

## PATENT ASSIGNMENT

Electronic Version v1.1  
 Stylesheet Version v1.1

| SUBMISSION TYPE:   | NEW ASSIGNMENT    |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
|--|-------------------|---------------|----------------|---------------------------|------------------|---------------------|------------------|-------------------|--------------|----------------|------------|--------------------|------------|---------------|------------|------------|------------|---------------|------------|
| NATURE OF CONVEYANCE:  | ASSIGNMENT        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| CONVEYING PARTY DATA   |                   |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| <table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Bernhard H. GEIERSTANDGER</td> <td>04/04/2013</td> </tr> <tr> <td>Weijia OU</td> <td>04/05/2013</td> </tr> <tr> <td>Susan E. CELLITTI</td> <td>04/05/2013</td> </tr> <tr> <td>Tetuo UNO</td> <td>04/04/2013</td> </tr> <tr> <td>Tiffany CROSSGROVE</td> <td>06/15/2011</td> </tr> <tr> <td>Hsien-Po CHIU</td> <td>06/10/2011</td> </tr> <tr> <td>Xueshi HAO</td> <td>06/10/2011</td> </tr> <tr> <td>Jan GRUNEWALD</td> <td>06/10/2011</td> </tr> </tbody> </table> |                   | Name          | Execution Date | Bernhard H. GEIERSTANDGER | 04/04/2013       | Weijia OU           | 04/05/2013       | Susan E. CELLITTI | 04/05/2013   | Tetuo UNO      | 04/04/2013 | Tiffany CROSSGROVE | 06/15/2011 | Hsien-Po CHIU | 06/10/2011 | Xueshi HAO | 06/10/2011 | Jan GRUNEWALD | 06/10/2011 |
| Name   | Execution Date    |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Bernhard H. GEIERSTANDGER  | 04/04/2013        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Weijia OU  | 04/05/2013        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Susan E. CELLITTI  | 04/05/2013        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Tetuo UNO  | 04/04/2013        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Tiffany CROSSGROVE   | 06/15/2011        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Hsien-Po CHIU  | 06/10/2011        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Xueshi HAO   | 06/10/2011        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Jan GRUNEWALD  | 06/10/2011        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| RECEIVING PARTY DATA   |                   |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| <table border="1"> <tr> <td>Name:</td> <td>IRM LLC</td> </tr> <tr> <td>Street Address:</td> <td>131 Front Street</td> </tr> <tr> <td>Internal Address:</td> <td>P.O. Box HM 2899</td> </tr> <tr> <td>City:</td> <td>Hamilton</td> </tr> <tr> <td>State/Country:</td> <td>BERMUDA</td> </tr> <tr> <td>Postal Code:</td> <td>HM LX</td> </tr> </table>   |                   | Name:         | IRM LLC        | Street Address:           | 131 Front Street | Internal Address:   | P.O. Box HM 2899 | City:             | Hamilton     | State/Country: | BERMUDA    | Postal Code:       | HM LX      |               |            |            |            |               |            |
| Name:  | IRM LLC           |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Street Address:  | 131 Front Street  |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Internal Address:  | P.O. Box HM 2899  |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| City:  | Hamilton          |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| State/Country:   | BERMUDA           |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Postal Code:   | HM LX             |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| PROPERTY NUMBERS Total: 3  |                   |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| <table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>61108434</td> </tr> <tr> <td>Application Number:</td> <td>13125547</td> </tr> <tr> <td>PCT Number:</td> <td>US2009061954</td> </tr> </tbody> </table>  |                   | Property Type | Number         | Application Number:       | 61108434         | Application Number: | 13125547         | PCT Number:       | US2009061954 |                |            |                    |            |               |            |            |            |               |            |
| Property Type  | Number            |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Application Number:  | 61108434          |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Application Number:  | 13125547          |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| PCT Number:  | US2009061954      |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| CORRESPONDENCE DATA  |                   |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Fax Number:  | 8586588000        |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| <i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>   |                   |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Phone:   | (858) 812-1617    |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Email:   | lwatts@gnf.org    |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |
| Correspondent Name:  | Daniel E. Raymond |               |                |                           |                  |                     |                  |                   |              |                |            |                    |            |               |            |            |            |               |            |

CH \$120.00 61108434

Address Line 1: 10675 John Jay Hopkins Drive  
Address Line 4: San Diego, CALIFORNIA 92121

ATTORNEY DOCKET NUMBER: PAT053160

NAME OF SUBMITTER: Daniel E Raymond

Signature: /Daniel E Raymond, Reg. No. 53,504/

Date: 09/30/2013

**Total Attachments: 11**

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**ASSIGNMENT**

For good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, we

|                       |                                       |   |
|-----------------------|---------------------------------------|---|
| Bernhard GEIERSTANGER | citizen of Germany                    | Genomics Institute of the Novartis Research Foundation<br>10675 John Jay Hopkins Drive<br>San Diego, California 92121, US |
| Weijia OU             | citizen of United States of America   | Genomics Institute of the Novartis Research Foundation<br>10675 John Jay Hopkins Drive<br>San Diego, California 92121, US |
| Susan E. CELLITTI     | citizen of United States of America   | Genomics Institute of the Novartis Research Foundation<br>10675 John Jay Hopkins Drive<br>San Diego, California 92121, US |
| Tetsuo UNO            | citizen of Japan                      | Genomics Institute of the Novartis Research Foundation<br>10675 John Jay Hopkins Drive<br>San Diego, California 92121, US |
| Tiffany Crossgrove    | citizen of United States of America   | Genomics Institute of the Novartis Research Foundation<br>10675 John Jay Hopkins Drive<br>San Diego, California 92121, US |
| Hsien-Po CHIU         | citizen of Taiwan                     | Genomics Institute of the Novartis Research Foundation<br>10675 John Jay Hopkins Drive<br>San Diego, California 92121, US |
| Xueshi HAO            | citizen of People's Republic of China | Genomics Institute of the Novartis Research Foundation<br>10675 John Jay Hopkins Drive<br>San Diego, California 92121, US |
| Jan Grunewald         | citizen of Germany                    | Genomics Institute of the Novartis Research Foundation<br>10675 John Jay Hopkins Drive<br>San Diego, California 92121, US |

do hereby sell, assign and transfer to IRM LLC, a Delaware Limited Liability Company, a body corporate organized according to the laws of the United States of America, of 131 Front Street, P. O. Box HM 2899, Hamilton HM LX, Bermuda (hereinafter referred to as the "ASSIGNEE") and its successors, assigns and legal representatives, all of my right, title and interest for all countries of the world in and to (1) all of my inventions and discoveries described in the patent application(s) titled

**BIOSYNTHETICALLY GENERATED PYRROLINE-CARBOXY-LYSINE  
AND SITE SPECIFIC PROTEIN MODIFICATIONS VIA CHEMICAL DERIVATIZATION  
OF PYRROLINE-CARBOXY-LYSINE AND PYRROLYSINE RESIDUES**

and filed in the United States Patent and Trademark Office on \*21 April 2011 and accorded Application Number \*13/125,547 and/or filed in the RO/US on \*23 October 2009 and accorded International Patent Application Number \*PCT/US2009/061954, (2) the patent application(s) identified in (1), (3) all national stages of any international patent application identified in (1), (4) all other patent applications in all countries and regions claiming the priority of the provisional or non-provisional patent application filed in the United States Patent and Trademark Office on 24 October 2008 and accorded Application Number 61/108,434, (5) for all patent applications, all rights of priority based upon the United States patent application identified in (4) in all countries and regions under the Paris Convention for the Protection of Industrial Property, 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 identified in (4) is a provisional patent application, under 35 USC 119(e)

(including the right to file patent applications on said inventions and discoveries in the names of **ASSIGNEE** or their designees or in our names, at their election and in accordance with applicable law in all countries and regions), (6) all continuations and divisions of any United States patent application or international patent application designating the United States identified in (1), any national stages of any international application identified in (1) and any patent applications within the scope of (4) (including further continuations and divisions such as, but not limited to, continuations of continuations and continuations of divisions), ((2)-(4) and (6) hereinafter referred to collectively as "patent applications"), (7) all patents that are granted on any of said patent applications, (8) all registrations and confirmations of, and importation certificates based upon, one or more of said patents and applications for such registrations, confirmations and importation certificates and (9) all reissues, renewals and extensions of said patents, 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** and their successors, assigns and legal representatives to the full ends of the terms for which said patents, 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 us if this sale, assignment and transfer had not been made.

\*We hereby authorize **ASSIGNEE** and their representatives to insert in this Assignment the filing date(s) and Application Number(s) of said patent application(s) when notified thereof.

And we hereby covenant and agree that we will, at any time, (i) upon the request, but at the expense, of **ASSIGNEE** or their successors, assigns or legal representatives execute and deliver all documents that may be necessary or desirable to perfect the title to the foregoing inventions and discoveries, patent applications, patents, registrations, confirmations, importation certificates, reissues, renewals, extensions, reexamination certificates, supplementary protection certificates and applications within the scope of (8) and (9) in **ASSIGNEE** or their successors, assigns or legal representatives, 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** or their successors, assigns or legal representatives execute all additional patent applications within the scope of (3), (4) and (6) and all applications within the scope of (8) or (9) 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** or their successors, assigns or legal representatives.

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

Executed this 4th day of April, 2013.

Bernhard H. Geierstanger L.S.  
Bernhard H. GEIERSTANGER

**ACKNOWLEDGEMENT**

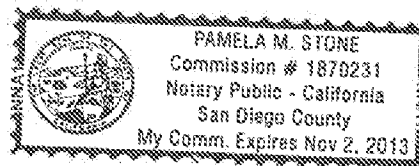
State of California )  
 ) s.s.:  
County of San Diego )

On April 4, 2013 before me, Pamela M. Stone, Notary Public, personally appeared **Bernhard H. GEIERSTANGER** 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 5th day of April, 2013.

*WeiJia OU* L.S.  
WeiJia OU

**ACKNOWLEDGEMENT**

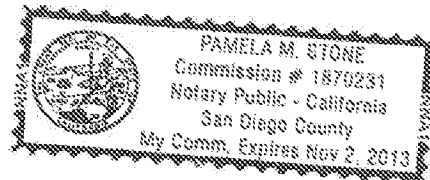
State of California )  
 ) s.s.:  
County of San Diego )

On April 5, 2013 before me, Pamela M. Stone, Notary Public, personally appeared WeiJia OU 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 5<sup>th</sup> day of April, 2013.

Susan E. Cellitti L.S.  
Susan E. CELLITTI

**ACKNOWLEDGEMENT**

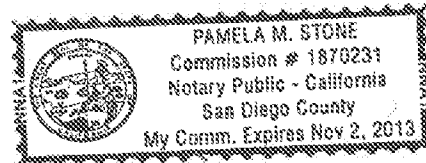
State of California )  
 ) s.s.:  
County of San Diego )

On April 5, 2013 before me, Pamela M. Stone, Notary Public, personally appeared **Susan E. CELLITTI** 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~~(s)~~/she/they executed the same in his~~(s)~~/her/their authorized capacity~~(ies)~~, and that by his~~(s)~~/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 4 day of April, 2013.

Tetsuo Uno L.S.  
Tetsuo UNO

**ACKNOWLEDGEMENT**

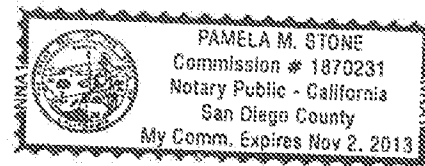
State of California )  
 ) s.s.:  
County of San Diego )

On April 4, 2013 before me, Pamela M. Stone, Notary Public, personally appeared **Tetsuo UNO** 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 15 day of June, 2011.

Tiffany Crossgrove L.S.  
Tiffany CROSSGROVE

**ACKNOWLEDGEMENT**

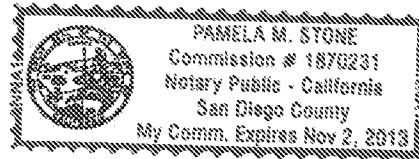
State of California )  
 ) s.s.:  
County of San Diego )

On June 15, 2011 before me, Pamela M. Stone, Notary Public, personally appeared Tiffany CROSSGROVE 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 10 day of June, 2011.

Hsien-Po CHIU L.S.

**ACKNOWLEDGEMENT**

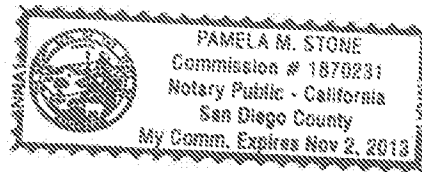
State of California )  
 ) s.s.:  
 County of San Diego )

On June 10, 2011 before me, Pamela M. Stone, Notary Public, personally appeared Hsien-Po CHIU 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 10 day of June, 2011.

Xueshi HAO L.S.  
Xueshi HAO

**ACKNOWLEDGEMENT**

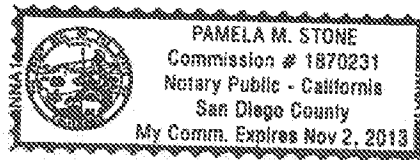
State of California )  
 ) s.s.:  
County of San Diego )

On June 10, 2011 before me, Pamela M. Stone, Notary Public, personally appeared Xueshi HAO 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 10<sup>th</sup> day of JUNE, 2011.

Jan Grunewald L.S.  
Jan GRUNEWALD

**ACKNOWLEDGEMENT**

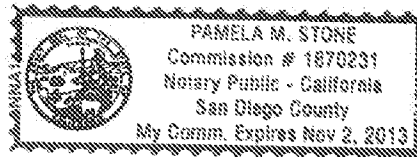
State of California )  
 ) s.s.:  
County of San Diego )

On June 10, 2011 before me, Pamela M. Stone, Notary Public, personally appeared Jan GRUNEWALD 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)

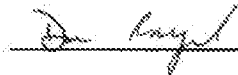


ACCEPTANCE OF ASSIGNMENT

With reference to the Assignment to IRM LLC of an invention entitled BIOSYNTHETICALLY GENERATED PYRROLINE-CARBOXY-LYSINE AND SITE SPECIFIC PROTEIN MODIFICATIONS VIA CHEMICAL DERIVATIZATION OF PYRROLINE-CARBOXY-LYSINE AND PYRROLYSINE RESIDUES signed by Bernhard H. GEIERSTANGER, Weijia OU, Susan E. CELLITI, Tetsuo UNO, Tiffany CROSSGROVE, Hsien-Po CHIU, Xueshi HAO and Jan GRUNEWALD, this will certify that IRM LLC accepts such Assignment.

IRM LLC

By:



Name:

Daniel E. Raymond, Ph.D.

Function:

Authorized Signatory  
and Power of Attorney on behalf of IRM LLC

Date:

APRIL 12, 2013

## ACKNOWLEDGEMENT

State of California

}

) s.s.:

County of San Diego

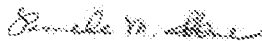
}

On April 12, 2013 before me, Pamela M. Stone, Notary Public, personally appeared **Daniel E. RAYMOND** 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)

