

10-27-2000



PATENT

REC. 101497993 SHEET PATENTS ONLY

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New

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Document ID#:

Correction of PTO Error

Reel #:  Frame #

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**Conveyance Type**

Assignment

License

Merger

Security Agreement

Change of Name

Other

**U.S. Government**  
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Departmental File  Secret File

**Conveying Party(ies)**  Mark if additional names of conveying parties attached

| Name                 | Execution Date |     |      |
|----------------------|----------------|-----|------|
|                      | Month          | Day | Year |
| Robert D. Rosenberg  | 8              | 21  | 2000 |
| Nicholas W. Schworak | 9              | 7   | 2000 |
| Jian Liu             | 8              | 23  | 2000 |
| Linda M.S. Fritze    | 8              | 31  | 2000 |
| John J. Schwartz     | 8              | 16  | 2000 |
| Lijuan Zhang         | 9              | 29  | 2000 |

**Receiving Party**  Mark if additional names of receiving parties attached

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**Domestic Representative Name and Address** Enter for the first Receiving Party only.

Name

Address (line 1)

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Mail documents to be recorded with required cover sheet(s) information to: Box Assignment, Commissioner of Patents and Trademarks, Washington, D.C. 20231

PATENT REEL: 011174 FRAME: 0854

Correspondent Name and Address

Area Code and Telephone Number 617/248-7000

Name Patent Administrator

Address (line 1) Testa, Hurwitz & Thibeault, LLP

Address (line 2) High Street Tower

Address (line 3) 125 High Street

Address (line 4) Boston, MA 02110

Pages Enter the total number of pages of the attached conveyance document including any attachments.

Application Number(s) or Patent Number(s) Mark if additional numbers attached Enter either the Patent Application Number or the Patent Number (DO NOT ENTER BOTH numbers for the same property).

Table with columns for Patent Application Number(s) and Patent Number(s), containing the entry 09/557,262.

Patent Cooperation Treaty (PCT) Enter PCT application number only if a U.S. Application Number has not been assigned.

Number of Properties Enter the total number of properties involved.

Fee Amount Fee Amount for Properties Listed (37 CFR 3.41): \$ 40.00 Method of Payment: Enclosed [X] Deposit Account [ ] Deposit Account Number # 20-0531 Authorization to charge additional fees: Yes [X] No [ ]

Statement and Signature To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document. Charges to deposit account are authorized, as indicated herein.

Maureen A. Bresnahan Name of Person Signing [Signature] Signature October 13, 2000 Date

**ASSIGNMENT**

WHEREAS, We, Robert D. Rosenberg, Nicholas W. Shworak, Jian Liu, Linda M.S. Fritze, John J. Schwartz and Lijuan Zhang have invented one or more improvements in:

HEPARAN SULFATE D-GLUCOSAMINYL 3-O-SULFOTRANSFERASES, AND USES THEREFOR described in applications (or provisional applications) for Letters Patent:

identified by Attorney Docket No. \_\_\_\_\_, and/or executed by us of even date herewith and about to be filed in the United States Patent Office;

Serial No. 09/557,262 filed in the United States Patent Office on April 24, 2000; and

WHEREAS, Massachusetts Institute of Technology (hereinafter "ASSIGNEE"), a corporation organized and existing under the laws of the Commonwealth of Massachusetts, and having a usual place of business at 77 Massachusetts Avenue, Cambridge, Massachusetts 02139 desires to acquire an interest therein, in accordance with agreements duly entered into with us;

NOW, THEREFORE, to all whom it may concern be it known that for and in consideration of said agreements and of other good and valuable consideration, the receipt of which is hereby acknowledged, we have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, our entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to the inventions described in said application, together with our entire right, title and interest in and to said application and such Letters Patent as may issue thereon or claim priority under international convention, including but not limited to continuations, divisionals, reissues, and reexaminations of said application of such Letters Patent; said inventions, applications and Letters Patent to be held and enjoyed by said ASSIGNEE for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held by us had this assignment and sale not been made; we hereby convey all of our rights arising under or pursuant to any and all international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent. We hereby acknowledge that this assignment, being of our entire right, title and interest in and to said inventions, carries with it the right in ASSIGNEE to apply for and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of ASSIGNEE's selection and the right to procure the grant of all Letters Patent to ASSIGNEE for its own name as assignee of our entire right, title and interest therein.

AND, we hereby further agree for ourselves and our executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the aforesaid invention to said ASSIGNEE, its successors, assigns, and legal representatives, but at its or their expense and charges, including: the execution of applications for patents in foreign countries; the execution of substitution, reissue, divisional or continuation applications; and preliminary or other statements or the giving of testimony in any interference or other proceeding in which said inventions or any application or patent directed thereto may be involved; and we further hereby authorize ASSIGNEE or its attorneys or agents to insert the correct serial number and filing date into this assignment, if none is indicated on that date of our execution of this assignment;

**Joint Assignment**

**Serial No.: 09/557,262**

**Page 2**

AND, we do hereby authorize and request the Commissioner of Patents of the United States to issue such Letters Patent as shall be granted upon said application or applications based thereon to said ASSIGNEE, its successors, assigns, and legal representatives.

*IN TESTIMONY WHEREOF*, we have hereunto set our hands and affixed our seals the date set forth below.

Inventor: *Robert D. Rosenberg*  
Robert D. Rosenberg

Commonwealth of Massachusetts )  
County of Middlesex ) ss

Subscribed and sworn to before me, by the above-named Robert D. Rosenberg this 21<sup>st</sup> day of August, 2000.

*James B. Francis*  
Notary Public  
My Commission Expires: My Commission Expires March 30, 2001

Inventor: \_\_\_\_\_  
Nicholas W. Shworak

Commonwealth of Massachusetts )  
County of \_\_\_\_\_ ) ss

Subscribed and sworn to before me, by the above-named Nicholas W. Shworak this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Jian Liu

State of North Carolina )  
County of \_\_\_\_\_ ) ss

Subscribed and sworn to before me, by the above-named Jian Liu this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Linda M.S. Fritze

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Linda M. S. Fritze this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
John J. Schwartz

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named John J. Schwartz this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Lijuan Zhang

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Lijuan Zhang this \_\_\_\_\_ day of  
\_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

**ASSIGNMENT**

WHEREAS, We, Robert D. Rosenberg, Nicholas W. Shworak, Jian Liu, Linda M.S. Fritze, John J. Schwartz and Lijuan Zhang have invented one or more improvements in:

HEPARAN SULFATE D-GLUCOSAMINYL 3-O-SULFOTRANSFERASES, AND USES THEREFOR described in applications (or provisional applications) for Letters Patent:

identified by Attorney Docket No. \_\_\_\_\_, and/or executed by us of even date herewith and about to be filed in the United States Patent Office;

Serial No. 09/557,262 filed in the United States Patent Office on April 24, 2000; and

WHEREAS, Massachusetts Institute of Technology (hereinafter "ASSIGNEE"), a corporation organized and existing under the laws of the Commonwealth of Massachusetts, and having a usual place of business at 77 Massachusetts Avenue, Cambridge, Massachusetts 02139 desires to acquire an interest therein, in accordance with agreements duly entered into with us;

NOW, THEREFORE, to all whom it may concern be it known that for and in consideration of said agreements and of other good and valuable consideration, the receipt of which is hereby acknowledged, we have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, our entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to the inventions described in said application, together with our entire right, title and interest in and to said application and such Letters Patent as may issue thereon or claim priority under international convention, including but not limited to continuations, divisionals, reissues, and reexaminations of said application of such Letters Patent; said inventions, applications and Letters Patent to be held and enjoyed by said ASSIGNEE for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held by us had this assignment and sale not been made; we hereby convey all of our rights arising under or pursuant to any and all international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent. We hereby acknowledge that this assignment, being of our entire right, title and interest in and to said inventions, carries with it the right in ASSIGNEE to apply for and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of ASSIGNEE's selection and the right to procure the grant of all Letters Patent to ASSIGNEE for its own name as assignee of our entire right, title and interest therein.

AND, we hereby further agree for ourselves and our executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the aforesaid invention to said ASSIGNEE, its successors, assigns, and legal representatives, but at its or their expense and charges, including: the execution of applications for patents in foreign countries; the execution of substitution, reissue, divisional or continuation applications; and preliminary or other statements or the giving of testimony in any interference or other proceeding in which said inventions or any application or patent directed thereto may be involved; and we further hereby authorize ASSIGNEE or its attorneys or agents to insert the correct serial number and filing date into this assignment, if none is indicated on that date of our execution of this assignment;

AND, we do hereby authorize and request the Commissioner of Patents of the United States to issue such Letters Patent as shall be granted upon said application or applications based thereon to said ASSIGNEE, its successors, assigns, and legal representatives.

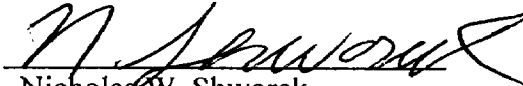
*IN TESTIMONY WHEREOF*, we have hereunto set our hands and affixed our seals the date set forth below.

Inventor: \_\_\_\_\_  
Robert D. Rosenberg

Commonwealth of Massachusetts )  
County of \_\_\_\_\_ ) ss

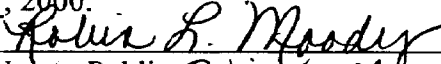
Subscribed and sworn to before me, by the above-named Robert D. Rosenberg this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor:   
Nicholas W. Shworak

Commonwealth of Massachusetts )  
County of Suffolk ) ss

Subscribed and sworn to before me, by the above-named Nicholas W. Shworak this 7th day of September, 2000.

  
Notary Public Robin L. Moody  
My Commission Expires: 11-12-2005

Inventor: \_\_\_\_\_  
Jian Liu

State of North Carolina )  
County of \_\_\_\_\_ ) ss

Subscribed and sworn to before me, by the above-named Jian Liu this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Linda M.S. Fritze

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Linda M. S. Fritze this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
John J. Schwartz

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named John J. Schwartz this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Lijuan Zhang

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Lijuan Zhang this \_\_\_\_\_ day of  
\_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_



ASSIGNMENT

WHEREAS, We, Robert D. Rosenberg, Nicholas W. Shworak, Jian Liu, Linda M.S. Fritze, John J. Schwartz and Lijuan Zhang have invented one or more improvements in:

HEPARAN SULFATE D-GLUCOSAMINYL 3-O-SULFOTRANSFERASES, AND USES THEREFOR

described in applications (or provisional applications) for Letters Patent:

identified by Attorney Docket No. \_\_\_\_\_, and/or executed by us of even date herewith and about to be filed in the United States Patent Office;

Serial No. 09/557,262 filed in the United States Patent Office on April 24, 2000; and

WHEREAS, Massachusetts Institute of Technology (hereinafter "ASSIGNEE"), a corporation organized and existing under the laws of the Commonwealth of Massachusetts, and having a usual place of business at 77 Massachusetts Avenue, Cambridge, Massachusetts 02139 desires to acquire an interest therein, in accordance with agreements duly entered into with us;

NOW, THEREFORE, to all whom it may concern be it known that for and in consideration of said agreements and of other good and valuable consideration, the receipt of which is hereby acknowledged, we have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, our entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to the inventions described in said application, together with our entire right, title and interest in and to said application and such Letters Patent as may issue thereon or claim priority under international convention, including but not limited to continuations, divisionals, reissues, and reexaminations of said application of such Letters Patent; said inventions, applications and Letters Patent to be held and enjoyed by said ASSIGNEE for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held by us had this assignment and sale not been made; we hereby convey all of our rights arising under or pursuant to any and all international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent. We hereby acknowledge that this assignment, being of our entire right, title and interest in and to said inventions, carries with it the right in ASSIGNEE to apply for and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of ASSIGNEE's selection and the right to procure the grant of all Letters Patent to ASSIGNEE for its own name as assignee of our entire right, title and interest therein.

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*IN TESTIMONY WHEREOF*, we have hereunto set our hands and affixed our seals the date set forth below.

Inventor: \_\_\_\_\_  
Robert D. Rosenberg

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Robert D. Rosenberg this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Nicholas W. Shworak

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Nicholas W. Shworak this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor:                     *J. L.*                      
Jian Liu

State of North Carolina )  
County of ) ss

Subscribed and sworn to before me, by the above-named Jian Liu this 23 day of August, 2000.

                    *Elizabeth Bevestley*                      
Notary Public  
My Commission Expires: 10/2002

Inventor: \_\_\_\_\_  
Linda M.S. Fritze

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Linda M. S. Fritze this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
John J. Schwartz

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named John J. Schwartz this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Lijuan Zhang

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Lijuan Zhang this \_\_\_\_\_ day of  
\_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

**ASSIGNMENT**

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identified by Attorney Docket No. \_\_\_\_\_, and/or executed by us of even date herewith and about to be filed in the United States Patent Office;

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NOW, THEREFORE, to all whom it may concern be it known that for and in consideration of said agreements and of other good and valuable consideration, the receipt of which is hereby acknowledged, we have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, our entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to the inventions described in said application, together with our entire right, title and interest in and to said application and such Letters Patent as may issue thereon or claim priority under international convention, including but not limited to continuations, divisionals, reissues, and reexaminations of said application of such Letters Patent; said inventions, applications and Letters Patent to be held and enjoyed by said ASSIGNEE for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held by us had this assignment and sale not been made; we hereby convey all of our rights arising under or pursuant to any and all international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent. We hereby acknowledge that this assignment, being of our entire right, title and interest in and to said inventions, carries with it the right in ASSIGNEE to apply for and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of ASSIGNEE's selection and the right to procure the grant of all Letters Patent to ASSIGNEE for its own name as assignee of our entire right, title and interest therein.

AND, we hereby further agree for ourselves and our executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the aforesaid invention to said ASSIGNEE, its successors, assigns, and legal representatives, but at its or their expense and charges, including: the execution of applications for patents in foreign countries; the execution of substitution, reissue, divisional or continuation applications; and preliminary or other statements or the giving of testimony in any interference or other proceeding in which said inventions or any application or patent directed thereto may be involved; and we further hereby authorize ASSIGNEE or its attorneys or agents to insert the correct serial number and filing date into this assignment, if none is indicated on that date of our execution of this assignment;

AND, we do hereby authorize and request the Commissioner of Patents of the United States to issue such Letters Patent as shall be granted upon said application or applications based thereon to said ASSIGNEE, its successors, assigns, and legal representatives.

*IN TESTIMONY WHEREOF*, we have hereunto set our hands and affixed our seals the date set forth below.

Inventor: \_\_\_\_\_  
Robert D. Rosenberg

**Commonwealth of Massachusetts**     )  
**County of**                                 ) ss

Subscribed and sworn to before me, by the above-named Robert D. Rosenberg this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Nicholas W. Shworak

**Commonwealth of Massachusetts**     )  
**County of**                                 ) ss

Subscribed and sworn to before me, by the above-named Nicholas W. Shworak this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Jian Liu

**State of North Carolina**             )  
**County of**                                 ) ss

Subscribed and sworn to before me, by the above-named Jian Liu this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: Linda M.S. Fritze  
Linda M.S. Fritze

Commonwealth of Massachusetts )  
County of Suffolk ) ss

Subscribed and sworn to before me, by the above-named Linda M. S. Fritze this 31st  
day of August, 2000.

Robin L. Moody  
Notary Public Robin L. Moody  
My Commission Expires: 11-12-2005

Inventor: \_\_\_\_\_  
John J. Schwartz

Commonwealth of Massachusetts )  
County of \_\_\_\_\_ ) ss

Subscribed and sworn to before me, by the above-named John J. Schwartz this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Lijuan Zhang

Commonwealth of Massachusetts )  
County of \_\_\_\_\_ ) ss

Subscribed and sworn to before me, by the above-named Lijuan Zhang this \_\_\_\_\_ day of  
\_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

**ASSIGNMENT**

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Inventor: \_\_\_\_\_  
Robert D. Rosenberg

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Robert D. Rosenberg this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Nicholas W. Shworak

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Nicholas W. Shworak this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Jian Liu

State of North Carolina )  
County of ) ss

Subscribed and sworn to before me, by the above-named Jian Liu this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

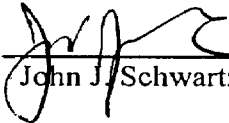


Inventor: \_\_\_\_\_  
Linda M.S. Fritze

Commonwealth of Massachusetts )  
County of \_\_\_\_\_ ) ss


Subscribed and sworn to before me, by the above-named Linda M. S. Fritze this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor:  \_\_\_\_\_  
John J. Schwartz

Commonwealth of Massachusetts )  
County of Middlesex ) ss

Subscribed and sworn to before me, by the above-named John J. Schwartz this 16th  
day of August, 2000.

  
Notary Public  
My Commission Expires: \_\_\_\_\_  
**Lee-Anne Hampton Battite**  
Notary Public  
My Commission Expires  
December 1, 2006

Inventor: \_\_\_\_\_  
Lijuan Zhang

Commonwealth of Massachusetts )  
County of \_\_\_\_\_ ) ss

Subscribed and sworn to before me, by the above-named Lijuan Zhang this \_\_\_\_\_ day of  
\_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

**ASSIGNMENT**

WHEREAS, We, Robert D. Rosenberg, Nicholas W. Shworak, Jian Liu, Linda M.S. Fritze, John J. Schwartz and Lijuan Zhang have invented one or more improvements in:

HEPARAN SULFATE D-GLUCOSAMINYL 3-O-SULFOTRANSFERASES, AND USES THEREFOR described in applications (or provisional applications) for Letters Patent:

identified by Attorney Docket No. \_\_\_\_\_, and/or executed by us of even date herewith and about to be filed in the United States Patent Office;

Serial No. 09/557,262 filed in the United States Patent Office on April 24, 2000; and

WHEREAS, Massachusetts Institute of Technology (hereinafter "ASSIGNEE"), a corporation organized and existing under the laws of the Commonwealth of Massachusetts, and having a usual place of business at 77 Massachusetts Avenue, Cambridge, Massachusetts 02139 desires to acquire an interest therein, in accordance with agreements duly entered into with us;

NOW, THEREFORE, to all whom it may concern be it known that for and in consideration of said agreements and of other good and valuable consideration, the receipt of which is hereby acknowledged, we have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, our entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to the inventions described in said application, together with our entire right, title and interest in and to said application and such Letters Patent as may issue thereon or claim priority under international convention, including but not limited to continuations, divisionals, reissues, and reexaminations of said application of such Letters Patent; said inventions, applications and Letters Patent to be held and enjoyed by said ASSIGNEE for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held by us had this assignment and sale not been made; we hereby convey all of our rights arising under or pursuant to any and all international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent. We hereby acknowledge that this assignment, being of our entire right, title and interest in and to said inventions, carries with it the right in ASSIGNEE to apply for and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of ASSIGNEE's selection and the right to procure the grant of all Letters Patent to ASSIGNEE for its own name as assignee of our entire right, title and interest therein.

AND, we hereby further agree for ourselves and our executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the aforesaid invention to said ASSIGNEE, its successors, assigns, and legal representatives, but at its or their expense and charges, including: the execution of applications for patents in foreign countries; the execution of substitution, reissue, divisional or continuation applications; and preliminary or other statements or the giving of testimony in any interference or other proceeding in which said inventions or any application or patent directed thereto may be involved; and we further hereby authorize ASSIGNEE or its attorneys or agents to insert the correct serial number and filing date into this assignment, if none is indicated on that date of our execution of this assignment;

AND, we do hereby authorize and request the Commissioner of Patents of the United States to issue such Letters Patent as shall be granted upon said application or applications based thereon to said ASSIGNEE, its successors, assigns, and legal representatives.

*IN TESTIMONY WHEREOF*, we have hereunto set our hands and affixed our seals the date set forth below.

Inventor: \_\_\_\_\_  
Robert D. Rosenberg

**Commonwealth of Massachusetts**     )  
**County of**                                     ) ss

Subscribed and sworn to before me, by the above-named Robert D. Rosenberg this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Nicholas W. Shworak

**Commonwealth of Massachusetts**     )  
**County of**                                     ) ss

Subscribed and sworn to before me, by the above-named Nicholas W. Shworak this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Jian Liu

**State of North Carolina**                 )  
**County of**                                     ) ss

Subscribed and sworn to before me, by the above-named Jian Liu this \_\_\_\_\_ day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
Linda M.S. Fritze

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Linda M. S. Fritze this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: \_\_\_\_\_  
John J. Schwartz

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named John J. Schwartz this \_\_\_\_\_  
day of \_\_\_\_\_, 2000.

\_\_\_\_\_  
Notary Public  
My Commission Expires: \_\_\_\_\_

Inventor: Lijuan Zhang  
Lijuan Zhang

Commonwealth of Massachusetts )  
County of ) ss

Subscribed and sworn to before me, by the above-named Lijuan Zhang this 29th day of  
September, 2000.

Dikwal Ann Sylvia  
Notary Public  
My Commission Expires: 8/18/2006