

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

EPAS ID: PAT4043244

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
PAUL S. CHARIFSON	07/25/2012
MICHAEL P. CLARK	07/26/2012
UPUL K. BANDARAGE	07/27/2012
RANDY S. BETHIEL	07/25/2012
MICHAEL J. BOYD	08/02/2012
IOANA DAVIES	07/30/2012
HONGBO DENG	07/26/2012
JOHN P. DUFFY	07/31/2012
LUC J. FARMER	07/16/2012
HUAI GAO	08/03/2012
WENXIN GU	07/30/2012
JOSEPH M. KENNEDY	07/25/2012
BRIAN LEDFORD	07/25/2012
MARK W. LEDEBOER	07/26/2012
FRANCOIS MALTAIS	07/25/2012
EMANUELE PEROLA	07/26/2012
TIANSHENG WANG	07/30/2012
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	VERTEX PHARMACEUTICALS INCORPORATED
<b>Street Address:</b>	50 NORTHERN AVENUE
<b>City:</b>	BOSTON
<b>State/Country:</b>	MASSACHUSETTS
<b>Postal Code:</b>	02210
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	15177546
<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</i>	
<b>PATENT</b>	

*using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.*

**Email:** patents@vrtx.com  
**Correspondent Name:** VERTEX PHARMACEUTICALS INCORPORATED  
**Address Line 1:** 50 NORTHERN AVENUE  
**Address Line 4:** BOSTON, MASSACHUSETTS 02210

<b>ATTORNEY DOCKET NUMBER:</b>	VPI/11-120 USW CN1 DV1CN1
<b>NAME OF SUBMITTER:</b>	FRANCES M. CUNNINGHAM
<b>SIGNATURE:</b>	/Frances M. Cunningham/
<b>DATE SIGNED:</b>	09/08/2016

**Total Attachments: 42**

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**PATENT**

**REEL: 039953 FRAME: 0848**

## ASSIGNMENT

We,

- (1) Paul S. Charifson, of Framingham, Massachusetts;
- (2) Michael P. Clark, of Concord, Massachusetts;
- (3) Upul K. Bandarage, of Lexington, Massachusetts;
- (4) Randy S. Bethiel, of Lexington, Massachusetts;
- (5) Michael J. Boyd, of Winchester, Massachusetts;
- (6) Ioana Davies, of Watertown, Massachusetts;
- (7) Hongbo Deng, of Southborough, Massachusetts;
- (8) John P. Duffy, of Northborough, Massachusetts;
- (9) Luc J. Farmer, of Quebec, Canada;
- (10) Huai Gao, of Arlington, Massachusetts;
- (11) Wenxin Gu, of Concord, Massachusetts;
- (12) Joseph M. Kennedy, of Charlestown, Massachusetts;
- (13) Brian Ledford, of Acton, Massachusetts;
- (14) Mark W. Ledeboer, of Acton, Massachusetts;
- (15) Francois Maltais, of Tewksbury, Massachusetts;
- (16) Emanuele Perola, of Brookline, Massachusetts; and
- (17) Tiansheng Wang, of Concord, Massachusetts;

for good and valuable consideration, receipt of which is hereby acknowledged, have assigned, sold and transferred to, by virtue of our agreement with Vertex Pharmaceuticals Incorporated and do hereby assign, sell and transfer to, Vertex Pharmaceuticals Incorporated, a corporation organized and existing under the laws of the Commonwealth of Massachusetts and having an office and a place of business at 130 Waverly Street, Cambridge, MA 02139, its successors and assigns, all hereinafter referred to as the ASSIGNEE:

(1) the entire right, title and interest in the United States and in all countries throughout the world in and to any and all of my/our inventions, and discoveries disclosed in:

(a) the application for United States Letters Patent entitled: \_\_\_\_\_, and  
filed in the United States Patent and Trademark Office on \_\_\_\_\_, under Application

Number <sup>1</sup>, including any renewals, revivals, reissues, reexaminations, extensions, continuations, and divisions thereof, and any substitute applications therefor, and/or

(b) the International Patent Application entitled: THIOPHENE COMPOUNDS, filed under the Patent Cooperation Treaty in the United States Receiving Office on August 1, 2012, under Application No. PCT/US2012/049097<sup>2</sup>, and designating all countries, including any renewals, revivals, reissues, reexaminations, extensions, continuations and divisions thereof, and any substitute applications therefor;

(2) the full and complete right to file patent applications in the name of the ASSIGNEE, its designee, or in my/our names at the election of the ASSIGNEE or its designee, on the aforesaid inventions, discoveries and applications in the United States and in any other country of the world;

(3) the entire right, title and interest in and to any Letters Patent which may issue thereon in the United States or in any other country of the world, and in and to any renewals, revivals, reissues, reexaminations, extensions, continuations and divisions thereof; and

(4) the entire right, title and interest in and to all Convention and Treaty Rights of all kinds thereon, including without limitation all rights of priority in any country of the world, in and to the above inventions, discoveries and applications including, but not limited to, the following priority application(s):

61/513,793	US	August 1, 2011
Application No.	Country	Filing Date

and all rights of priority in any country of the world deriving from the above-identified International Patent Application.

We hereby authorize and request the competent authorities to grant and to issue any and all such Letters Patent in the United States and throughout the world to the ASSIGNEE of the

<sup>1</sup> We authorize and request ASSIGNEE to insert the filing date and/or application number of said application when known.

<sup>2</sup> I/We authorize and request ASSIGNEE to insert the filing date and/or application number of said application when known.

entire right, title and interest therein, as fully and entirely as the same would have been held and enjoyed by me/us had this assignment, sale and transfer not been made.

We agree, at any time, upon the request of the ASSIGNEE to execute and to deliver to the ASSIGNEE any additional applications for patents for said inventions and discoveries, or any part or parts thereof, and any applications for patents of confirmation, registration and importation based on any Letters Patent issuing on said inventions, discoveries or applications, and divisions, continuations, renewals, revivals, reissues, reexaminations and extensions thereof.

We further agree at any time to execute and to deliver upon request of the ASSIGNEE such additional documents, if any, as are necessary or desirable to secure patent protection on said inventions, discoveries and applications throughout all countries of the world, and otherwise to do the necessary to give full effect to and to perfect the rights of the ASSIGNEE under this Assignment, including the execution, delivery and procurement of any and all further documents evidencing this assignment, transfer and sale as may be necessary or desirable.

Paul S. Charifson

(1) Paul S. Charifson

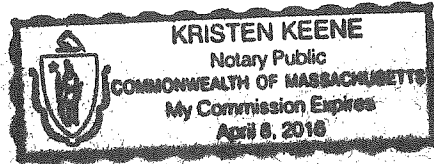
Date: July 25, 2012

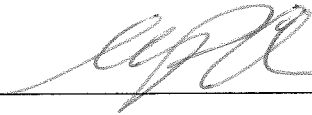
Commonwealth of Massachusetts  
County of Middlesex

On this 25<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Paul S. Charifson, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Kristen Keene  
Notary Public

My Commission Expires: 4/8/2016.



  
\_\_\_\_\_

(2) Michael P. Clark

Date: 07-26-2012

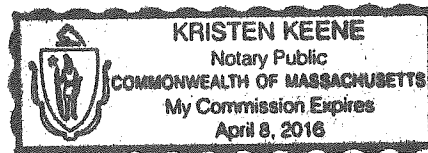
Commonwealth of Massachusetts  
County of Middlesex

On this 26<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Michael P. Clark, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

  
\_\_\_\_\_

Notary Public

My Commission Expires: 4/8/2016





Upul K. Bandarage

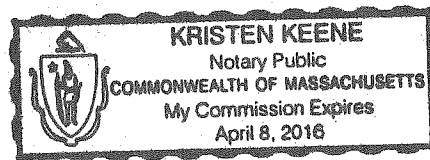
(3) Upul K. Bandarage

Date: 07/27/2012

Commonwealth of Massachusetts  
County of Middlesex

On this 27<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Upul K. Bandarage, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Kristen Keene  
Notary Public  
My Commission Expires: 4/8/2016



Randy S. Bethiel

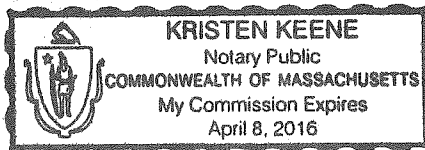
(4) Randy S. Bethiel

Date: 7/25/12

Commonwealth of Massachusetts  
County of Middlesex

On this 25<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Randy S. Bethiel, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Kristen Keene  
Notary Public  
My Commission Expires: 4/8/2016.



Michael J Boyd

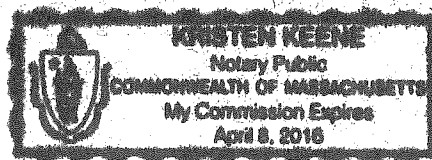
(5) Michael J. Boyd

Date: 8-2-12

Commonwealth of Massachusetts  
County of Middlesex

On this 2 day of August, 2012, before me, the undersigned notary public, personally appeared Michael J. Boyd, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Kristen Keene  
Notary Public  
My Commission Expires: 4/8/2016



Davies

(6) Ioana Davies

Date: 07/30/2012

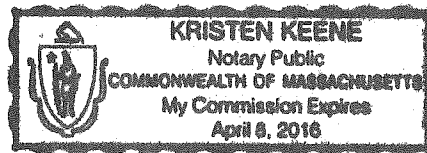
Commonwealth of Massachusetts

County of Middlesex

On this 30<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Ioana Davies, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Kristen Keene  
Notary Public

My Commission Expires: 4/8/2016





(7) Hongbo Deng

Date: 07/26/2012

Commonwealth of Massachusetts

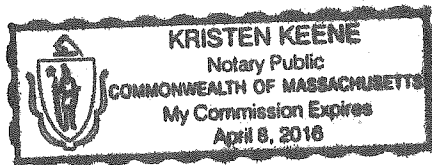
County of Middlesex

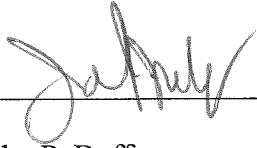
On this 26<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Hongbo Deng, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.



Notary Public

My Commission Expires: 4/8/2016.



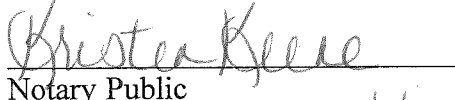


(8) John P. Duffy

Date: 7/31/12

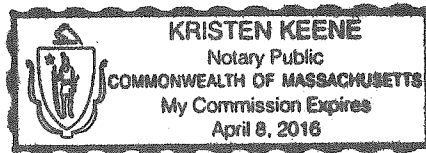
Commonwealth of Massachusetts  
County of Middlesex

On this 31<sup>st</sup> day of July, 2012, before me, the undersigned notary public, personally appeared John P. Duffy, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.



Notary Public

My Commission Expires: 4/8/2016 .



\_\_\_\_\_  
(9) Luc J. Farmer

Date: \_\_\_\_\_

IN WITNESS WHEREOF, I have hereunto set hand and seal

Signature of witness: \_\_\_\_\_

Printed Name of Witness: \_\_\_\_\_

this \_\_\_\_ day of \_\_\_\_\_  
Date of signing

IN WITNESS WHEREOF, I have hereunto set hand and seal

Signature of witness: \_\_\_\_\_

Printed Name of Witness: \_\_\_\_\_

this \_\_\_\_ day of \_\_\_\_\_  
Date of signing

[Signature]

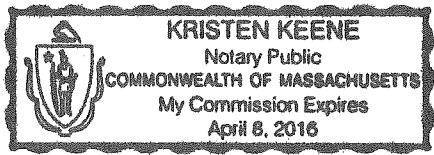
(10) Huai Gao

Date: Aug 3, 2012

Commonwealth of Massachusetts  
County of Middlesex

On this 3<sup>rd</sup> day of August, 2012, before me, the undersigned notary public, personally appeared Huai Gao, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

[Signature]  
Notary Public  
My Commission Expires: 4/8/2016.







Joseph M. Kennedy

(12) Joseph M. Kennedy

Date: 07/25/12

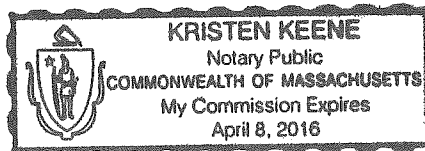
Commonwealth of Massachusetts

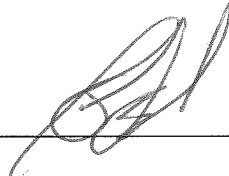
County of Middlesex

On this 25<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Joseph M. Kennedy, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Kristen Keene  
Notary Public

My Commission Expires: 4/8/2016.



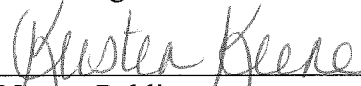
  
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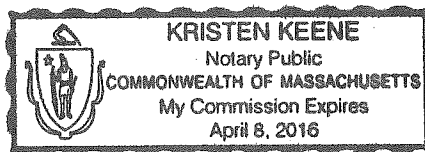
(13) Brian Ledford

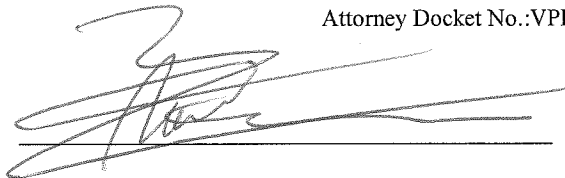
Date: 7-25-2012

Commonwealth of Massachusetts  
County of Middlesex

On this 25<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Brian Ledford, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

  
\_\_\_\_\_  
Notary Public  
My Commission Expires: 4/8/2016.






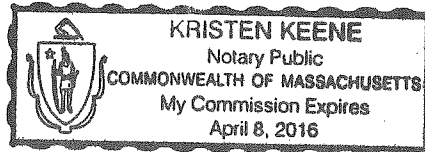
(14) Mark W. Ledeboer

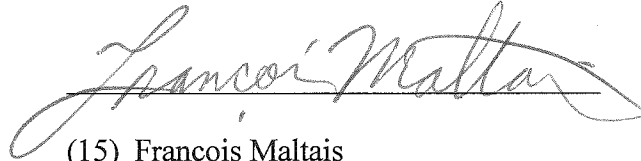
Date: 7/26/2012

Commonwealth of Massachusetts  
County of Middlesex

On this 26<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Mark W. Ledeboer, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

  
\_\_\_\_\_  
Notary Public  
My Commission Expires: 4/8/2016.





(15) Francois Maltais

Date: 07/25/12

Commonwealth of Massachusetts

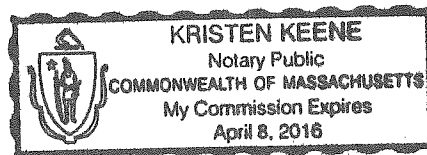
County of Middlesex

On this 25<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Francois Maltais, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.



Notary Public

My Commission Expires: 4/8/2016.



Emanuele Perola

(16) Emanuele Perola

Date: 7/26/2012

Commonwealth of Massachusetts

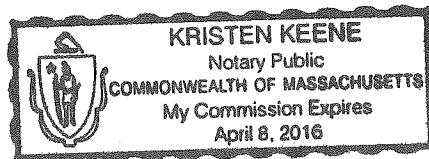
County of Middlesex


On this 26<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Emanuele Perola, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Kristen Keene

Notary Public

My Commission Expires: 4/8/2016.





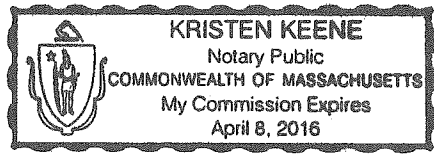
(17) Tiansheng Wang

Date: 7/30/2012

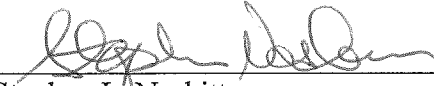
Commonwealth of Massachusetts  
County of Middlesex

On this 30<sup>th</sup> day of July, 2012, before me, the undersigned notary public, personally appeared Tiansheng Wang, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Kristen Keene  
Notary Public  
My Commission Expires: 4/8/2016.




ACKNOWLEDGMENT OF ASSIGNEE

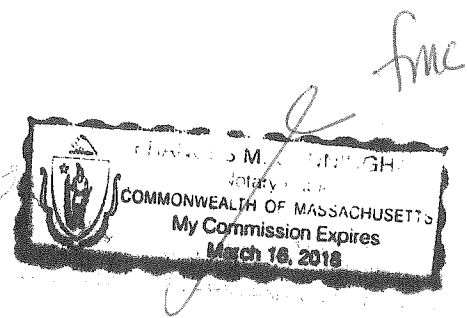
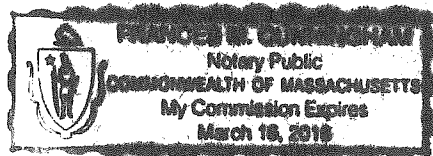
By:   
Stephen L. Nesbitt  
Vice President and Chief Patent Counsel  
VERTEX PHARMACEUTICALS INCORPORATED

Date: August 6, 2012

Commonwealth of Massachusetts  
County of Middlesex

On this 6<sup>th</sup> day of August, 2012, before me, the undersigned notary public, personally appeared Stephen L. Nesbitt (name of document signer), proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

  
Notary Public  
My Commission Expires: 3/16/2018





## ASSIGNMENT

We,

- (1) Paul S. Charifson, of Framingham, Massachusetts;
- (2) Michael P. Clark, of Concord, Massachusetts;
- (3) Upul K. Bandarage, of Lexington, Massachusetts;
- (4) Randy S. Bethiel, of Lexington, Massachusetts;
- (5) Michael J. Boyd, of Winchester, Massachusetts;
- (6) Ioana Davies, of Watertown, Massachusetts;
- (7) Hongbo Deng, of Southborough, Massachusetts;
- (8) John P. Duffy, of Northborough, Massachusetts;
- (9) Luc J. Farmer, of Quebec, Canada;
- (10) Huai Gao, of Arlington, Massachusetts;
- (11) Wenxin Gu, of Concord, Massachusetts;
- (12) Joseph M. Kennedy, of Charlestown, Massachusetts;
- (13) Brian Ledford, of Acton, Massachusetts;
- (14) Mark W. Ledeboer, of Acton, Massachusetts;
- (15) Francois Maltais, of Tewksbury, Massachusetts;
- (16) Emanuele Perola, of Brookline, Massachusetts; and
- (17) Tiansheng Wang, of Concord, Massachusetts;

for good and valuable consideration, receipt of which is hereby acknowledged, have assigned, sold and transferred to, by virtue of our agreement with Vertex Pharmaceuticals Incorporated and do hereby assign, sell and transfer to, Vertex Pharmaceuticals Incorporated, a corporation organized and existing under the laws of the Commonwealth of Massachusetts and having an office and a place of business at 130 Waverly Street, Cambridge, MA 02139, its successors and assigns, all hereinafter referred to as the ASSIGNEE:

(1) the entire right, title and interest in the United States and in all countries throughout the world in and to any and all of my/our inventions, and discoveries disclosed in:

(a) the application for United States Letters Patent entitled: \_\_\_\_\_, and  
filed in the United States Patent and Trademark Office on \_\_\_\_\_, under Application

Number <sup>1</sup>, including any renewals, revivals, reissues, reexaminations, extensions, continuations, and divisions thereof, and any substitute applications therefor, and/or

(b) the International Patent Application entitled: THIOPHENE COMPOUNDS, filed under the Patent Cooperation Treaty in the United States Receiving Office on August 1, 2012, under Application No. PCT/US2011/049097<sup>2</sup>, and designating all countries, including any renewals, revivals, reissues, reexaminations, extensions, continuations and divisions thereof, and any substitute applications therefor;

(2) the full and complete right to file patent applications in the name of the ASSIGNEE, its designee, or in my/our names at the election of the ASSIGNEE or its designee, on the aforesaid inventions, discoveries and applications in the United States and in any other country of the world;

(3) the entire right, title and interest in and to any Letters Patent which may issue thereon in the United States or in any other country of the world, and in and to any renewals, revivals, reissues, reexaminations, extensions, continuations and divisions thereof; and

(4) the entire right, title and interest in and to all Convention and Treaty Rights of all kinds thereon, including without limitation all rights of priority in any country of the world, in and to the above inventions, discoveries and applications including, but not limited to, the following priority application(s):

61/513,793	US	August 1, 2011
Application No.	Country	Filing Date

and all rights of priority in any country of the world deriving from the above-identified International Patent Application.

We hereby authorize and request the competent authorities to grant and to issue any and all such Letters Patent in the United States and throughout the world to the ASSIGNEE of the

<sup>1</sup> We authorize and request ASSIGNEE to insert the filing date and/or application number of said application when known.

<sup>2</sup> I/We authorize and request ASSIGNEE to insert the filing date and/or application number of said application when known.

entire right, title and interest therein, as fully and entirely as the same would have been held and enjoyed by me/us had this assignment, sale and transfer not been made.

We agree, at any time, upon the request of the ASSIGNEE to execute and to deliver to the ASSIGNEE any additional applications for patents for said inventions and discoveries, or any part or parts thereof, and any applications for patents of confirmation, registration and importation based on any Letters Patent issuing on said inventions, discoveries or applications, and divisions, continuations, renewals, revivals, reissues, reexaminations and extensions thereof.

We further agree at any time to execute and to deliver upon request of the ASSIGNEE such additional documents, if any, as are necessary or desirable to secure patent protection on said inventions, discoveries and applications throughout all countries of the world, and otherwise to do the necessary to give full effect to and to perfect the rights of the ASSIGNEE under this Assignment, including the execution, delivery and procurement of any and all further documents evidencing this assignment, transfer and sale as may be necessary or desirable.

\_\_\_\_\_  
(1) Paul S. Charifson

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Paul S. Charifson, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(2) Michael P. Clark

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Michael P. Clark, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(3) Upul K. Bandarage

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Upul K. Bandarage, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(4) Randy S. Bethiel

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Randy S. Bethiel, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(5) Michael J. Boyd

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Michael J. Boyd, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.



\_\_\_\_\_

(6) Ioana Davies

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Ioana Davies, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(7) Hongbo Deng

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Hongbo Deng, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(8) John P. Duffy

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared John P. Duffy, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

Luc J. Farmer

(9) Luc J. Farmer

Date: 7/16/2012

IN WITNESS WHEREOF, I have hereunto set hand and seal

Signature of witness:

Sylvie Ouellet

Printed Name of Witness:

SYLVIE OUELLET

this 16 day of

July 2012

Date of signing

IN WITNESS WHEREOF, I have hereunto set hand and seal

Signature of witness:

Julie Nobert

Printed Name of Witness:

JULIE NOBERT

this 16 day of

July 2012

Date of signing

\_\_\_\_\_  
(10) Huai Gao

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Huai Gao, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires:\_\_\_\_\_.

\_\_\_\_\_  
(11) Wenxin Gu

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Wenxin Gu, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(12) Joseph M. Kennedy

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Joseph M. Kennedy, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(13) Brian Ledford

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Brian Ledford, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.



\_\_\_\_\_  
(14) Mark W. Ledeboer

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Mark W. Ledeboer, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(15) Francois Maltais

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Francois Maltais, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(16) Emanuele Perola

Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Emanuele Perola, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

\_\_\_\_\_  
(17) Tiansheng Wang


Date: \_\_\_\_\_

Commonwealth of Massachusetts  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 2012, before me, the undersigned notary public, personally appeared Tiansheng Wang, proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_.

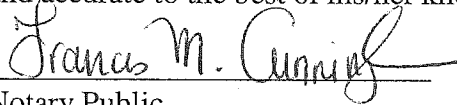
ACKNOWLEDGMENT OF ASSIGNEE

By:   
Stephen L. Nesbitt  
Vice President and Chief IP Counsel  
VERTEX PHARMACEUTICALS INCORPORATED

Date: August 7, 2012

Commonwealth of Massachusetts  
County of Middlesex

On this 7<sup>th</sup> day of August, 2012, before me, the undersigned notary public, personally appeared Stephen L. Nesbitt (name of document signer), proved to me through satisfactory evidence of identification which was/were:  personal knowledge of identity,  a driver's license,  other (please identify) \_\_\_\_\_, to be the person whose name is signed on this document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

  
Notary Public  
My Commission Expires: 3/16/2018

