

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

EPAS ID: PAT3411390

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
VINCE YEH	08/03/2012
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
HANK MICHAEL JAMES PETRASSI	08/09/2012
XIAOLIN LI	08/03/2012
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	NOVARTIS INSTITUTE FOR FUNCTIONAL GENOMICS, INC., DBA GENOMICS INSTITUTE OF THE NOVARTIS RESEARCH FOUNDATION,
<b>Street Address:</b>	10675 JOHN JAY HOPKINS DRIVE
<b>City:</b>	SAN DIEGO
<b>State/Country:</b>	CALIFORNIA
<b>Postal Code:</b>	92121
<b>PROPERTY NUMBERS Total: 2</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	13595575
<b>PCT Number:</b>	US2012052621
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	
<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>	
<b>Phone:</b>	858-812-1525
<b>Email:</b>	jclarke@gnf.org
<b>Correspondent Name:</b>	DANIEL E RAYMOND/GNF
<b>Address Line 1:</b>	10675 JOHN JAY HOPKINS DRIVE
<b>Address Line 4:</b>	SAN DIEGO, CALIFORNIA 92121
<b>ATTORNEY DOCKET NUMBER:</b>	PAT054747-US-NP, WO
<b>NAME OF SUBMITTER:</b>	DANIEL E RAYMOND

<b>SIGNATURE:</b>	/DANIEL E RAYMOND/
<b>DATE SIGNED:</b>	06/24/2015

**Total Attachments: 26**

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## ASSIGNMENT

This Assignment Agreement is entered into by and between

Vince YEHL	citizen of Canada	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Xiaolin LI	citizen of People's Republic of China	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Xiaodong LIU	citizen of People's Republic of China	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Jon LOREN	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Valentina MOLTENI	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Juliet NABAKKA	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Bao NGUYEN	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US

Hank Michael James PETRASSI	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
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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 PAT054747]

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 61/530,028;

(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

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 3 day of AUG, 2012.

BY *Vince YEH* L.S.

Vince YEH

ACKNOWLEDGEMENT

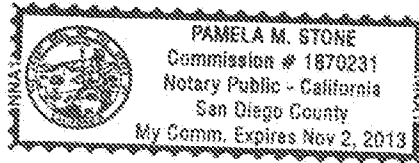
State of California )  
 ) s.s.:  
County of San Diego )

On August 3, 2012 before me, Pamela M. Stone, Notary Public, personally appeared **Vince YEH** 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 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 *Pamela M. Stone* (Seal)



Executed this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

BY \_\_\_\_\_ L.S.

**Xiaolin LI**

**ACKNOWLEDGEMENT**

State of California )  
 ) s.s.:  
County of \_\_\_\_\_)

On \_\_\_\_\_ before me, \_\_\_\_\_, 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 \_\_\_\_\_ (Seal)



Executed this 1st day of August, 2012.

BY Xiaodong LIU L.S.

ACKNOWLEDGEMENT

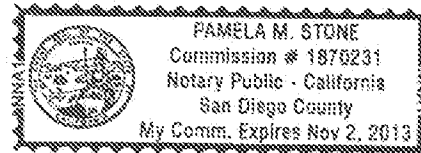
State of California )  
 ) s.s.:  
County of San Diego )

On August 1, 2012 before me, Pamela M. Stone, Notary Public, personally appeared Xiaodong LIU 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.

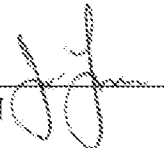
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Pamela M. Stone (Seal)



Executed this 16 day of August, 2012.

BY  L.S.  
Jon LOREN

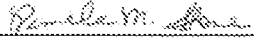
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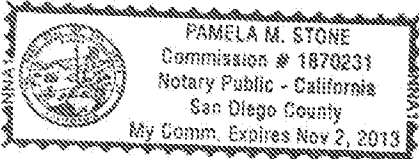
State of California            )  
  ) s.s.:  
County of San Diego        )

On August 16, 2012 before me, Pamela M. Stone, Notary 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 he/she/they executed the same in his/hers/their authorized capacity(ies), and that by his/hers/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  (Seal)



Executed this 1 day of August, 2012.

BY *Valentina Molteni* L.S.  
**Valentina MOLTENI**

ACKNOWLEDGEMENT

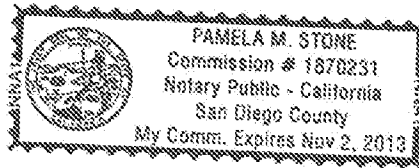
State of California )  
 ) s.s.:  
County of San Diego )

On August 1, 2012 before me, Pamela M. Stone, Notary Public, personally appeared **Valentina MOLTENI** 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 *Pamela M. Stone* (Seal)



Executed this 1<sup>st</sup> day of August, 2012.

BY *Juliet NABAKKA* L.S.  
**Juliet NABAKKA**

ACKNOWLEDGEMENT

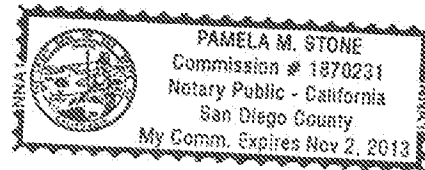
State of California )  
 ) s.s.:  
County of San Diego )

On August 1, 2012 before me, Pamela M. Stone, 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/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 *Pamela M. Stone* (Seal)



Executed this 1st day of August, 2012.

BY *Bao NGUYEN* L.S.  
**Bao NGUYEN**

ACKNOWLEDGEMENT

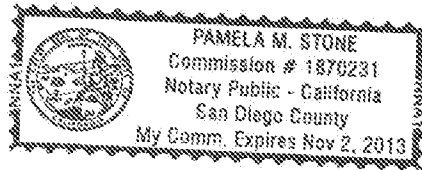
State of California )  
 ) s.s.:  
County of San Diego )

On August 1, 2012 before me, Pamela M. Stone, 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/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 *Pamela M. Stone* (Seal)



Executed this 9 day of August, 2012.

BY *[Signature]* L.S.  
**Hank Michael James PETRASSI**

ACKNOWLEDGEMENT

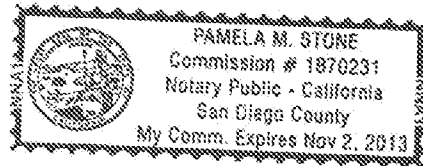
State of California )  
 ) s.s.:  
County of San Diego )

On August 9, 2012 before me, Pamela M. Stone, Notary Public, personally appeared **Hank Michael James PETRASSI** 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 *Pamela M. Stone* (Seal)



Executed this 21<sup>st</sup> day of August, 2012.

Novartis Institute for Functional Genomics, Inc.

BY *T. L. Smith* L.S.  
**Timothy L. Smith**  
**Authorized Signatory**

ACKNOWLEDGEMENT

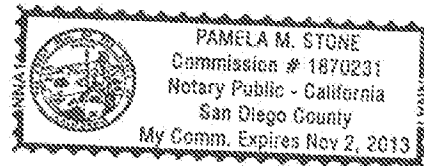
State of California )  
 ) s.s.:  
County of San Diego )

On August 21, 2012 before me, Pamela M. Stone, Notary Public, personally appeared **Timothy L. Smith** 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 *Pamela M. Stone* (Seal)



**ASSIGNMENT**

This Assignment Agreement is entered into by and between

Vince YEHL	citizen of Canada	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Xiaolin LI	citizen of People's Republic of China	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Xiaodong LIU	citizen of People's Republic of China	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Jon LOREN	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Valentina MOLTENI	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Juliet NABAKKA	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
Bao NGUYEN	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US



Hank Michael James PETRASSI	citizen of United States of America	Novartis Institution for Functional Genomics, Inc. dba Genomics Institute of the Novartis Research Foundation 10675 John Jay Hopkins Drive San Diego, California 92121 US
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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 PAT054747]

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 61/530,028;

(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

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 \_\_\_\_\_, 2012.

BY \_\_\_\_\_ L.S.

**Vince YEH**

ACKNOWLEDGEMENT

State of California )

) s.s.:

County of San Diego )

On \_\_\_\_\_ before me, Pamela M. Stone, Notary Public, personally appeared **Vince YEH** 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 \_\_\_\_\_ (Seal)

Executed this 3rd day of August, 2012.

BY [Signature] L.S.  
Xiaolin LI

ACKNOWLEDGEMENT

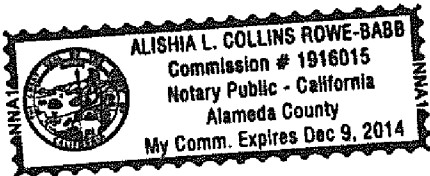
State of California )  
 ) s.s.:  
County of Alameda )

On August 3, 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 [Signature] (Seal)



Executed this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

BY \_\_\_\_\_ L.S.  
**Xiaodong LIU**

ACKNOWLEDGEMENT

State of California                    )  
  ) s.s.:  
County of San Diego                    )

On \_\_\_\_\_ before me, Pamela M. Stone, Notary Public, personally appeared **Xiaodong LIU** 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 \_\_\_\_\_ (Seal)

Executed this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

BY \_\_\_\_\_ L.S.  
**Jon LOREN**

ACKNOWLEDGEMENT

State of California                    )  
  ) s.s.:  
County of San Diego                    )

On \_\_\_\_\_ before me, Pamela M. Stone, Notary 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 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 \_\_\_\_\_ (Seal)

Executed this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

BY \_\_\_\_\_ L.S.  
**Valentina MOLTENI**

ACKNOWLEDGEMENT

State of California )  
 ) s.s.:  
County of San Diego )

On \_\_\_\_\_ before me, Pamela M. Stone, Notary Public, personally appeared **Valentina MOLTENI** 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 \_\_\_\_\_ (Seal)



Executed this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

BY \_\_\_\_\_ L.S.  
**Juliet NABAKKA**

ACKNOWLEDGEMENT

State of California )  
 ) s.s.:  
County of San Diego )

On \_\_\_\_\_ before me, Pamela M. Stone, 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/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 \_\_\_\_\_ (Seal)

Executed this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

BY \_\_\_\_\_ L.S.  
**Bao NGUYEN**

ACKNOWLEDGEMENT

State of California )  
 ) s.s.:  
County of San Diego )

On \_\_\_\_\_ before me, Pamela M. Stone, 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/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 \_\_\_\_\_ (Seal)

Executed this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

BY \_\_\_\_\_ L.S.  
**Hank Michael James PETRASSI**

ACKNOWLEDGEMENT

State of California )  
 ) s.s.:  
County of San Diego )

On \_\_\_\_\_ before me, Pamela M. Stone, Notary Public, personally appeared **Hank Michael James PETRASSI** 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 \_\_\_\_\_ (Seal)

Executed this 21<sup>st</sup> day of August, 2012.

Novartis Institute for Functional Genomics, Inc.

BY *Timothy L. Smith* L.S.  
**Timothy L. Smith**  
**Authorized Signatory**

ACKNOWLEDGEMENT

State of California )  
 ) s.s.:  
County of San Diego )

On August 21, 2012 before me, Pamela M. Stone, Notary Public, personally appeared **Timothy L. Smith** 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 *Pamela M. Stone* (Seal)

