

## PATENT ASSIGNMENT COVER SHEET

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EPAS ID: PAT4162059

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
DAVID ROOT	11/17/2016
<b>RECEIVING PARTY DATA</b>	
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<b>City:</b>	CAMBRIDGE
<b>State/Country:</b>	MASSACHUSETTS
<b>Postal Code:</b>	02142
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	14973062
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<b>ATTORNEY DOCKET NUMBER:</b>	44790.04.2035
<b>NAME OF SUBMITTER:</b>	JOSHUA HAMLET
<b>SIGNATURE:</b>	/Joshua Hamlet/
<b>DATE SIGNED:</b>	11/30/2016
<b>Total Attachments: 2</b>	
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Vedder Price P.C.  
Application No.: 14/973,062  
Filing Date: 12/17/2015  
File No.: 44790.04.2035/ BI-2013/073.US1

## ASSIGNMENT

I, **David Root**, have made certain inventions or discoveries (or both) set forth in an application for Letters Patent of the United States of America entitled: **FUNCTIONAL GENOMICS USING CRISPR-CAS SYSTEMS, COMPOSITIONS, METHODS, SCREENS AN APPLICATIONS THEREOF** and **THE BROAD INSTITUTE INC.**, whose address is, **415 Main Street, Cambridge, MA 02142** and which, together with its successors and assigns is hereinafter called "Assignee," is desirous of acquiring the title, rights, benefits and privileges hereinafter recited, and of confirming the same or any part thereof heretofore acquired by Assignee.

Now, therefore, for valuable consideration furnished by Assignee to me, receipt and sufficiency of which I hereby acknowledge, I hereby, without reservation:

Assign and convey to and confirm in Assignee the entire right, title and interest in and to said inventions and discoveries, said application for Letters Patent of the United States of America, any and all other applications for Letters Patent on said inventions and discoveries in whatsoever countries, including all divisional, renewal, substitute, continuation and Convention applications based in whole or in part upon said inventions or discoveries or upon said applications, and any and all Letters Patent and reissues and extensions of Letters Patent granted for said inventions and discoveries or upon said applications, and every priority right that is or may be predicated upon or arise from said inventions, said discoveries, said applications and said Letters Patent;

Authorize Assignee to file and prosecute patent applications in any or all countries on any or all of said inventions and discoveries in my name or names or in the name of Assignee or otherwise as Assignee may deem advisable, under the International Convention or otherwise;

Authorize and request the Commissioner of Patents of the United States of America and the empowered officials of all other governments to issue or transfer all said Letters Patent to Assignee, as assignee of the entire right, title and interest therein or otherwise as Assignee may direct;

Warrant that I have not knowingly conveyed to others any right in said inventions, discoveries, applications or patents or any license to use the same or to make, use or sell anything embodying or utilizing any of said inventions or discoveries; and that I have good right to assign the same to Assignee without encumbrance;

Bind my heirs and legal representatives, as well as myself to do, upon Assignee's request and at its expense, but without additional consideration to me, all acts reasonably serving to assure that the said inventions and discoveries, the said patent applications and the said Letters Patent shall be held and enjoyed by Assignee as fully and entirely as the same could have been

held and enjoyed by me or my heirs or representatives if this assignment had not been made; and particularly to execute and deliver to Assignee all lawful application documents including petitions, specifications, and oaths, and all assignments, disclaimers, and lawful affidavits in form and substance as may be requested by Assignee; to communicate to Assignee all facts known to me relating to said inventions and discoveries or the history thereof; and to furnish Assignee with any and all documents, photographs, models, samples and other physical exhibits in my control or in the control of my heirs or legal representatives and which may be useful for establishing the facts of my conceptions, disclosures, and reduction to practice of said inventions and discoveries.

In testimony of which I have affixed my signature.

11/17/2016  
Date

David E. Root  
David Root

Commonwealth of Massachusetts )  
COUNTY OF Middlesex ) SS

I, Carmelina M. Commito, a Notary Public in and for the county and Commonwealth aforesaid, do hereby certify that David Root, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that she signed and delivered the said instrument as her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this 17<sup>th</sup> day of November, 2016.

Carmelina M. Commito  
Notary Public

My Commission Expires:  
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SEAL

