503009741 10/08/2014 PATENT ASSIGNMENT COVER SHEET

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| SUBMISSION TYPE: | | NEW ASSIGI | NEW ASSIGNMENT | | | | |
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| NATURE OF CONVEYANCE: | | ASSIGNMEN | ASSIGNMENT | | | | |
| CONVEYING PARTY | | I | | | | | |
| | | Name | | Execution Date | | | |
| C. FRANK BENNETT | | 09/03/2004 | | | | | |
| SUSAN M. FREIER | 08/24/2004 | | | | | | |
| RICHARD H. GRIFFE | Y | 08/24/2004 | | | | | |
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| RECEIVING PARTY | ΑΤΑ | | | | | | |
| Name: | ISIS PH | ISIS PHARMACEUTICALS, INC. | | | | | |
| Street Address: | 2292 F. | 2292 FARADAY AVENUE | | | | | |
| City: | CARLS | CARLSBAD | | | | | |
| State/Country: | CALIFO | RNIA | | | | | |
| Postal Code: | 92008 | 92008 | | | | | |
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| PROPERTY NUMBER | RS Total: 1 | | | | | | |
| Property Typ | e | Nun | nber | | | | |
| Application Number: | | 14143943 | | | | | |
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| CORRESPONDENCE | DATA | | | | | | |
| Fax Number: | | (608)662-1276 | 662-1276 | | | | |
| Correspondence will using a fax number, | | | | nsuccessful, it will be sent | | | |
| Email: | • | macheckett@casim | | | | | |
| Correspondent Name | | REBECCA B. SCAI | - | | | | |
| Address Line 1: | | CASIMIR JONES S | | | | | |
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| Address Line 4: | | | | | | | |
| ATTORNEY DOCKET | NUMBER: | REGUL-3241 | 3/US-20/DIV | | | | |
| NAME OF SUBMITTE | R: | | REBECCA B. SCARR | | | | |
| SIGNATURE: | | /Rebecca B. | /Rebecca B. Scarr/ | | | | |
| DATE SIGNED: | | 10/08/2014 | 10/08/2014 | | | | |
| otal Attachments: 15 | 5 | I | | | | | |
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ASSIGNMENT

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WHEREAS, we, Christine Esau of La Jolla, California, Bridget Lollo of Encinitas, California, C. Frank Bennett of Carlsbad, California, Susan M. Freier of San Diego, California, Richard H. Griffey of Vista, California, Brenda F. Baker of Carlsbad, California, Timothy A. Vickers of Oceanside, California, Eric G. Marcusson of San Diego, Erich Koller of Carlsbad, California, Eric E. Swayze of Carlsbad, California Ravi Jain of Carlsbad, California, Balkrishen Bhat of Carlsbad, California, and Eigen Peralta of Chula Vista, California hereinafter referred to as the assignors, have invented a certain invention entitled "Oligomeric Compounds And Compositions For Use In Modulation Of Small NonCoding RNAs," for which we have made an application for Letters Patent of the United States, said application having been filed on July 30, 2004 and assigned Application No. 10/909,125; and

WHEREAS, ISIS Pharmaceuticals, Inc., hereinafter referred to as the assignee, of 2292 Faraday Avenue, Carlsbad CA, a corporation of Delaware, is desirous of acquiring the entire right, title and interest in and to the said inventions or improvements and in and to the said application, and in, to and under any and all Letters Patent which may be granted on or as a result thereof in any and all countries;

NOW, THEREFORE, for and in consideration of the sum of One Dollar (\$1.00) to each of us in hand paid by said assignee, and other good and valuable consideration, the receipt of which is hereby acknowledged, we, the said assignors, have sold, assigned, transferred and set over, and by these presents do hereby sell, assign, transfer and set over to said assignee, the entire right, title and interest in and to said inventions or improvements and said application and any and all continuations, divisions and renewals of and substitutes for said application, and in, to and under any and all Letters Patent which may be granted on or as a result thereof in the United States and any and all other countries, and any reissue or reissues or extension or extensions of said Letters Patent, and assign to and authorize said assignee, to file in our names applications for Letters Patent in all countries, the same to be held and enjoyed by said assignee, its successors, assigns, nominees or legal representatives, to the full end of the term or terms for which said Letters Patent respectively may be granted, reissued or extended, as fully and entirely as the same would have been held and enjoyed by us had this assignment, sale and transfer not been made.

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PATENT APPLICATION Joint Inventors

AND we hereby covenant that we have full right to convey the entire interest herein assigned, and that we have not executed and will not execute any agreement in conflict herewith, and we further covenant and agree that we will each time request is made and without undue delay, execute and deliver all such papers as may be necessary or desirable to perfect the title to said inventions or improvements, said application and said Letters Patent to said assignee, its successors, assigns, nominees, or legal representatives, and each of us agrees to communicate to said assignee or to its nominee all known facts respecting said inventions or improvements, said application and said Letters Patent, to testify in any legal proceedings, to sign all lawful papers, to execute all disclaimers and divisional, continuing, reissue and foreign applications, to make all rightful oaths, and generally to do everything possible to aid said assignee, its successors, assigns, nominees and legal representatives to obtain and enforce for its or their own benefit proper patent protection for said inventions or improvements in any and all countries.

AND we hereby authorize and request the Commissioner of Patents and Trademarks of the United States and any official of any country or countries foreign to the United States whose duty it is to issue patents on applications as aforesaid, to issue to said assignee, as assignee of the entire right, title and interest, any and all Letters Patent for said inventions or improvements, including any and all Letters Patent of the United States which may be issued and granted on or as a result of the application aforesaid, in accordance with the terms of this assignment.

AND this Assignment may be executed in multiple counterparts, each of which shall be deemed to be an original of this Assignment. Additionally, we hereby authorize our attorneys to collect the signature pages of each executed counterpart and to attach those signature pages to a single copy of this instrument, which single copy and attached signature pages together shall constitute an original of this Assignment.

PATENT APPLICATION Joint Inventors

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

SS.

Dated: <u>()</u> 2004

State of California

County of San Diego

time Esau

On this <u>274</u> day of <u>Auquest</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Christine Esau, personally known to me/proved-to-me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.

WITNESS my hand and official seal.

LAURA L EAGLES ion # 1483258 iomia: ian Diego County or 13, 2008 omm. Excl

Signature of Notary

PATENT APPLICATION Joint Inventors

2004 Dated:

Bridget Lollo

State of California)) ss. County of San Diego)

On this <u>214</u> day of <u>August</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Bridget Lollo, personally known to me/proved to me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.

WITNESS my hand and official seal.

AUGA L. SAME 41.1253 in an tea a Ruhlin an Diego Couniv Apr 13, 200

Signature of Notary

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PATENT APPLICATION Joint Inventors

Dated: <u>9-3-04</u>.2004

C- Frank Bennet

C. Frank Bennett

State of California

County of San Diego

On this <u>3rd</u> day of <u>September</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared C. Frank Bennett, personally known to me/proved-to-me-on this basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her-signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.



Signature of Notary

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\$8.

Dated: 2004

State of California

County of San Diego

Susan M.

24 m day of Aug On this 2004. before me. the undersigned, a Notary Public for the state, personally appeared Steven Susan M. Freier, personally known to me/proved to me on the basis of satisfactory ovidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.



Signature of Notary

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ss.

PATENT APPLICATION Joint Inventors

Dated: 8/24/04 ,2004

Pulse (1-Guffer Richard H. Griffer

State of California

County of San Diego

On this <u>24</u>th day of <u>Auquest</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Richard H. Griffey, personally known to me/proved to me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.



WITNESS my hand and official seal.

Signature of Notary

PATENT REEL: 033907 FRAME: 0898

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SS.

PATENT APPLICATION Joint Inventors

2004 Dated:

Brenda F. Bakér

State of California

County of San Diego

On this <u>24</u><u>M</u> day of <u>August</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Brenda F. Baker, personally known to me/proved to me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.



WITNESS my hand and official seal.

Signature of Notary

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PATENT APPLICATION Joint Inventors

2004 Dated:

Timothy A. Vickers

State of California

County of San Diego

On this <u>ist</u> day of <u>begun bet</u> 2004, before me, the undersigned, a Notary Public for the state, personally appeared Timothy A. Vickers, personally known to me/proved to me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her-authorized capacity, and that by his/her-signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.



Signature of Notary

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SS.

PATENT APPLICATION Joint Inventors

Dated: _8/27 2004

Eric G. Marcusson

State of California

County of San Diego

On this <u>27</u> day of <u>August</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Eric G. Marcusson, personally known to me/proved to me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her anthorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.



Signature of Notary

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PATENT APPLICATION Joint Inventors

8/27 2004 Dated:

fich Keller

State of California

County of San Diego

On this <u>214</u> day of <u>August</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Erich Koller, personally known to mc/proved to me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.



WITNESS my hand and official seal.

Signature of Notary

07 Dated: 2004

State of California

County of San Diego

On this <u>1</u>th day of <u>Stepten Bee</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Eric E. Swayze, personally known to me/proved to me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.

SS.

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WIINESS my hand and official seal.

Crist G. Coller: Signature of Notary



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PATENT APPLICATION Joint Inventors

25 August , 2004 Dated: State of California) SS.

County of San Diego

On this <u>2544</u> day of <u>August</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Ravi Jain, personally known to me/proved to me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.



WITNESS my hand and official seal.

Signature of Notary

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PATENT APPLICATION Joint Inventors

Dated: X -2004

Balkrishen Bhat

State of California County of San Diego

On this <u>27</u><u>H</u> day of <u>August</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Balkrishen Bhat, personally known to me/proved-to-me on the basis of catiofactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.



WITNESS my hand and official seal.

Signature of Notary

| Dated: | <u>August</u> | 25 | _, 200 | 4 |
|---------------------|---------------|----|--------|---------------|
| State of California | | |) | |
| County of | of San Diego | |) | \$ \$. |

R. Peralta

Eigen Peralta

On this <u>25</u> day of <u>August</u>, 2004, before me, the undersigned, a Notary Public for the state, personally appeared Eigen Peralta, personally known to me/proved to me on the basis of satisfactory evidence to be the person who subscribed the foregoing Assignment and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the Assignment the person, or the entity on behalf of which the person acted, executed the Assignment.

WITNESS my hand and official seal.



Signature of Notary

PATENT REEL: 033907 FRAME: 0906

RECORDED: 10/08/2014