

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5695191

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT	
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT	
<b>CONVEYING PARTY DATA</b>		
<b>Name</b>		<b>Execution Date</b>
CRISPR THERAPEUTICS AG		08/21/2019
<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: 35</b>		
<b>Property Type</b>	<b>Number</b>	
Application Number:	62664023	
Application Number:	62734431	
Application Number:	62671770	
Application Number:	62734543	
Application Number:	62594689	
PCT Number:	US1863973	
Application Number:	62119754	
Application Number:	15550943	
Application Number:	15550951	
Application Number:	62119774	
Application Number:	15550954	
Application Number:	62332211	
Application Number:	62370507	
Application Number:	62370739	
Application Number:	62384924	
Application Number:	62429451	
Application Number:	62324024	
Application Number:	62382522	
Application Number:	62429428	
Application Number:	16094408	

PATENT

Property Type	Number
Application Number:	16356373
Application Number:	62396993
Application Number:	62577434
Application Number:	62583146
PCT Number:	IB1801338
Application Number:	62626423
Application Number:	16267693
PCT Number:	IB1900114
Application Number:	62626426
Application Number:	16267702
PCT Number:	IB1900183
Application Number:	62250823
Application Number:	62328203
Application Number:	15762700
PCT Number:	IB1700532

#### CORRESPONDENCE DATA

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**ATTORNEY DOCKET NUMBER:** C1542.90000US00

**NAME OF SUBMITTER:** ELIZABETH D. MCCARTHY

**SIGNATURE:** /Elizabeth D. McCarthy/

**DATE SIGNED:** 08/30/2019

#### Total Attachments: 7

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## ASSIGNMENT

For good and valuable consideration, the receipt of which is hereby acknowledged, CRISPR Therapeutics AG, a Swiss Public Limited Company having a place of business at Baarerstrasse 14, 6300 Zug, SWITZERLAND, for itself, its assigns and legal representatives ("Assignor") hereby:

1. Sells, assigns and transfers to **Vertex Pharmaceuticals Incorporated**, having a place of business at **50 Northern Avenue, Boston, Massachusetts 02210**, its successors, assigns and legal representatives, all hereinafter referred to as the Assignee, its entire right, title and interest for the United States and all foreign countries, in and to any and all inventions and designs which are disclosed in the patent applications for United States Letters Patent filed in the United States Patent and Trademark Office on the attached **Schedule A**, and in and to the application and all corresponding provisional, non-provisional, divisional, continuing, substitute, renewal, reissue and all other applications for Letters Patent, utility models, industrial designs or similar intellectual property rights which have been or shall be filed in the United States, internationally, and in any foreign country, including but not limited to China, Japan and Korea, on any of the inventions and designs; and in and to all original and reissued patents which have been or shall be issued in the United States or any other jurisdiction on the inventions and designs, including the right to apply for patent rights in each foreign country and all rights to priority, including the right to claim priority for China, Japan and Korea; as well as the right to sue in its own name and recover damages for past infringement of any United States Letters Patent and foreign patent, including a reasonable royalty relating to provisional rights under 35 U.S.C. § 154(d) that have attached to any published United States patent application, on the inventions and designs;
2. Agrees that the Assignee may apply for and receive Letters Patent and utility model and industrial design registrations for the inventions and designs in its own name; and when requested, without charge to but at the expense of the Assignee, agrees to carry out in good faith the intent and purpose of this Assignment, by executing all non-provisional, divisional, continuing, substitute, renewal, reissue, and all other patent, utility model and industrial design applications on any and all the inventions and designs, by executing all rightful oaths, assignments, powers of attorney and other papers, by communicating to the Assignee all facts known to it relating to the inventions and designs and the history thereof, and generally by doing everything reasonably possible which the Assignee shall consider desirable for aiding in securing and maintaining proper protection for the inventions and designs and for vesting title to the inventions and designs and all applications for patents and all patents on the inventions and designs, in the Assignee;
3. Requests the Director of the United States Patent and Trademark Office and foreign patent authorities to issue the Letters Patent or other intellectual property rights, including foreign patents, to the Assignee;
4. Authorizes and requests Wolf, Greenfield & Sacks, P.C. to supply any missing application identification information or correct any errors in the application identification information provided above, whether discovered prior to or after recordation;
5. Covenants with the Assignee that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by it and that full right to convey the same as herein expressed is possessed by it; and

6. Appoints Assignee, through its designee, its attorney-in-fact to execute, in its name and on its 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.

This instrument is executed under seal and signed under the pains and penalties of perjury under the laws of the United States of America.

21.08.2019  
Date

Crispr Therapeutics AG  
Baarerstrasse 14  
CH - Zug 6300  
VAT No: CHE-494.642-722 MWST

Anders Kassow  
Assignor: CRISPR Therapeutics AG  
Address: Baarerstrasse 14  
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SWITZERLAND  
Signer: **ANDERS KASSOW**  
Title: **EXECUTIVE DIRECTOR IP**

Witness:  
21.08.2019  
Date

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Witness:  
21.08.2019  
Date

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Name: Marjolien Overgaauw  
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CH-5174 Untersiggenthal

# SCHEDULE A

WGS Docket No.	Application No.	Title	Filing Date	Status
C1542.70004US00	62/664023	CRISPR CAS9 MODIFIED CD34+ HUMAN HEMATOPOIETIC STEM AND PROGENITOR CELLS	April 27, 2018	Expired
C1542.70004US01	62/734431	CRISPR CAS9 MODIFIED CD34+ HUMAN HEMATOPOIETIC STEM AND PROGENITOR CELLS	September 21, 2018	Pending
C1542.70006US00	62/671770	CRISPR-CAS9 MODIFIED CD34+ HUMAN HEMATOPOIETIC STEM AND PROGENITOR CELLS AND RELATED METHODS FOR TREATING BETA-THALASSEMIA	May 15, 2018	Expired
C1542.70006US01	62/734543	CRISPR-CAS9 MODIFIED CD34+ HUMAN HEMATOPOIETIC STEM AND PROGENITOR CELLS AND RELATED METHODS FOR TREATING BETA-THALASSEMIA	September 21, 2018	Pending
C1542.70041US00	62/594689	PHARMACEUTICAL COMPOSITIONS FOR TREATING HEMOGLOBINOPATHIES	December 5, 2017	Expired
C1542.70041WO00	PCT/US2018/063973	CRISPR-CAS9 MODIFIED CD34+ HUMAN HEMATOPOIETIC STEM AND PROGENITOR CELLS AND USES THEREOF	December 5, 2018	Published
C1542.70010US00	62/119754	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	February 23, 2015	Expired
C1542.70010US03	15/550943	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	August 14, 2017	Published
C1542.70010WO00	PCT/IB2016/000276	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	February 23, 2016	National Phase
C1542.70011US00	15/550951	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	August 14, 2017	Published
C1542.70011WO00	PCT/IB2016/000282	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	February 23, 2016	National Phase

C1542.70012US00	62/119774	MATERIALS AND METHODS FOR TREATMENT OF HUMAN GENETIC DISEASES INCLUDING HEMOGLOBINOPATHIES	February 23, 2015	Expired
C1542.70012US01	15/550954	MATERIALS AND METHODS FOR TREATMENT OF HUMAN GENETIC DISEASES INCLUDING HEMOGLOBINOPATHIES	August 14, 2017	Published
C1542.70012WO00	PCT/IB2016/000286	MATERIALS AND METHODS FOR TREATMENT OF HUMAN GENETIC DISEASES INCLUDING HEMOGLOBINOPATHIES	February 23, 2016	National Phase
C1542.70015US00	62/332211	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	May 5, 2016	Expired
C1542.70015US01	62/370507	RE-CREATING HEREDITARY PERSISTENCE OF FETAL HEMOGLOBIN (HPFH) OR MODIFYING BCL 11 A TO TREAT SICKLE CELL DISEASE (SCD) AND BETA-THALASSEMIA	August 3, 2016	Expired
C1542.70015US02	62/370739	RE-CREATING HEREDITARY PERSISTENCE OF FETAL HEMOGLOBIN (HPFH) OR MODIFYING BCL 11 A TO TREAT SICKLE CELL DISEASE (SCD) AND BETA-THALASSEMIA	August 4, 2016	Expired
C1542.70015US03	62/384924	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	September 8, 2016	Expired
C1542.70015US04	62/429451	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	December 2, 2016	Expired
C1542.70015WO00	PCT/IB2017/000532	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	April 18, 2017	National Phase
C1542.70016US00	62/324024	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	April 18, 2016	Expired

C1542.70016US01	62/382522	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	September 1, 2016	Expired
C1542.70016US02	62/429428	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	December 2, 2016	Expired
C1542.70016US03	16/094408	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	October 17, 2018	Pending
C1542.70016US04	16/356373	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	March 18, 2019	Published
C1542.70016WO00	PCT/IB2017/000577	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	April 18, 2017	National Phase
C1542.70030US00	62/396993	MATERIAL AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	September 20, 2016	Expired
C1542.70030US01	62/577434	MATERIAL AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	October 26, 2017	Expired
C1542.70030US02	62/583146	MATERIAL AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	November 8, 2017	Expired
C1542.70030WO00	PCT/IB2018/001338	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	October 26, 2018	Published
C1542.70033US00	62/626423	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	February 5, 2018	Expired
C1542.70033US01	16/267693	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	February 5, 2019	Pending
C1542.70033WO00	PCT/IB2019/000114	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	February 5, 2019	Pending
C1542.70034US00	62/626426	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	February 5, 2018	Expired
C1542.70034US01	16/267702	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	February 5, 2019	Pending
C1542.70034WO00	PCT/IB2019/000183	MATERIALS AND METHODS FOR	February 5, 2019	Pending



		TREATMENT OF HEMOGLOBINOPATHIES		
C1542.70044US00	62/250823	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	November 4, 2015	Expired
C1542.70044US01	62/328203	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	April 27, 2016	Expired
C1542.70044US01	15/762700	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	March 23, 2018	Published
C1542.70044WO00	PCT/IB2016/001750	MATERIALS AND METHODS FOR TREATMENT OF HEMOGLOBINOPATHIES	November 4, 2016	National Phase