	December 28, 2010	3896426	United States
CareDx	January 12, 2016	4884670	United States
CareDx	June 2, 2015	013523279	European Community

TRADEMARK APPLICATIONS

<b>Mark</b>	<b>Application Date</b>	<b>Application Number</b>	<b>Jurisdiction</b>
RenaMap (allowed 10/13/2015)	October 16, 2014	86/425,845	United States
RenaSure	September 23,	86/404,134	United States

(allowed 10/13/2015)	2014		
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