

ASSIGNMENT

WHEREAS I/We, the below named inventor(s) (hereinafter referred to as Assignor(s)), of an invention entitled:

HETEROARYL COMPOUNDS USEFUL AS INHIBITORS OF SUMO ACTIVATING ENZYME

as disclosed and claimed in United States Application No. 14/788,675, filed June 30, 2015 (Confirmation No. 5618) and/or PCT International Application No. PCT/US15/38712, filed June 30, 2015 and;

WHEREAS, **Millennium Pharmaceuticals, Inc.**, a corporation of **Delaware** whose post office address is **40 Landsdowne Street, Cambridge, MA 02139** (hereinafter referred to as Assignee), is desirous of securing the entire right, title, and interest in and to this invention in all countries throughout the world, and in and to all applications for patents on this invention in all countries throughout the world, including any PCT International Application and all national stage applications based thereon that may be filed, and all patents issued upon such applications in all countries throughout the world;

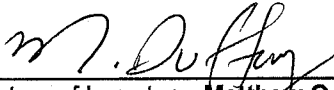
NOW THEREFORE, be it known that, for good and valuable consideration the receipt of which from Assignee is hereby acknowledged, I/We, as Assignor(s), have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my/our entire right, title, and interest in and to this invention, the above-referenced applications that disclose and claim this invention, any PCT International Application and all national stage applications based thereon that may be filed, any other applications for patents filed anywhere in the world that claim this invention, and all divisions, and continuations of any such application, and all patents which may be granted thereon, and all reissues thereof, and all rights to claim priority in any country on the basis of any such applications, and all extensions, renewals, and reissues thereof; and I/We hereby authorize and request the Commissioner of Patents and Trademarks of the United States and any official of any foreign country whose duty it is to issue patents on applications as described above, to issue all Letters Patent for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

AND, I/WE HEREBY covenant that I/We have the full right to convey the interest assigned by this Assignment, and I/We have not executed and will not execute any agreement in conflict with this Assignment;

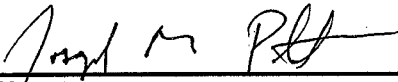
AND, I/WE HEREBY further covenant and agree that I/We will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to me/us respecting this invention, and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns, execute all divisional, continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid Assignee, its successors and assigns, to obtain and enforce proper patent protection for this invention in the United States and any foreign country, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee, its successors and assigns.

AND, I/WE HEREBY authorize and request the attorneys empowered in the Power of Attorney in this application, to insert the filing date and application number of the above-referenced application(s) when known.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 25th day of March, 2016.



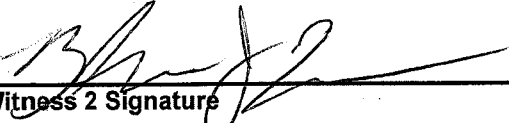
Signature of Inventor **Matthew O. DUFFEY**
5050 S. Lake Shore Drive, #2717
Chicago, IL 60615



Witness 1 Signature
Joseph M. Pletcher

Witness 1 (Typed or Handwritten) Name
180 N Stetson Ave, Chicago IL 60601

Witness 1 Address



Witness 2 Signature
BLAINE BROWN

Witness 2 (Typed or Handwritten) Name
2138 S INDIANA AVE APT 1507 CHICAGO, IL 60614

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 2016.

Signature of Inventor **Dylan B. ENGLAND**
9 Wayne Road
Milford, MA 01757

Witness 1 Signature

Witness 1 (Typed or Handwritten) Name

Witness 1 Address

Witness 2 Signature

Witness 2 (Typed or Handwritten) Name

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 2016.

Signature of Inventor **Brian Scott FREEZE**
67 Gates St., Unit 1
Boston, MA 02127

Witness 1 Signature

Witness 1 (Typed or Handwritten) Name

Witness 1 Address

Witness 2 Signature

Witness 2 (Typed or Handwritten) Name

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 2016.

Signature of Inventor **Zhigen HU**
42 Truman Road
Newton Center, MA 02459

Witness 1 Signature

Witness 1 (Typed or Handwritten) Name

Witness 1 Address

Witness 2 Signature

Witness 2 (Typed or Handwritten) Name

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 2016.

Signature of Inventor **Steven P. LANGSTON**
164 Mill Road
North Andover, MA 01845

Witness 1 Signature

Witness 1 (Typed or Handwritten) Name

Witness 1 Address

Witness 2 Signature

Witness 2 (Typed or Handwritten) Name

Witness 2 Address

SOLE/JOINT INVENTION
(Worldwide Rights)
Attorney Docket No. 08047.0068-00000

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 2016.

Signature of Inventor **Charles J. MCINTYRE**
230 Brookline Street, Apt. 1
Cambridge, MA 02139

Witness 1 Signature

Witness 1 (Typed or Handwritten) Name

Witness 1 Address

Witness 2 Signature

Witness 2 (Typed or Handwritten) Name

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 2016.

Signature of Inventor **Hirotake MIZUTANI**
264 Massachusetts Ave., #209
Arlington, MA 02474

Witness 1 Signature

Witness 1 (Typed or Handwritten) Name

Witness 1 Address

Witness 2 Signature

Witness 2 (Typed or Handwritten) Name

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 2016.

Signature of Inventor **He XU**
43 Glover Road
Needham, MA 02494

Witness 1 Signature

Witness 1 (Typed or Handwritten) Name

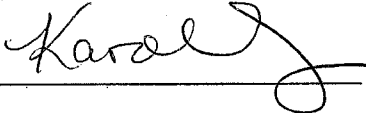
Witness 1 Address

Witness 2 Signature

Witness 2 (Typed or Handwritten) Name

Witness 2 Address

Assignee Name: Millennium Pharmaceuticals, Inc.

Signature: 

Printed Name: Karoline K.M. Shair

Corporate Title: VP, IP Resion Head

Date: April 4, 2016

ASSIGNMENT

WHEREAS I/We, the below named inventor(s) (hereinafter referred to as Assignor(s)), of an invention entitled:

HETEROARYL COMPOUNDS USEFUL AS INHIBITORS OF SUMO ACTIVATING ENZYME

as disclosed and claimed in United States Application No. 14/788,675, filed June 30, 2015 (Confirmation No. 5618) and/or PCT International Application No. PCT/US15/38712, filed June 30, 2015 and;

WHEREAS, **Millennium Pharmaceuticals, Inc.**, a corporation of **Delaware** whose post office address is **40 Landsdowne Street, Cambridge, MA 02139** (hereinafter referred to as Assignee), is desirous of securing the entire right, title, and interest in and to this invention in all countries throughout the world, and in and to all applications for patents on this invention in all countries throughout the world, including any PCT International Application and all national stage applications based thereon that may be filed, and all patents issued upon such applications in all countries throughout the world;

NOW THEREFORE, be it known that, for good and valuable consideration the receipt of which from Assignee is hereby acknowledged, I/We, as Assignor(s), have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my/our entire right, title, and interest in and to this invention, the above-referenced applications that disclose and claim this invention, any PCT International Application and all national stage applications based thereon that may be filed, any other applications for patents filed anywhere in the world that claim this invention, and all divisions, and continuations of any such application, and all patents which may be granted thereon, and all reissues thereof, and all rights to claim priority in any country on the basis of any such applications, and all extensions, renewals, and reissues thereof; and I/We hereby authorize and request the Commissioner of Patents and Trademarks of the United States and any official of any foreign country whose duty it is to issue patents on applications as described above, to issue all Letters Patent for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

AND, I/WE HEREBY covenant that I/We have the full right to convey the interest assigned by this Assignment, and I/We have not executed and will not execute any agreement in conflict with this Assignment;

AND, I/WE HEREBY further covenant and agree that I/We will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to me/us respecting this invention, and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns, execute all divisional, continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid Assignee, its successors and assigns, to obtain and enforce proper patent protection for this invention in the United States and any foreign country, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee, its successors and assigns.

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IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 2016.

Signature of Inventor **Matthew O. DUFFEY**
5050 S. Lake Shore Drive, #2717
Chicago, IL 60615

Witness 1 Signature

Witness 1 (Typed or Handwritten) Name

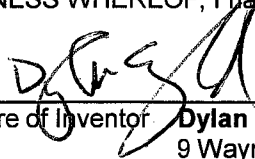
Witness 1 Address

Witness 2 Signature

Witness 2 (Typed or Handwritten) Name

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 28 day of March, 2016.



Signature of Inventor **Dylan B. ENGLAND**
9 Wayne Road
Milford, MA 01757



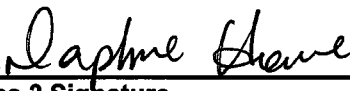
Witness 1 Signature

ANN SHERRY

Witness 1 (Typed or Handwritten) Name

46 HURON CIRCLE DORCHESTER, MA 02124

Witness 1 Address



Witness 2 Signature

DAPHNE HOWE

Witness 2 (Typed or Handwritten) Name

37 Fernandez Circle, Randolph, MA 02368

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 28th day of March, 2016.



Signature of Inventor **Brian Scott FREEZE**
67 Gates St., Unit 1
Boston, MA 02127



Witness 1 Signature

ANN SHERRY

Witness 1 (Typed or Handwritten) Name

46 HURON CIRCLE, DORCHESTER MA 02124

Witness 1 Address



Witness 2 Signature

DAPHNE HOWE

Witness 2 (Typed or Handwritten) Name

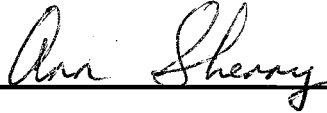
37 Fernandez Circle, Randolph, MA 02368

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 28 day of Mar, 2016.



Signature of Inventor **Zhigen HU**
42 Truman Road
Newton Center, MA 02459



Witness 1 Signature

ANN SHERRY

Witness 1 (Typed or Handwritten) Name

46 HURON CIRCLE, DORCHESTER MA 02124

Witness 1 Address



Witness 2 Signature

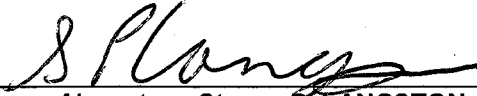
DAPHNE HOWE

Witness 2 (Typed or Handwritten) Name

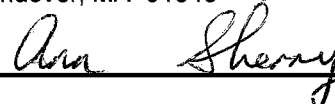
37 Fernandez Circle, Randolph MA 02368

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 28 day of march, 2016.



Signature of Inventor **Steven P. LANGSTON**
164 Mill Road
North Andover, MA 01845



Witness 1 Signature

ANN SHERRY

Witness 1 (Typed or Handwritten) Name

46 HURON CIRCLE, DORCHESTER MA 02124

Witness 1 Address



Witness 2 Signature

DAPHNE HOWE

Witness 2 (Typed or Handwritten) Name

37 Fernandez Circle, Randolph, MA 02368

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 29th day of March, 2016.

Charles J. McIntyre

Signature of Inventor **Charles J. MCINTYRE**
230 Brookline Street, Apt. 1
Cambridge, MA 02139

Ann Sherry

Witness 1 Signature

ANN SHERRY

Witness 1 (Typed or Handwritten) Name

46 HURON CIRCLE, DORCHESTER MA 02124

Witness 1 Address

Daphne Howe

Witness 2 Signature

DAPHNE HOWE

Witness 2 (Typed or Handwritten) Name

37 Fernandez Circle, Randolph, MA 02368

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 28 day of March, 2016.



Signature of Inventor **Hirotake MIZUTANI**
264 Massachusetts Ave., #209
Arlington, MA 02474



Witness 1 Signature

ANN SHERRY

Witness 1 (Typed or Handwritten) Name

46 Huron Circle, Dorchester MA 02124

Witness 1 Address

 Daphne Howe

Witness 2 Signature

DAPHNE HOWE

Witness 2 (Typed or Handwritten) Name

37 Fernandez Circle, Randolph, MA 02368

Witness 2 Address

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 28th day of March, 2016.

Signature of Inventor He XU
43 Glover Road 12, Louart Drive
Needham, MA 02494

H.X.
03-28-2016

Ann Sherry
Witness 1 Signature

ANN SHERRY

Witness 1 (Typed or Handwritten) Name

46 HURON CIRCLE, DORCHESTER MA 02124
Witness 1 Address

Daphne Howe
Witness 2 Signature

DAPHNE HOWE
Witness 2 (Typed or Handwritten) Name

37 Fernandez Circle Randolph, MA 02368
Witness 2 Address

Assignee Name: Millennium Pharmaceuticals, Inc.

Signature:

Printed Name: Karoline K.M. Shair

Corporate Title: VP, IP Resion Head

Date: April 9, 2016

ASSIGNMENT

WHEREAS, KOJI ONO, of c/o **TAKEDA PHARMACEUTICAL COMPANY LIMITED, 26-1, Muraoka-Higashi 2-chome, Fujisawa, Kanagawa 251-0012 JAPAN**, (hereinafter "ASSIGNOR") is aware of the patent application entitled:

**HETEROARYL COMPOUNDS USEFUL AS INHIBITORS OF SUMO
ACTIVATING ENZYME;**

☐ prepared for filing in the United States Patent and Trademark Office; or

☒ identified by United States Application No. **14/788,675** filed in the United States Patent and Trademark Office on **June 30, 2015** ; and/or PCT International Application No. PCT/US15/38712, filed on June 30, 2015; and

☒ is also aware of the following priority applications:

Serial No.: 62/019,756; Filed: July 1, 2014

Serial No.: 62/185,678; Filed June 28, 2015

WHEREAS, **TAKEDA PHARMACEUTICAL COMPANY LIMITED** (hereinafter "ASSIGNEE"), having a usual place of business at **1-1, Doshomachi 4-chome, Chuo-ku, Osaka-shi, Osaka 541-0045 JAPAN**, desires to acquire or confirm an interest therein;

NOW, THEREFORE, to all whom it may concern be it known that, in consideration of agreements previously and duly entered into between the parties, and/or for other good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR hereby confirms and/or declares that it has sold, assigned, and transferred and/or does hereby sell, assign, and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, its entire right, title, and interest in and throughout the United States of America, its territories, and all foreign countries, in and to any and all inventions described in the patent application, and/or any priority applications noted above; and hereby confirm that its sale, assignment and transfer is and was effective at least as of the filing date of the patent application and/or priority application. ASSIGNOR'S sale, assignment and transfer applies to the above-referenced patent application, and to any application that is based in whole or in part on the patent application, including to divisional, continuing, substitute, renewal, reissue, reexamination and other applications, for example, that claim priority to the patent application. Also, this sale, assignment and transfer pertains to any and all other rights arising under or pursuant to any and all international agreements, treaties, or laws relating to the protection of industrial property, including all rights of priority under the International Convention for the Protection of Industrial Property, and in and to any such patent(s) as may issue thereon including any and all original and reissued patents which have been or shall be issued in the United States and foreign countries; said inventions, applications, and patent(s) to be held and enjoyed by ASSIGNEE for its own use and for its successors, assigns and legal representatives, to the full end of the term for which said patent(s) may be granted as fully and entirely as the same would have been held by ASSIGNOR had this sale, assignment and transfer not been made;

AND, ASSIGNOR hereby acknowledges that this Assignment, being of its entire right, title, and interest in and to the inventions, carries with it the right in ASSIGNEE, by attorneys and agents of ASSIGNEE selection, to apply for and receive any and all patent(s) for said inventions in its own name;

AND, ASSIGNOR hereby further agrees for itself and its executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the patent(s) to ASSIGNEE, its successors, assignees, and legal representatives, but at its expense and charges, including the execution of application for patents in foreign countries, the execution of substitution, reissue, divisional or continuation applications, and the giving of testimony, preliminary statements, or other statements in any interference or other proceeding in which the inventions or any applications or patents directed to the inventions may be involved by communicating to the ASSIGNEE all facts ASSIGNOR knows relating to the inventions and their history, and generally by doing everything possible which ASSIGNEE shall consider desirable for aiding in securing and maintaining proper patent protection for the inventions and for vesting title in the inventions and all applications for patent and all patents on the inventions in ASSIGNEE;

AND, ASSIGNOR further hereby authorizes ASSIGNEE or its attorneys or agents to insert the correct serial number(s) and/or filing date(s) into this assignment document, if appropriate;

AND, ASSIGNOR hereby appoints ASSIGNEE as its common agent for purposes of prosecuting international patent applications and any national patent applications for which such common agency is recognized;

AND, ASSIGNOR hereby requests the Director of Patents and Trademarks of the United States to issue any and all patent(s) as shall be granted upon said application or applications based thereon to ASSIGNEE, its successors, assigns, and legal representatives;

AND, ASSIGNOR covenants with said ASSIGNEE that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by ASSIGNOR, and that full right to convey the same as herein expressed is possessed by ASSIGNOR.

IN TESTIMONY WHEREOF, ASSIGNOR by its duly authorized representative acting on his own free will have caused this instrument to be duly executed and have hereunto set his hand and affixed his seal on the dates set forth below.

Koji Ono

Name : Koji ONO

March 30, 2016

Date

Witness Signature: Izumi Shimizu

Izumi SHIMIZU

Name (please print):

March 30, 2016

Date

Witness Signature: Shinichi Imamura

Shinichi Imamura

Name (please print):

March 30, 2016

Date

ASSIGNMENT

WHEREAS, **TAKEDA PHARMACEUTICAL COMPANY LIMITED** (hereinafter "ASSIGNOR") of **1-1, DOSHOMACHI 4-CHOME, CHUO-KU, OSAKA-SHI, OSAKA, JAPAN 541-0045**, is aware of the patent application entitled:

**HETEROARYL COMPOUNDS USEFUL AS INHIBITORS OF SUMO
ACTIVATING ENZYME;**

- ☐ prepared for filing in the United States Patent and Trademark Office; or
- ☒ identified by United States Application No. **14/788,675** filed in the United States Patent and Trademark Office on **June 30, 2015** ; and/or PCT International Application No. **PCT/US15/38712**, filed on June 30, 2015; and
- ☒ is also aware of the following priority applications:

Serial No.: 62/019,756; Filed: July 1, 2014
Serial No.: 62/185,678; Filed June 28, 2015

WHEREAS, **MILLENNIUM PHARMACEUTICALS, INC.** (hereinafter "ASSIGNEE"), having a usual place of business at **40 LANDSDOWNE STREET, CAMBRIDGE, MA 02139**, desires to acquire or confirm an interest therein;

NOW, THEREFORE, to all whom it may concern be it known that, in consideration of agreements previously and duly entered into between the parties, and/or for other good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR hereby confirms and/or declares that it has sold, assigned, and transferred and/or does hereby sell, assign, and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, its entire right, title, and interest in and throughout the United States of America, its territories, and all foreign countries, in and to any and all inventions described in the patent application, and/or any priority applications noted above; and hereby confirm that its sale, assignment and transfer is and was effective at least as of the filing date of the patent application and/or priority application. ASSIGNOR'S sale, assignment and transfer applies to the above-referenced patent application, and to any application that is based in whole or in part on the patent application, including to divisional, continuing, substitute, renewal, reissue, reexamination and other applications, for example, that claim priority to the patent application. Also, this sale, assignment and transfer pertains to any and all other rights arising under or pursuant to any and all international agreements, treaties, or laws relating to the protection of industrial property, including all rights of priority under the International Convention for the Protection of Industrial Property, and in and to any such patent(s) as may issue thereon including any and all original and reissued patents which have been or shall be issued in the United States and foreign countries; said inventions, applications, and patent(s) to be held and enjoyed by ASSIGNEE for its own use and for its successors, assigns and legal representatives, to the full end of the term for which said patent(s) may be granted as fully and entirely as the same would have been held by ASSIGNOR had this sale, assignment and transfer not been made;

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AND, ASSIGNOR hereby further agrees for itself and its executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the patent(s) to ASSIGNEE, its successors, assignees, and legal representatives, but at its expense and charges, including the execution of application for patents in foreign countries, the execution of substitution, reissue, divisional or continuation applications, and the giving of testimony, preliminary statements, or other statements in any interference or other proceeding in which the inventions or any applications or patents directed to the inventions may be involved by communicating to the ASSIGNEE all facts ASSIGNOR knows relating to the inventions and their history, and generally by doing everything possible which ASSIGNEE shall consider desirable for aiding in securing and maintaining proper patent protection for the inventions and for vesting title in the inventions and all applications for patent and all patents on the inventions in ASSIGNEE;

AND, ASSIGNOR further hereby authorizes ASSIGNEE or its attorneys or agents to insert the correct serial number(s) and/or filing date(s) into this assignment document, if appropriate;

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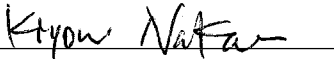
SIGNED this 6th day of April, 2016.

**TAKEDA PHARMACEUTICAL COMPANY
LIMITED.**

By: 

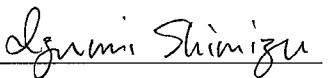
Name: Yoichi Okumura

Title: Global Head of IP
Takeda Pharmaceutical Company Ltd.

Witness Signature: 

Kiyomi Nakano
Name (please print):

Apr. 6, 2016
Date

Witness Signature: 

Izumi SHIMIZU
Name (please print):

Apr 6, 2016
Date