

APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

6. the 18th day of October, A.D. 2017

7. by Kris W Kobach, Secretary of State

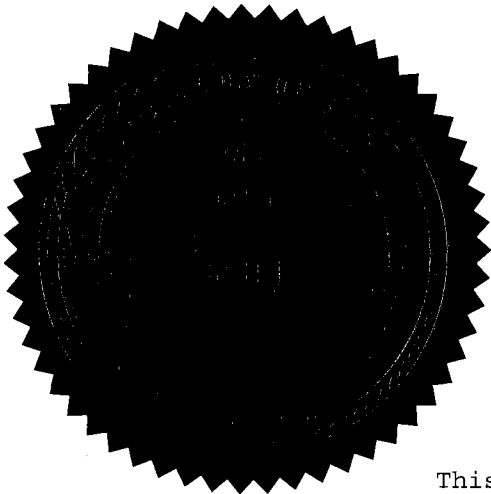
8. No. 17-05538

9. Seal/Stamp:

10. Signature

Certification issued
Kansas Secretary of State

Kris W. Kobach



Kris W. Kobach

This Apostille is not valid for use anywhere within the
United States of America, its territories or possessions.



Nathan Arends
Counsel

October 13, 2017

To whom it may concern:

I certify that the attached document is an original.

Nathan Arends
Nathan Arends
Counsel

Bayer HealthCare
P.O. Box 390
Shawnee Mission, KS 66201

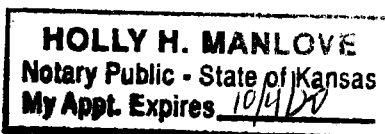
Phone: 913-268-2037
nathan.arends@bayer.com

d by
St
sh

State of Kansas
County of Johnson

Signed or attested before me on October 13, 2017 by
Nathan Arends.

Holly H. Manlove
Holly H. Manlove
Notary Public



My appointment expires: 10/4/20

ASSIGNMENT

WHEREAS, I, Warren Tully of 22 Te Ra Road, Point Chevalier, Auckland, New Zealand, have invented an improvement in INCREASING FERTILITY IN BOVINE SPECIES described in a U.S. provisional patent application assigned Serial No. 62/366772, filed July 26, 2016;

AND, WHEREAS, BAYER NEW ZEALAND LIMITED (17012) of 3 Argus Place, Hillcrest, Auckland, New Zealand, a New Zealand company, and its successors, assigns and legal representatives (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest, including the right to claim priority, in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be



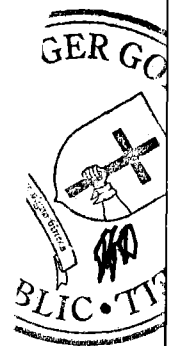
granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

AND I hereby authorize and request the Director of the United States Patent and Trademark Office of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives, and agree with said ASSIGNEE, its successors and assigns, that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I



have not executed and will not execute any instrument in conflict herewith.

IN WITNESS WHEREOF, I have hereunto set my hand.

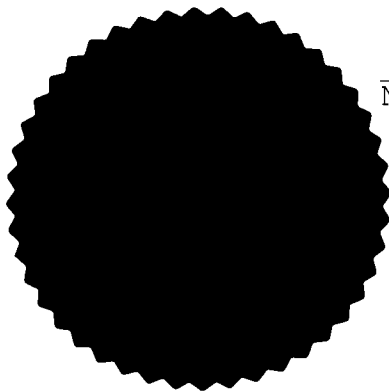
27 April 2017
Date

Warren Tully

LOCATION AUCKLAND)
NEW ZEALAND)

On this 27TH day of APRIL, 2017, before me, a Notary Public, personally appeared Warren Tully to me known to be the person described in and who executed the foregoing assignment and acknowledged that he executed same as his free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the date and year last above written.



R. Gordon Donnell
Notary Public

Roger Gordon Donnell
Notary Public
Auckland
NEW ZEALAND
My commission is for life.

DONNELL AND ASSOCIATES
Lawyers and Notary Public
Level 1, Unit 20, 18 Link Drive
Wairau Park, North Shore City
PO Box 334-050 Sunnyvale 0743
Ph: (09) 443-0172 Fax (09) 443-0576



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

6. the 18th day of October, A.D. 2017

7. by Kris W Kobach, Secretary of State

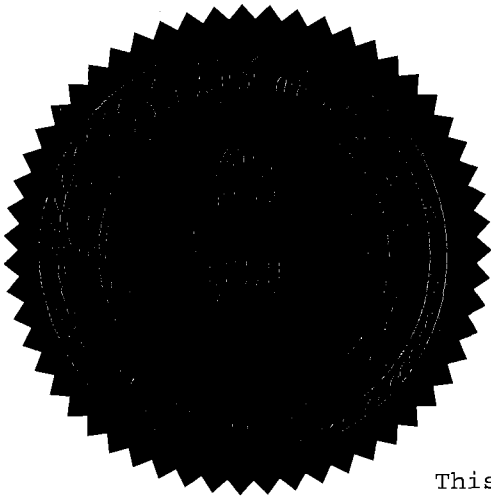
8. No. 17-05539

9. Seal/Stamp:

10. Signature

Certification issued
Kansas Secretary of State

Kris W. Kobach



Kris W. Kobach

This Apostille is not valid for use anywhere within the
United States of America, its territories or possessions.



Nathan Arends
Counsel

October 13, 2017

To whom it may concern:

I certify that the attached document is an original.

Nathan Arends
Nathan Arends
Counsel

Bayer HealthCare
P.O. Box 390
Shawnee Mission, KS 66201

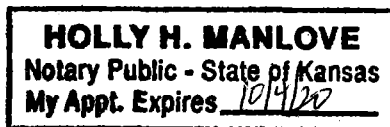
d by
Sta

Phone: 913-268-2037
nathan.arends@bayer.com

State of Kansas
County of Johnson

Signed or attested before me on October 13, 2017 by
Nathan Arends.

Holly H. Manlove
Holly H. Manlove
Notary Public



My appointment expires: 10/4/20

**DEED OF ASSIGNMENT
OF INTELLECTUAL PROPERTY RIGHTS**

DEED OF ASSIGNMENT OF INTELLECTUAL PROPERTY RIGHTS

2.0. BACKGROUND

- 2.1. Richard Olde Riekerink and Warren Tully, employees of **Assignor**, devised the *Invention* together with Jason Nickell, Albert Abraham, Daniel Keil, Terry Settje, Leland Vickers, and Stu Nibbelink.
- 2.2. **Assignor** acquired the rights to the invention and the Patent Rights from Richard Olde Riekerink and Warren Tully by way of assignment.
- 2.3. The **Assignor** acknowledges that the **Assignee** is or should be the owner of the *Intellectual Property Rights*, and hereby agrees to assign same to the **Assignee** on the terms described below.

BY THIS DEED THE PARTIES AGREE –

3.0. THE ASSIGNMENT

- 3.1. The **Assignor** hereby assigns all his right, title and interest in and to the *Invention* and *Intellectual Property Rights* to the Assignee.
- 3.2. The assignment will take place effective on the date this Deed is fully executed by the **Assignor**.

4.0. CONSIDERATION

- 4.1. In consideration for the assignment detailed in clause 3.1, the **Assignee** will pay to the **Assignor** upon execution of this Deed the sum of one New Zealand dollar (NZ\$1.00), the receipt and sufficiency of which is acknowledged by the Assignor.
- 4.2. Any and all rights of the **Assignor** with respect to the *Invention* and *Intellectual Property Rights* – including the right to claim priority from the patent application set out in the Schedule - will pass to the **Assignee** upon the effective date of this Deed.
- 4.3. Further, **Assignee** grants to **Assignor** a non-exclusive, worldwide, royalty-free, sublicensable, irrevocable license to use the *Invention* under the Patents.

5.0. ASSIGNOR'S OBLIGATIONS

- 5.1. The **Assignor** undertakes to provide any documents and authorisations as may be requested by the **Assignee** for vesting absolutely all their right, title and interest in and to the *Intellectual Property Rights* in favour of the **Assignee**, and for conferring on the **Assignee** the right to take action against any third party who copies the *Invention* or infringes the *Intellectual Property Rights*.

DEED OF ASSIGNMENT OF INTELLECTUAL PROPERTY RIGHTS

5.2. **Assignor** shall forthwith disclose to the **Assignee** any improvements in, modifications of or additions to the *Invention* he becomes aware of, and the intellectual property in all such improvements, modifications or additions will be owned by the **Assignee**.

5.2.1. The **Assignor** shall assign to the **Assignee** upon request all intellectual property rights relating to all improvements in, modifications of or additions to the *Invention*.

5.3. At the request of the **Assignee**, the **Assignor** shall at **Assignee's** expense execute all documents and do all acts necessary or convenient to enable **Assignee** to:

5.3.1. make, prosecute or register in **Assignee's** name an application for a patent, registered design, registered trade mark, plant variety rights or other intellectual property protection in respect of any of the *Intellectual Property Rights*;

5.3.2. defend opposition proceedings in respect of any of the *Intellectual Property Rights* against a third party or conduct opposition proceedings against a third party in respect of any application for intellectual property protection that may adversely affect **Assignee's** ability to exploit the *Intellectual Property Rights*;

5.3.3. defend proceedings in any court, tribunal or other forum which relate to the validity of any of protection obtained in respect of the *Intellectual Property Rights*;

5.3.4. enforce the *Intellectual Property Rights* including obtaining all such remedies as may be available for infringement of the *Intellectual Property Rights*.

5.4. The **Assignor** shall, at the request of the **Assignee**, and to the extent outstanding, furnish the **Assignee** with full details of and relating to the *Invention* and the *Intellectual Property Rights* (including the circumstances of invention, creation and/or design of same) and where possible all original versions of the *Invention*.

5.5. The **Assignor** agrees to treat as confidential all information relating to the *Invention* and the *Intellectual Property Rights* and shall not use, disclose or publish same without the express prior written consent of the **Assignee**. Such obligations shall not extend to information which already is in or which enters the public domain through no fault of the **Assignor**. The **Assignor** agrees to seek prior clearance from **Assignee** in any case of uncertainty.

6.0. ASSIGNOR'S WARRANTIES

6.1. The **Assignor** warrants:

DEED OF ASSIGNMENT OF INTELLECTUAL PROPERTY RIGHTS

6.1.1. There are no encumbrances or other matters affecting their respective capacity to assign the *Invention* and the *Intellectual Property Rights* to the **Assignee** free of any encumbrances or interests whatsoever.

7.0. GOVERNING LAW

7.1. This Deed and any disputes relating to it shall be governed by and construed in all respects in accordance with the laws of New Zealand.

7.2. Each party to this Deed submits to the non-exclusive jurisdiction of the courts of New Zealand.

Executed as a Deed this _____ day of _____ 2017 for and on behalf of

Bayer Healthcare LLC by its duly authorised officers

Signature Jessica Monachello

Name Jessica Monachello

Position Assistant Secretary

Signature William B. Doidge

Name WILLIAM B. DOIDGE

Position ASSISTANT SECRETARY

Executed as a Deed this 5th day of July 2017 for and on behalf of

Bayer New Zealand Limited by its duly authorised officers

Signature Patricia Castle

Name Patricia Castle
Director

Position _____

Signature Forbes Richard Emslie

Name FORBES RICHARD EMSLIE

Position ADAC DEVELOPMENT CENTRE
(HEAD)

State of Kansas
County of Johnson

I certify under penalty of perjury under the laws of the
State of Kansas that the foregoing is true and correct.
Executed on October 5, 2017.

Assignment Agreement

between

Bayer Animal Health GmbH

51368 Leverkusen

Germany

-hereinafter referred to as BAH –

and

Bayer HealthCare LLC

100 Bayer Boulevard

Whippany, NJ 07981

USA

-hereinafter referred to as BHLLC –

both parties being hereinafter referred to jointly as the PARTIES.

BHLLC is an assignee of US Patent Application Serial No. 62/366772, filed July 26, 2016 entitled “INCREASING FERTILITY IN BOVINE SPECIES”, which is hereinafter referred to as the “PATENT APPLICATION.” The PARTIES hereby agree to assign the PATENT APPLICATION to BAH, in consideration of the remuneration by BAH of BHLLC’s R&D costs undertaken in connection with PATENT APPLICATION. The PARTIES are convinced that such assignment will be advantageous for both parties.

For this purpose the PARTIES agree as follows:

1. BHLLC will assign BHLLC’s rights to the PATENT APPLICATION to BAH upon the execution of the present agreement by both PARTIES. BAH shall have the right to file and prosecute patent applications based on the PATENT APPLICATION in BAH’s own name, including the right to claim priority, and to withdraw or abandon patent applications or patents based on the PATENT APPLICATION. After executing the present agreement the parties will take the necessary steps to implement said assignment. BAH hereby accepts said assignment and will become the owner of the PATENT APPLICATION and all rights and obligations resulting therefrom.

2. In particular, BHLLC will also assign its rights to BAH to any patents granted on the PATENT APPLICATION. As from the effective date of the present agreement BAH will be responsible for the prosecution, maintenance, defense and enforcement of the PATENT APPLICATION. At the request of BAH, BHLLC will also otherwise make every effort to assist BAH in its prosecution and any necessary defense of the PATENT APPLICATION.
3. As from the effective date of the present agreement the costs of the PATENT APPLICATION and any patents maturing therefrom will be borne solely by BAH.
4. BHLLC will bear no liability and makes no guarantees with regard to the PATENT APPLICATIONS or any patents granted thereon, and in particular not with regard to their patentability, legal validity, commercializability or technical feasibility.
5. If any provision hereof is or later becomes invalid or unenforceable, such provision shall be ineffective without affecting the validity of the remaining provisions, unless the invalid provision is of such essential importance to this Agreement that it cannot reasonable be assumed that the parties would have concluded this Agreement in its absence. The parties shall attempt to replace the invalid provision with valid provisions as closely aligned with the original intent of the parties as possible.
6. The present agreement will be governed by the law of the Federal Republic of Germany. The present agreement can only be amended with the written consent of both parties.

Monheim(Rhein),

Date: 2017-07-25

Bayer Animal Health GmbH


Stephan van der Vlugt
(Team Head of Patents)



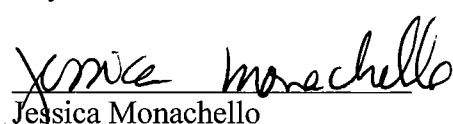
Matthias Storch

(Patent Counsel)

Whippany,

Date: 8/1/2017

Bayer HealthCare LLC


Jessica Monachello
Assistant Secretary

APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

6. the 18th day of October, A.D. 2017

7. by Kris W Kobach, Secretary of State

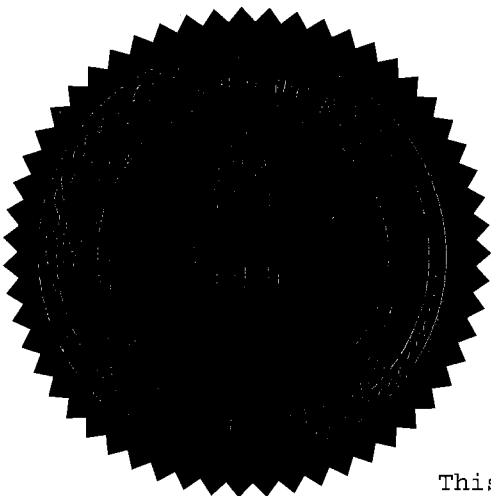
8. No. 17-05531

9. Seal/Stamp:

10. Signature

Certification issued
Kansas Secretary of State

Kris W. Kobach



Kris W. Kobach

This Apostille is not valid for use anywhere within the
United States of America, its territories or possessions.

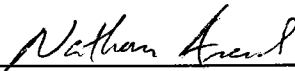


Nathan Arends
Counsel

October 13, 2017

To whom it may concern:

I certify that the attached document is an original.


Nathan Arends
Counsel

Bayer HealthCare
P.O. Box 390
Shawnee Mission, KS 66201

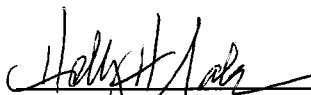
Phone: 913-268-2037
nathan.arends@bayer.com

ed by
f State



State of Kansas
County of Johnson

Signed or attested before me on October 13, 2017 by
Nathan Arends.


Holly H. Manlove
Notary Public



My appointment expires: 10/14/20

Assignment Agreement

between

Bayer Animal Health GmbH

51368 Leverkusen

Germany

-hereinafter referred to as BAH –

and

Bayer HealthCare LLC

100 Bayer Boulevard

Whippany, NJ 07981

USA

-hereinafter referred to as BHLLC –

both parties being hereinafter referred to jointly as the PARTIES.

BHLLC is an assignee of US Patent Application Serial No. 62/366772, filed July 26, 2016 entitled "INCREASING FERTILITY IN BOVINE SPECIES", which is hereinafter referred to as the "PATENT APPLICATION." The PARTIES hereby agree to assign the PATENT APPLICATION to BAH, in consideration of the remuneration by BAH of BHLLC's R&D costs undertaken in connection with PATENT APPLICATION. The PARTIES are convinced that such assignment will be advantageous for both parties.

For this purpose the PARTIES agree as follows:

1. BHLLC will assign BHLLC's rights to the PATENT APPLICATION to BAH upon the execution of the present agreement by both PARTIES. BAH shall have the right to file and prosecute patent applications based on the PATENT APPLICATION in BAH's own name, including the right to claim priority, and to withdraw or abandon patent applications or patents based on the PATENT APPLICATION. After executing the present agreement the parties will take the necessary steps to implement said assignment. BAH hereby accepts said assignment and will become the owner of the PATENT APPLICATION and all rights and obligations resulting therefrom.

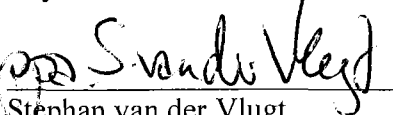


2. In particular, BHLLC will also assign its rights to BAH to any patents granted on the PATENT APPLICATION. As from the effective date of the present agreement BAH will be responsible for the prosecution, maintenance, defense and enforcement of the PATENT APPLICATION. At the request of BAH, BHLLC will also otherwise make every effort to assist BAH in its prosecution and any necessary defense of the PATENT APPLICATION.
3. As from the effective date of the present agreement the costs of the PATENT APPLICATION and any patents maturing therefrom will be borne solely by BAH.
4. BHLLC will bear no liability and makes no guarantees with regard to the PATENT APPLICATIONS or any patents granted thereon, and in particular not with regard to their patentability, legal validity, commercializability or technical feasibility.
5. If any provision hereof is or later becomes invalid or unenforceable, such provision shall be ineffective without affecting the validity of the remaining provisions, unless the invalid provision is of such essential importance to this Agreement that it cannot reasonable be assumed that the parties would have concluded this Agreement in its absence. The parties shall attempt to replace the invalid provision with valid provisions as closely aligned with the original intent of the parties as possible.
6. The present agreement will be governed by the law of the Federal Republic of Germany. The present agreement can only be amended with the written consent of both parties.

Leverkusen,

Date: July 25, 2017

Bayer Animal Health GmbH



Stephan van der Vlugt
(Law and Patents)



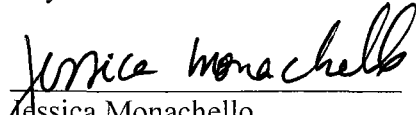
Matthias Storch

(Law and Patents)

Whippany,

Date: July 25, 2017

Bayer HealthCare LLC



Jessica Monachello
Assistant Secretary

APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

6. the 18th day of October, A.D. 2017

7. by Kris W Kobach, Secretary of State

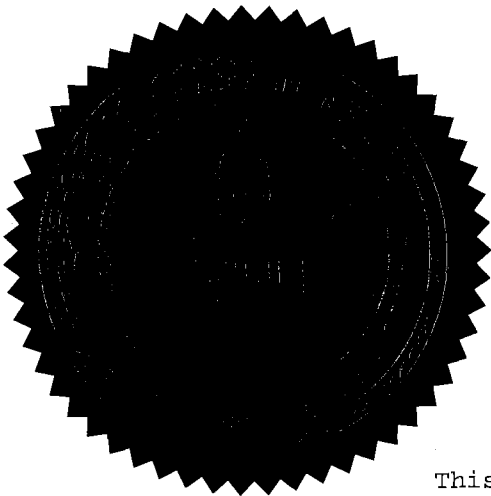
8. No. 17-05537

9. Seal/Stamp:

10. Signature

Certification issued
Kansas Secretary of State

Kris W. Kobach



Kris W. Kobach

This Apostille is not valid for use anywhere within the
United States of America, its territories or possessions.

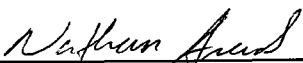


Nathan Arends
Counsel

October 13, 2017

To whom it may concern:

I certify that the attached document is an original.


Nathan Arends
Counsel

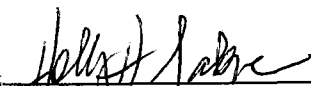
Bayer HealthCare
P.O. Box 390
Shawnee Mission, KS 66201

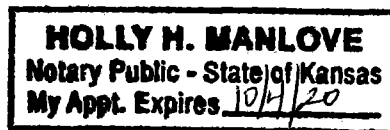
d by
f Sta


Phone: 913-268-2037
nathan.arends@bayer.com

State of Kansas
County of Johnson

Signed or attested before me on October 13, 2017 by
Nathan Arends.


Holly H. Manlove
Notary Public



My appointment expires: 10/4/20

ASSIGNMENT

WHEREAS, I, Richard Olde Riekerink of 256 Orongo Road, RD4, Thames, have invented an improvement in INCREASING FERTILITY IN BOVINE SPECIES described in a U.S. provisional patent application assigned Serial No. 62/366772, filed July 26, 2016;

AND, WHEREAS, BAYER NEW ZEALAND LIMITED (17012) of 3 Argus Place, Hillcrest, Auckland, New Zealand, a New Zealand company, and its successors, assigns and legal representatives (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest, including the right to claim priority, in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

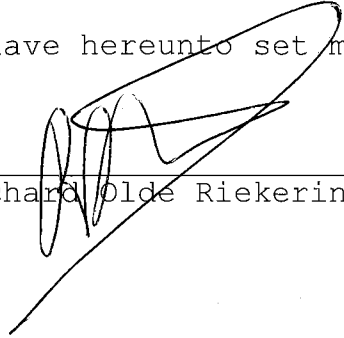
AND I hereby authorize and request the Director of the United States Patent and Trademark Office of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives, and agree with said ASSIGNEE, its successors and assigns, that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I have not executed and will not execute any instrument in conflict herewith.

IN WITNESS WHEREOF, I have hereunto set my hand.

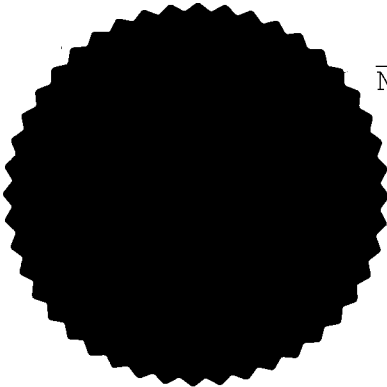
27 APRIL 2017
Date

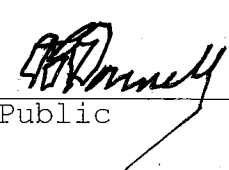

Richard Olde Riekerink

LOCATION AUCKLAND)
NEW ZEALAND)

On this 27TH day of APRIL, 2017, before me, a Notary Public, personally appeared Richard Olde Riekerink to me known to be the person described in and who executed the foregoing assignment and acknowledged that he executed same as his free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the date and year last above written.



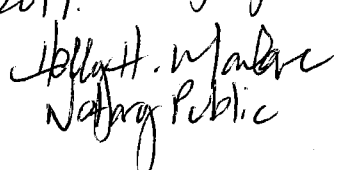

Notary Public

Roger Gordon Donnell
Notary Public
Auckland
NEW ZEALAND
My commission is for life.

DONNELL AND ASSOCIATES
Lawyers and Notary Public
Level 1, Unit 20, 18 Link Drive
Wairau Park, North Shore City 0627
PO Box 334-050 Sunnynook 0743
Ph: (09) 443-0172 Fax: (09) 443-0516

State of Kansas
County of Johnson

I certify under penalty of perjury under the laws of the state of Kansas that the foregoing is true and correct.
Executed on October 5, 2017.


Notary Public

HOLLY H. MANLOVE
Notary Public - State of Kansas
My Appt. Expires 10/4/20



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

6. the 1st day of November, A.D. 2016

7. by Kris W Kobach, Secretary of State

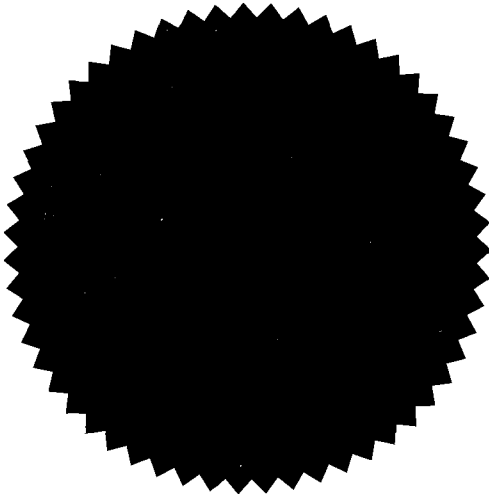
8. No. 16-04829

9. Seal/Stamp:

10. Signature

Certification issued
Kansas Secretary of State

Kris W. Kobach



Kris W. Kobach

ASSIGNMENT

WHEREAS, I, Terry Settje of 15220 West 139th Street, Olathe, Kansas, United States of America, have invented an improvement in INCREASING FERTILITY IN BOVINE SPECIES described in a U.S. provisional patent application assigned Serial No. 62/366772, filed July 26, 2016;

AND, WHEREAS, BAYER HEALTHCARE LLC of 100 Bayer Boulevard, Whippany, New Jersey 07981, United States of America, a corporation organized under the laws of the State of Delaware, United States of America, and its successors, assigns and legal representatives (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest, including the right to claim priority, in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be

granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

AND I hereby authorize and request the Director of the United States Patent and Trademark Office of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives, and agree with said ASSIGNEE, its successors and assigns, that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I

have not executed and will not execute any instrument in conflict herewith.

IN WITNESS WHEREOF, I have hereunto set my hand.

05-Aug-2016 Terry Settje
Date Terry Settje

STATE OF Kansas)
COUNTY OF Johnson)

On this 5th day of August, 2016, before me, a Notary Public, personally appeared Terry Settje to me known to be the person described in and who executed the foregoing assignment and acknowledged that he executed same as his free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the date and year last above written.

Holly H. Manlove
Notary Public

My Commission Expires:

8/25/16



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

6. the 28th day of November, A.D. 2016

7. by Kris W Kobach, Secretary of State

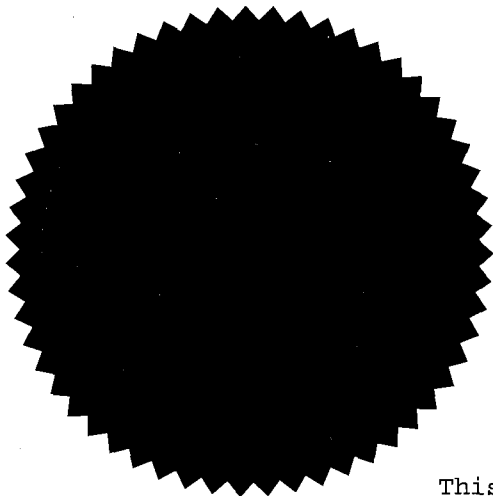
8. No. 16-05223

9. Seal/Stamp:

10. Signature

Certification issued
Kansas Secretary of State

Kris W. Kobach



Kris W. Kobach

This Apostille is not valid for use anywhere within the
United States of America, its territories or possessions.

ASSIGNMENT

WHEREAS, I, Dr. Daniel Keil of 30837 West 231st Street, Spring Hill, Kansas, United States of America, have invented an improvement in INCREASING FERTILITY IN BOVINE SPECIES described in a U.S. provisional patent application assigned Serial No. 62/366772, filed July 26, 2016;

AND, WHEREAS, BAYER HEALTHCARE LLC of 100 Bayer Boulevard, Whippany, New Jersey 07981, United States of America, a corporation organized under the laws of the State of Delaware, United States of America, and its successors, assigns and legal representatives (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest, including the right to claim priority, in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be

granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

AND I hereby authorize and request the Director of the United States Patent and Trademark Office of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

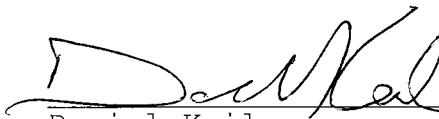
AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives, and agree with said ASSIGNEE, its successors and assigns, that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I

have not executed and will not execute any instrument in conflict herewith.

IN WITNESS WHEREOF, I have hereunto set my hand.

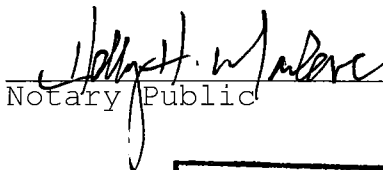
28 JUL 2016
Date


Daniel Keil

STATE OF Kansas)
COUNTY OF Johnson)

On this 28th day of July, 2016, before me, a Notary Public, personally appeared Daniel Keil to me known to be the person described in and who executed the foregoing assignment and acknowledged that he executed same as his free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the date and year last above written.


Notary Public

My Commission Expires:

8/25/16



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

6. the 28th day of November, A.D. 2016

7. by Kris W Kobach, Secretary of State

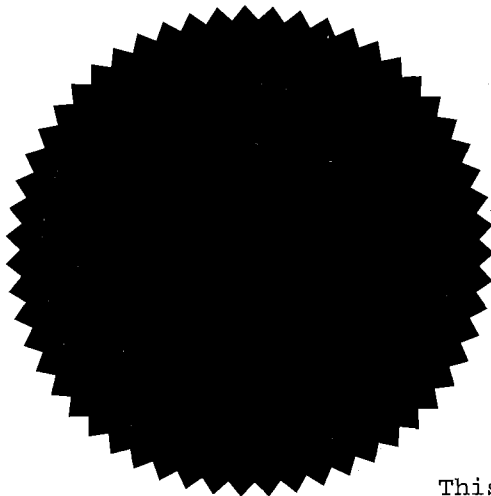
8. No. 16-05224

9. Seal/Stamp:

10. Signature

Certification issued by
Kansas Secretary of State

Kris W. Kobach



Kris W. Kobach

This Apostille is not valid for use anywhere within the
United States of America, its territories or possessions.

ASSIGNMENT

WHEREAS, I, Dr. Jason Nickell of 5516 Sleepy Hollow, Parkville, Missouri, 64152, United States of America, have invented an improvement in INCREASING FERTILITY IN BOVINE SPECIES described in a U.S. provisional patent application assigned Serial No. 62/366772, filed July 26, 2016;

AND, WHEREAS, BAYER HEALTHCARE LLC of 100 Bayer Boulevard, Whippany, New Jersey 07981, United States of America, a corporation organized under the laws of the State of Delaware, United States of America, and its successors, assigns and legal representatives (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest, including the right to claim priority, in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be

granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

AND I hereby authorize and request the Director of the United States Patent and Trademark Office of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives, and agree with said ASSIGNEE, its successors and assigns, that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I

have not executed and will not execute any instrument in conflict herewith.

IN WITNESS WHEREOF, I have hereunto set my hand.

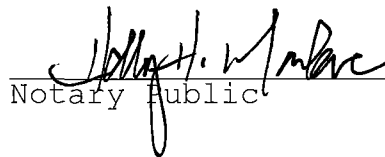
28 July 2016
Date


Jason Nickell

STATE OF Kansas)
COUNTY OF Johnson)

On this 28th day of July, 2016, before me, a Notary Public, personally appeared Jason Nickell to me known to be the person described in and who executed the foregoing assignment and acknowledged that he executed same as his free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the date and year last above written.


Notary Public

My Commission Expires:

8/25/16



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

6. the 28th day of November, A.D. 2016

7. by Kris W Kobach, Secretary of State

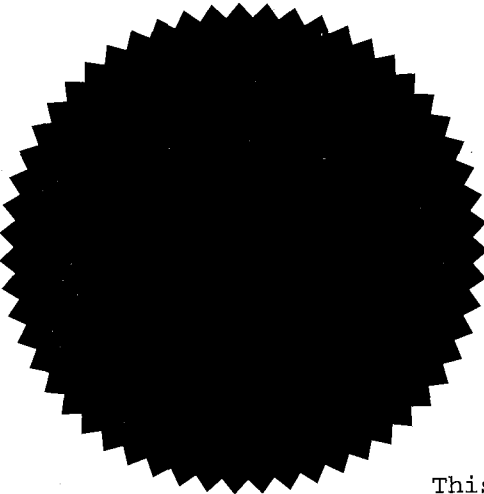
8. No. 16-05225

9. Seal/Stamp:

10. Signature

Certification issued by
Kansas Secretary of State

Kris W. Kobach



Kris W. Kobach

This Apostille is not valid for use anywhere within the
United States of America, its territories or possessions.

ASSIGNMENT

WHEREAS, I, Dr. Leland Vickers of 8610 Penrose Lane, Lenexa, Kansas, United States of America, have invented an improvement in INCREASING FERTILITY IN BOVINE SPECIES described in a U.S. provisional patent application assigned Serial No. 62/366772, filed July 26, 2016;

AND, WHEREAS, BAYER HEALTHCARE LLC of 100 Bayer Boulevard, Whippany, New Jersey 07981, United States of America, a corporation organized under the laws of the State of Delaware, United States of America, and its successors, assigns and legal representatives (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest, including the right to claim priority, in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be

granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

AND I hereby authorize and request the Director of the United States Patent and Trademark Office of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives, and agree with said ASSIGNEE, its successors and assigns, that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I

have not executed and will not execute any instrument in conflict herewith.

IN WITNESS WHEREOF, I have hereunto set my hand.

5-Aug-2016
Date

Leland P. Vickers
Leland Vickers

STATE OF Kansas)
COUNTY OF Johnson)

On this 5th day of August, 2016, before me, a Notary Public, personally appeared Leland Vickers to me known to be the person described in and who executed the foregoing assignment and acknowledged that he executed same as his free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the date and year last above written.

Holly H. Manlove
Notary Public

My Commission Expires:

8/25/16



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

6. the 1st day of November, A.D. 2016

7. by Kris W Kobach, Secretary of State

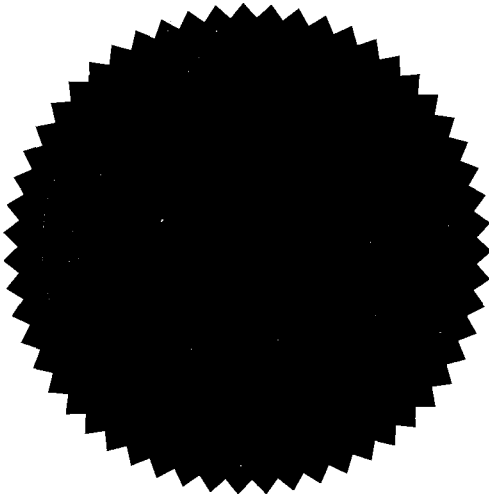
8. No. 16-04830

9. Seal/Stamp:

10. Signature

Certification issued
Kansas Secretary of State

Kris W. Kobach



Kris W. Kobach

ASSIGNMENT

WHEREAS, I, Dr. Albert Abraham of 14805 West 72nd Street, Shawnee, Kansas, 66216, United States of America, have invented an improvement in INCREASING FERTILITY IN BOVINE SPECIES described in a U.S. provisional patent application assigned Serial No. 62/366772, filed July 26, 2016;

AND, WHEREAS, BAYER HEALTHCARE LLC of 100 Bayer Boulevard, Whippany, New Jersey 07981, United States of America, a corporation organized under the laws of the State of Delaware, United States of America, and its successors, assigns and legal representatives (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest, including the right to claim priority, in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be

granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

AND I hereby authorize and request the Director of the United States Patent and Trademark Office of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

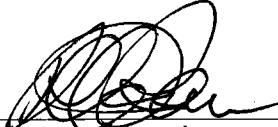
AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives, and agree with said ASSIGNEE, its successors and assigns, that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I

have not executed and will not execute any instrument in conflict herewith.

IN WITNESS WHEREOF, I have hereunto set my hand.

08/08/2016
Date


Albert Abraham

STATE OF Kansas)
COUNTY OF Johnson)

On this 8TH day of August, 2016, before me, a Notary Public, personally appeared Albert Abraham to me known to be the person described in and who executed the foregoing assignment and acknowledged that he executed same as his free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the date and year last above written.


Notary Public

My Commission Expires:

8/25/16



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This Public Document

2. has been signed by HOLLY H. MANLOVE

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the State of Kansas

Certified

5. at Topeka, Kansas

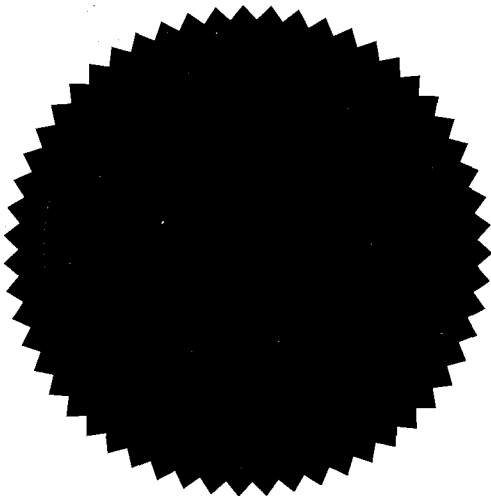
6. the 1st day of November, A.D. 2016

7. by Kris W Kobach, Secretary of State

8. No. 16-04831

9. Seal/Stamp:

10. Signature



Kris W. Kobach

ASSIGNMENT

WHEREAS, I, Dr. Stuart Nibbelink of 11101 Belleview Avenue, Kansas City, Missouri, United States of America, have invented an improvement in INCREASING FERTILITY IN BOVINE SPECIES described in a U.S. provisional patent application assigned Serial No. 62/366772, filed July 26, 2016;

AND, WHEREAS, BAYER HEALTHCARE LLC of 100 Bayer Boulevard, Whippany, New Jersey 07981, United States of America, a corporation organized under the laws of the State of Delaware, United States of America, and its successors, assigns and legal representatives (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest, including the right to claim priority, in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be

granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

AND I hereby authorize and request the Director of the United States Patent and Trademark Office of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives, and agree with said ASSIGNEE, its successors and assigns, that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I

have not executed and will not execute any instrument in conflict herewith.

IN WITNESS WHEREOF, I have hereunto set my hand.

10 Aug 2016
Date

[Signature]
Stuart Nibbelink

STATE OF Kansas)
COUNTY OF Johnson)

On this 10th day of August, 2016, before me, a Notary Public, personally appeared Stuart Nibbelink to me known to be the person described in and who executed the foregoing assignment and acknowledged that he executed same as his free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the date and year last above written.

[Signature]
Notary Public

My Commission Expires:

8/25/16

