### 503130680 01/09/2015

### PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT3177290

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

### **CONVEYING PARTY DATA**

Name	Execution Date
HANK MICHAEL JAMES PETRASSI	08/01/2012
XIAODONG LIU	08/01/2012
JON LOREN	08/16/2012
VALENTINA MOLTENI	08/01/2012
JULIET NABAKKA	08/01/2012
BAO NGUYEN	08/01/2012
VINCE YEH	07/31/2012
XIAOLIN LI	08/02/2012

#### **RECEIVING PARTY DATA**

Name:	NOVARTIS INSTITUTE FOR FUNCTIONAL GENOMICS
Street Address:	10675 JOHN JAY HOPKINS DRIVE
Internal Address:	DBA GENOMICS INSTITUTE OF THE NOVARTIS RESEARCH FOUNDATION
City:	SAN DIEGO
State/Country:	CALIFORNIA
Postal Code:	01741

### **PROPERTY NUMBERS Total: 1**

Property Type	Number
Application Number:	14258963

### **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: 858-812-1525
Email: jclarke@gnf.org

Correspondent Name: DANIEL E RAYMOND

Address Line 1: GNF, 10675 JOHN JAY HOPKINS DRIVE

Address Line 4: SAN DIEGO, CALIFORNIA 92121

ATTORNEY DOCKET NUMBER: PAT054748-US-CNT02

NAME OF SUBMITTER: DANIEL E. RAYMOND

PATENT 503130680 REEL: 034676 FRAME: 0561

**SIGNATURE:** /Daniel E. Raymond, Reg. 53504/ **DATE SIGNED:** 01/09/2015 **Total Attachments: 26** source=PAT054748 assignment inventors -NIFG#page1.tif source=PAT054748 assignment inventors -NIFG#page2.tif source=PAT054748 assignment inventors -NIFG#page3.tif source=PAT054748 assignment inventors -NIFG#page4.tif source=PAT054748 assignment inventors -NIFG#page5.tif source=PAT054748 assignment inventors -NIFG#page6.tif source=PAT054748 assignment inventors -NIFG#page7.tif source=PAT054748 assignment inventors -NIFG#page8.tif source=PAT054748 assignment inventors -NIFG#page9.tif source=PAT054748 assignment inventors -NIFG#page10.tif source=PAT054748 assignment inventors -NIFG#page11.tif source=PAT054748 assignment inventors -NIFG#page12.tif source=PAT054748 assignment inventors -NIFG#page13.tif source=PAT054748 assignment XLi - NIFG#page1.tif source=PAT054748 assignment XLi - NIFG#page2.tif source=PAT054748 assignment XLi - NIFG#page3.tif source=PAT054748 assignment XLi - NIFG#page4.tif source=PAT054748 assignment XLi - NIFG#page5.tif source=PAT054748 assignment XLi - NIFG#page6.tif source=PAT054748 assignment XLi - NIFG#page7.tif source=PAT054748 assignment XLi - NIFG#page8.tif source=PAT054748 assignment XLi - NIFG#page9.tif source=PAT054748 assignment XLi - NIFG#page10.tif source=PAT054748 assignment XLi - NIFG#page11.tif source=PAT054748 assignment XLi - NIFG#page12.tif

source=PAT054748 assignment XLi - NIFG#page13.tif

PATENT REEL: 034676 FRAME: 0562

## ASSIGNMENT

### This Assignment Agreement is entered into by and between

Hank Michael James PETRASSI	citizen of United States of America	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Xiaolin Li	citizen of People's Republic of China	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Xiaodong LIU	citizen of People's Republic of China	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Jon LOREN	citizen of United States of America	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Valentina MOLTENI	citizen of United States of America	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Juliet NABAKKA	citizen of United States of America	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Bao NGUYEN	citizen of United States of America	Novartis institute for Functional Genomics, Inc. Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US

Vince YEH	Citizen of Canada	Novartis Institute for Functional Genomics,
		Inc.
		dba Genomics Institute of the Novartis
		Research Foundation (GNF)
		10675 John Jay Hopkins Drive
		San Diego, California 92121
		US

c/o NOVARTIS INSTITUTE FOR FUNCTIONAL GENOMICS, INC., dba Genomics Institute of the Novartis Research Foundation, 10675 John Jay Hopkins Drive, San Diego, California 92121, USA, (hereinafter "Inventor(s)"), and the NOVARTIS INSTITUTE FOR FUNCTIONAL GENOMICS, INC., dba the GENOMICS INSTITUTE OF THE NOVARTIS RESEARCH FOUNDATION (GNF), 10675 John Jay Hopkins Drive, San Diego, California 92121, USA, a company organized under the laws of the State of Delaware.

For good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, I/We the Inventor(s) do hereby confirm and agree that, by operation of law and/or contract, and/or by the fulfillment of any and all legal requirements regarding the transfer of employee inventions in my/our country of employment, GNF is the true and lawful owner of all right, title and interest in all inventions, discoveries, patents/utility models, applications, and rights described in paragraphs (1) through (8) below.

If, however, under the laws of any country, I/We the Inventor(s) nevertheless have any ownership right, title or interest in any of the items described herein (which I/We do not believe to be the case and make no claim in or to), for good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, I/We the Inventor(s) do hereby sell, assign and transfer to GNF and its successors, assigns and legal representatives (hereinafter referred to collectively as the "ASSIGNEE"), all of our right, title and interest for all countries of the world in and to

(1) all of our inventions and discoveries described in the provisional or non-provisional patent, utility model, or other application(s) entitled

# COMPOUNDS AND COMPOSITIONS AS C-KIT KINASE INHIBITORS [Patent Case PAT054748]

and filed in the (to be determined) Office on (to be determined) and accorded Application Number (to be determined); and/or filed as a PCT International Application on (to be determined) and accorded International Patent Application Number PCT (to be determined); and/or filed in the United States Patent and Trademark Office on September 01, 2011 and accorded Application Number 61/530,038;

- (2) the application(s) identified in paragraph (1), and all applications claiming priority from such application(s), directly or indirectly, including all national stages of any international patent application(s);
- (3) the right to file patent, utility model, or other applications on any invention or discovery disclosed in any of the applications identified in paragraphs (1) and (2), including the right to file such applications on said inventions and discoveries in the names of

Page 2 of 13

ASSIGNEE or their designees or in our/my name, at ASSIGNEE's election and in accordance with applicable law in all countries and regions; and the right to file all patent, utility model, or other applications in all countries and regions claiming the priority of any of the provisional or non-provisional application(s) identified in paragraphs (1) or (2);

- (4) all rights to claim priority from any of the applications referred to in paragraphs (1), (2), and (3) or from any application from which any of the applications referred to in paragraphs (1), (2) and (3) claim priority in all countries and regions under the Paris Convention for the Protection of Industrial Property, the WTO GATT TRIPS Agreement, the Inter-American Convention relating to Inventions, Patents, Designs, and Industrial Models and all other international agreements to which the United States now is or hereafter becomes a signatory and, if the United States patent application is a provisional patent application, under 35 USC 119(e);
- (5) all continuations, continuations-in-part, and divisionals of any United States patent application(s) or international patent application(s) designating the United States, any national stages of any international application(s), and any other patent application(s) described in paragraphs (1) through (4) hereof, including further continuations, continuations-in-part, and divisionals such as, but not limited to, continuations of continuations and continuations of divisionals:
- (6) all patents, utility models, or other grants that issue from any of the applications referred to herein and all rights and remedies associated therewith including the right to sue for and recover past damages and to recover under 35 U.S.C. § 154 (d) or any other law permitting remedies for infringement prior to issuance of the patent;
- (7) all registrations and confirmations of, and importation certificates based upon, one or more of said patents, utility models, or other grants, and applications for such registrations, confirmations and importation certificates and;
- (8) all reissues, renewals and extensions of said patents, utility models, registrations, confirmations and importation certificates, reexamination certificates issued for said patents and supplementary protection certificates based upon said patents and applications for such reissues, renewals, extensions, reexamination certificates and supplementary protection certificates, the same to be held and enjoyed by said ASSIGNEE to the full ends of the terms for which said patents, utility models, registrations, confirmations, importation certificates, reexamination certificates, supplementary protection certificates, reissues, renewals and extensions may be granted, as fully and entirely as the same would have been held and enjoyed by me/us if this sale, assignment and transfer had not been made.

I/We the Inventor(s) hereby authorize ASSIGNEE and their representatives to insert in paragraph (1) of this Assignment the filing date(s) and Application Number(s) of said patent, utility model, or other application(s) when notified thereof.

I/We the Inventor(s) hereby covenant and agree that I/We will, at any time, (i) upon the request, but at the expense, of ASSIGNEE, execute and deliver all documents that may be necessary or desirable to perfect the title to the foregoing inventions and discoveries, applications, patents, utility models, registrations, confirmations, importation certificates, reissues, renewals, extensions, reexamination certificates, supplementary protection certificates, and applications within the scope of (7) and (8), in ASSIGNEE, including the

execution and procurement of all further documents evidencing this sale, assignment and transfer as may be necessary or desirable for recording the same in the patent office or other intellectual property office, agency or the like of any country or region, (ii) upon the request, but at the expense, of ASSIGNEE execute all additional applications within the scope of paragraphs (1) through (6) and all applications within the scope of (7) or (8), and (iii) make all rightful oaths and declarations and do all lawful acts requisite for procuring the same or for aiding therein, without further compensation, but at the expense of ASSIGNEE.

Should any provision of this Assignment be deemed invalid or unenforceable by reason of any law, statute, regulation or judgment, existing now or in the future in any jurisdiction, such provision shall be modified in such jurisdiction so as to nearly approximate the intent of the Parties. If this cannot be done, such invalid or unenforceable provision shall be divisible and be deleted in any such jurisdiction, and all other provisions shall remain in full force and effect. The modification or deletion of any provision in one jurisdiction shall have no effect on this Assignment in any other jurisdiction.

This Assignment shall be governed by the laws of Delaware.

This Assignment is effective as from the earliest priority date as stated above.

Executed this	
BY L.S. Hank Michael James PETRASSI	
ACKNOWLEDGEMENT	
State of California )	
) s.s.:  County of San Diego )	
On Air 1 2013 before me 2024 Section (C) Notain Hank Michael James PETRASSI who proved to me on the basis the person(s) whose name(s) share subscribed to the within instrument healted they executed the same in fill/her/their-authorized capacity() signature(s) on the instrument, the person(s), or the entity upon behalf executed the instrument.	of satisfactory evidence to be and acknowledged to me that as), and that by his/har/their
I certify under PENALTY OF PERJURY under the laws of the State of paragraph is true and correct.	f California that the foregoing
WITNESS my hand and official seal.  Signature first first (Seal)	SUSAN SESNOVICH Commission # 1982303 Netery Public - Califernia San Diego County My Comm. Expires Dec 2, 2015

Executed this d	ay of	, 20
BY		L.S.
Xiaolin LI		
ACKNOWLEDGEME	NT	
State of California	)	
	) s.s.:	
County of San Diego	)	
Xiaolin LI who proved to is/are subscribed to the w in his/her/their authorized	o me on the basis of so ithin instrument and a d capacity(ies), and th	
I certify under PENALTY paragraph is true and corr		r the laws of the State of California that the foregoing
WITNESS my hand an	d official seal.	
Signature		(Seal)

Executed this \sum_\subseteq t day of	August , 2012
BY Xiaodong LIU	L.S.
ACKNOWLEDGEMENT	
State of California	) ) s.s.:
County of San Diego	)
Xiaodong LIU who proved to mame(s) is large subscribed to the w the same in his/her/their author	e me, <u>NA SAN(H</u> , Notary Public, personally appeared the on the basis of satisfactory evidence to be the person(a) whose within instrument and acknowledged to me that be/she/they executed rized capacity(ies), and that by (his/her/their signature(s) on the entity upon behalf of which the person(s) acted, executed the
I certify under PENALTY OF PE paragraph is true and correct.	RJURY under the laws of the State of California that the foregoing
WITNESS my hand and officia	l seal.
Signature Lucian Signature	(Seal)  SUSAN SESNOVICH  Commission # 1982303  Notary Public - California  San Diego Coemty  My Comm. Expires Dec 2, 2015

Executed this	3 6,,	_day of _	Muguet	, 20_ <u>1%</u> .
ВҮ	Mr.	1		L.S.
Jon LOREN	O			
ACKNOWLE	DGEN	MENT .		
State of Califo	rnia		)	
			) s.s.:	
County of San	Dieg	3	)	

On AULT 10 20/2 before me, SAN SAN WINNotary Public, personally appeared Jon LOREN who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is are subscribed to the within instrument and acknowledged to me that the she they executed the same in fliches their authorized capacity(iss), and that by figher their signature(s) on the instrument, the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my band and official seal.

Signature <u>Julia Jenovila</u> (Seal)

SUSAN SESNOVICH
Commission # 1962303
Notery Public - Celliornia
Sen Diego County
My Comm. Expires Dec 2, 2015

Executed this day of	<u> August</u> , 20_	<b>`</b>
BY New York Valentina MOLTENI	L.:	S.
ACKNOWLEDGEMENT		
State of California	)	
	) s.s.:	
County of San Diego	)	
Valentina MOLTENI who prov whose name(s) is are subscribed executed the same in his her their instrument, the person(s), or the instrument.	ed to me on the basis of s to the within instrument as authorized capacity(ies), ar e entity upon behalf of w	Notary Public, personally appeared satisfactory evidence to be the person(s) and acknowledged to me that he/she they not that by his/high/their signature(s) on the which the person(s) acted, executed the
paragraph is true and correct.	KJURY under the laws of	the State of California that the foregoing
WITNESS my hand and officia	l seal.	
Signature <u>Lease Lanc</u>	ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	SUSAN SESHOVICH Commission # 1862303 Notary Public - California San Diego County Y Comm. Explice Dec 2, 2015

Executed this
BY Jobakka L.S. Juliet NABAKKA
ACKNOWLEDGEMENT
State of California )
) s.s.: County of San Diego )
On AUGUST 1 3018— before me, SUSAN SOLUMINT. Notary Public, personally appeared Juliet NABAKKA who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is subscribed to the within instrument and acknowledged to me that he signature(s) on the same in his/fer their authorized capacity(ies), and that by his/fer their signature(s) on the instrument, the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.
WITNESS my hand and official seal.
Signature  SUSAN SESNOVICH Commission # 1962303 Notary Public - California San Diego County My Comm. Expires Dec 2, 2015

Executed this 157 day of	<u>4uqus1, 20</u>
BY I	L.S
Bao NGUYEN	
ACKNOWLEDGEMENT	
State of California	)
	) s.s.:
County of San Diego	)

On fixed 1 2013 before me, 2542 Sestimated. Notary Public, personally appeared Bao NGUYEN who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is associated to the within instrument and acknowledged to me (s) in highes/their authorized capacity(iss), and that by (18/hes/their signature(s) on the instrument, the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature <u>Sucest Septential</u> (Seal)

SUSAN BESNOVICH
Commission # 1962303
Hotary Public - California
Sen Diego County
My Comm. Expires Dec 2, 2015

Executed this day	of <u>JULY</u> , 201	2
BY LSC	Ua	L.S.
Vince YEH	<b>,</b>	
ACKNOWLEDGEMENT		
State of California	)	
	) s.s.:	
County of San Diego	)	

On JULY 3/30/2 before me SSAN SEANCH. Notary Public, personally appeared Vince VEH who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) Sare subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/hes/their authorized capacity(ies), and that by his/hes/their signature(s) on the instrument, the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Jusin Junel (Seal)

SUSAN SESHOWCH
Commission # 1982303
Motery Public - Cellfornis
Sen Diego Coumy
My Comm. Expires Dec 2, 2016

Executed this 13 day of	August 2012
Novartis Institute for Functions	d Genomics, Inc.
BY Robert Downs	L.S.
ACKNOWLEDGEMENT	
State of California	)
County of San Diego	) s.s.: )

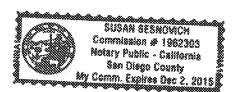
1

On <u>ALLIST 13 2012</u> before me <u>///SALLIST</u>, Notary Public, personally appeared Robert Downs who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) (s/arc subscribed to the within instrument and acknowledged to me that be/she/they executed the same in <u>Mil/her/their</u> authorized capacity(ies), and that by (is/her/their signature(s) on the instrument, the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Silan Sonna (Seal)



### ASSIGNMENT

### This Assignment Agreement is entered into by and between

Hank Michael James PETRASSI	citizen of United States of America	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Xiaolin Li	citizen of People's Republic of China	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novarils Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Xiaodong LIU	citizen of People's Republic of China	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Jon LOREN	citizen of United States of America	Novariis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Valentina MOLTENI	citizen of United States of America	Novartis Institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Juliet NABAKKA	citizen of United States of America	Novartis Institute for Functional Genomics. Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US
Bao NGUYEN	citizen of United States of America	Novartis institute for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation (GNF) 10675 John Jay Hopkins Drive San Diego, California 92121 US

Vince YEH	Citizen of Canada	Novartis Institute for Functional Genomics,
		Inc.
		dba Genomics Institute of the Novartis
		Research Foundation (GNF)
		10675 John Jay Hopkins Drive
		San Diego, California 92121
		US

c/o NOVARTIS INSTITUTE FOR FUNCTIONAL GENOMICS, INC., dba Genomics Institute of the Novartis Research Foundation, 10675 John Jay Hopkins Drive, San Diego, California 92121, USA, (hereinafter "Inventor(s)"), and the NOVARTIS INSTITUTE FOR FUNCTIONAL GENOMICS, INC., dba the GENOMICS INSTITUTE OF THE NOVARTIS RESEARCH FOUNDATION (GNF), 10675 John Jay Hopkins Drive, San Diego, California 92121, USA, a company organized under the laws of the State of Delaware.

For good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, I/We the Inventor(s) do hereby confirm and agree that, by operation of law and/or contract, and/or by the fulfillment of any and all legal requirements regarding the transfer of employee inventions in my/our country of employment, GNF is the true and lawful owner of all right, title and interest in all inventions, discoveries, patents/utility models, applications, and rights described in paragraphs (1) through (8) below.

If, however, under the laws of any country, I/We the Inventor(s) nevertheless have any ownership right, title or interest in any of the items described herein (which I/We do not believe to be the case and make no claim in or to), for good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, I/We the Inventor(s) do hereby sell, assign and transfer to GNF and its successors, assigns and legal representatives (hereinafter referred to collectively as the "ASSIGNEE"), all of our right, title and interest for all countries of the world in and to

(1) all of our inventions and discoveries described in the provisional or non-provisional patent, utility model, or other application(s) entitled

# COMPOUNDS AND COMPOSITIONS AS C-KIT KINASE INHIBITORS [Patent Case PAT054748]

and filed in the (to be determined) Office on (to be determined) and accorded Application Number (to be determined); and/or filed as a PCT International Application on (to be determined) and accorded International Patent Application Number PCT (to be determined); and/or filed in the United States Patent and Trademark Office on September 01, 2011 and accorded Application Number 61/530,038;

- (2) the application(s) identified in paragraph (1), and all applications claiming priority from such application(s), directly or indirectly, including all national stages of any international patent application(s);
- (3) the right to file patent, utility model, or other applications on any invention or discovery disclosed in any of the applications identified in paragraphs (1) and (2), including the right to file such applications on said inventions and discoveries in the names of

Page 2 of 13

ASSIGNEE or their designees or in our/my name, at ASSIGNEE's election and in accordance with applicable law in all countries and regions; and the right to file all patent, utility model, or other applications in all countries and regions claiming the priority of any of the provisional or non-provisional application(s) identified in paragraphs (1) or (2);

- (4) all rights to claim priority from any of the applications referred to in paragraphs (1), (2), and (3) or from any application from which any of the applications referred to in paragraphs (1), (2) and (3) claim priority in all countries and regions under the Paris Convention for the Protection of Industrial Property, the WTO GATT TRIPS Agreement, the Inter-American Convention relating to Inventions, Patents, Designs, and Industrial Models and all other international agreements to which the United States now is or hereafter becomes a signatory and, if the United States patent application is a provisional patent application, under 35 USC 119(e);
- (5) all continuations, continuations-in-part, and divisionals of any United States patent application(s) or international patent application(s) designating the United States, any national stages of any international application(s), and any other patent application(s) described in paragraphs (1) through (4) hereof, including further continuations, continuations-in-part, and divisionals such as, but not limited to, continuations of continuations and continuations of divisionals:
- (6) all patents, utility models, or other grants that issue from any of the applications referred to herein and all rights and remedies associated therewith including the right to sue for and recover past damages and to recover under 35 U.S.C. § 154 (d) or any other law permitting remedies for infringement prior to issuance of the patent;
- (7) all registrations and confirmations of, and importation certificates based upon, one or more of said patents, utility models, or other grants, and applications for such registrations, confirmations and importation certificates and:
- (8) all reissues, renewals and extensions of said patents, utility models, registrations, confirmations and importation certificates, reexamination certificates issued for said patents and supplementary protection certificates based upon said patents and applications for such reissues, renewals, extensions, reexamination certificates and supplementary protection certificates, the same to be held and enjoyed by said ASSIGNEE to the full ends of the terms for which said patents, utility models, registrations, confirmations, importation certificates, reexamination certificates, supplementary protection certificates, reissues, renewals and extensions may be granted, as fully and entirely as the same would have been held and enjoyed by me/us if this sale, assignment and transfer had not been made.

I/We the Inventor(s) hereby authorize ASSIGNEE and their representatives to insert in paragraph (1) of this Assignment the filing date(s) and Application Number(s) of said patent, utility model, or other application(s) when notified thereof.

I/We the Inventor(s) hereby covenant and agree that I/We will, at any time, (i) upon the request, but at the expense, of ASSIGNEE, execute and deliver all documents that may be necessary or desirable to perfect the title to the foregoing inventions and discoveries, applications, patents, utility models, registrations, confirmations, importation certificates, reissues, renewals, extensions, reexamination certificates, supplementary protection certificates, and applications within the scope of (7) and (8), in ASSIGNEE, including the

execution and procurement of all further documents evidencing this sale, assignment and transfer as may be necessary or desirable for recording the same in the patent office or other intellectual property office, agency or the like of any country or region, (ii) upon the request, but at the expense, of ASSIGNEE execute all additional applications within the scope of paragraphs (1) through (6) and all applications within the scope of (7) or (8), and (iii) make all rightful oaths and declarations and do all lawful acts requisite for procuring the same or for aiding therein, without further compensation, but at the expense of ASSIGNEE.

Should any provision of this Assignment be deemed invalid or unenforceable by reason of any law, statute, regulation or judgment, existing now or in the future in any jurisdiction, such provision shall be modified in such jurisdiction so as to nearly approximate the intent of the Parties. If this cannot be done, such invalid or unenforceable provision shall be divisible and be deleted in any such jurisdiction, and all other provisions shall remain in full force and effect. The modification or deletion of any provision in one jurisdiction shall have no effect on this Assignment in any other jurisdiction.

This Assignment shall be governed by the laws of Delaware.

This Assignment is effective as from the earliest priority date as stated above.

Executed this	day of, 20
BY	L.S.
Hank Michael Jame	s PETRASSI
ACKNOWLEDGEM	ENT
State of California	)
	) s.s.:
County of San Diego	)
Hank Michael Jame the person(s) whose na he/she/they executed t	before me,, Notary Public, personally appeared s PETRASSI who proved to me on the basis of satisfactory evidence to be me(s) is/are subscribed to the within instrument and acknowledged to me that he same in his/her/their authorized capacity(ies), and that by his/her/their rument, the person(s), or the entity upon behalf of which the person(s) acted, t.
I certify under PENAL paragraph is true and co	TY OF PERJURY under the laws of the State of California that the foregoing prect.
WITNESS my hand a	and official seal.
Signature	(Seal)

Executed this <u>In</u> day of	Juguse 2012
BY Xiaolin LI	L.S.
ACKNOWLEDGEMENT	
State of California	)
County of Alameda	) s.s.: )

On August 2, 2012 before me, Alishia L. Collins Rowe-Babb, Notary Public, personally appeared Xiaolin LI who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument, the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature all a f Bland Dall (Seal)

ALISHIA L. COLLINS NOWE-BABB Commission & 1918015 Motory Public - California Alamada County My Comm. Espiras Dec 9, 2014

Executed this	_day of	, 20
BY		L.S.
Xiaodong LIU		
ACKNOWLEDGEM	IENT	
State of California	•	
	) s.s.:	
County of San Diego	•	
name(s) is/are subscrib the same in his/her/tl	ed to the within instrume heir authorized capacity	Notary Public, personally appeared sis of satisfactory evidence to be the person(s) whose tent and acknowledged to me that he/she/they executed y(ies), and that by his/her/their signature(s) on the behalf of which the person(s) acted, executed the
I certify under PENAL paragraph is true and co		er the laws of the State of California that the foregoing
WITNESS my hand a	and official seal.	
Signature		(Seal)

Executed this d	ay of	, 20,	
BY		L.S.	
BY Jon LOREN			
ACKNOWLEDGEME	NI		
State of California	)		
	) s.s.:		
County of San Diego	)		
name(s) is/are subscribed the same in his/her/thei	to the within instrumer authorized capacity(	Notary Public, personally appeared of satisfactory evidence to be the person(s) whent and acknowledged to me that he/she/ihey executes), and that by his/her/their signature(s) on behalf of which the person(s) acted, executed	uted the
I certify under PENALTY paragraph is true and corr		r the laws of the State of California that the forego	oing
WITNESS my hand an	d official seal.		
Signature		(Seal)	

Executed this da	y of	, 20
BY		L.S.
BY Valentina MOLTENI		
ACKNOWLEDGEMEN	T	
State of California	)	
	) s.s.:	
County of San Diego	)	
Valentina MOLTENI whose name(s) is/are subsexecuted the same in his/he	no proved to me or cribed to the withing cr/their authorized or	, Notary Public, personally appeared n the basis of satisfactory evidence to be the person(s) in instrument and acknowledged to me that he/she/they capacity(ies), and that by his/her/their signature(s) on the on behalf of which the person(s) acted, executed the
I certify under PENALTY paragraph is true and corre		der the laws of the State of California that the foregoing
WITNESS my hand and	official seal.	
Signature		(Seal)

Executed this day	y of	, 20		
BY		L.S.		
Juliet NABAKKA				
ACKNOWLEDGEMEN	T			
State of California	)			
	) s.s.:			
County of San Diego	)			
On	oved to me on the l c the within instrum authorized capacit	pasis of satisfactory ev nent and acknowledged y(ies), and that by t	idence to be the person(s) of the me that he/she/they exc his/her/their signature(s) of	whose ecuted on the
I certify under PENALTY paragraph is true and correct		er the laws of the State	e of California that the fore	egoing
WITNESS my hand and	official seal.			
Signature		(Seal)		

Executed this	day of	, 20	
ВУ		LS.	
Bao NGUYEN		***************************************	
ACKNOWLEDGEM	ENT		
State of California	)		
	) s.s.:		
County of San Diego	)		
Bao NGUYEN who pename(s) is/are subscribe the same in his/her/th	roved to me on the basis ed to the within instrument eir authorized capacity(is	of satisfactory evidence to be to tand acknowledged to me that hes), and that by his/her/their behalf of which the person(s)	the person(s) whose ne/she/they executed signature(s) on the
I certify under PENAL' paragraph is true and co		the laws of the State of Californi	ia that the foregoing
WITNESS my hand a	nd official seal.		
Signature		(Seal)	

1 1

Executed this day	y of	, 20	
BY Vince YEH		L.S.	
Vince YEH			
ACKNOWLEDGEMEN	T		
	)		
	) s.s.:		
County of San Diego	)		
Vince YEH who proved name(s) is/are subscribed t the same in his/her/their	to me on the basi o the within instrun authorized capacit	Notary Public, personally appear is of satisfactory evidence to be the person(s) when the person (s) when the person (s) is not that by his/her/their signature(s) on behalf of which the person(s) acted, execute	whose cuted in the
I certify under PENALTY paragraph is true and correct		ler the laws of the State of California that the fore	going
WITNESS my hand and	official seal.		
Signature		(Seal)	

Executed this 13 day of August 20/2
Novartis Institute for Functional Genomics, Inc.
BY L.S. Robert Downs
ACKNOWLEDGEMENT
State of California )
) s.s.:
County of San Diego )
On <u>F(K/S) 1/20/</u> before me, <u>S/SAN S(SANVICH</u> . Notary Public, personally appeared <b>Robert Downs</b> who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) (s/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(jes), and that by his/her/their signature(s) on the instrument, the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.
WITNESS my hand and official seal.
Signature Sugar Session (Seal)  Signature Sugar Session (Seal)  Commission (182300)  Commission (Commission (Commi