### 507490952 09/14/2022

# PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT7537842

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

### **CONVEYING PARTY DATA**

Name	Execution Date
MARY BEATTY	12/06/2017
NICHOLAS DOANE CHILCOAT	12/06/2017
STEPHANE DESCHAMPS	12/06/2017
GREGORY D MAY	12/06/2017
GINA MARIE ZASTROW-HAYES	12/06/2017

### **RECEIVING PARTY DATA**

Name:	PIONEER HI-BRED INTERNATIONAL, INC.
Street Address:	7100 NW 62ND AVENUE
Internal Address:	PO BOX 1014
City:	JOHNSTON
State/Country:	IOWA
Postal Code:	50131-1014

### **PROPERTY NUMBERS Total: 1**

Property Type	Number
Application Number:	16494822

### **CORRESPONDENCE DATA**

Fax Number: (515)535-6883

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.

Phone: 5155350009

Email: IPSUPPORT@CORTEVA.COM

**Correspondent Name:** PIONEER HI-BRED INTERNATIONAL, INC.

Address Line 1: 7250 NW 62ND AVENUE

Address Line 2: PO BOX 552

Address Line 4: JOHNSTON, IOWA 50131-0552

ATTORNEY DOCKET NUMBER:	7409-US-PCT
NAME OF SUBMITTER:	JANAE LEHMAN BELL
SIGNATURE:	/janaelehmanbell/
DATE SIGNED:	09/14/2022

# Total Attachments: 5 source=7409USPSP2\_ExecutedAssignments#page1.tif source=7409USPSP2\_ExecutedAssignments#page2.tif source=7409USPSP2\_ExecutedAssignments#page3.tif source=7409USPSP2\_ExecutedAssignments#page4.tif source=7409USPSP2\_ExecutedAssignments#page5.tif

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			<u>ONS IN NUCLEIC A</u>	<u>CIDS</u> the subjec	ct matter of which	h is described	in the application for patent
(Attorn	ey Docket No:	7409-US-PSP[2] )					
	declaration e	executed on					
$\boxtimes$	United State	es Of America	Patent Applica	ation Serial No.	62/511732	, filed on	May26 2017,
	PCT Applicat	ion Serial No.		filed on			_
which	h claim(s) its ear	liest priority to Ap	plication Serial No.			, filed	on
	For valuable o	onsideration, the r	eceipt and adequa	cy of which is	hereby acknowle	edged, and in f	ulfillment of my pre-existing
		nt to assignee, whi					
							kisting under the laws of the
							52 <sup>nd</sup> Avenue, P.O. Box 1014,
		1014, herein referi					
	_						tent"), (2) any priority rights
							tection of Industrial Property
		•		_			all member countries of the
			_				plications, (3) any and all of
•		_					ted to or arising out of such th Inventions in any country
							tion, continuations-in-part,
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							nd all reexams, reissues and
							and/or such Inventions; (B)
							the aforesaid International
				•			Commissioner of Patents and
Tradem	narks of the Unit	ed States of Ameri	ca and any counter	part in any oth	er patent office l	eing hereby a	uthorized to issue or transfer
all of sa	id patents to sa	id assignee in accor	dance herewith, a	nd (4) enforce	said patents and	to sue for and	recover profits and damages
for any	and all infringe	ments thereof, wh	ether past, present	t or future, to t	he full end of the	e term or term	s for which said patents may
							out this assignment;
							d reasonable costs incurred,
							nown to me respecting such
							r the rights described above,
						-	uch testimony is legal should
							ecessary or required by said of this instrument, including
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		-					al representatives to obtain,
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		_		_			s, legal representatives, and
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		d filing date when					
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Assignr	ment shall be ef	fective as of the ea	rliest priority date	for the afores	aid application(s	for Letters Pa	tent.
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	MARY BEATT			MA	2ato	<u> </u>	46111
	Name of Inve	ntor 1	Signat	ure of Inventor	()	Date	
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I, the undersigned <u>NICHOLAS DOANE CHILCOAT</u>				***************************************
IDENTIFYING AND CHARACTERIZING GENE EDITIN		<u>EIC ACIDS</u> the subject	t matter o	of which is described in the
application for patent (Attorney Docket No: 7409-	JS-PSP[2]			
declaration executed on				
United States Of America Pater	nt Application Serial No.	62/511732 ,	filed on	May26 2017 ,
PCT Application Serial No.	filed on			
which claim(s) its earliest priority to Application 5	Serial No.		, filed	on .
which claim(s) its earliest priority to Application 5 For valuable consideration, the receipt an	d adequacy of which is h	nereby acknowledged	, and in fi	Ifillment of my pre-existing
obligation of assignment to assignee, which is here				, ·
I. Sell, assign, and transfer unto PIONEER HI-BRED	INTERNATIONAL, INC., a	corporation organize	ed and ex	isting under the laws of the
State of Iowa in the United States of America and	having its principal pla	ice of business at 71	.00 NW 6	2 <sup>nd</sup> Avenue, P.O. Box 1014,
Johnston, Iowa 50131-1014, herein referred to as t	he assignee, and to assig	gnee's successors and	d assigns,	
(A) the entire right, title, and interest in and to	(1) the aforesaid applica	ation(s) for Letters Pa	tent ("Pat	ent"), (2) any priority rights
derived from such aforesaid application(s) for Pater	at by virtue of the Interna	ational Convention fo	r the Prot	ection of Industrial Property
("International Convention") and any other treaty	or understanding for int	ellectual property for	any and	all member countries of the
International Convention or other treaty or unders	standing, including right:	s in any and all provis	sional app	ilications, (3) any and all of
my inventions, whether joint or sole, disclosed in				
aforesaid application(s) for Patent ("Inventions")	, (4) any and all applic	ations for Patent for	r any sucl	i Inventions in any country
whatsoever, including all provisional, non-pro-				
international and convention applications based				
Inventions, (5) any and all patents for any such Ir				
extensions of any patent based in whole or in part				
the entire right to (1) file such applications in its				
Convention or any other treaty or understanding, (				
Trademarks of the United States of America and an				
all of said patents to said assignee in accordance he				
for any and all infringements thereof, whether pass				
be granted, as fully and entirely as the same would				
II. Agree, whenever assignee asks, without further				
(A) to communicate to said assignee, its succe				
Inventions or the rights described above, (B) to test the location of that testimony to be in the country				
my country of residence prohibit such testimony, (				
assignee, its successors, assigns and legal represe				
petitions, specifications, oaths, assignments, discla				
assignee and (D) generally to do everything possib				
maintain, defend and enforce patent protection fo				
III. Represent, warrant and covenant that I have the				
is not pre-dated by any grant, license, or other righ				
IV. Agree that my grants and obligations herein sl				
assigns; and	· · · · · · · · · · · · · · · · · · ·	, , , , , , , , , , , , , , , , , , , ,		,,,
V. Agree that an authorized representative of a	assignee is hereby gran	ted the power to in	isert in ti	nis assignment any further
identification which may be necessary or desirable	e to comply with the rul	es of the U.S. Patent	and Trac	lemark Office or the patent
office of any other country for recordation of this A				
application number and filing date when known.				
In Witness Whereof, I have executed this Worldw	ide Assignment on the	date indicated by my	hand and	l agree that this Worldwide
Assignment shall be effective as of the earliest prior				
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NICHOLAS DOANE CHILCOAT	Michele Don	Chalment	Dec	6,2017
Name of Inventor 2	Madely Cox. Signature of Inventor		Data	6,2017
a contract of an analysis &	referment to anythin		rsarc:	

	undersigned <u>STEPHANE DESCHAMP</u> HARACTERIZING GENE EDITING VA				
_	t (Attorney Docket No: 7409-US-PSI		subject matter of	***************************************	orized in the opposition to
Patem	declaration executed on	<u> </u>			
Ø	United States Of America	Patent Application Serial No.	62/511732	, filed on	May26 2017 ,
	PCT Application Serial No.	filed on			
	h claim(s) its earliest priority to App			, filed	on .
******	For valuable consideration, the re		ereby acknowled		
ohligat	tion of assignment to assignee, which			god, and m	annual control of the control of
	assign, and transfer unto PIONEER			anized and ex	sisting under the laws of the
_	of Iowa in the United States of Am	•			_
	on, Iowa 50131-1014, herein referre				
	) the entire right, title, and interest	<del></del>	7		tent"), (2) any priority rights
	d from such aforesaid application(s)				
	national Convention") and any other				
Interna	ational Convention or other treaty o	or understanding, including right	s in any and all pr	ovisional app	olications, (3) any and all of
my inv	entions, whether joint or sole, disc	closed in such aforesaid applicat	on(s) for Patent,	and/or relate	ed to or arising out of such
afores	aid application(s) for Patent ("Inve	entions"), (4) any and all applic	ations for Patent	for any sucl	h Inventions in any country
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	ational and convention application				
	ions, (5) any and all patents for an				
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	tire right to (1) file such application				
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	narks of the United States of Americ				
	aid patents to said assignee in accord				
	y and all infringements thereof, whe nted, as fully and entirely as the san				
	ee, whenever assignee asks, withou				
	) to communicate to said assignee,				
Inventi	lons or the rights described above, (	B) to testify in any legal proceeding	e respecting such	Inventions or	the rights described above.
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assigne	ee and (D) generally to do everythin	ig possible to ald said assignee, it	s successors, assi	gns, and lega	I representatives to obtain,
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	ore-dated by any grant, license, or o				
	ree that my grants and obligations	herein shall also bind all of my h	eirs, executors, a	dministrators	, legal representatives, and
assigns					
V. Ag	ree that an authorized representa	tive of assignee is hereby gran	ted the power to	o insert in th	assignment any further
	cation which may be necessary or				
	of any other country for recordation Ition number and filing date when k		power to insert o	on this assigni	ment information regarding
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	STEPHANE DESCHAMPS	loes	- J.	19	1612017
	Name of Inventor 3	Signature of Inventor-		Date	11101 T
	THE OI INTOMOL J	Digitatore of Hiveling-		Date	

	ndersigned <u>GREGORY D MAY</u> , hereb				
	CTERIZING GENE EDITING VARIATION	<u>IS IN NUCLEIC ACIDS</u> the subjec	t matter of whic	h is described	in the application for patent
_	ey Docket No: 7409-US-PSP[2]				
Ц	declaration executed on	<del></del>			
$\boxtimes$	United States Of America	Patent Application Serial No.	62/511732	, filed on	May26 2017 ,
	PCT Application Serial No.	filed on			_
which	claim(s) its earliest priority to Applic	cation Serial No.		, filed	on
	For valuable consideration, the rec			dged, and in f	ulfillment of my pre-existing
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extensi	ons of any patent based in whole or	in part upon such aforesaid ap	plication(s) for L	etters Patent	and/or such Inventions; (B)
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	arks of the United States of America				
	id patents to said assignee in accorda				
	and all infringements thereof, wheth				
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	e, its successors, assigns and legal				
	ns, specifications, oaths, assignments				
	e and (D) generally to do everything				
mainta	n, defend and enforce patent protec	tion for such Inventions and/or	r secure title to s	uch Invention	s with assignee;
III. Rep	resent, warrant and covenant that I	have the full right and lawful a	uthority to make	this assignme	ent, that such assigned right
-	re-dated by any grant, license, or oth				•
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	ness Whereof, I have executed this \			•	<del>-</del>
Assign	ment shall be effective as of the earlie	est priority date for the aforesaid	d application(s) f	or Letters Pate	ent.
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	GREGORY D MAY		<del>//</del>		-6 - 201/
	Name of Inventor 4	Signature of Inventor	()	Date	
		-	V		

WORLDWIDE ASSIGNMENT
I, the undersigned GINA MARIE ZASTROW-HAYES, hereby declare that I am an inventor of an invention entitled METHODS OF
IDENTIFYING AND CHARACTERIZING GENE EDITING VARIATIONS IN NUCLEIC ACIDS the subject matter of which is described in the application for patent (Attorney Docket No: 7409-US-PSP[2] )
declaration executed on
United States Of America Patent Application Serial No. 62/511732 , filed on May26 2017 ,
PCT Application Serial No. filed on
which claim(s) its earliest priority to Application Serial No, filed on, filed on  For valuable consideration, the receipt and adequacy of which is hereby acknowledged, and in fulfillment of my pre-existing
obligation of assignment to assignee, which is hereby acknowledged, I hereby:
I. Sell, assign, and transfer unto PIONEER HI-BRED INTERNATIONAL, INC., a corporation organized and existing under the laws of the
State of lowa in the United States of America and having its principal place of business at 7100 NW 62 <sup>nd</sup> Avenue, P.O. Box 1014,
Johnston, Iowa 50131-1014, herein referred to as the assignee, and to assignee's successors and assigns,
(A) the entire right, title, and interest in and to: (1) the aforesaid application(s) for Letters Patent ("Patent"), (2) any priority rights
derived from such aforesaid application(s) for Patent by virtue of the International Convention for the Protection of Industrial Property
("International Convention") and any other treaty or understanding for intellectual property for any and all member countries of the
International Convention or other treaty or understanding, including rights in any and all provisional applications, (3) any and all of
my inventions, whether joint or sole, disclosed in such aforesaid application(s) for Patent, and/or related to or arising out of such
aforesaid application(s) for Patent ("inventions"), (4) any and all applications for Patent for any such inventions in any country
whatsoever, including all provisional, non-provisional, divisional, renewal, substitute, continuation, continuations-in-part,
international and convention applications based in whole or in part upon such aforesaid application(s) for Patent and/or such
Inventions, (5) any and all patents for any such inventions in any country whatsoever, including any and all reexams, reissues and
extensions of any patent based in whole or in part upon such aforesaid application(s) for Letters Patent and/or such Inventions; (B)
the entire right to (1) file such applications in its name or in my name, (2) file such applications under the aforesaid International
Convention or any other treaty or understanding, (3) have said patents granted in its name or mine, the Commissioner of Patents and
Trademarks of the United States of America and any counterpart in any other patent office being hereby authorized to issue or transfer
all of said patents to said assignee in accordance herewith, and (4) enforce said patents and to sue for and recover profits and damages
for any and all infringements thereof, whether past, present or future, to the full end of the term or terms for which said patents may
be granted, as fully and entirely as the same would have been held and enjoyed by the undersigned without this assignment;
B. Agree, whenever assignee asks, without further compensation but at assignee's expense for actual and reasonable costs incurred,
(A) to communicate to said assignee, its successors, assigns, and legal representatives, any facts known to me respecting such
Inventions or the rights described above, (B) to testify in any legal proceeding respecting such inventions or the rights described above, the location of that testimony to be in the country in which I reside or in the nearest country in which such testimony is legal should
my country of residence prohibit such testimony, (C) to execute all applications, papers or instruments necessary or required by said
assignee, its successors, assigns and legal representatives, to carry into effect any of the provisions of this instrument, including
petitions, specifications, oaths, assignments, disclaimers, and lawful affidavits in form and substance which may be requested by said
assignee and (D) generally to do everything possible to aid said assignee, its successors, assigns, and legal representatives to obtain,
maintain, defend and enforce patent protection for such Inventions and/or secure title to such Inventions with assignee;
III. Represent, warrant and covenant that I have the full right and lawful authority to make this assignment, that such assigned right
is not pre-dated by any grant, license, or other right heretofore given by me to any party other than the assignee hereto;
IV. Agree that my grants and obligations herein shall also bind all of my heirs, executors, administrators, legal representatives, and
assigns; and
V. Agree that an authorized representative of assignee is hereby granted the power to insert in this assignment any further
identification which may be necessary or desirable to comply with the rules of the U.S. Patent and Trademark Office or the patent
office of any other country for recordation of this Assignment, including the power to insert on this assignment information regarding
application number and filing date when known.
In Witness Whereof, I have executed this Worldwide Assignment on the date indicated by my hand and agree that this Worldwide
Assignment shall be effective as of the earliest priority date figs the aforesaid application(s) for Letters Patent.
GINA MARIE ZASTROW-HAYES / // // // // // // // // // // // //
Name of Inventor 5 Signature of Inventor Date

**PATENT REEL: 061093 FRAME: 0458** 

**RECORDED: 09/14/2022**