

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4272068

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
FRANK DEROSA	04/08/2013
MICHAEL HEARTLEIN	03/27/2013
RECEIVING PARTY DATA	
Name:	SHIRE HUMAN GENETIC THERAPIES, INC.
Street Address:	300 SHIRE WAY
City:	LEXINGTON
State/Country:	MASSACHUSETTS
Postal Code:	02421
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	14776506
CORRESPONDENCE DATA	
Fax Number:	(617)526-9899
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
Phone:	617-526-9600
Email:	dgilbride@proskauer.com
Correspondent Name:	PROSKAUER ROSE LLP
Address Line 1:	ONE INTERNATIONAL PLACE
Address Line 4:	BOSTON, MASSACHUSETTS 02110
ATTORNEY DOCKET NUMBER:	MRT-1103US
NAME OF SUBMITTER:	DARIN E. KIZER
SIGNATURE:	/DARIN E. KIZER/
DATE SIGNED:	02/13/2017
This document serves as an Oath/Declaration (37 CFR 1.63).	
Total Attachments: 5	
source=SHR-1103US Assignment#page1.tif	
source=SHR-1103US Assignment#page2.tif	
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COMBINED JOINT ASSIGNMENT & DECLARATION

A. ASSIGNMENT

WHEREAS, each of the below-named inventors whose name and residence is set forth in the following Table 1:

Inventor Name	City, State
1. Frank DeRosa	Lexington, MA
2. Michael Heartlein	Lexington, MA

Table 1

hereby declares and agrees, on behalf of himself/herself and all of his/her successors and assigns that each is aware of the patent application(s) entitled:

RIBONUCLEIC ACIDS WITH 4'-THIO-MODIFIED NUCLEOTIDES AND RELATED METHODS; and

- prepared for filing in the United States Patent and Trademark Office; or
 - identified by United States Application Serial No. **61/785,098** filed in the United States Patent and Trademark Office on **March 14, 2013**; and
 - identified by International Patent Application No. **Serial No.** filed on **Filing Date**;
- and
- is also aware of the following priority applications:

Serial No.: Serial No.; Filed: Filing Date

WHEREAS **Shire Human Genetic Therapies, Inc.** (hereinafter "ASSIGNEE"), having a usual place of business at **300 Shire Way, Lexington, MA 02421**, 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, I have sold, assigned, and transferred and/or do hereby sell, assign, and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, my 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 my sale, assignment and transfer is and was effective at least as of the filing date of the patent application and/or priority application. My 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 me had this sale, assignment and transfer not been made;

AND, I hereby acknowledge that this Assignment, being of my 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, I hereby further agree for myself and my 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 I know 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, I further hereby authorize 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, I hereby appoint ASSIGNEE as my common agent for purposes of prosecuting international patent applications and any national patent applications for which such common agency is recognized;

AND, I hereby request 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, I covenant 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 me, and that full right to convey the same as herein expressed is possessed by me.

B. DECLARATION (37 CFR 1.63)

As a below named inventor, I hereby declare that:

This declaration is directed to the patent application entitled:

RIBONUCLEIC ACIDS WITH 4'-THIO-MODIFIED NUCLEOTIDES AND RELATED METHODS; and

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

identified by United States Application Serial No. **61/785,098** filed in the United States Patent and Trademark Office on **March 14, 2013**; or

identified by International Patent Application No. **Serial No.** filed on **Filing Date**.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I have reviewed and understand the contents of the application, including the claims and am aware of the duty to disclose to the United States Patent and Trademark Office all information known to be material to patentability as defined in 37 CFR 1.56.

SIGNED this 8th day of April, 2013.

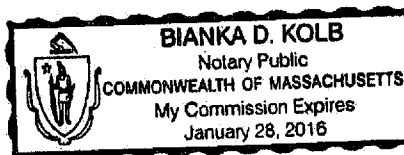
[Signature]
Name: **Frank DeRosa**

STATE OF Massachusetts SS.

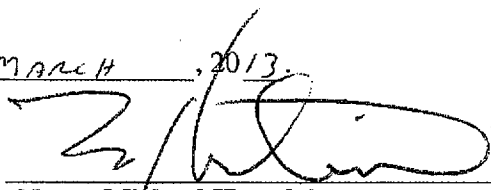
COUNTY OF Middlesex

Before me this 8th day of April, 2013, personally appeared **Frank DeRosa**, and proved to me through satisfactory evidence of identity which was KNOWN TO ME to be the person whose name is signed on the preceding or attached document, and acknowledged that he/she executed the same, of his/her own free will and for the purposes set forth.

NOTARY PUBLIC [Signature]
Name: Bianka Kolb
My Commission Expires: Jan. 28, 2016



SIGNED this 27 day of MARCH, 2013.

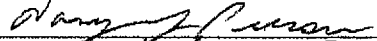

Name: Michael Heartlein

STATE OF MASSACHUSETTS SS.

COUNTY OF MIDDLESEX

Before me this 27 day of MARCH, 2013, personally appeared **Michael Heartlein**, and proved to me through satisfactory evidence of identity which was _____ to be the person whose name is signed on the preceding or attached document, and acknowledged that he/she executed the same, of his/her own free will and for the purposes set forth.

NOTARY PUBLIC


Name: Nancy L. Piers
My Commission Expires: December 8, 2017

