

PATENT ASSIGNMENT COVER SHEET

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Stylesheet Version v1.2

EPAS ID: PAT7841671

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY INTEREST

CONVEYING PARTY DATA

Name	Execution Date
INVITAE CORPORATION	03/07/2023

RECEIVING PARTY DATA

Name:	U.S. BANK TRUST COMPANY, NATIONAL ASSOCIATION, AS COLLATERAL AGENT
Street Address:	WEST SIDE FLATS ST. PAUL
Internal Address:	60 LIVINGSTON AVENUE
City:	ST. PAUL
State/Country:	MINNESOTA
Postal Code:	55107

PROPERTY NUMBERS Total: 58

Property Type	Number
Patent Number:	8600683
Patent Number:	9624533
Patent Number:	10395760
Patent Number:	10648103
Patent Number:	11166658
Patent Number:	10995370
Patent Number:	9212394
Patent Number:	9758814
Patent Number:	10626450
Patent Number:	11326204
Patent Number:	11254973
Patent Number:	9228233
Patent Number:	9822409
Patent Number:	10370710
Patent Number:	8812422
Patent Number:	9298804
Patent Number:	8847799
Patent Number:	8976049
Patent Number:	9292527

PATENT

Property Type	Number
Patent Number:	9535920
Patent Number:	10706017
Patent Number:	11053548
Patent Number:	10061953
Patent Number:	10445543
Patent Number:	D773070
Patent Number:	10053729
Patent Number:	8209130
Patent Number:	8738300
Patent Number:	10604799
Patent Number:	11155863
Patent Number:	11149308
Patent Number:	11462299
Patent Number:	8099298
Patent Number:	8311851
Patent Number:	8676608
Patent Number:	10210312
Patent Number:	11302431
Application Number:	16506287
Application Number:	17508682
Application Number:	17215433
Application Number:	63301451
Application Number:	63432639
Application Number:	63421430
Application Number:	17739978
Application Number:	15523134
Application Number:	15551788
Application Number:	17576867
Application Number:	16997517
Application Number:	17339625
Application Number:	17000054
Application Number:	16985980
Application Number:	17483537
Application Number:	16790519
Application Number:	17867430
Application Number:	17946942
Application Number:	16624225
Application Number:	18081459

Property Type	Number
Application Number:	17716404

CORRESPONDENCE DATA

Fax Number:
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.

Phone: 212.940.6562

Email: joanne.arnold@katten.com

Correspondent Name: JOANNE BL ARNOLD

Address Line 1: KATTEN

Address Line 2: 50 ROCKEFELLER PLAZA

Address Line 4: NEW YORK, NEW YORK 10020-1605

ATTORNEY DOCKET NUMBER:	333285.00289
NAME OF SUBMITTER:	JOANNE BL ARNOLD
SIGNATURE:	/Joanne BL Arnold/
DATE SIGNED:	03/13/2023
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 11

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PATENT SECURITY AGREEMENT

THIS PATENT SECURITY AGREEMENT, dated as of March 7, 2023, is made by each of the entities listed on the signature pages hereof (each a “Grantor” and, collectively, the “Grantors”), in favor of U.S. BANK TRUST COMPANY, NATIONAL ASSOCIATION, as Collateral Agent (in such capacity, together with its successors and permitted assigns, the “Collateral Agent”) for the Secured Parties (as defined in the Indenture referred to below) and the other Secured Parties.

WITNESSETH:

WHEREAS, pursuant to the Indenture, dated as of March 7, 2023 (as the same may be amended, restated, supplemented and/or modified from time to time, the “Indenture”), by and among INVITAE CORPORATION (the “Company”), the Subsidiaries of the Company from time to time party thereto, and U.S. Bank Trust Company, National Association, as Trustee and the Collateral Agent, the Company has issued 4.5% Convertible Senior Secured Notes due 2028;

WHEREAS, each Grantor (other than the Company) has agreed, (a) pursuant to the Indenture, to guarantee the Guaranteed Obligations (as defined in the Indenture) of the Company and (b) pursuant to a Security Agreement of even date herewith in favor of Collateral Agent (as such agreement may be amended, restated, supplemented and/or otherwise modified from time to time, the “Security Agreement”), to grant a security interest in the Collateral (as defined in the Security Agreement); and

WHEREAS, the Security Agreement requires the Grantors to execute and deliver this Patent Security Agreement;

NOW, THEREFORE, in consideration of the premises and other good and valuable consideration, the receipt, sufficiency and adequacy of which are hereby acknowledged, each Grantor hereby agrees with Collateral Agent as follows:

1. Defined Terms. Capitalized terms used herein without definition are used as defined in the Indenture and Security Agreement.

2. Grant of Security Interest in Patent Collateral. Each Grantor, as collateral security for the prompt and complete payment and performance when due (whether at stated maturity, by acceleration or otherwise) of the Secured Obligations of such Grantor, hereby mortgages, pledges and hypothecates to Collateral Agent for the benefit of the Secured Parties, and grants to Collateral Agent for the benefit of the Secured Parties a Lien on and security interest in, all of its right, title and interest in, to and under the following Collateral of such Grantor (the “Patent Collateral”):

(a) all of its Patents providing for the grant by or to such Grantor of any right under any Patent, including, without limitation, those referred to on Schedule 1 hereto;

(b) all reissues, reexaminations, continuations, continuations-in-part, divisionals, renewals and extensions of the foregoing; and

(c) all IP Ancillary Rights.

Notwithstanding anything herein to the contrary, (i) the collateral grant provided in this Section 2 shall not be construed as an assignment of any of the foregoing assets or property and (ii) no Lien or security interest is hereby granted on any Excluded Assets; provided, further, that if and when any assets or property shall

cease to be an Excluded Asset, a Lien on and security interest in such property shall be deemed granted therein.

3. Security Agreement. The security interest granted pursuant to this Patent Security Agreement is granted in conjunction with the security interest granted to Collateral Agent pursuant to the Security Agreement and each Grantor hereby acknowledges and agrees that the rights and remedies of Collateral Agent with respect to the security interest in the Patent Collateral made and granted hereby are more fully set forth in the Security Agreement, the terms and provisions of which are incorporated by reference herein as if fully set forth herein.

4. Continuing Obligation. If, before the Secured Obligations shall have been paid in full in cash, Grantor shall obtain rights to any new Patents, the preceding Security Agreement shall automatically apply thereto, and Grantor shall give Collateral Agent prompt written notice thereof.

5. Grantor Remains Liable. Each Grantor hereby agrees that, anything herein to the contrary notwithstanding, such Grantor shall assume full and complete responsibility for the prosecution, defense, enforcement or any other necessary or desirable actions in connection with their Patents and IP Ancillary Rights subject to a security interest hereunder.

6. Counterparts. This Patent Security Agreement may be executed in any number of counterparts and by different parties in separate counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement. Signature pages may be detached from multiple separate counterparts and attached to a single counterpart.

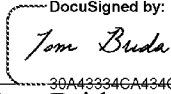
7. Governing Law. This Patent Security Agreement and the rights and obligations of the parties hereto shall be governed by, and construed and interpreted in accordance with, the laws of the State of New York.

8. Concerning the Collateral Agent. U.S. Bank Trust Company, National Association is entering this Patent Security Agreement not in its individual capacity, but solely in its capacity as the Collateral Agent under the Indenture. In acting hereunder, the Collateral Agent shall be entitled to all of the rights, privileges, indemnities and immunities granted to the Collateral Agent in the Indenture, as if such rights, privileges, indemnities and immunities were set forth herein.

[SIGNATURE PAGES FOLLOW]


IN WITNESS WHEREOF, each Grantor has caused this Patent Security Agreement to be executed and delivered by its duly authorized officer as of the date first set forth above.

INVITAE CORPORATION
as Grantor

By: 
Name: Tom Brida
Title: General Counsel and Secretary

ACCEPTED AND AGREED
as of the date first above written:

U.S. BANK TRUST COMPANY, NATIONAL ASSOCIATION,
as Collateral Agent

By: 
Name: Brandon Bonfig
Title: Vice President

SCHEDULE I
TO
PATENT SECURITY AGREEMENT

Patent Registrations

REGISTERED PATENTS

Application Title	Country	Patent No.	Issue Date	Application No.	Filing Date	Status	Owner
SYSTEMS AND METHODS FOR OBTAINING AND MANAGING SEQUENCING DATA	US	8,600,683	03-Dec-2013	13/348,626	11-Jan-2012	Granted	Invitae Corporation
MULTIPLEX NUCLEIC ACID DETECTION METHODS	US	9,624,533	18-Apr-2017	14/099,821	06-Dec-2013	Granted	Invitae Corporation
METHODS, SYSTEMS AND PROCESSES OF IDENTIFYING GENETIC VARIATION IN HIGHLY SIMILAR GENES	US	10,395,760	27-Aug-2019	15/098,272	13-Apr-2016	Granted	Invitae Corporation
UNIVERSAL BLOCKING OLIGO SYSTEM AND IMPROVED HYBRIDIZATION CAPTURE METHODS FOR MULTIPLEXED CAPTURE REACTIONS	US	10,648,103	12-May-2020	15/514,957	08-Oct-2015	Granted	Invitae Corporation
BLOOD SAMPLING SYSTEM AND METHOD	US	11,166,658	09-Nov-2021	15/661,396	27-Jul-2017	Granted	Invitae Corporation
METHODS, SYSTEMS AND PROCESSES OF IDENTIFYING GENETIC VARIATIONS	US	10,995,370	04-May-2021	15/711,760	21-Sep-2017	Granted	Invitae Corporation

ASSAYS FOR SINGLE MOLECULE DETECTION AND USE THEREOF	US	9,212,394	15-Dec-2015	14/603,323	22-Jan-2015	Granted	Invitae Corporation
ASSAYS FOR SINGLE MOLECULE DETECTION AND USE THEREOF	US	9,758,814	12-Sep-2017	14/949,097	23-Nov-2015	Granted	Invitae Corporation
ASSAYS FOR SINGLE MOLECULE DETECTION AND USE THEREOF	US	10,626,450	21-Apr-2020	15/675,234	11-Aug-2017	Granted	Invitae Corporation
ASSAYS FOR SINGLE MOLECULE DETECTION AND USE THEREOF	US	11,326,204	10-May-2022	16/842,089	07-Apr-2020	Granted	Invitae Corporation
SYSTEMS AND METHODS FOR SINGLE MOLECULE QUANTIFICATION	US	11,254,973	22-Feb-2022	16/329,816	01-Sep-2017	Granted	Invitae Corporation
ANALYSIS METHODS	US	9,228,233	05-Jan-2016	13/616,788	14-Sep-2012	Granted	Invitae Corporation
ANALYSIS METHODS	US	9,822,409	21-Nov-2017	14/984,644	30-Dec-2015	Granted	Invitae Corporation
ANALYSIS METHODS	US	10,370,710	06-Aug-2019	15/818,165	20-Nov-2017	Granted	Invitae Corporation
VARIANT DATABASE	US	8,812,422	19-Aug-2014	13/667,575	02-Nov-2012	Granted	Invitae Corporation
VARIANT DATABASE	US	9,298,804	29-Mar-2016	14/329,243	11-Jul-2014	Granted	Invitae Corporation
METHODS AND SYSTEMS FOR STORING SEQUENCE READ DATA	US	8,847,799	30-Sep-2014	14/293,568	02-Jun-2014	Granted	Invitae Corporation
METHODS AND SYSTEMS FOR STORING SEQUENCE READ DATA	US	8,976,049	10-Mar-2015	14/466,281	22-Aug-2014	Granted	Invitae Corporation

METHODS AND SYSTEMS FOR STORING SEQUENCE DATA	READ	US	9,292,527	22-Mar-2016	14/604,165	23-Jan-2015	Granted	Invitae Corporation
METHODS AND SYSTEMS FOR STORING SEQUENCE DATA	READ	US	9,535,920	03-Jan-2017	14/959,162	04-Dec-2015	Granted	Invitae Corporation
METHODS AND SYSTEMS FOR STORING SEQUENCE DATA	READ	US	10,706,017	07-Jul-2020	15/396,936	03-Jan-2017	Granted	Invitae Corporation
METHODS FOR DETECTING ANEUPLOIDY		US	11,053,548	06-Jul-2021	14/710,229	12-May-2015	Granted	Invitae Corporation
DEVICES AND SYSTEMS FOR BARCODING INDIVIDUAL WELLS AND VESSELS		US	10,061,953	28-Aug-2018	14/994,325	13-Jan-2016	Granted	Invitae Corporation
DEVICES AND SYSTEMS FOR BARCODING INDIVIDUAL WELLS AND VESSELS		US	10,445,543	15-Oct-2019	16/111,909	24-Aug-2018	Granted	Invitae Corporation
DEVICE FOR BARCODING INDIVIDUAL WELLS AND VESSELS		US	D773070	29-Nov-2016	29/518,525	24-Feb-2015	Granted	Invitae Corporation
RAPID ANEUPLOIDY DETECTION		US	10,053,729	21-Aug-2018	14/388,314	26-Sep-2014	Granted	Invitae Corporation
SEQUENCE ASSEMBLY		US	8,209,130	26-Jun-2012	13/439,508	04-Apr-2012	Granted	Invitae Corporation
SEQUENCE ASSEMBLY		US	8,738,300	27-May-2014	13/494,616	12-Jun-2012	Granted	Invitae Corporation
SEQUENCE ASSEMBLY		US	10,604,799	31-Mar-2020	14/250,891	11-Apr-2014	Granted	Invitae Corporation

SEQUENCE ASSEMBLY [TRACK 1]	US	11,155,863	26-Oct-2021	17/322,587	17-May-2021	Granted	Invitae Corporation
SEQUENCE ASSEMBLY [TRACK 1]	US	11,149,308	19-Oct-2021	17/322,610	17-May-2021	Granted	Invitae Corporation
MOLECULAR EVIDENCE PLATFORM FOR AUDITABLE, CONTINUOUS OPTIMIZATION OF VARIANT INTERPRETATION IN GENETIC AND GENOMIC TESTING AND ANALYSIS	US	11,462,299	04-Oct-2022	16/162,889	17-Oct-2018	Granted	Invitae Corporation
GENETIC DATA ANALYSIS AND DATABASE TOOLS	US	8,099,298	17-Jan-2012	12/031,327	14-Feb-2008	Granted	Invitae Corporation
GENETIC DATA ANALYSIS AND DATABASE TOOLS	US	8,311,851	13-Nov-2012	13/316,144	09-Dec-2011	Granted	Invitae Corporation
GENETIC DATA ANALYSIS AND DATABASE TOOLS	US	8,676,608	18-Mar-2014	13/647,246	08-Oct-2012	Granted	Invitae Corporation
SYSTEMS AND METHODS FOR QUANTIFICATION AND PRESENTATION OF MEDICAL RISK ARISING FROM UNKNOWN FACTORS	US	10,210,312	19-Feb-2019	14/170,367	31-Jan-2014	Granted	Invitae Corporation
SYSTEMS AND METHODS FOR QUANTIFICATION AND PRESENTATION OF MEDICAL RISK ARISING FROM UNKNOWN FACTORS	US	11,302,431	12-Apr-2022	16/264,397	31-Jan-2019	Granted	Invitae Corporation

PATENT APPLICATIONS

Application Title	Country	Patent No.	Issue Date	Application No.	Filing Date	Status	Owner
METHODS, SYSTEMS AND PROCESSES OF IDENTIFYING GENETIC VARIATION IN HIGHLY SIMILAR GENES	US			16/506,287	09-Jul-2019	Allowed	Invitae Corporation
BLOOD SAMPLING SYSTEM AND METHOD	US			17/508,682	22-Oct-2021	Published	Invitae Corporation
METHODS, SYSTEMS AND PROCESSES OF IDENTIFYING GENETIC VARIATIONS	US			17/215,433	29-Mar-2021	Published	Invitae Corporation
DEVICE AND METHOD FOR PLACEMENT AND SECUREMENT OF FILM	US			63/301,451	20-Jan-2022	Pending	Invitae Corporation
TECHNIQUES FOR DESIGNING PATIENT-SPECIFIC PANELS AND METHODS OF USE THEREOF FOR DETECTING MINIMAL RESIDUAL DISEASE	US			63/432,639	14-Dec-2022	Pending	Invitae Corporation
POPULATION FREQUENCY MODELING FOR MACHINE LEARNING-BASED VARIANT PATHOGENICITY ESTIMATION	US			63/421,430	01-Nov-2022	Pending	Invitae Corporation
ARRAYS FOR SINGLE MOLECULE	US			17/739,978	09-May-2022	Published	Invitae Corporation

DETECTION AND USE THEREOF							
ASSAYS FOR SINGLE MOLECULE DETECTION AND USE THEREOF	US			15/523,134	31-Oct-2015	Published	Invitae Corporation
ARRAYS FOR SINGLE MOLECULE DETECTION AND USE THEREOF	US			15/551,788	18-Feb-2016	Published	Invitae Corporation
SYSTEMS AND METHODS FOR SINGLE MOLECULE QUANTIFICATION	US			17/576,867	14-Jan-2022	Published	Invitae Corporation
DETERMINING THE CLINICAL SIGNIFICANCE OF VARIANT SEQUENCES	US			16/997,517	19-Aug-2020	Published	Invitae Corporation
METHODS FOR DETECTING ANEUPLOIDY	US			17/339,625	04-Jun-2021	Published	Invitae Corporation
SYSTEMS AND METHODS FOR GENETIC ANALYSIS	US			17/000,054	21-Aug-2020	Published	Invitae Corporation
METHODS OF QUALITY CONTROL USING SINGLE-NUCLEOTIDE POLYMORPHISMS IN PRE-IMPLANTATION GENETIC SCREENING	US			16/985,980	05-Aug-2020	Published	Invitae Corporation
RAPID ANEUPLOIDY DETECTION [TRACK 1]	US			17/483,537	23-Sep-2021	Published	Invitae Corporation
SEQUENCE ASSEMBLY	US			16/790,519	13-Feb-2020	Allowed	Invitae Corporation
SEQUENCE ASSEMBLY	US			17/867,430	18-Jul-2022	Published	Invitae Corporation

MOLECULAR EVIDENCE PLATFORM FOR AUDITABLE, CONTINUOUS OPTIMIZATION OF VARIANT INTERPRETATION IN GENETIC AND GENOMIC TESTING AND ANALYSIS	US			17/946,942	17-Oct-2018	Pending	Invitae Corporation
INTERPRETATION OF GENETIC AND GENOMIC VARIANTS VIA AN INTEGRATED COMPUTATIONAL AND EXPERIMENTAL DEEP MUTATIONAL LEARNING FRAMEWORK	US			16/624,225	19-Jun-2018	Published	Invitae Corporation
SYSTEMS AND METHODS FOR THE INTERPRETATION OF GENETIC AND GENOMIC VARIANTS VIA AN INTEGRATED COMPUTATIONAL AND EXPERIMENTAL DEEP MUTATIONAL LEARNING FRAMEWORK	US			18/081,459	14-Dec-2022	Pending	Invitae Corporation
SYSTEMS AND METHODS FOR QUANTIFICATION AND PRESENTATION OF MEDICAL RISK ARISING FROM UNKNOWN FACTORS	US			17/716,404	08-Apr-2022	Published	Invitae Corporation