

PATENT ASSIGNMENT

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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>Christoph E. Dumelin</td> <td>06/11/2011</td> </tr> <tr> <td>David J. Gorin</td> <td>06/13/2011</td> </tr> <tr> <td>Adam S. Kamlet</td> <td>06/13/2011</td> </tr> <tr> <td>David R. Liu</td> <td>04/20/2012</td> </tr> <tr> <td>Lynn McGregor</td> <td>06/11/2011</td> </tr> </tbody> </table>		Name	Execution Date	Christoph E. Dumelin	06/11/2011	David J. Gorin	06/13/2011	Adam S. Kamlet	06/13/2011	David R. Liu	04/20/2012	Lynn McGregor	06/11/2011
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CORRESPONDENCE DATA													
Fax Number:	(617)495-9568												
Phone:	(617) 495-3058												
Email:	denlyn_atherton@harvard.edu												
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent via US Mail.</i>													
Correspondent Name:	Anne Craig												
Address Line 1:	1350 Massachusetts Ave												
Address Line 2:	Harvard University, Office of Tech. Dev.												
Address Line 4:	Cambridge, MASSACHUSETTS 02138												
ATTORNEY DOCKET NUMBER:	3580 US PCT HU												

OP \$80.00 US1002732

NAME OF SUBMITTER:

Anne I. Craig

Total Attachments: 9

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ASSIGNMENT

Assignor:
HOWARD HUGHES MEDICAL INSTITUTE
4000 Jones Bridge Road
Chevy Chase, MD 20815

Assignee:
PRESIDENT AND FELLOWS OF HARVARD COLLEGE
17 Quincy Street
Cambridge, MA 02138

WHEREAS, I, David R. Liu, of Lexington, Massachusetts, as a duly appointed agent of Howard Hughes Medical Institute (HHMI), have developed certain inventions described in International PCT Patent Application No. PCT/US10/02732 filed 10/13/2010, entitled: "Reactivity-Dependent and Interaction-Dependent PCR" which claims priority to Provisional Patent Application No. 61/257,983 filed 11/04/2009, having full right to convey HHMI's entire right, title, and interest, both legal and equitable, in and to said inventions, free from all prior assignments, agreements, licenses, mortgages, security interests, or other encumbrances whatsoever; and


WHEREAS, PRESIDENT AND FELLOWS OF HARVARD COLLEGE ("Assignee"), a non-profit corporation of the state of Massachusetts, having its principal place of business at 17 Quincy Street, Cambridge, Massachusetts 02138, is desirous of acquiring the entire right, title, and interest in and to said invention or inventions and any and all patents to be obtained therefore;

NOW, THEREFORE, in consideration of good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by the undersigned, the undersigned does hereby sell, assign, transfer, and set over unto said Assignee, its successors and assigns, HHMI's entire right, title, and interest throughout the world in and to said invention or inventions, as described in the aforesaid application, in any form or embodiment thereof, and in and to the aforesaid application; and in and to any application filed in any foreign country based thereon, including the right to file said foreign applications and claim priority under the provisions of any international convention or treaty; also the entire right, title, and interest throughout the world in and to any and all patents or reissues or extensions

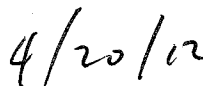
thereof to be obtained in this or any foreign country upon said invention or inventions and any divisional, continuation, continuation-in-part, or substitute applications which may be filed upon said invention or inventions in this or any foreign country; and the undersigned hereby authorizes and requests the issuing authority to issue any and all patents on said application or applications to said Assignee or its successors and assigns.

The undersigned further agrees, without any further payment or compensation by said Assignee or its successors and assigns, to communicate to said Assignee, its representatives or agents or its successors and assigns, any facts relating to said invention or inventions including evidence of interference purposes or for other legal proceedings whenever requested; testify in any interference or other legal proceedings, whenever requested; executed and deliver, on request, all lawful papers required to make any of the foregoing provisions effective; and generally do everything possible to aid said Assignee, its successors or assigns and nominees to secure, obtain and enforce proper patent protection for said invention or inventions in this or any foreign country.

IN TESTIMONY WHEREOF, the undersigned had hereunto set his/her hand and seal on the date after his/her signature.



David R. Liu



Date



Witness Signature



Date

ALEKSANDAR MARČEVIĆ

Witness's Printed Name

ASSIGNMENT

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the undersigned:

**Christoph E. Dumelin, David J. Gorin, Adam S. Kamlet, and Lynn
McGregor**

(each hereafter "Assignor") hereby assign, sell, and transfer to:

**President and Fellows of Harvard College
17 Quincy Street, Cambridge, Massachusetts 02138**

(hereafter "Assignee") its successors and assigns, Assignor's entire right, title and interest throughout the world in and to any and all inventions for:

REACTIVITY-DEPENDENT AND INTERACTION-DEPENDENT PCR

described in International PCT Patent Application No. **PCT/US2010/02732**, filed 10/13/10; and in Provisional Patent application No. **61/257,983**, filed 11/04/09, and in and to the aforesaid application(s), in any form or embodiment thereof, and in and to any application on any of the inventions filed in this and any foreign country, based thereon, including the right to file said applications, apply for patent rights, and claim priority under the provisions of any international convention or treaty; also the entire right, title and interest throughout the world in and to any and all patents or reissues or extensions thereof to be obtained in this or any foreign country upon any of the inventions and any divisional, continuation, or substitute applications which may be filed upon said invention or inventions in this or any foreign country; and the right to sue in its own name and recover damages for past infringement of any United States Letters Patent and foreign patent; and authorize and request the issuing authority to issue any and all patents on said application or applications to said Assignee or its successors and assigns.

For purposes of complying with foreign requirements, the above paragraph is intended to expressly grant all the recited rights and grants in China, Korea, and Japan.

Assignor hereby warrants that he/she has full right to convey his/her entire right, title and interest, both legal and equitable, in and to said inventions, free from all prior assignments, agreements, licenses, mortgages, security interests, or other encumbrances whatsoever; and


Assignor further agrees, without further payment or compensation by said Assignee or its successors and assigns, to communicate to said Assignee, its representatives or agents or its successors and assigns, any facts relating to said invention or inventions including evidence for interference purposes or for other legal proceedings, whenever requested; testify in any interference or other legal proceedings whenever

requested; execute and deliver, on request, all lawful papers required to make any of the foregoing provisions effective; and generally do everything possible to aid said Assignee, its representatives or agents, or its successors or assigns to secure, obtain and enforce proper patent protection for said invention or inventions in this and any foreign country.

Assignor authorizes Assignee or Assignee's representative to supply and/or to correct any errors in the patent/application information provided above including but not limited to said application serial number(s) and filing date(s), prior to or after recordation.

Assignor appoints Assignee, through its designee, as its attorney-in-fact to execute, in Assignor's name and on Assignor's behalf, any and all documents required to effectuate this Assignment, specifically including, but not limited to, those documents specified above and any necessary corrective assignments.

6/11/11
Date


Christoph E. Dumelin

6-11-11
Date



Witness

ALEKSANDAR MARKOVIĆ
Witness's Printed Name

6/13/11
Date


David J. Gorin

6/13/11
Date


Witness

ALEKSANDAR MARKOVIĆ
Witness's Printed Name

6/13/2011

Date

A. Kamlet

Adam S. Kamlet

6/13/11

Date

Aleksandar Markovic

Witness

ALEKSANDAR MARKOVIC

Witness's Printed Name

6/11/11

Date

Lynn McGregor

Lynn McGregor

6-11-11

Date

Aleksandar Markovic

Witness

ALEKSANDAR MARKOVIC

Witness's Printed Name

HHMI

HOWARD HUGHES MEDICAL INSTITUTE

March 8, 2010

David R. Liu, PhD
Investigator
Howard Hughes Medical Institute
Harvard University
Department of Chemistry and Chemical Biology
12 Oxford Street
Cambridge, MA 02138

Dear Dr. Liu:

I have received the executed form assigning your rights in the invention entitled "Reactivity-Dependent PCR and Interaction-Dependent PCR," which is set forth on the invention disclosure dated September 21, 2009 (the "Invention"). HHMI has adopted the practice of appointing you as HHMI's agent for the purpose of assigning its rights in the Invention to President and Fellows of Harvard College ("Institution"), as required under the collaborative arrangement between HHMI and Institution. Enclosed with this letter is an executed document appointing you as HHMI's agent for this purpose. I am sending a copy of the assignment(s), this letter and its enclosure to Denlyn K. Atherton at Institution.

As you are probably aware, you will be asked to execute an assignment of rights to Institution in the event a patent application is filed with respect to the Invention. To ensure that HHMI's rights are properly assigned to Institution, it is important that you have the enclosed executed document with you when you execute that assignment and that, after your signature, you write in "for himself and as agent for the Howard Hughes Medical Institute." If you have any questions at all about this procedure or your role in it, please contact me.

Sincerely,



Sue S. Ohata
Manager of Intellectual Property

Enclosure

cc: Ms. Denlyn K. Atherton

APPOINTMENT OF INVESTIGATOR AS AGENT

Appointment by the Howard Hughes Medical Institute ("HHMI") of David R. Liu, PhD, an employee of HHMI, as its agent for the purpose of assigning certain rights to President and Fellows of Harvard College ("Institution").

~~WHEREAS, HHMI and Institution collaborate in the active conduct of medical research~~
pursuant to an Agreement between them dated as of April 14, 2003 (the "Agreement");

WHEREAS, pursuant to the Agreement, HHMI has agreed to assign to Institution HHMI's rights with respect to inventions, discoveries, improvements, and other intellectual property, whether patentable or copyrightable (each a "Subject Property"), conceived or reduced to practice in the course of the research program conducted under the Agreement by employees of HHMI;

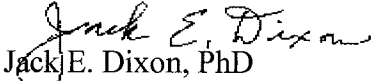
WHEREAS, research conducted pursuant to the Agreement by David R. Liu, PhD while employed by HHMI at Institution has resulted in the invention of a certain Subject Property entitled "Reactivity-Dependent PCR and Interaction-Dependent PCR," which is the subject of a patent application entitled "Reactivity-Dependent PCR" filed in the U.S. Patent and Trademark Office on November 4, 2009 with Serial Number 61/257,983 (the "Invention"), and the Invention is a Subject Property; and

WHEREAS, HHMI wishes David R. Liu, PhD to act as its agent for the purpose of assigning to Institution the rights HHMI has in the Invention by reason of the research program conducted at Institution.

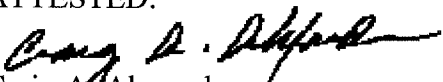
NOW THEREFORE, HHMI hereby appoints David R. Liu, PhD as its agent for the purpose of assigning the rights HHMI has or may acquire in the Invention by reason of the research program conducted at Institution to Institution in accordance with and subject to the conditions of the Agreement.

Executed: March 8, 2010

HOWARD HUGHES MEDICAL INSTITUTE

By: 
Jack E. Dixon, PhD
Vice President and Chief Scientific Officer

ATTESTED:


Craig A. Alexander
Vice President and General Counsel

Harvard 3580
HHMI 04452

PATENT
REEL: 028342 FRAME: 0511

ASSIGNMENT

Assignment made MARCH 3rd, 2010, by David R. Liu, PhD ("Inventor") to the Howard Hughes Medical Institute, a Delaware corporation ("HHMI").

Recitals

WHEREAS, Inventor is an employee of HHMI and, as a condition of his employment, has signed the Agreement appended to HHMI's Policy on Intellectual Property (the "Intellectual Property Agreement");

WHEREAS, pursuant to the Intellectual Property Agreement, Inventor has agreed (a) to assign to HHMI all rights he may acquire in any invention, discovery, improvement, or other intellectual property, whether or not patentable or copyrightable, developed directly or indirectly as a result of a program of research financed by HHMI funds or funds under the control of HHMI (each a "Subject Property") and (b) to execute any agreements that may be desired by HHMI in connection with such assignment;

WHEREAS, Inventor has, alone or with others invented "Reactivity-Dependent PCR and Interaction-Dependent PCR" which may be the subject of a patent application (the "Invention"), and the Invention is a Subject Property; and

WHEREAS, Inventor seeks to make a formal assignment of his interest in the Invention to HHMI, and HHMI desires the execution of a formal assignment of all of Inventor's right, title, and interest in the Invention.

NOW, THEREFORE, in consideration of the promises contained in and the acts performed and to be performed pursuant to the Intellectual Property Agreement and of other good and valuable consideration, the receipt of which is hereby acknowledged by Inventor, Inventor agrees as follows:

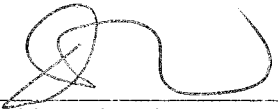
1. Assignment. Inventor hereby assigns to HHMI his entire right, title, and interest in the Invention; any United State patent applications and all corresponding foreign patent applications which are directed to the Invention (including, without limitation, the patent application entitled "Reactivity-Dependent PCR" filed in the United States Patent and Trademark Office on November 4, 2009 with Serial Number 61/257,983), and any and all patents issued therefrom; all United States or foreign division and continuation applications based on any of the foregoing, and any and all patents issued therefrom; and all claims which are directed to the Invention and which may be contained in continuation-in-part applications or in patents which issue therefrom.

2. Cooperation. Inventor agrees to execute upon request such further assignments, documents, and other instruments as may be necessary or desirable to assign Inventor's entire right, title and interest in the Invention to HHMI and to assist HHMI (or others at the direction of HHMI) in applying for, obtaining, and enforcing patents, copyrights, or other rights in the United States and in any foreign country with respect to the Invention.

3. Parties. The terms and provisions of the Assignment shall inure to the benefit of HHMI and its successors and assigns and shall be binding on the Inventor and his heirs, personal representatives and assigns.

4. Warranty. Inventor warrants and represents that he has not entered into any assignment, contract, or understanding in conflict herewith, and that there is no other person or entity whose consent is required in order for the Inventor to make the assignment contained herein.

Inventor:


David R. Liu, PhD


Commonwealth of Massachusetts

County of Middlesex

Then personally appeared before me the above-named David R. Liu, PhD and acknowledged that he executed the foregoing instrument in his authorized capacity this 5 day of MARCH, 2010

(SEAL)

Notary Public:


John L. RANDAZZO
(print name)

My Commission Expires: _____

Harvard 3580
HHMI 04452

JOHN L. RANDAZZO
NOTARY PUBLIC
My Commission Expires April 30, 2010