Exhibit 4.3

THIS WARRANT HAS NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE “1933 ACT”), OR ANY APPLICABLE STATE SECURITIES LAWS, AND MAY NOT BE SOLD OR TRANSFERRED UNLESS SUCH SALE OR TRANSFER IS IN ACCORDANCE WITH THE REGISTRATION REQUIREMENTS OF SUCH ACT AND APPLICABLE LAWS OR SOME OTHER EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF SUCH ACT AND APPLICABLE LAWS IS AVAILABLE WITH RESPECT THERETO.

PREFERRED STOCK PURCHASE WARRANT

Warrant No.

Number of Shares: a maximum of 517,242

Series B Convertible Preferred Stock

Subject to determination as set for the below

GENOCEA BIOSCIENCES, INC.

Effective as of October 25, 2011

Void after October 25, 2021

1. Issuance. This Preferred Stock Purchase Warrant (the “Warrant”) is issued to LIGHTHOUSE CAPITAL PARTNERS VI, L.P. by GENOCEA BIOSCIENCES, INC., a Delaware corporation (hereinafter with its successors called the “Company”).

2. Purchase Price; Number of Shares.

(a) The registered holder of this Warrant (the “Holder”), is entitled upon surrender of this Warrant with the subscription form annexed hereto duly executed, at the principal office of the Company, to purchase from the Company, at a price per share of $0.58 (the “Purchase Price”), up to a maximum of 517,242 fully paid and nonassessable shares of the Company’s Series B Convertible Preferred Stock, $0.001 par value (the “Preferred Stock”). Commencing on the date hereof, 258,621 (the “Exercise Quantity”) of shares of Preferred Stock are immediately available for purchase hereunder.

(b) On the Commitment Termination Date, the Exercise Quantity shall automatically be increased by such additional number of shares as is equal to (A) 3% of the amount of Aggregate Advances funded under the Loan Agreement, if any, divided by (B) the Purchase Price.

In addition to other terms which may be defined herein, the following terms, as used in this Warrant, shall have the following meanings:

(i) “Aggregate Advances” means the aggregate original dollar amount of Advances made under the Loan Agreement, whether such Advances are outstanding or prepaid, at the time of any scheduled adjustment to the Exercise Quantity.

(ii) “Loan Agreement” means that certain Loan and Security Agreement No. 2151 dated October 25, 2011 between the Company and Lighthouse Capital Partners VI, L.P..

Any term not defined herein shall have the meaning as set forth in the Loan Agreement.

Until such time as this Warrant is exercised in full or expires, the Purchase Price and the securities issuable upon exercise of this Warrant are subject to adjustment as hereinafter provided. The person or persons in whose name or

1

names any certificate representing shares of Preferred Stock is issued hereunder shall be deemed to have become the holder of record of the shares represented thereby as at the close of business on the date this Warrant is exercised with respect to such shares, whether or not the transfer books of the Company shall be closed.

3. Payment of Purchase Price. The Purchase Price may be paid (i) in cash or by check, (ii) by the surrender by the Holder to the Company of any promissory notes or other obligations issued by the Company, with all such notes and obligations so surrendered being credited against the Purchase Price in an amount equal to the principal amount thereof plus accrued interest to the date of surrender, or (iii) by any combination of the foregoing.

4. Net Issue Election. The Holder may elect to receive, without the payment by the Holder of any additional consideration, shares of Preferred Stock equal to the value of this Warrant or any portion hereof by the surrender of this Warrant or such portion to the Company, with the net issue election notice annexed hereto duly executed, at the principal office of the Company. Thereupon, the Company shall issue to the Holder such number of fully paid and nonassessable shares of Preferred Stock as is computed using the following formula:

where: X = the number of shares of Preferred Stock to be issued to the Holder pursuant to this Section 4.

Y = the number of shares of Preferred Stock covered by this Warrant in respect of which the net issue election is made pursuant to this Section 4.

A = the Fair Market Value (defined below) of one share of Preferred Stock, as determined at the time the net issue election is made pursuant to this Section 4.

B = the Purchase Price in effect under this Warrant at the time the net issue election is made pursuant to this Section 4.

“Fair Market Value” of a share of Preferred Stock (or fully paid and nonassessable shares of the Company’s common stock, $0.001 par value (the “Common Stock”) if the Preferred Stock has been automatically converted into Common Stock) as of the date that the net issue election is made (the “Determination Date”) shall mean:

(i) If the net issue election is made in connection with and contingent upon the closing of the sale of the Company’s Common Stock to the public in a public offering pursuant to a Registration Statement under the 1933 Act (a “Public Offering”), and if the Company’s Registration Statement relating to such Public Offering (“Registration Statement”) has been declared effective by the Securities and Exchange Commission, then the initial “Price to Public” specified in the final prospectus with respect to such offering multiplied by the number of shares of Common Stock into which each share of Preferred Stock is then convertible.

(ii) If the net issue election is not made in connection with and contingent upon a Public Offering, then as follows:

(a) If traded on a securities exchange or NASDAQ market or system, the fair market value of the Common Stock shall be deemed to be the average of the closing or last reported sale prices of the Common Stock on such exchange or market over the five day period ending five trading days prior to the Determination Date, and the fair market value of the Preferred Stock shall be deemed to be such fair market value of the Common Stock multiplied by the number of shares of Common Stock into which each share of Preferred Stock is then convertible;

(b) If otherwise traded in an over-the-counter market, the fair market value of the Common Stock shall be deemed to be the average of the closing ask prices of the Common Stock over the five day

2

period ending five trading days prior to the Determination Date, and the fair market value of the Preferred Stock shall be deemed to be such fair market value of the Common Stock multiplied by the number of shares of Common Stock into which each share of Preferred Stock is then convertible; and

(c) If there is no public market for the Common Stock, then fair market value shall be determined in good faith by the Company’s Board of Directors.

5. Partial Exercise. This Warrant may be exercised in part, and the Holder shall be entitled to receive a new warrant, which shall be dated as of the date of this Warrant, covering the number of shares in respect of which this Warrant shall not have been exercised.

6. Fractional Shares. In no event shall any fractional share of Preferred Stock be issued upon any exercise of this Warrant. If, upon exercise of this Warrant in its entirety, the Holder would, except as provided in this Section 6, be entitled to receive a fractional share of Preferred Stock, then the Company shall make a cash payment therefor upon the basis of the Purchase Price then in effect.

7. Expiration Date; Automatic Exercise. This Warrant shall expire at the close of business on October , 2021, and shall be void thereafter (the “Expiration Date”). Notwithstanding the foregoing, this Warrant shall automatically be deemed to be exercised in full pursuant to the provisions of Section 4 hereof, without any further action on behalf of the Holder, immediately prior to the time this Warrant would otherwise expire pursuant to the preceding sentence.

8. Reserved Shares; Valid Issuance. The Company covenants that it will at all times from and after the date hereof reserve and keep available such number of its authorized shares of Preferred Stock and Common Stock free from all preemptive or similar rights therein, as will be sufficient to permit, respectively, the exercise of this Warrant in full and the conversion into shares of Common Stock of all shares of Preferred Stock receivable upon such exercise. The Company further covenants that such shares as may be issued pursuant to such exercise and/or conversion will, upon issuance, be duly and validly issued, fully paid and nonassessable and free from all taxes, liens and charges with respect to the issuance thereof.

9. Stock Splits and Dividends. If after the date hereof the Company shall subdivide the Preferred Stock, by split-up or otherwise, or combine the Preferred Stock, or issue additional shares of Preferred Stock in payment of a stock dividend on the Preferred Stock, the number of shares of Preferred Stock issuable on the exercise of this Warrant shall forthwith be proportionately increased in the case of a subdivision or stock dividend, or proportionately decreased in the case of a combination, and the Purchase Price shall forthwith be proportionately decreased in the case of a subdivision or stock dividend, or proportionately increased in the case of a combination.

10. Adjustments for Diluting Issuances. The other antidilution rights applicable to the Preferred Stock of the Company are set forth in the Amended and Restated Certificate of Incorporation, as amended from time to time (the “Articles”), a true and complete copy in its current form which is attached hereto as Exhibit A. Such rights shall not be restated, amended or modified in any manner which affects the Holder adversely and differently than the holders of Preferred Stock without such Holder’s prior written consent. The Company shall promptly provide the Holder hereof with any restatement, amendment or modification to the Articles promptly after the same has been made.

11. Mergers and Reclassifications. If after the date hereof the Company shall enter into any Reorganization (as hereinafter defined), then, as a condition of such Reorganization, lawful provisions shall be made, and duly executed documents evidencing the same from the Company or its successor shall be delivered to the Holder, so that the Holder shall thereafter have the right to purchase, at a total price not to exceed that payable upon the exercise of this Warrant in full, the kind and amount of shares of stock and other securities and property receivable upon such Reorganization by a holder of the number of shares of Preferred Stock which might have been purchased by the Holder immediately prior to such Reorganization, and in any such case appropriate provisions shall be made with respect to the rights and interest of the Holder to the end that the provisions hereof (including without limitation, provisions for the adjustment of the Purchase Price and the number of shares issuable hereunder and the provisions relating to the net issue election) shall thereafter be applicable in relation to any shares of stock or other securities and property thereafter deliverable upon exercise hereof. For the purposes of this Section 11, the term

3

“Reorganization” shall include without limitation any reclassification, capital reorganization or change of the Preferred Stock (other than as a result of a subdivision, combination or stock dividend provided for in Section 9 hereof), or any consolidation of the Company with, or merger of the Company into, another corporation or other business organization (other than a merger in which the Company is the surviving corporation and which does not result in any reclassification or change of the outstanding Preferred Stock), or any sale or conveyance to another corporation or other business organization of all or substantially all of the assets of the Company.

12. Certificate of Adjustment. Whenever the Purchase Price is adjusted, as herein provided, the Company shall promptly deliver to the Holder a certificate of the Company’s chief financial officer setting forth the Purchase Price after such adjustment and setting forth a brief statement of the facts requiring such adjustment.

13. Notices of Record Date, Etc. In the event of:

(a) any taking by the Company of a record of the holders of any class of securities for the purpose of determining the holders thereof who are entitled to receive any dividend or other distribution, or any right to subscribe for, purchase, sell or otherwise acquire or dispose of any shares of stock of any class or any other securities or property, or to receive any other right;

(b) any reclassification of the capital stock of the Company, capital reorganization of the Company, consolidation or merger involving the Company, or sale or conveyance of all or substantially all of its assets; or

(c) any voluntary or involuntary dissolution, liquidation or winding-up of the Company;

then in each such event the Company will provide or cause to be provided to the Holder a written notice thereof. Such notice shall be provided at least twenty (20) business days prior to the date specified in such notice on which any such action is to be taken.

14. Representations, Warranties and Covenants. This Warrant is issued and delivered by the Company and accepted by each Holder on the basis of the following representations, warranties and covenants made by the Company:

(a) The Company has all necessary authority to issue, execute and deliver this Warrant and to perform its obligations hereunder. This Warrant has been duly authorized issued, executed and delivered by the Company and is the valid and binding obligation of the Company, enforceable in accordance with its terms.

(b) The shares of Preferred Stock issuable upon the exercise of this Warrant have been duly authorized and reserved for issuance by the Company and, when issued in accordance with the terms hereof, will be validly issued, fully paid and nonassessable.

(c) The issuance, execution and delivery of this Warrant do not, and the issuance of the shares of Preferred Stock upon the exercise of this Warrant in accordance with the terms hereof will not, (i) violate or contravene the Company’s Articles or by-laws, or any law, statute, regulation, rule, judgment or order applicable to the Company, (ii) violate, contravene or result in a breach or default under any contract, agreement or instrument to which the Company is a party or by which the Company or any of its assets are bound or (iii) require the consent or approval of or the filing of any notice or registration with any person or entity.

(d) As long as this Warrant is, or any shares of Preferred Stock issued upon exercise of this Warrant or any shares of Common Stock issued upon conversion of such shares of Preferred Stock are, issued and outstanding, the Company will provide to the Holder the financial and other information described in the Loan Agreement.

(e) So long as this Warrant has not terminated, Holder shall be entitled to receive such financial and other information as the Holder would be entitled to receive pursuant to Section 2 of the Company’s Amended and Restated Investor Rights Agreement if Holder were a “Major Investor” (as defined therein), provided,

4

however, that the Company may exclude from such financial and other information any information that the Company determines in good faith reasonably needs to be excluded to preserve the attorney-client privileges or to protect highly confidential proprietary information.

(f) As of the date hereof, the authorized capital stock of the Company consists of (i) 123,740,317 shares of Common Stock, of which [3,503,747] shares are issued and outstanding and 517,242 shares are reserved for issuance upon the exercise of this Warrant with respect to Common Stock and the conversion of the Preferred Stock into Common Stock if this Warrant is exercised with respect to Preferred Stock, (ii) 4,615,385 shares of Seed Convertible Preferred Stock, all of which are issued and outstanding shares, (iii) 36,661,538 shares of Series A Convertible Preferred Stock, of which 35,576,923 are issued and outstanding shares, and (iv) 60,517,240 shares of Series B Convertible Preferred Stock, of which 34,581,278 are issued and outstanding shares. Attached hereto as Exhibit B is a capitalization table summarizing the capitalization of the Company. Once per calendar quarter, the Company will provide Holder with a current capitalization table indicating changes, if any, to the number of outstanding shares of common stock and preferred stock.

15. Confidentiality. The Holder agrees to keep confidential all information, materials, notes, documents and copies concerning the business of the Company provided in accordance with the terms of this Warrant or to the Holder as a result of the Holder’s status as a stockholder of the Company upon exercise of the Warrant (the “Information”). Notwithstanding the foregoing, the Holder shall be permitted to disclose Information (i) to its officers, managers, members, partners, directors, employees, agents and representatives provided that such Information shall remain confidential; (ii) to the extent required by applicable laws and regulations or by any subpoena or similar legal process, or to the extent requested by any governmental agency or authority, after notice to the Company to the extent the Holder is not advised by counsel that providing such notice would be a breach of applicable law or regulations; (iii) to the extent such Information (A) becomes publicly available other than as a result of a breach of this Section 15, (B) becomes available to the Holder on a non-confidential basis from a source other than the Company or (C) was available to the Holder on a non-confidential basis prior to its disclosure to the Holder by the Company; (iv) to the extent the Company shall have consented to such disclosure in writing; (v) in connection with the assignment of this Warrant provided that the recipient of the Information agrees to maintain the confidentiality of the Information; or (vi) in connection with the exercise of its rights and remedies under this Warrant. The provisions of this Section 15 shall survive the termination, expiration or exercise of this Warrant.

16. Registration Rights. The Company and the Holder agree to enter into the Amendment to Second Amended and Restated Registration Rights Agreement attached hereto as Exhibit C.

17. Voting Agreement. The Company and the Holder agree to enter into the Amendment to the Amended and Restated Voting Agreement attached hereto as Exhibit D.

18. Amendment. The terms of this Warrant may be amended, modified or waived only with the written consent of the Holder and the Company.

19. Representations and Covenants of the Holder. This Warrant has been entered into by the Company in reliance upon the following representations and covenants of the Holder, which by its execution hereof the Holder hereby confirms:

(a) Investment Purpose. The right to acquire Preferred Stock or the Preferred Stock issuable upon exercise of the Holder’s rights contained herein will be acquired for investment and not with a view to the sale or distribution of any part thereof, and the Holder has no present intention of selling or engaging in any public distribution of the same except pursuant to a registration or exemption.

(b) Accredited Investor. Holder is an “accredited investor” within the meaning of the Securities and Exchange Rule 501 of Regulation D, as presently in effect.

(c) Private Issue. The Holder understands (i) that the Preferred Stock issuable upon exercise of the Holder’s rights contained herein is not registered under the 1933 Act or qualified under applicable state securities laws on the ground that the issuance contemplated by this Warrant will be exempt from the

5

registration and qualifications requirements thereof, and (ii) that the Company’s reliance on such exemption is predicated on the representations set forth in this Section 19.

(d) Financial Risk. The Holder has such knowledge and experience in financial and business matters as to be capable of evaluating the merits and risks of its investment and has the ability to bear the economic risks of its investment.

20. Notices, Transfers, Etc.

(a) Any notice or written communication required or permitted to be given to the Holder may be given by certified mail or delivered to the Holder at the address most recently provided by the Holder to the Company.

(b) Subject to compliance with applicable federal and state securities laws, this Warrant may be transferred by the Holder with respect to any or all of the shares purchasable hereunder. Upon surrender of this Warrant to the Company, together with the assignment notice annexed hereto duly executed, for transfer of this Warrant as an entirety by the Holder, the Company shall issue a new warrant of the same denomination to the assignee. Upon surrender of this Warrant to the Company, together with the assignment hereof properly endorsed, by the Holder for transfer with respect to a portion of the shares of Preferred Stock purchasable hereunder, the Company shall issue a new warrant to the assignee, in such denomination as shall be requested by the Holder hereof, and shall issue to such Holder a new warrant covering the number of shares in respect of which this Warrant shall not have been transferred.

(c) In case this Warrant shall be mutilated, lost, stolen or destroyed, the Company shall issue a new warrant of like tenor and denomination and deliver the same (i) in exchange and substitution for and upon surrender and cancellation of any mutilated Warrant, or (ii) in lieu of any Warrant lost, stolen or destroyed, upon receipt of an affidavit of the Holder or other evidence reasonably satisfactory to the Company of the loss, theft or destruction of such Warrant

21. No Impairment. The Company will not, by amendment of its Articles or through any reclassification, capital reorganization, consolidation, merger, sale or conveyance of assets, dissolution, liquidation, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance of performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the Holder.

22. No Rights as Shareholder. Except as set forth herein, the Holder shall not be entitled to vote or receive dividends or be deemed the holder of Preferred Stock or any other securities of the Company which may at any time be issuable on the exercise hereof for any purpose, nor shall anything contained herein be construed to confer upon the Holder any of the rights of a shareholder of the Company or any right to vote for the election of directors or upon any matter submitted to shareholders at any meeting thereof, or to give or withhold consent to any corporate action (whether upon any recapitalization, issuance of stock, reclassification of stock, change of par value or change of stock to no par value, consolidation, merger, conveyance or otherwise) or to receive notice of meetings, or to receive dividends or subscription rights or otherwise until the Warrant shall have been exercised or converted and the shares purchasable upon the exercise hereof shall have become deliverable, as provided herein.

23. Governing Law. The provisions and terms of this Warrant shall be governed by and construed in accordance with the internal laws of the State of California without giving effect to its principles regarding conflicts of laws.

24. Successors and Assigns. This Warrant shall be binding upon the Company’s successors and assigns and shall inure to the benefit of the Holder’s successors, legal representatives and permitted assigns.

25. Business Days. If the last or appointed day for the taking of any action required or the expiration of any rights granted herein shall be a Saturday or Sunday or a legal holiday in California or Massachusetts, then

6

such action may be taken or right may be exercised on the next succeeding day which is not a Saturday or Sunday or such a legal holiday.

26. Qualifying Public Offering. If the Company shall effect a firm commitment underwritten public offering of shares of Common Stock which results in the conversion of the Preferred Stock into Common Stock pursuant to the Company’s Articles in effect immediately prior to such offering, then, effective upon such conversion, this Warrant shall change from the right to purchase shares of Preferred Stock to the right to purchase shares of Common Stock, and the Holder shall thereupon have the right to purchase, at a total price equal to that payable upon the exercise of this Warrant in full, the number of shares of Common Stock which would have been receivable by the Holder upon the exercise of this Warrant for shares of Preferred Stock immediately prior to such conversion of such shares of Preferred Stock into shares of Common Stock, and in such event appropriate provisions shall be made with respect to the rights and interest of the Holder to the end that the provisions hereof (including, without limitation, the provisions for the adjustment of the Purchase Price and of the number of shares purchasable upon exercise of this Warrant and the provisions relating to the net issue election) shall thereafter be applicable to any shares of Common Stock deliverable upon the exercise hereof.

7

27. Value. The Company and the Holder agree that the value of this Warrant on the date of grant is $100.

GENOCEA BIOSCIENCES, INC.

By:

/s/ William D. Clark

Name:

William D. Clark

Title:

CEO

Subscription

To:

Date:

The undersigned hereby subscribes for shares of Preferred Stock covered by this Warrant. The certificate(s) for such shares shall be issued in the name of the undersigned or as otherwise indicated below:

Signature

Name for Registration

Mailing Address

Net Issue Election Notice

To:

Date:

The undersigned hereby elects under Section 4 to surrender the right to purchase shares of Preferred Stock pursuant to this Warrant. The certificate(s) for such shares issuable upon such net issue election shall be issued in the name of the undersigned or as otherwise indicated below:

Signature

Name for Registration

Mailing Address

Assignment

For value received hereby sells, assigns and transfers unto

[Please print or typewrite name and address of Assignee]

the within Warrant, and does hereby irrevocably constitute and appoint its attorney to transfer the within Warrant on the books of the within named Company with full power of substitution on the premises.

Dated:

Signature

Name for Registration

In the Presence of:

EXHIBIT A

THIRD AMENDED AND RESTATED CERTIFICATE OF INCORPORATION

OF

GENOCEA BIOSCIENCES, INC.

Genocea Biosciences, Inc., a corporation organized and existing under the laws of the state of Delaware (this “Corporation”), hereby certifies as follows:

1. This Corporation’s original Certificate of Incorporation was filed with the Secretary of State of Delaware on August 16, 2006 under the name “Genocea, Inc.” and was amended and restated on December 21, 2006 and on February 10, 2009.

2. This Third Amended and Restated Certificate of Incorporation (the “Certificate of Incorporation”) has been duly adopted by this Corporation’s Board of Directors and stockholders in accordance with the applicable provisions of Sections 228, 242 and 245 of the General Corporation Law of the State of Delaware.

3. The Certificate of Incorporation of this Corporation is hereby amended and restated to read in full as follows:

“FIRST: The name of the corporation is Genocea Biosciences, Inc.

SECOND: The address of the registered office of the Corporation in the State of Delaware is 1209 Orange Street in the City of Wilmington, County of New Castle, and the name of its registered agent at such address is The Corporation Trust Company.

THIRD: The nature of the business or purposes to be conducted or promoted is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of Delaware.

FOURTH: The total number of shares of all classes of stock which the Corporation has authority to issue is 225,534,480 shares, consisting of 123,740,317 shares of common stock, par value $.001 per share (the “Common Stock”), and 101,794,163 shares of preferred stock, of which 4,615,385 shares of preferred stock are designated Seed Convertible Preferred Stock, par value $.001 per share (the “Seed Preferred Stock”), 36,661,538 shares of preferred stock are designated Series A Convertible Preferred Stock, par value $.001 per share (the “Series A Preferred Stock”) and 60,517,240 shares of preferred stock are designated Series B convertible Preferred Stock par value $.001 per share ( the “Series B Preferred Stock”) and, together with the Seed Preferred Stock and the Series A Preferred Stock, the “Preferred Stock”).

The powers, preferences and rights, and the qualifications, limitations or restrictions thereof, in respect of each class or series of stock of the Corporation shall be as follows:

Section 1. Liquidation Rights.

(a) Liquidation Payments.

(i) In the event of any liquidation, dissolution or winding up of the affairs of the Corporation, whether voluntary or involuntary (a “Liquidation”), the holders of shares of the Series B Preferred Stock shall be entitled to be paid, prior and in preference to any distribution of any of the assets of the Corporation to the holders of Series A Preferred Stock, Seed Preferred Stock or Common Stock by reason of their ownership thereof, out of the assets of the Corporation available for distribution to holders of the Corporation’s capital stock of all classes, the amount of $0.58 per share of Series B Preferred Stock (which amount shall be subject to equitable adjustment whenever there shall occur a stock dividend, stock split, combination of shares, reclassification or other similar event with respect to the Series B Preferred Stock) plus all dividends accrued and/or declared thereon but unpaid, to and including the date full payment shall be tendered to the holders of the Series B Preferred Stock, with respect to such liquidation, dissolution or winding up (the aggregate amount payable to all holders of Series B Preferred Stock in respect of all shares of Series B Preferred Stock pursuant to this Subsection 1(a)(i) of this Article FOURTH, “Series B Liquidation Payment”).

If the assets of the Corporation shall be insufficient to permit the payment in full to the holders of the Series B Preferred Stock of all amounts so distributable to them, then the entire assets of the Corporation available for such distribution shall be distributed ratably among the holders of the Series B Preferred Stock in proportion to the full preferential amount each such holder is otherwise entitled to receive under this Subsection 1(a)(i) of this Article FOURTH.

No payment shall be made with respect to the Series A Preferred Stock, the Seed Preferred Stock or the Common Stock unless and until full payment has been made to the holders of the Series B Preferred Stock of the amounts they are entitled to receive under this Subsection 1(a)(i) of this Article FOURTH.

(ii) After the payments under Section 1(a)(i) of this Article FOURTH have been made in full to the holders of the Series B Preferred Stock, or funds necessary for such payments shall have been set aside by the Corporation in trust for the account of holders of Series B Preferred Stock so as to be available for such payments, the holders of shares of the Series A Preferred Stock shall be entitled to be paid, prior and in preference to any distribution of any of the assets of the Corporation to the holders of Seed Preferred Stock or Common Stock by reason of their ownership thereof, out of the remaining assets of the Corporation available for

3

distribution to holders of the Corporation’s capital stock of all classes, the amount of $0.65 per share of Series A Preferred Stock (which amount shall be subject to equitable adjustment whenever there shall occur a stock dividend, stock split, combination of shares, reclassification or other similar event with respect to the Series A Preferred Stock) plus all dividends accrued and/or declared thereon but unpaid, to and including the date full payment shall be tendered to the holders of the Series A Preferred Stock, with respect to such liquidation, dissolution or winding up (the aggregate amount payable to all holders of Series A Preferred Stock in respect of all shares of Series A Preferred Stock pursuant to this Subsection 1(a)(ii) of this Article FOURTH, the “Series A Liquidation Payment”).

If after prior payment in full of the payments to the holders of the Series B Preferred Stock under Section 1(a)(i) of this Article FOURTH the assets of the Corporation shall be insufficient to permit the payment in full to the holders of the Series A Preferred Stock of all amounts so distributable to them, then the entire assets of the Corporation available for such distribution shall be distributed ratably among the holders of the Series A Preferred Stock in proportion to the full preferential amount each such holder is otherwise entitled to receive under this Subsection 1(a)(ii) of this Article FOURTH.

No payment shall be made with respect to the Seed Preferred Stock or the Common Stock unless and until full payment has been made to the holders of the Series A Preferred Stock of the amounts they are entitled to receive under this Subsection 1(a)(ii) of this Article FOURTH.

(iii) After the payments under Section 1(a)(ii) of this Article FOURTH have been made in full to the holders of the Series A Preferred Stock, or funds necessary for such payments shall have been set aside by the Corporation in trust for the account of holders of Series A Preferred Stock so as to be available for such payments, the holders of shares of the Seed Preferred Stock shall be entitled to be paid, prior and in preference to any distribution of any of the assets of the Corporation to the holders of Common Stock by reason of their ownership thereof, out of the remaining assets of the Corporation available for distribution to holders of the Corporation’s capital stock of all classes, an amount of $0.65 per share of Seed Preferred Stock (which amount shall be subject to equitable adjustment whenever there shall occur a stock dividend, stock split, combination of shares, reclassification or other similar event with respect to the Seed Preferred Stock) plus all dividends declared thereon but unpaid, to and including the date full payment shall be tendered to the holders of the Seed Preferred Stock, with respect to such liquidation, dissolution or winding up (the aggregate amount payable to all holders of Seed Preferred Stock in respect of all shares of Seed Preferred Stock pursuant to this Subsection 1(a)(iii) of this Article FOURTH, the “Seed Liquidation Payment”).

4

If after prior payment in full of the payments to the holders of the Series A Preferred Stock under Section 1(a)(ii) of this Article FOURTH the assets of the Corporation shall be insufficient to permit the payment in full to the holders of the Seed Preferred Stock of all amounts so distributable to them, then the assets of the Corporation available for such distribution shall be distributed ratably among the holders of the Seed Preferred Stock in proportion to the full preferential amount each such holder is otherwise entitled to receive under this Subsection 1(a)(iii) of this Article FOURTH.

No payment shall be made with respect to the Common Stock unless and until full payment has been made to the holders of the Seed Preferred Stock of the amounts they are entitled to receive under this Subsection 1(a)(iii) of this Article FOURTH.

(iv) After the payments under Section 1(a)(iii) of this Article FOURTH have been made in full to the holders of the Seed Preferred Stock, or funds necessary for such payments shall have been set aside by the Corporation in trust for the account of holders of Seed Preferred Stock so as to be available for such payments, the remaining assets of the Corporation available for distribution shall be distributed among the holders of the Series B Preferred Stock, Series A Preferred Stock and Common Stock ratably in proportion to the number of shares of Common Stock then held by each such holder on an as converted basis.

(v) Upon conversion of shares of Preferred Stock into shares of Common Stock pursuant to Section 2 of this Article FOURTH below, the holders of such Common Stock shall not be entitled to any preferential payment or distribution in case of any liquidation, dissolution or winding up, but shall share ratably in any distribution of the assets of the Corporation to all the holders of Common Stock as provided under Subsection 1(a)(iv) of this Article FOURTH.

(vi) The Series B Liquidation Payment, the Series A Liquidation Payment and the Seed Liquidation Payment payable with respect to shares of Preferred Stock under this Subsection 1(a) of this Article FOURTH are sometimes hereinafter referred to as “Preferred Stock Liquidation Payments”.

(b) Distributions Other than Cash. Whenever any portion of the distributions provided for in this Section 1 of this Article FOURTH shall be payable in property other than cash, the value of such property shall be assessed as the fair market value of such property as determined in good faith by the Board of Directors of the Corporation. The Corporation shall give prompt written notice of such valuation (including the methods used to determine the valuation), to each holder of Preferred Stock.

5

(c) Merger as Liquidation, etc. The merger or consolidation of the Corporation into or with another corporation (except one in which the holders of capital stock of the Corporation immediately prior to such merger or consolidation continue to hold a majority in voting power of the capital stock of the surviving corporation (or, if the surviving corporation is a wholly-owned subsidiary, its parent), in which case the provisions of Subsection 2(f) of this Article FOURTH shall apply), or exclusive license of all or substantially all of the intellectual property of the Corporation without field or material geographic restriction or the sale, lease, transfer or other disposition of all or substantially all of the assets of the Corporation, shall be deemed to be a liquidation, dissolution or winding up of the affairs of the Corporation (a “Deemed Liquidation”) for purposes of this Section 1 of this Article FOURTH with respect to the Series B Preferred Stock, the Series A Preferred Stock and the Seed Preferred Stock, unless the holders of at least sixty percent (60%) of the then outstanding shares of the Series B Preferred Stock elect to the contrary; such election to be made by giving notice thereof to the Corporation at least three days before the effective date of such event. If such notice is given with respect to the Preferred Stock, the provisions of Subsection 2(f) of this Article FOURTH shall apply. Unless such election is made with respect to the Preferred Stock, any amounts received by the holders of such Preferred Stock as a result of such merger, consolidation or other transaction shall be deemed to be applied toward, and all consideration received by the Corporation in such merger, consolidation, license, lease, asset sale or other disposition under this Subsection 1(c) of this Article FOURTH together with all other available assets of the Corporation shall be distributed toward, to the extent necessary, the Preferred Stock Liquidation Payments in accordance with Section 1 of this Article FOURTH.

(d) Notice. In the event the Corporation shall propose to undertake any liquidation, dissolution or winding up of the affairs of the Corporation including any Deemed Liquidation, the Corporation shall, within ten (10) days after the date the Board of Directors approves such action or twenty (20) days prior to any stockholders’ meeting called to approve such action, whichever is earlier, give each holder of Preferred Stock initial written notice of the proposed action. Such initial written notice shall describe the material terms and conditions of such proposed action, including a description of the stock, cash and property to be received by the holders of the Preferred Stock and the Common Stock upon consummation of the proposed action and the proposed date of delivery thereof. If any material change in the facts set forth in the initial notice shall occur, the Corporation shall promptly give each holder of Preferred Stock written notice of such material change. The Corporation shall not consummate any such proposed liquidation, dissolution or winding up before the expiration of thirty (30) days after the mailing of the initial notice or twenty (20) days after the mailing of any subsequent written notice, whichever is later, provided that any such 30-day or 20-day period may be shortened or waived upon the written consent of the holders of at least sixty percent (60%) of the outstanding shares of Series B Preferred Stock. Any holder of outstanding shares of Preferred Stock may

6

waive (as to itself) any notice required by this Subsection by a written instrument specifically indicating such waiver.

(e) Effect of Noncompliance. In the event the requirements of Subsection 1(d) of this Article FOURTH are not complied with, the Corporation shall forthwith either cause the closing of the Deemed Liquidation to be postponed until the requirements of such sections have been complied with, or cancel such Deemed Liquidation (to the extent possible under applicable law), in which event the rights, preferences, privileges and restrictions of the holders of Preferred Stock shall revert to and be the same as such rights, preferences, privileges and restrictions existing immediately prior to the date of the first notice referred to in Subsection 1(d) of this Article FOURTH.

(f) Acquisitions Involving Earn-Outs or Multiple Payments. Notwithstanding Section 1(a) or Section 1(c) of this Article FOURTH, in the event of a Deemed Liquidation in which (y)(1) the consideration (to be) received or (to be) paid does not occur at a single closing, but instead occurs (or is to occur) on more than one occasion (e.g., in a transaction involving earn-out payments) and (2) the up front payment (to be) received at the closing is less than the aggregate Preferred Stock Liquidation Payments and/or (z) any portion of the consideration (to be) payable to the stockholders of the Corporation is placed into an escrow, held back and/or is payable to the stockholders of the Corporation subject to contingencies, then in lieu of the amounts and priorities set forth in Section 1(a) of this Article FOURTH, distributions to the holders of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock, as applicable, shall be made in accordance with the following priorities as such consideration is received:

(i) First, to the holders of Series B Preferred Stock in accordance with the provisions of Subsection 1(a)(i) of this Article FOURTH until the holders of Series B Preferred Stock have received an aggregate amount equal to the Series B Liquidation Payment;

(ii) Second, to the holders of Series A Preferred Stock in accordance with the provisions of Subsection 1(a)(ii) of this Article FOURTH until the holders of Series A Preferred Stock have received an aggregate amount equal to the Series A Liquidation Payment;

(iii) Third, to the holders of Seed Preferred Stock in accordance with the provisions of Subsection 1(a)(iii) of this Article FOURTH until the holders of Seed Preferred Stock have received an aggregate amount equal to the Seed Liquidation Payment; and

(iv) Fourth, after the payment of all amounts required to be paid in accordance with clauses (i), (ii) and (iii) above, any funds and assets legally available (or that become available) for distribution, if any, shall be distributed among the holders of Series B Preferred Stock, Series A Preferred Stock and Common Stock in accordance with the provisions of Subsection 1(a)(iv) of this Article FOURTH;

7

Provided if the amount which any holder of shares of the Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock would receive if such holder converted all such shares of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock, as the case may be, into Common Stock immediately prior to such Deemed Liquidation, in accordance with this Subsection 1(f) of this Article FOURTH with respect to the shares of Common Stock issuable upon conversion of such shares of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock, as the case may be, is greater than the amount such holder would receive if such holder did not so convert such shares of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock, as the case may be, then such holder shall be entitled to be paid such greater amount out of the assets available for distribution in accordance with Subsection 1(f)(iv) of this Article FOURTH. For the avoidance of doubt, if, in connection with a Deemed Liquidation, a holder of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock receives payments on its shares of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock, as the case may be, pursuant to this paragraph, then such holder shall not be entitled to also receive the amount payable on its shares of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock, as the case may be, pursuant to Subsections 1(f)(i) through 1(f)(iii) of this Article FOURTH.

Section 2. Conversion. The holders of Preferred Stock shall have conversion rights as follows (the “Conversion Rights”):

(a) Right to Convert; Conversion Price. Each share of Preferred Stock shall be convertible, without the payment of any additional consideration by the holder thereof and at the option of the holder thereof, at any time after the date of issuance of such share, at the office of the Corporation or any transfer agent for the Preferred Stock, into such number of fully paid and non-assessable shares of Common Stock as is determined by dividing $0.58 plus all accrued but unpaid dividends on the date of conversion (with respect to the Series B Preferred Stock) (the “Series B Original Issue Price”), provided, however, that all holders of Series B Preferred Stock shall receive such dividends in cash at the time of conversion upon such an election by the holders of at least sixty percent (60%) of the outstanding shares of Series B Preferred Stock, in which case the Series B Original Issue Price shall be $0.58; $0.65 (with respect to the Series A Preferred Stock) (the “Series A Original Issue Price”); and $0.65 (with respect to Seed Preferred Stock) (each as adjusted for any stock dividend, stock split, combination of shares, reclassification or other similar event with respect to the Series B Preferred Stock, Series A Preferred Stock and Seed Preferred Stock) by the Series B Preferred Conversion Price, Series A Preferred Conversion Price and Seed Preferred Conversion Price, respectively, determined as hereinafter provided, in effect at the time of conversion. The Series B Preferred Conversion Price (the “Series B Preferred Conversion Price”) shall initially be $0.58 per share. The Series A Preferred Conversion Price (the “Series A Preferred Conversion Price”) shall initially be $0.65

8

per share. The Seed Preferred Conversion Price (the “Seed Preferred Conversion Price”) shall initially be $0.65 per share. The Series B Preferred Conversion Price, Series A Preferred Conversion Price and Seed Preferred Conversion Price are collectively referred to as the “Preferred Conversion Price.” Each such initial Preferred Conversion Price shall be subject to adjustment, in order to adjust the number of shares of Common Stock into which the Series B Preferred Stock, Series A Preferred Stock and Seed Preferred Stock are convertible, as hereinafter provided.

The right of conversion with respect to any shares of Preferred Stock which shall have been called for redemption under Section 6 of this Article FOURTH shall terminate at the close of business on the day fixed for redemption unless the Corporation shall default in the payment of the redemption price, in which case the right of conversion with respect to such shares shall continue unless and until such redemption price is paid in full.

(b) Automatic Conversion.

(i) Each share of Preferred Stock shall automatically be converted into shares of Common Stock at the applicable Preferred Conversion Price then in effect, as the case may be, and any declared but unpaid dividends or in the case of Series B Preferred Stock, accrued but unpaid dividends elected to be paid in cash in accordance with Section 2(a) of this Article FOURTH, shall be paid in cash, upon the closing of a firm commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended, underwritten by a nationally recognized underwriter that is satisfactory to the holders of at least a majority of the then outstanding shares of Series B Preferred Stock, covering the offer and sale of Common Stock for the account of the Corporation to the public at an offering price per share (after all underwriters’ discounts and commissions, if any) of at least three (3) times the Series B Original Issue Price with net proceeds to the Corporation of not less than $40,000,000 (in the event of which offering, the person(s) entitled to receive the Common Stock issuable upon such conversion of the Preferred Stock shall not be deemed to have converted the Preferred Stock until the closing of such offering) (such public offering, a “Qualified IPO”).

(ii) Each share of Seed Preferred Stock and Series A Preferred Stock shall automatically be converted into shares of Common Stock at the applicable Preferred Conversion Price then in effect, as the case may be, and any declared but unpaid dividends thereon shall be paid, upon the written election of the holders of at least sixty percent (60%) of the then outstanding shares of Series A Preferred Stock to require such mandatory conversion on the date or event specified by such stockholders. Each share of Series B Preferred Stock shall automatically be converted into shares of Common Stock at the Series B Preferred Conversion Price then in effect, and any accrued but unpaid dividends thereon elected to be paid in cash in accordance with Section 2(a) of this Article FOURTH shall be paid, upon the written election of

9

the holders of at least sixty percent (60%) of the then outstanding shares of Series B Preferred Stock to require such mandatory conversion on the date or event specified by such stockholders.

(iii) Each share of Series B Preferred Stock held by any Investor (as such term is defined in that certain Series B Convertible Preferred Stock Purchase Agreement by and among the Corporation and certain purchasers of Series B Preferred Stock dated on or about December 17, 2010 (the “Purchase Agreement”)), or any successor-in-interest to any Investor, that fails to purchase the amount of Series B Preferred Stock required to be purchased by such Investor (or such Investor’s successor-in-interest) at a Second Closing (as defined in the Purchase Agreement) pursuant to the Purchase Agreement, shall immediately following the Second Closing be automatically converted into shares of Common Stock at the Series B Preferred Conversion Price then in effect and all dividends thereon shall be canceled.

(c) Mechanics of Automatic Conversions. Upon the occurrence of an event specified in Subsection 2(b) of this Article FOURTH, the Preferred Stock to be converted shall be converted automatically without any further action by the holders of such shares and whether or not the certificates representing such shares are surrendered to the Corporation or its transfer agent; provided, however, that all holders of shares of Preferred Stock being converted shall be given written notice of the occurrence of the event specified in Subsection 2(b) of this Article FOURTH triggering such conversion, including the date such event occurred (the “Mandatory Conversion Date”), and the Corporation shall not be obligated to issue certificates evidencing the shares of Common Stock issuable upon such conversion unless certificates evidencing such shares of Preferred Stock being converted are either delivered to the Corporation or its transfer agent, or the holder notifies the Corporation or any transfer agent that such certificates have been lost, stolen, or destroyed and executes an agreement satisfactory to the Corporation to indemnify the Corporation from any loss incurred by it in connection therewith (such certificate, a “Certificate of Loss”). On the Mandatory Conversion Date, all rights with respect to the Preferred Stock so converted shall terminate (except any of the rights of the holder thereof as a holder of Common Stock pursuant to this Certificate of Incorporation or otherwise agreed to between such holder and the Corporation or the other holders of the Corporation’s stock) upon surrender of the holder’s certificate or certificates therefor (or a Certificate of Loss), other than such holder’s rights to receive certificates for the number of shares of Common Stock into which such Preferred Stock has been converted, together (in the case of Subsections 2(b)(i) and 2(b)(ii)) with cash in an amount equal to all dividends declared but unpaid on, and, in the case of the Series B Preferred Stock, accrued dividends to the extent an election has been made to be paid such dividends in cash in accordance with Section 2(a) of this Article FOURTH, and any and all other amounts owing with respect to, the shares of Preferred Stock converted to and including the time of conversion. Upon the automatic conversion of the Preferred Stock pursuant to Section 2(b) of this Article FOURTH, the holders of such Preferred Stock shall surrender the certificates representing such shares (or a Certificate of Loss) at the office of the Corporation or

10

of its transfer agent. If required of the holders by the Corporation, certificates surrendered for conversion shall be endorsed or accompanied by written instrument or instruments of transfer, in form satisfactory to the Corporation, duly executed by the registered holder or by the holder’s attorney duly authorized in writing. Upon surrender of such certificates there shall be issued and delivered to such holder, or to such holder’s nominee or nominees, promptly, a certificate or certificates for the number of shares of Common Stock into which the shares of Preferred Stock surrendered were convertible on the Mandatory Conversion Date, together with cash in an amount equal to all dividends declared but unpaid on, and, in the case of the Series B Preferred Stock, accrued dividends to the extent an election has been made to be paid such dividends in cash in accordance with Section 2(a) of this Article FOURTH, and any and all other amounts owing with respect to, the shares of Preferred Stock being converted to and including the time of conversion. Upon the automatic conversion of the Preferred Stock, all shares of Preferred Stock being converted by any holder thereof shall be aggregated for the purpose of determining the number of shares of Common Stock to which such holder shall be entitled, and no fractional shares of Common Stock shall be issued. In lieu of any fractional share to which the holder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the fair market value of the Common Stock on the Mandatory Conversion Date, as reasonably determined by the Board of Directors in good faith.

(d) Mechanics of Optional Conversions. Before any holder of Preferred Stock shall be entitled to convert the same into shares of Common Stock, the holder shall surrender the certificate or certificates therefor at the office of the Corporation or of any transfer agent designated by the Corporation, or the holder shall notify the Corporation or any transfer agent that such certificates have been lost, stolen, or destroyed and execute a Certificate of Loss, and shall give written notice to the Corporation at such time that the holder elects to convert his or her Preferred Stock and shall state therein (a) the number of Preferred Stock shares to be so converted and (b) the holder’s name or the name or names of the holder’s nominees in which the holder wishes the certificate or certificates for shares of Common Stock to be issued. On the date of conversion, all rights with respect to the Preferred Stock so converted shall terminate (except any of the rights of the holder thereof as a holder of Common Stock pursuant to this Certificate of Incorporation or otherwise agreed to between such holder and the Corporation or the other holders of the Corporation’s stock) upon surrender of the holder’s certificate or certificates therefor, other than such holder’s rights to receive certificates for the number of shares of Common Stock into which such Preferred Stock has been converted and cash in an amount equal to all dividends declared but unpaid on, and, in the case of the Series B Preferred Stock, accrued dividends to the extent an election has been made to be paid such dividends in cash in accordance with Section 2(a) of this Article FOURTH, and any and all other amounts owing with respect to, the shares of Preferred Stock being converted to and including the time of conversion. If so required by the Corporation, certificates surrendered for conversion shall be endorsed or accompanied by written instrument or instruments of transfer, in form satisfactory to

11

the Corporation, duly executed by the registered holder or by the holder’s attorney duly authorized in writing. Upon the optional conversion of the Preferred Stock, all shares of Preferred Stock being converted by any holder thereof shall be aggregated for the purpose of determining the number of shares of Common Stock to which such holder shall be entitled, and no fractional shares of Common Stock shall be issued. In lieu of any fractional share to which the holder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the fair market value of the Common Stock on the date of conversion, as reasonably determined by the Board of Directors in good faith. The Corporation shall, promptly after surrender of the certificate or certificates for conversion, issue and deliver to such holder, or to the holder’s nominee or nominees, a certificate or certificates for the number of shares of Common Stock to which the holder shall be entitled as aforesaid, together with cash in lieu of any fraction of a share and cash in an amount equal to all dividends declared but unpaid thereon and, in the case of the Series B Preferred Stock, accrued dividends to the extent an election has been made to be paid such dividends in cash in accordance with Section 2(a) of this Article FOURTH, and any and all other amounts owing with respect thereto at such time together with a certificate for the remaining number of shares of Preferred Stock if less than all of the shares of Preferred Stock evidenced by the certificate or certificates were converted. Unless otherwise specified by the holder in the written notice of conversion, such conversion shall be deemed to have been made immediately prior to the close of business on the date of surrender of the shares of Preferred Stock to be converted, and the person or persons entitled to receive the shares of Common Stock issuable upon conversion shall be treated for all purposes as the record holder or holders of such shares of Common Stock on such date.

(e) Adjustments to Preferred Conversion Price for Diluting Issues.

(i) Special Definitions. For purposes of this Subsection 2(e) of this Article FOURTH, the following definitions shall apply:

(1) “Option” shall mean rights, options or warrants to subscribe for, purchase or otherwise acquire either Common Stock or Convertible Securities.

(2) “Original Issue Date” shall mean the first date on which a share of Series B Preferred Stock is issued.

(3) “Convertible Securities” shall mean any evidences of indebtedness, shares of capital stock (other than Common Stock) or other securities directly or indirectly convertible into or exchangeable for Common Stock.

(4) “Additional Shares of Common Stock” shall mean all shares of Common Stock issued (or, pursuant to Subsection 2(e)(iii) of this Article FOURTH, deemed to be issued) by the Corporation after the Original Issue Date, other than:

12

(A) shares of Common Stock issued or issuable upon conversion of shares of Seed Preferred Stock, Series A Preferred Stock or Series B Preferred Stock and shares of Common Stock, Options or Convertible Securities issued as a dividend or distribution on Series A Preferred Stock or Series B Preferred Stock;

(B) up to 12,392,500 shares of Common Stock issued or issuable to employees, consultants or directors of the Corporation pursuant to a stock purchase or stock option plan or other employee stock bonus arrangement approved by a majority of the Corporation’s Board of Directors, including at least a majority of the Preferred Stock Directors (as hereinafter defined); and provided that such number may be adjusted upward with the approval of the holders of at least sixty percent (60%) of the Series B Preferred Stock then outstanding;

(C) shares of Common Stock issued in consideration for the acquisition or licensing of technology or a corporate partnership transaction, if approved by the Board of Directors, including at least a majority of the Preferred Stock Directors;

(D) shares of Common Stock issued in equipment leasing or other debt financing transactions, if approved by the Board of Directors, including at least a majority of the Preferred Stock Directors; and

(E) shares of Common Stock issued in the Company’s initial public offering.

(ii) No Adjustment of Preferred Conversion Price. Except as set forth in Subsection 2(e)(vi) of this Article FOURTH, no adjustment in the number of shares of Common Stock into which the Preferred Stock is convertible shall be made, by adjustment to the applicable Preferred Conversion Price in respect of the issuance of Additional Shares of Common Stock (a) unless the consideration per share for an Additional Share of Common Stock (determined pursuant to Subsection 2(e)(v) of this Article FOURTH) issued or deemed to be issued by the Corporation is less than the applicable Preferred Conversion Price, in effect on the date of, and immediately prior to, the issue of such Additional Share of Common Stock or (b) if prior to such issuance or within twenty (20) days thereafter the Corporation receives written notice from the holders of at least sixty percent (60%) of the outstanding shares of the applicable series of Preferred Stock that no such adjustment in the Preferred Conversion Price for such series of Preferred Stock shall be made.

(iii) Issue of Securities Deemed Issue of Additional Shares of Common Stock.

(1) Options and Convertible Securities. In the event the Corporation at any time or from time to time after the Original Issue Date shall issue any Options

13

(excluding for all purposes of this Subsection 2(e)(iii)(1) of this Article FOURTH Options excluded from the definition of Additional Shares of Common Stock in Subsection 2(e)(i)(4)(B) of this Article FOURTH) or Convertible Securities or shall fix a record date for the determination of holders of any class of securities entitled to receive any such Options or Convertible Securities, then the maximum number of shares (as set forth in the instrument relating thereto without regard to any provisions contained therein for a subsequent adjustment of such number) of Common Stock issuable upon the exercise of such Options or, in the case of Convertible Securities and Options therefor, the conversion or exchange of such Convertible Securities, shall be deemed to be Additional Shares of Common Stock issued as of the time of such issue or, in case such a record date shall have been fixed, as of the close of business on such record date (assuming the satisfaction of any conditions to convertibility, exercisability or exchangeability, including without limitation, the passage of time), and the applicable Preferred Conversion Price shall be adjusted accordingly, provided that in any such case in which Additional Shares of Common Stock are deemed to be issued:

(A) no further adjustment in the applicable Preferred Conversion Price shall be made upon the subsequent issue of Convertible Securities or shares of Common Stock upon the exercise of such Options or conversion or exchange of such Convertible Securities;

(B) if such Options or Convertible Securities by their terms provide, with the passage of time or otherwise, for any increase or decrease in the consideration payable to the Corporation, or increase or decrease in the number of shares of Common Stock issuable, upon the exercise, conversion or exchange thereof, the applicable Preferred Conversion Price computed upon the original issue thereof (or upon the occurrence of a record date with respect thereto), and any subsequent adjustments based thereon, shall, upon any such increase or decrease becoming effective, be recomputed to reflect such increase or decrease insofar as it affects such Options or the rights of conversion or exchange under such Convertible Securities;

(C) upon the expiration of any such Options or any rights of conversion or exchange under such Convertible Securities which shall not have been exercised, the applicable Preferred Conversion Price computed upon the original issue thereof (or upon the occurrence of a record date with respect thereto), and any subsequent adjustments based thereon, shall, upon such expiration, be recomputed as if:

(I) In the case of Convertible Securities or Options for Common Stock, the only Additional Shares of Common Stock issued were the shares of Common Stock, if any, actually issued upon the exercise of such Options or the conversion or exchange of such Convertible Securities and the consideration received therefor was the consideration actually received by the Corporation for the issue of all such Options, whether or not exercised, plus the consideration actually received by the Corporation upon such exercise, or

14

for the issue of all such Convertible Securities which were actually converted or exchanged, plus the additional consideration, if any, actually received by the Corporation upon such conversion or exchange; and

(II) in the case of Options for Convertible Securities only the Convertible Securities, if any, actually issued upon the exercise thereof were issued at the time of issue of such Options, and the consideration received by the Corporation for the Additional Shares of Common Stock deemed to have been then issued was the consideration actually received by the Corporation for the issue of all such Options, whether or not exercised, plus the consideration deemed to have been received by the Corporation (determined pursuant to Subsection 2(e)(v) of this Article FOURTH) upon the issue of the Convertible Securities with respect to which such Options were actually exercised;

(D) no readjustment pursuant to clause (B) or (C) above shall have the effect of increasing the applicable Preferred Conversion Price to an amount which exceeds the lower of (i) the applicable Preferred Conversion Price on the original adjustment date, or (ii) the applicable Preferred Conversion Price that would have resulted from any issuance of Additional Shares of Common Stock between the original adjustment date and such readjustment date (in each case as adjusted for any stock dividend, stock split, combination of shares, reclassification or other similar event);

(E) if such record date shall have been fixed and such Options or Convertible Securities are not issued on the date fixed therefor, the adjustment previously made in the applicable Preferred Conversion Price which became effective on such record date shall be canceled as of the close of business on such record date, and thereafter the applicable Preferred Conversion Price shall be adjusted pursuant to this Subsection 2(e)(iii) of this Article FOURTH as of the actual date of their issuance.

(2) Stock Dividends, Stock Distributions and Subdivisions. In the event the Corporation at any time or from time to time after the Original Issue Date shall declare or pay any dividend or make any other distribution on the Common Stock payable in Common Stock or effect a subdivision of the outstanding shares of Common Stock (by reclassification or otherwise than by payment of a dividend in Common Stock), then and in any such event, Additional Shares of Common Stock shall be deemed to have been issued with respect to the Preferred Stock:

(A) in the case of any such dividend or distribution, immediately after the close of business on the record date for the determination of holders of any class of securities entitled to receive such dividend or distribution, or

15

(B) in the case of any such subdivision, at the close of business on the date immediately prior to the date upon which such corporate action becomes effective.

If such record date shall have been fixed and no part of such dividend or distribution shall have been paid on the date fixed therefor, the adjustment previously made to the applicable Preferred Conversion Price which became effective on such record date shall be canceled as of the close of business on such record date, and thereafter the applicable Preferred Conversion Price shall be adjusted pursuant to this Subsection 2(e)(iii) of this Article FOURTH as of the time of actual payment of such dividend or distribution.

(3) Dilutive Financing. In the event of any merger, business combination, acquisition of a company or its assets, sale of the Corporation’s assets to a third party or a similar transaction, irrespective of corporate form, (A) that the Corporation enters into primarily for the purpose, as determined by the Board of Directors of the Corporation in good faith, of allowing the Corporation to access the cash of a third party and (B) that has an effective consideration per share to the Corporation (based on the cash of such third party accessed by such transaction at the consummation of such transaction divided by the number of Additional Shares of Common Stock issued by the Corporation in such transaction) of less than the Series B Preferred Conversion Price in effect on the date of and immediately prior to such transaction, such transaction shall be considered an issuance of Additional Shares of Common Stock subject to Section 2(e) of this Article FOURTH.

(iv) Adjustment of Preferred Conversion Price Upon Issuance of Additional Shares of Common Stock. In the event that at any time or from time to time after the Original Issue Date, the Corporation shall issue Additional Shares of Common Stock (including, without limitation, Additional Shares of Common Stock deemed to be issued pursuant to Subsection 2(e)(iii)(1) of this Article FOURTH but excluding Additional Shares of Common Stock deemed to be issued pursuant to Subsection 2(e)(iii)(2) of this Article FOURTH, which event is dealt with in Subsection 2(e)(vi)(1) of this Article FOURTH), without consideration or for a consideration per share less than $0.58 per share (subject to appropriate adjustment for any stock split, combination or other similar recapitalization event), then and in such event, the Series B Preferred Conversion Price, the Series A Preferred Conversion Price and the Seed Preferred Conversion Price, as applicable, shall be reduced, concurrently with such issue, to a price (calculated to the nearest one tenth of one cent) determined in accordance with the following formula:

16

where:

NCP = New Series B Preferred Conversion Price, new Series A Preferred Conversion Price or new Seed Preferred Conversion Price, as applicable;

P1= Series B Preferred Conversion Price, Series A Preferred Conversion Price or Seed Preferred Conversion Price, as applicable, in effect immediately prior to new issue;

Q1 = Number of shares of Common Stock outstanding, or deemed to be outstanding as set forth below, immediately prior to such issue;

P2 = Weighted average price per share received by the Corporation upon such issue;

Q2 = Number of shares of Common Stock issued, or deemed to have been issued, in the subject transaction;

provided that for the purpose of this Subsection 2(e)(iv) of this Article FOURTH, all shares of Common Stock issuable upon exercise of Options outstanding immediately prior to such issue and conversion of shares of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock, as applicable, outstanding immediately prior to such issue shall be deemed to be outstanding, and immediately after any Additional Shares of Common Stock are deemed issued pursuant to Subsection 2(e)(iii) of this Article FOURTH, such Additional Shares of Common Stock shall be deemed to be outstanding.

(v) Determination of Consideration. For purposes of this Subsection 2(e) of this Article FOURTH, the consideration received by the Corporation for the issue of any Additional Shares of Common Stock shall be computed as follows:

(1) Cash and Property: Such consideration shall:

(A) insofar as it consists of cash, be computed at the aggregate amounts of cash received by the Corporation excluding amounts paid or payable for accrued interest or accrued dividends;

17

(B) insofar as it consists of property other than cash, be computed at the fair value thereof at the time of such issue, as determined in good faith by the Board of Directors; and

(C) in the event Additional Shares of Common Stock are issued together with other shares or securities or other assets of the Corporation for consideration which covers both, be the proportion of such consideration so received, computed as provided in clauses (A) and (B) above, as determined in good faith by the Board of Directors.

(2) Options and Convertible Securities. The consideration per share received by the Corporation for Additional Shares of Common Stock deemed to have been issued pursuant to Subsection 2(e)(iii)(1) of this Article FOURTH, relating to Options and Convertible Securities, shall be determined by dividing (x) the total amount, if any, received or receivable by the Corporation as consideration for the issue of such Options or Convertible Securities, plus the minimum aggregate amount of additional consideration (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such consideration) payable to the Corporation upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities, by (y) the maximum number of shares of Common Stock (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or the conversion or exchange of such Convertible Securities.

(vi) Adjustment for Dividends, Distributions, Subdivisions, Combinations or Consolidations of Common Stock.

(1) Stock Dividends, Distributions or Subdivisions. In the event the Corporation shall be deemed to issue Additional Shares of Common Stock pursuant to Subsection 2(e)(iii)(2) of this Article FOURTH in a stock dividend, stock distribution or subdivision, the applicable Preferred Conversion Price in effect immediately before such deemed issuance shall, concurrently with the effectiveness of such deemed issuance, be proportionately decreased.

(2) Combinations or Consolidations. In the event the outstanding shares of Common Stock shall be combined or consolidated, by reclassification or otherwise, into a lesser number of shares of Common Stock, the applicable Preferred Conversion Price in effect immediately prior to such combination or consolidation shall, concurrently with the effectiveness of such combination or consolidation, be proportionately increased.

18

(vii) Special Mandatory Conversion

(1) Trigger Event. Prior to a Qualified IPO or Deemed Liquidation, in the event that any holder of shares of Preferred Stock does not participate in a Qualified Financing (as defined below) by purchasing in the aggregate, in such Qualified Financing and within the time period specified by the Corporation (provided that the Corporation has sent to each holder of Preferred Stock at least 10 days written notice of, and the opportunity to purchase its Pro Rata Amount (as defined below) of, the Qualified Financing), such holder’s Pro Rata Amount, then the Applicable Portion (as defined below) of the shares of Preferred Stock held by such holder shall automatically, and without any further action on the part of such holder, be converted into shares of Common Stock at the applicable Preferred Conversion Price in effect immediately prior to the consummation of such Qualified Financing, effective upon, subject to, and concurrently with, the consummation of the Qualified Financing and in accordance with the following order:

(A) first, the shares of Series B Preferred Stock held by such holder in an amount equal to such holder’s Applicable Portion shall be converted into shares of Common Stock at the Series B Preferred Conversion Price in effect immediately prior to the consummation of such Qualified Financing; provided that if the aggregate number of shares of Series B Preferred Stock held by such holder is less than such holder’s Applicable Portion, then

(B) second, the shares of Series A Preferred Stock held by such holder in an amount equal to such holder’s Applicable Portion, less the number of shares converted pursuant to Section 2(e)(vii)(1)(A) of this Article FOURTH, shall be converted into shares of Common Stock at the Series A Preferred Conversion Price in effect immediately prior to the consummation of such Qualified Financing; provided that if the aggregate number of shares of Series A Preferred Stock held by such holder is less than such holder’s Applicable Portion less the number of shares converted pursuant to Section 2(e)(vii)(1)(A) of this Article FOURTH, then

(C) third, the shares of Seed Preferred Stock held by such holder in an amount equal to such holder’s Applicable Portion, less the number of shares converted pursuant to Sections 2(e)(vii)(1)(A) and 2(e)(vii)(1)(B) of this Article FOURTH, shall be converted into shares of Common Stock at the Seed Preferred Conversion Price in effect immediately prior to the consummation of such Qualified Financing.

For purposes of determining the number of shares of Preferred Stock owned by a holder, and for determining the number of Offered Securities (as defined below) a holder of Preferred Stock has purchased in a Qualified Financing, all shares of Preferred Stock held by Affiliates (as defined below) of such holder shall be aggregated with such holder’s shares and all Offered Securities

19

purchased by Affiliates of such holder shall be aggregated with the Offered Securities purchased by such holder (provided that no shares or securities shall be attributed to more than one entity or person within any such group of affiliated entities or persons). Such conversion is referred to herein as a “Special Mandatory Conversion.”

(2) Procedural Requirements. Upon a Special Mandatory Conversion, each holder of shares of Preferred Stock converted pursuant to Subsection 2(e)(vii)(a) of this Article FOURTH shall be sent written notice of such Special Mandatory Conversion and the place designated for mandatory conversion of all such shares of Preferred Stock pursuant to this Section 2(e)(vii) of this Article FOURTH. Upon receipt of such notice, each holder of such shares of Preferred Stock shall surrender his, her or its certificate or certificates for all such shares (or, if such holder alleges that such certificate has been lost, stolen or destroyed, a Certificate of Loss) to the Corporation at the place designated in such notice. If so required by the Corporation, certificates surrendered for conversion shall be endorsed or accompanied by written instrument or instruments of transfer, in form satisfactory to the Corporation, duly executed by the registered holder or by his, her or its attorney duly authorized in writing. All rights with respect to the Preferred Stock converted pursuant to Subsection 2(e)(vii)(a) of this Article FOURTH, including the rights, if any, to receive notices and vote (other than as a holder of Common Stock), will terminate at the time of the Special Mandatory Conversion (notwithstanding the failure of the holder or holders thereof to surrender the certificates for such shares at or prior to such time), except only the rights of the holders thereof, upon surrender of their certificate or certificates therefor (or a Certificate of Loss), to receive the items provided for in the next sentence of this Subsection 2(e)(vii)(b) of this Article FOURTH. As soon as practicable after the Special Mandatory Conversion and the surrender of the certificate or certificates (or a Certificate of Loss) for Preferred Stock so converted, the Corporation shall issue and deliver to such holder, or to his, her or its nominees, a certificate or certificates for the number of full shares of Common Stock issuable on such conversion in accordance with the provisions hereof, together with cash as provided herein in lieu of any fraction of a share of Common Stock otherwise issuable upon such conversion and the payment of any declared but unpaid dividends, and, in the case of the Series B Preferred Stock, accrued dividends to the extent an election has been made to be paid such dividends in cash in accordance with Section 2(a) of this Article FOURTH, on the shares of Preferred Stock converted.

(3) Definitions. For purposes of this Section 2(e)(vii), the following definitions shall apply:

(A) “Affiliate” shall mean, with respect to any holder of shares of Preferred Stock, any person, entity or firm which, directly or indirectly, controls, is controlled by or is under common control with such holder, including, without limitation, any

20

entity of which the holder is a partner or member, any partner, officer, director, member or employee of such holder and any venture capital fund now or hereafter existing of which the holder is a partner or member which is controlled by or under common control with one or more general partners of such holder or shares the same management company with such holder.

(B) “Applicable Portion” shall mean, with respect to any holder of shares of Preferred Stock who fails to purchase his, her or its Pro Rata Amount in a Qualifying Offering, a number of shares of Preferred Stock calculated by multiplying the aggregate number of shares of Preferred Stock held by such holder immediately prior to a Qualified Financing by a fraction, the numerator of which is equal to the amount by which such holder’s Pro Rata Amount exceeds the number of Offered Securities actually purchased by such holder in such Qualified Financing, and the denominator of which is equal to such holder’s Pro Rata Amount.

(C) “Offered Securities” shall mean the equity securities of the Corporation set aside by the Board of Directors of the Corporation (including the affirmative vote of the JJDC Director (as defined in the Amended and Restated Voting Agreement dated on or about December 17, 2010 among the Corporation and certain of its stockholders, as may be amended from time to time (the “Voting Agreement”)), for so long as Johnson & Johnson Development Corporation or its successors or assigns is entitled to designate a director of the Corporation pursuant to the Voting Agreement and the Skyline Director (as defined in the Voting Agreement) for so long as Skyline Venture Partners V, L.P. or its successors or assigns is entitled to designate a director of the Corporation pursuant to the Voting Agreement) for purchase by holders of outstanding shares of Preferred Stock in connection with a Qualified Financing, and offered to such holders.

(D) “Pro Rata Amount” shall mean, with respect to any holder of Preferred Stock, the lesser of (a) a number of Offered Securities calculated by multiplying the aggregate number of Offered Securities by a fraction, the numerator of which is equal to the number of shares of Preferred Stock owned by such holder, and the denominator of which is equal to the aggregate number of outstanding shares of Common Stock (for the purpose of this definition, treating all shares of Common Stock issuable upon exercise of Options outstanding immediately prior to such Qualified Financing or upon conversion of Convertible Securities outstanding (assuming exercise of any outstanding Options therefor) immediately prior to such Qualified Financing as outstanding) and (b) the maximum number of Offered Securities that such holder is permitted by the Corporation to purchase in such Qualified Financing, after giving effect to any cutbacks or limitations established by the Board of Directors and applied on a pro rata basis to all holders of Preferred Stock.

(E) “Qualified Financing” shall mean any transaction occurring after the Original Issue Date, involving the issuance or sale of Additional Shares of

21

Common Stock that the Board of Directors of the Corporation, including the affirmative vote of the JJDC Director and the Skyline Director, determines should be subject to Section 2(e)(vii) of this Article FOURTH.

(d) Adjustments for Certain Dividends and Distributions. In the event that at any time or from time to time after the Original Issue Date the Corporation shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Corporation other than shares of Common Stock or securities, the issuance of which are deemed to be issuances of Common Stock under Subsection 2(e)(iii) of this Article FOURTH, then and in each such event provision shall be made so that the holders of Preferred Stock shall receive upon conversion thereof in addition to the number of shares of Common Stock receivable thereupon, the amount of securities of the Corporation that they would have received had their Preferred Stock been converted into Common Stock immediately prior to such event and had they thereafter, during the period from the date of such event to and including the conversion date, retained such securities receivable by them as aforesaid during such period, giving application during such period to all adjustments called for herein.

(e) Adjustment for Reclassification, Exchange, or Substitution. In the event that at any time or from time to time after the Original Issue Date the Common Stock issuable upon the conversion of the applicable Preferred Stock shall be changed into the same or a different number of shares of any class or series of stock or other securities or property, whether by capital reorganization, reclassification, recapitalization or otherwise (other than a subdivision or combination of shares or stock dividend provided for above, or a merger, consolidation, or sale of assets provided for below), then and in each such event the holder of any shares of the applicable Preferred Stock shall have the right thereafter to convert such shares into the kind and amount of shares of stock and other securities and property which such holder would have been entitled to receive upon such reorganization, reclassification, recapitalization or other change by the holder of a number of shares of Common Stock equal to the number of shares of Common Stock into which such shares of the applicable Preferred Stock might have been converted immediately prior to such reorganization, reclassification, recapitalization or change, all subject to further adjustment as provided herein.

(f) Adjustment for Merger, Consolidation or Sale of Assets. In the event that at any time or from time to time after the Original Issue Date the Corporation shall merge or consolidate with or into another entity or sell all or substantially all of its assets, and such consolidation, merger or sale is not treated as a liquidation under Subsection 1(c) of this Article FOURTH, each share of Preferred Stock shall thereafter be convertible into the kind and amount of shares of stock or other securities or property to which a holder of the number of shares of Common Stock of the Corporation deliverable upon conversion of such Preferred Stock would have been entitled to receive upon such consolidation, merger or sale; and, in such case,

22

appropriate adjustment (as determined in good faith by the Board of Directors) shall be made in the application of the provisions set forth in this Section 2 with respect to the rights and interest thereafter of the holders of shares of such Preferred Stock, to the end that the provisions set forth in this Section 2 of this Article FOURTH (including provisions with respect to changes in and other adjustments of the applicable Preferred Conversion Price) shall thereafter be applicable, as nearly as reasonably may be, in relation to any shares of stock or other securities or property thereafter deliverable upon the conversion of such Preferred Stock.

(g) No Impairment. The Corporation shall not without the consent(s) required by Section 3 of this Article FOURTH, by amendment of its Certificate of Incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms to be observed or performed under this Section 2 of this Article FOURTH by the Corporation but shall at all times in good faith assist in the carrying out of all the provisions of this Section 2 of this Article FOURTH and in the taking of all such action as may be necessary or appropriate in order to protect the Conversion Rights of the holders of Preferred Stock against impairment.

(h) Certificate as to Adjustments. Upon the occurrence of each adjustment or readjustment of the applicable Preferred Conversion Price pursuant to this Section 2 of this Article FOURTH, the Corporation at its expense shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to each holder of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock, as applicable, a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Corporation shall, upon the written request at any time of any holder of Preferred Stock, furnish or cause to be furnished to such holder a like certificate setting forth (i) such adjustments and readjustments, (ii) the applicable Preferred Conversion Price at the time in effect, and (iii) the number of shares of Common Stock and the amount, if any, of other property which at the time would be received upon the conversion of each share of Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock, as applicable.

(i) Notices of Record Date. In the event of any taking by the Corporation of a record of the holders of any class or series of securities for the purpose of determining the holders thereof who are entitled to receive any dividend or other distribution, the Corporation shall mail to each holder of Preferred Stock at least ten (10) days prior to such record date a notice specifying the date on which any such record is to be taken for the purpose of such dividend or distribution.

23

(j) Common Stock Reserved. The Corporation shall reserve and keep available, free from pre-emptive rights, out of its authorized but unissued Common Stock, solely for the purpose of effecting the conversion of Preferred Stock, such number of shares of Common Stock as shall from time to time be sufficient to effect conversion of the Preferred Stock. If at any time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the conversion of all the then outstanding shares of Preferred Stock, the Corporation shall promptly take such corporate action as may, in the opinion of its counsel, be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purpose.

(k) Certain Taxes. The Corporation shall pay any issue or transfer taxes payable in connection with the conversion of Preferred Stock, provided, however, that the Corporation shall not be required to pay any tax which may be payable in respect of any transfer to a name other than that of the holder of the Preferred Stock.

(l) Closing of Books. The Corporation shall at no time close its transfer books against the transfer of any Preferred Stock or of any shares of Common Stock issued or issuable upon the conversion of any shares of Preferred Stock in any manner which interferes with the timely conversion or transfer of such Preferred Stock or Common Stock.

(m) Validity of Shares. The Corporation agrees that it will from time to time take all such actions as may be required to assure that all shares of Common Stock which may be issued upon conversion of any Preferred Stock will, upon issuance, be legally and validly issued, fully paid and nonassessable and free from all taxes, liens and charges with respect to the issue thereof.

Section 3. Restrictions.

(a) At all times when at least ten percent (10%) of the Series B Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Series B Preferred Stock) issued remains outstanding, in addition to any other vote required by law or this Certificate of Incorporation, the Corporation shall not take any of the following actions, either directly or indirectly, by amendment, merger, consolidation or otherwise, without the consent of at least sixty percent (60%) of the holders of the then outstanding Series B Preferred Stock:

(i) adversely alter or amend the rights, preferences or privileges of the Series B Preferred Stock,

(ii) increase or decrease the authorized number of shares of Series B Preferred Stock,

(iii) increase or decrease the authorized size of the Board of Directors,

24

(iv) appoint or replace any At-Large Director (as defined in the Voting Agreement),

(v) hire a person to serve as, or terminate the employment of a person who is, the Chief Executive Officer, President, Chief Financial Officer or Chief Operating Officer of the Corporation or any subsidiary of the Corporation, or amend the terms of any employment agreement with such employee,

(vi) amend any provision of this Certificate of Incorporation relative only to the Series B Preferred Stock or amend or waive any provision of the Bylaws of the Corporation relative only to the Series B Preferred Stock, and

(vii) create any new class or series of shares having voting rights or other rights, preferences or privileges senior to the Series B Preferred Stock other than any new class or series of shares entitled to receive a liquidation preference for each share equal to not more than the consideration per share paid for such shares (as such price may be adjusted for stock dividends, stock splits, combinations of shares, reclassifications or other similar events with respect to such shares) plus accrued and/or unpaid dividends thereon with or without the right to receive distributions ratably after all Preferred Stock Liquidation Payments have been paid.

(b) At all times when at least ten percent (10%) of the Series A Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Series A Preferred Stock) issued remains outstanding, in addition to any other vote required by law or this Certificate of Incorporation, the Corporation shall not take any of the following actions, either directly or indirectly, by amendment, merger, consolidation or otherwise, without the consent of at least sixty percent (60%) of the holders of the then outstanding Series A Preferred Stock:

(i) adversely alter or amend the rights, preferences or privileges of the Series A Preferred Stock, and

(ii) increase or decrease the authorized number of shares of Series A Preferred Stock.

(c) At all times when at least ten percent (10%) of the Seed Preferred Stock issued remains outstanding, in addition to any other vote required by law or this Certificate of Incorporation, the Corporation shall not take any of the following actions, either directly or indirectly, by amendment, merger, consolidation or otherwise, without the consent of at least sixty percent (60%) of the holders of the then outstanding Seed Preferred Stock:

(i) adversely alter or amend the rights, preferences or privileges of the Seed Preferred Stock, and

(ii) increase or decrease the authorized number of shares of Seed Preferred Stock.

(d) In addition to any other vote required by law or this Certificate of Incorporation, the Corporation shall not take any of the following actions, either directly or indirectly, by

25

amendment, merger, consolidation or otherwise, without the consent of at least a majority of the holders of the then outstanding Preferred Stock:

(i) create any new class or series of shares having voting rights or other rights, preferences or privileges senior to or on parity with the Series B Preferred Stock, Series A Preferred Stock or Seed Preferred Stock,

(ii) effect a merger or corporate reorganization as a result of which the holders of capital stock of the Corporation immediately prior to such transaction hold less than a majority of the outstanding capital stock of the surviving or resulting corporation, or any transaction in which all or substantially all of the assets of the Corporation are sold, transferred or exclusively licensed,

(iii) effect a voluntary liquidation, winding-up or dissolution of the Corporation or a subsidiary of the Corporation or any bankruptcy filing or similar action by the Corporation or a subsidiary of the Corporation,

(iv) take any action that would result in a Deemed Liquidation,

(v) amend or waive any provision in the Certificate of Incorporation or Bylaws of the Corporation,

(vi) redeem or repurchase any shares of the Series A Preferred Stock, Seed Preferred Stock or Common Stock, unless such actions are made pursuant to equity incentive agreements with service providers giving the Corporation the right to repurchase shares upon the termination of services,

(vii) issue, incur or guarantee any debt in excess of $100,000 unless such action is approved by the majority of the Preferred Stock Directors,

(viii) any actions resulting in the investment in or acquisition of any entity which is not a wholly-owned subsidiary of the Corporation,

(ix) any action resulting in the purchase, license, lease or acquisition by the Corporation or a subsidiary of the Corporation of any business, division, rights or assets for consideration in excess of $100,000,

(x) any action resulting in the sale, exclusive license, lease or disposition by the Corporation or a subsidiary of the Corporation of any business, division or other right, asset, clinical program or intellectual property in excess of $100,000 unless such action is approved by a majority of the Preferred Stock Directors,

(xi) any action resulting in a capital expenditure by the Corporation in excess of $100,000 that was not included in the budget plan approved by the Board of Directors,

(xii) adopt or amend any Corporation equity incentive plan,

26

(xiii) issue any options (other than options issued pursuant to any Corporation equity incentive plan),

(xiv) reprice the exercise price of any options issued by the Corporation,

(xv) approve any business plan of the Corporation, or material changes to the business plan, unless the business plan or any material change is approved by a majority of the Preferred Stock Directors,

(xvi) any action commencing or settling litigation (i) relating primarily to material intellectual property of the Corporation or (ii) in which $500,000 is at stake for the Corporation,

(xvii) change the accounting methods or policies (other than as required by U.S. generally accepted accounting principles) or the accounting auditors of the Corporation or any subsidiary of the Corporation, unless such change is approved by the majority of the Preferred Stock Directors,

(xviii) pledge assets of the Corporation to guarantee any debt (other than in connection with a capital lease or a financing approved by at least a majority of the holders of the then outstanding Preferred Stock),

(xix) stop devoting a majority of the efforts of the Corporation or any subsidiary of the Corporation to discovering and developing vaccines, unless such change was included in a business plan approved by the Board of Directors,

(xx) approve any action that would impair the ability of the Corporation to satisfy the rights, preferences or privileges of the Preferred Stock,

(xxi) approve any contract or other agreement between the Corporation or any subsidiary of the Corporation, on one hand, and any officer, director, stockholder or employee of the Corporation or any subsidiary of the Corporation or any family member of such person, on the other hand, including any contract or other agreement for the sale or repurchase of any capital stock, rights, warrants or options of the Corporation or any subsidiary of the Corporation,

(xxii) declare or pay any dividends to stockholders of the Corporation,

(xxiii) grant any exclusive distribution rights to any entity that is not a subsidiary of the Corporation, and

(xxiv) agree to take any action listed in clauses (i) through (xxiii) above.

Section 4. Voting Rights.

(a) Except as otherwise required by law or set forth in this Certificate of Incorporation, the holders of Preferred Stock shall be entitled to notice of any meeting of stockholders and shall vote together with the holders of Common Stock as a single class upon any matter submitted to the stockholders for a vote. With respect to all questions as to which,

27

under law, stockholders are required to vote by classes or series, the Preferred Stock shall vote separately as a single class and series apart from the Common Stock. Shares of Common Stock and Preferred Stock shall entitle the holders thereof to the following number of votes on any matter as to which they are entitled to vote:

(i) Holders of Common Stock shall have one vote per share; and

(ii) Holders of Preferred Stock shall have that number of votes per share as is equal to the number of shares of Common Stock (including fractions of a share) into which each such share of Preferred Stock held by such holder could be converted (without giving effect to the conversion of any accrued but unpaid dividends) on the date for determination of stockholders entitled to vote at the meeting or on the date of any written consent.

(b) Any provision of the By-Laws of the Corporation to the contrary notwithstanding, the number of directors constituting the whole Board of Directors of the Corporation shall not be fixed at a number other than seven without the prior written consent of the holders of at least sixty percent (60%) of the Series B Preferred Stock then outstanding as provided in Section 3(a) of this Article FOURTH. The Board of Directors shall not delegate any of its powers or duties to any committee of the Board of Directors without the consent of at least a majority of the Preferred Stock Directors.

(c) At all times during which shares of Series B Preferred Stock remain outstanding, the holders of the outstanding shares of Series B Preferred Stock shall have the exclusive right, separately from the Common Stock, Seed Preferred Stock and Series A Preferred Stock, to elect two directors of the Corporation (the “Series B Preferred Stock Directors”). The Series B Preferred Stock Directors shall be elected by the vote or written consent of the holders of at least a majority of the outstanding Series B Preferred Stock. If a Series B Preferred Stock Director shall cease to serve as a director for any reason, another director elected by the holders of the Series B Preferred Stock shall replace such director. Any Series B Preferred Stock Director may be removed, with or without cause, and a replacement Series B Preferred Stock Director may be elected in his stead, at any time by the affirmative vote at a meeting duly called for the purpose, or by written consent, of the holders of more than sixty percent (60%) of the outstanding Series B Preferred Stock.

(d) At all times during which shares of Series A Preferred Stock remain outstanding, the holders of the outstanding shares of Series A Preferred Stock shall have the exclusive right, separately from the Common Stock, Seed Preferred Stock and Series B Preferred Stock, to elect three directors of the Corporation (the “Series A Preferred Stock Directors”). The Series A Preferred Stock Directors shall be elected by the vote or written consent of the holders of at least a majority of the outstanding Series A Preferred Stock. If a Series A Preferred Stock Director shall cease to serve as a director for any reason, another director elected by the holders of the Series A Preferred Stock shall replace such director. Any Series A Preferred Stock

28

Director may be removed, with or without cause, and a replacement Series A Preferred Stock Director may be elected in his stead, at any time by the affirmative vote at a meeting duly called for the purpose, or by written consent, of the holders of more than sixty percent (60%) of the outstanding Series A Preferred Stock.

(e) The holders of the outstanding shares of Common Stock shall have the exclusive right, separately from the Seed Preferred Stock, Series A Preferred Stock and Series B Preferred Stock, to elect one director of the Corporation (the “Common Stock Director”). The Common Stock Director shall be elected by the vote or written consent of the holders of a majority of the outstanding Common Stock. If the Common Stock Director shall cease to serve as a director for any reason, another director elected by the holders of the Common Stock shall replace such director. Any Common Stock Director may be removed, with or without cause, and a replacement Common Stock Director may be elected in his stead, at any time by the affirmative vote at a meeting duly called for the purpose, or by written consent, of the holders of a majority of the outstanding Common Stock.

(f) All other directors of the Corporation shall be elected by the holders of the Common Stock and Preferred Stock voting together as a single class, with the holders of Preferred Stock to have that number of votes as is determined in accordance with Section 4(a)(ii) of this Article FOURTH.

Section 5. Dividends.

(a) From and after the date of the issuance of any shares of Series B Preferred Stock, dividends at the rate per annum of eight percent (8%) of the Original Issue Price shall accrue on such shares of Series B Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Series B Preferred Stock) (the “Series B Preferred Dividend”). Series B Preferred Dividends shall accrue daily, whether or not declared and shall be cumulative and non-compounding; provided however, that except as set forth in the following sentence of this Section 5(a) or in Section 1(a) or Section 6(a) of this Article FOURTH, such Series B Preferred Dividends shall be payable only when, as, and if declared by the Board of Directors and the Corporation shall be under no obligation to pay such Series B Preferred Dividends. The Corporation shall not declare, pay or set aside any dividends on shares of Series A Preferred Stock, Seed Preferred Stock or Common Stock of the Corporation (other than dividends on shares of Common Stock payable in shares of Common Stock) unless (in addition to the obtaining of any consents required elsewhere in the Certificate of Incorporation) the holders of the Series B Preferred Stock then outstanding shall first receive, or simultaneously receive, a dividend on each outstanding share of Series B Preferred Stock in an amount at least equal to the amount of the aggregate Series B Preferred Dividends then accrued on such share of Series B Preferred Stock and not previously paid. The Series B Preferred Dividend shall continue to accrue even if the

29

Corporation does not have lawfully available funds to pay such Series B Preferred Dividend at the time of accrual.

(b) No dividend shall be declared or paid on shares of Series A Preferred Stock unless the provisions of Section 5(a) of this Article FOURTH above are satisfied. From and after the date of the issuance of any shares of Series A Preferred Stock, dividends at the rate per annum of 8% of the Series A Original Issue Price shall accrue on such shares of Series A Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Series A Preferred Stock) (the “Series A Preferred Dividend”). Series A Preferred Dividends shall accrue quarterly, whether or not declared but shall be non-cumulative and non-compounding; provided however, that except as set forth in the following sentence of this Section 5(b) or in Section 1(a) or Section 6(a) of this Article FOURTH, such Series A Preferred Dividends shall be payable only when, as, and if declared by the Board of Directors and the Corporation shall be under no obligation to pay such Series A Preferred Dividends. The Corporation shall not declare, pay or set aside any dividends on shares of Seed Preferred Stock or Common Stock of the Corporation (other than dividends on shares of Common Stock payable in shares of Common Stock) unless (in addition to the obtaining of any consents required elsewhere in the Certificate of Incorporation) the holders of the Series A Preferred Stock then outstanding shall first receive, or simultaneously receive, a dividend on each outstanding share of Series A Preferred Stock in an amount at least equal to the sum of (i) the amount of the aggregate Series A Preferred Dividends then accrued on such share of Series A Preferred Stock and not previously paid and (ii) (A) in the case of a dividend on Common Stock or Seed Preferred Stock, that dividend per share of Series A Preferred Stock as would equal the product of (1) the dividend payable on each share of such class or series determined, if applicable, as if all shares of such class or series had been converted into Common Stock and (2) the number of shares of Common Stock issuable upon conversion of a share of Series A Preferred Stock, in each case calculated on the record date for determination of holders entitled to receive such dividend or (B) in the case of a dividend on any class or series that is not convertible into Common Stock, at a rate per share of Series A Preferred Stock determined by (1) dividing the amount of the dividend payable on each share of such class or series of capital stock by the original issuance price of such class or series of capital stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to such class or series) and (2) multiplying such fraction by an amount equal to the Series A Original Issue Price); provided that, if the Corporation declares, pays or sets aside, on the same date, a dividend on shares of more than one class or series of capital stock of the Corporation, the dividend payable to the holders of Series A Preferred Stock pursuant to this Section 1 shall be calculated based upon the dividend on the class or series of capital stock that would result in the highest Series A Preferred Stock dividend.

30

(c) No dividend shall be declared or paid on shares of Common Stock unless the provisions of Section 5(a) and 5(b) above are satisfied and the Corporation shall declare and pay at the same time to each holder of Seed Preferred Stock a dividend equal to $0.052 per share of Seed Preferred Stock per annum, plus all dividends, previously declared and unpaid on the Seed Preferred Stock (respectively, the “Seed Preferred Dividend” and together with the Series A Preferred Dividend and the Series B Preferred Dividend, the “Preferred Dividend”), plus the dividend which would have been payable to such holder if the shares of Seed Preferred Stock held by such holder had been converted into Common Stock on the record date for the determination of holders of Common Stock entitled to receive such dividend.

(d) The calculation of the applicable Preferred Dividend shall be computed (y) on the number of days since such Preferred Stock respectively, was issued and outstanding (z) and shall include any accrued but unpaid dividends thereon. Prior to payment of any dividend pursuant to this Section 5 of this Article FOURTH, the Corporation shall provide a statement to each holder of Preferred Stock as of the date of declaration of such dividend, indicating the amount of the Preferred Dividend as applicable, owing on each such share and stipulating an appropriate mechanism by which the holder of such share of Preferred Stock may contest the calculation of the Preferred Dividend.

(e) No dividends shall be declared or paid on the Common Stock or Preferred Stock except as set forth in Section 1(a), Section 6(a) or Section 5 of this Article FOURTH.

Section 6. Redemption.

(a) At the written election of holders of at least a majority of the outstanding shares of Series B Preferred Stock at any time on or after the date that is 90 days before fifth anniversary of the Original Issue Date (the “Series B Redemption Election”), the Corporation shall be required to redeem all, but not less than all, of the outstanding shares of Series B Preferred Stock in three annual installments, upon the terms set forth in this Section 6 of this Article FOURTH. The first installment of such redemption shall occur on a date (the “First Series B Redemption Date”) specified in the Series B Redemption Election, which shall be not less than ninety (90) days after the date of the Series B Redemption Election, and the second and third installments of such redemption shall occur on the first and second anniversaries, respectively, of the First Series B Redemption Date. The Corporation shall redeem one-third of the outstanding shares of Series B Preferred Stock held by each holder on the First Series B Redemption Date, one-half of the remaining outstanding shares of Series B Preferred Stock then held by each holder on the first anniversary thereof and all of the remaining shares of Series B Preferred Stock on the second anniversary thereof. On each such redemption date, the holders shall surrender the certificate or certificates for the shares to be redeemed duly endorsed for transfer or with duly executed stock transfer powers sufficient to permit transfer attached at the offices of the Corporation or of any transfer agent for the Series B Preferred Stock, or the holder

31

shall notify the Corporation or any transfer agent that such certificates have been lost, stolen, or destroyed and execute a Certificate of Loss. The Corporation shall, as soon as practicable thereafter, issue and deliver to each holder a certificate or certificates for the balance of the shares not being redeemed. The redemption price per share of Series B Preferred Stock shall be equal to $0.58 (as adjusted for any stock dividend, stock split, combination of shares, reclassification or other similar event with respect to the Series B Preferred Stock) (the “Series B Redemption Price”) plus all dividends accrued and/or declared but unpaid on such share on the applicable redemption date.

(b) If at any time following the redemption in full of all shares of Series B Preferred Stock subject to a redemption request, the Corporation receives the written election of holders of at least sixty percent (60%) of the outstanding shares of Series A Preferred Stock (the “Series A Redemption Election”), the Corporation shall be required to redeem all, but not less than all, of the outstanding shares of Series A Preferred Stock in three annual installments, upon the terms set forth in this Section 6 of this Article FOURTH. The first installment of such redemption shall occur on a date (the “First Series A Redemption Date”) specified in the Series A Redemption Election, which shall be not less than ninety (90) days after the date of the Series A Redemption Election, and the second and third installments of such redemption shall occur on the first and second anniversaries, respectively, of the First Series A Redemption Date. The Corporation shall redeem one-third of the outstanding shares of Series A Preferred Stock held by each holder on the First Series A Redemption Date, one-half of the remaining outstanding shares of Series A Preferred Stock then held by each holder on the first anniversary thereof and all of the remaining shares on the second anniversary thereof. On each such redemption date, the holders shall surrender the certificate or certificates for the shares to be redeemed duly endorsed for transfer or with duly executed stock transfer powers sufficient to permit transfer attached at the offices of the Corporation or of any transfer agent for the Series A Preferred Stock, or the holder shall notify the Corporation or any transfer agent that such certificates have been lost, stolen, or destroyed and execute a Certificate of Loss. The Corporation shall, as soon as practicable thereafter, issue and deliver to each holder a certificate or certificates for the balance of the shares not being redeemed. The redemption price per share of Series A Preferred Stock shall be equal to $0.65 (as adjusted for any stock dividend, stock split, combination of shares, reclassification or other similar event with respect to the Series A Preferred Stock) (the “Series A Redemption Price”) plus all dividends accrued and/or declared but unpaid on such share on the applicable redemption date.

(c) Notice of any redemption shall be sent by first class mail, postage prepaid, to each holder of record of the Series B Preferred Stock or Series A Preferred Stock, as applicable, not less than thirty days nor more than sixty days prior to the First Series B Redemption Date or First Series A Redemption Date, as applicable, at the address of such holder as it appears on the books of the Corporation. Such notice shall set forth (i) the First Series B Redemption Date or

32

First Series A Redemption Date, as applicable, the dates of the second and third installments of such redemption, and the place of redemption; and (ii) the number of shares to be redeemed on each date of redemption and the redemption price calculated in accordance with Subsection 6(a) and 6(b) of this Article FOURTH, on each such date. The Corporation shall be obligated to redeem the Series B Preferred Stock or Series A Preferred Stock, as applicable, on the dates and in the amounts set forth in the notice; provided, however, that any holder of Series B Preferred Stock or Series A Preferred Stock, as applicable, may convert any or all of the shares owned by such holder into Common Stock in accordance with Section 4 of this Article FOURTH at any time prior to the date of redemption of such shares. The Corporation, if advised before the close of business on the relevant redemption date by written notice from any holder of record of Series B Preferred Stock or Series A Preferred Stock to be redeemed, as applicable, shall credit against the number of shares of Series B Preferred Stock or Series A Preferred Stock required to be redeemed from such holder, as applicable, and shall not redeem, the number of shares of Series B Preferred Stock or Series A Preferred Stock, as applicable, which shall have been converted by such holder on or before such date and which shall not previously have been credited against any redemption.

(d) If, on or before a redemption date, the funds necessary for such redemption shall have been set aside by the Corporation and deposited with a bank or trust company, in trust for the pro rata benefit of the holders of the Series B Preferred Stock or Series A Preferred Stock that has been called for redemption, then, notwithstanding that any certificates for shares that have been called for redemption shall not have been surrendered for cancellation, the shares represented thereby shall no longer be deemed outstanding from and after such redemption date, and all rights of holders of such shares so called for redemption shall forthwith, after such redemption date, cease and terminate with respect to such shares, excepting only the right to receive the redemption funds therefor to which they are entitled. Any interest accrued on funds so deposited and unclaimed by stockholders entitled thereto shall be paid to such stockholders at the time their respective shares are redeemed or to the Corporation at the time unclaimed amounts are paid to it. In case the holders of shares of Series B Preferred Stock or Series A Preferred Stock, as applicable, which shall have been called for redemption shall not, within one year after the final redemption date, claim the amounts so deposited with respect to the redemption thereof, any such bank or trust company shall, upon demand, pay over to the Corporation such unclaimed amounts and thereupon such bank or trust company shall be relieved of all responsibility in respect thereof to such holder and such holder shall look only to the Corporation for the payment thereof. Any funds so deposited with a bank or trust company which shall not be required for such redemption by reason of the exercise subsequent to the date of such deposit of the right of conversion of any shares or otherwise shall be returned to the Corporation forthwith.

33

(e) If the funds of the Corporation legally available for redemption of shares of Series B Preferred Stock or Series A Preferred Stock, as applicable, on a redemption date are insufficient to redeem the total number of shares of Series B Preferred Stock or Series A Preferred Stock submitted for redemption, those funds which are legally available will be used to redeem the maximum possible number of whole shares among the holders of such shares, based ratably on the aggregate Series B Redemption Price or Series A Redemption Price, as applicable which each such holder would be entitled to receive on such redemption date. The shares of Series B Preferred Stock or Series A Preferred Stock, as applicable, not redeemed shall remain outstanding and entitled to all rights and preferences provided herein. At any time thereafter when additional funds of the Corporation are legally available for the redemption of such shares of Series B Preferred Stock or Series A Preferred Stock, as applicable, such funds will be used, at the end of the next succeeding fiscal quarter, to redeem the balance of such shares, or such portion thereof for which funds are then legally available.

(f) In the event that funds are unavailable on the redemption date for any reason, then all unredeemed shares shall remain outstanding and entitled to all rights and preferences provided herein, and the Corporation shall pay interest on the Series B Redemption Price or Series A Redemption Price applicable to such unredeemed shares at the rate of eight percent (8%) per annum, with such interest to accrue daily in arrears; provided, however, that in no event shall such interest exceed the maximum permitted under applicable law (the “Maximum Permitted Rate”). In the event that fulfillment of any provision hereof results in such rate of interest being in excess of the Maximum Permitted Rate, the amount of interest required to be paid hereunder shall automatically be reduced to eliminate such excess; provided, however, that any subsequent increase in the Maximum Permitted Rate shall be retroactively effective to the applicable redemption date to the extent permitted by law. All interest accrued in accordance with this Section 6 shall be compounded annually and shall be due and payable upon redemption of shares in accordance with this Section 6.

Section 7. No Reissuance of Preferred Stock. No shares of Preferred Stock acquired by the Corporation by reason of redemption, purchase, conversion or otherwise shall be reissued, and all such shares shall be canceled, retired and eliminated from the shares which the Corporation shall be authorized to issue.

Section 8. Notices. All notices required or permitted to be sent pursuant to this Article FOURTH shall be deemed sufficient if contained in a written instrument and delivered in person or duly sent by first-class mail postage prepaid (other than in the case of notices to or from any non-U.S. resident) or by fax or any recognized express international courier service, addressed to the intended recipient at the recipient’s address as it appears on the books of the Corporation.

Section 9. Waiver of Certain Provisions. The observance of any provision of this Certificate of Incorporation that affects the Series A Preferred Stock hereof may be waived by

34

the affirmative vote of the holders of at least sixty percent (60%) of the outstanding shares of the Series A Preferred Stock. The observance of any provision of this Certificate of Incorporation that affects the Series B Preferred Stock hereof may be waived by the affirmative vote of the holders of at least sixty percent (60%) of the outstanding shares of the Series B Preferred Stock.

FIFTH: In furtherance of and not in limitation of powers conferred by statute, it is further provided that:

(a) Subject to the limitations and exceptions, if any, contained in the By-Laws of the Corporation and the requirements of Section 3(c) of Article FOURTH hereof, the By-Laws may be adopted, amended or repealed by the Board of Directors of the Corporation with, and only with, the approval of a majority of the directors then in office;

(b) Elections of directors need not be by written ballot unless, and only to the extent, otherwise provided in the By-Laws;

(c) Subject to any applicable requirements of law, the books of the Corporation may be kept outside the State of Delaware at such locations as may be designated by the Board of Directors or in the By-Laws of the Corporation; and

(d) The number of authorized shares of Common Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by the affirmative vote or written consent of a majority of all outstanding shares of voting stock of the Corporation, voting together as a single class on an as-converted basis, irrespective of the provisions of Section 242(b)(2) of the Delaware General Corporate Law.

SIXTH: The Corporation shall indemnify each person who at any time is, or shall have been, a director or officer of the Corporation and was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he is or was a director or officer of the Corporation, or is or was serving at the request of the Corporation as a director, officer, employee, or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys’ fees), judgments, fines and amounts paid in settlement incurred in connection with any such action, suit or proceeding, to the maximum extent permitted by the General Corporation Law of the State of Delaware, as the same exists or may hereafter be amended. In furtherance of and not in limitation of the foregoing, the Corporation shall advance expenses, including attorneys’ fees, incurred by an officer or director of the Corporation in defending any civil, criminal, administrative or investigative action, suit or proceeding in advance of the final disposition of such action, suit or proceeding upon receipt of an undertaking by or on behalf of such director or officer to repay such advances if it shall be ultimately determined that he is not entitled to be indemnified by the Corporation. The foregoing right of indemnification shall in no way be exclusive of any other rights of indemnification to

35

which any such director or officer may be entitled, under any By-Law, agreement, vote of directors or stockholders or otherwise. No amendment to or repeal of the provisions of this Article SIXTH shall deprive a director or officer of the benefit hereof with respect to any act or failure to act occurring prior to such amendment or repeal.

SEVENTH: No director of the Corporation shall be personally liable to the Corporation or to any of its stockholders for monetary damages arising out of such director’s breach of his fiduciary duty as a director of the Corporation, except to the extent that the elimination or limitation of such liability is not permitted by the General Corporation Law of the State of Delaware, as the same exists or may hereafter be amended. No amendment to or repeal of the provisions of this Article SEVENTH shall deprive any director of the Corporation of the benefit hereof with respect to any act or failure to act of such director occurring prior to such amendment or repeal.

EIGHTH: To the maximum extent permitted from time to time under the laws of the State of Delaware, the Corporation renounces any interest or expectancy of the Corporation in, or in being offered an opportunity to participate in, business opportunities that are from time to time are being presented to its officers, directors or stockholders, other than (i) those officers, directors or stockholders who are employees of the Corporation and (ii) those opportunities demonstrated by the Corporation to have been presented to such officers, directors or stockholders expressly as a result of their activities as a director, officer or stockholder of the Corporation. No amendment or repeal of this provision shall apply to or have any effect on the liability or alleged liability of any officer, director or stockholder of the Corporation for or with respect to any opportunities which such officer, director or stockholder becomes aware of prior to such amendment or repeal. This Article EIGHTH, shall terminate and no longer be applicable upon the closing of a firm commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended.

NINTH: The Corporation reserves the right to amend, alter, change or repeal any provision contained in this Certificate of Incorporation in the manner now or hereafter prescribed by statute and this Certificate of Incorporation, and all rights conferred upon stockholders herein, are granted subject to this reservation.”

[ Signature Page Follows ]

36

IN WITNESS WHEREOF, the Corporation has caused this Third Amended and Restated Certificate of Incorporation to be signed by William Clark, its Chief Business Officer, this 17th day of December, 2010.

GENOCEA BIOSCIENCES, INC.

By:

/s/ William Clark

Name:

William Clark

Title:

Chief Business Officer

EXHIBIT B

Capitalization Table

Genocea Biosciences

Cap Table 10/24/2011

round whole shares

Investor

Common

Seed/Series A

Series A Warrants

Total

New Series B Shares

Option Pool

Total Fully diluted

Fully diluted %

Polaris

10,520,677

399,909

10,920,586

8,156,493

19,077,079

16.15

%

Lux

1,000,000

10,520,677

587,931

12,108,608

4,655,172

16,763,780

14.19

%

Other Common

2,510,897

2,510,897

2,510,897

2.13

%

Morningside

923,077

28,926

952,003

863,876

1,815,879

1.54

%

Other Seed/Series A

381,723

67,849

449,572

449,572

0.38

%

Auriga Ventures III

4,615,385

4,615,385

2,864,252

7,479,637

6.33

%

Cycad Group

3,846,154

3,846,154

4,111,014

7,957,168

6.73

%

SR One

9,230,769

9,230,769

5,728,503

14,959,272

12.66

%

JJDC

—

17,241,379

17,241,379

14.59

%

Skyline

—

12,931,034

12,931,034

10.94

%

MPH

—

3,793,103

3,793,103

3.21

%

Alexandria

153,846

153,846

172,414

326,260

0.28

%

ESOP

12,846,350

12,846,350

10.87

%

Total

3,510,897

40,192,308

1,084,615

44,787,820

60,517,240

12,846,350

118,151,410

100

%

EXHIBIT C

GENOCEA BIOSCIENCES, INC.

AMENDMENT NO. 1 TO

SECOND AMENDED AND RESTATED REGISTRATION RIGHTS AGREEMENT

THIS AMENDMENT NO. 1 (the “Amendment”) is made as of October , 2011, by and among GENOCEA BIOSCIENCES, INC., a Delaware corporation (the “Company”), Lighthouse Capital Partners VI, L.P. (“Lighthouse”) and the Investors set forth on the signature pages hereto and to amend that certain Second Amended and Restated Registration Rights Agreement, dated as of December 17, 2010 (the “Registration Agreement”) by and among the Company and the Investors. Capitalized terms used herein but not otherwise defined shall have the meanings given to such terms in the Registration Agreement.

The Company and the Investors are parties to the Registration Agreement. In connection with a working capital credit facility with Lighthouse, (the “Financing”), the Company will issue a warrant to Lighthouse (the “Warrant”) to acquire shares of the Company’s Series B Convertible Preferred Stock, par value $0.001 per share (the “Series B Preferred Stock”).

As a condition to the Financing, the Company has agreed to grant Lighthouse certain registration rights with respect to the shares of the Company’s Common Stock issuable upon conversion of the Series B Preferred Stock, and the Investors desire to amend the Registration Agreement to include Lighthouse as a party to the Registration Agreement with respect to certain provisions thereunder.

The Registration Agreement may be amended only by the written agreement of the Company and the Holders of at least sixty percent (60%) of all the Registrable Shares (voting on an as converted to Common Stock basis) then in voting power; and

The Investors listed on the signature pages hereto hold at least sixty percent (60%) of all the Registrable Shares (voting on an as converted to Common Stock basis);

NOW, THEREFORE, in consideration of the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. The definition of “Registrable Shares” set forth in Section 1(h) of the Registration Agreement shall be amended in its entirety as set forth below:

“Registrable Shares” means (1) the Common Stock issuable upon conversion of the Preferred Stock held by an Investor, (2) any Common Stock purchased by an Investor (or its permitted transferees) pursuant to Section 3 of the Investor Rights Agreement of even date herewith by and among the Corporation and the Investors (or Common Stock issuable with respect to other securities so purchased), (3) solely for purposes of Sections 3, 5, 7, 8, 9, 10, 12, 15, 16, 17, 18, 19, 20 and 22, the Common Stock issuable upon conversion of the Preferred Stock held by Lighthouse Capital Partners VI, L. P. (or its permitted transferees) and (4) any Common Stock of the Corporation issued as a dividend or other distribution with respect to, or in exchange or in replacement of, such Preferred Stock or Common Stock. Notwithstanding the foregoing, Disqualified Shares shall not be included in the definition of Registrable Shares.”

2. The definitions of “Holder” and “Investor” shall be amended to include Lighthouse Capital VI, L.P. for purposes of Sections 3, 5, 7, 8, 9, 10, 12, 15, 16, 17, 18, 19, 20 and 22 of the Agreement such that Lighthouse Capital Partners VI, L.P. shall be a party to the Agreement with respect to such sections and this Amendment.

3. All notices and other communications under the Registration Agreement shall be made to Lighthouse at the address specified below and thereafter at such other address, notice of which is given in accordance with Section 21 of the Registration Agreement:

Lighthouse Capital Partners VI, L.P.

3555 Alameda de las Pulgas, Suite 200

Menlo Park, California 94025

Attn: Contract Administration

Phone: (650) 233-1001

Fax: (650) 233-0114

4. This Amendment may be executed in any number of counterparts, each such counterpart shall be deemed to be an original instrument, and all such counterparts together shall constitute but one agreement. Any such counterpart may contain one or more signature pages. This Amendment may be executed by facsimile signature pages.

5. The Registration Agreement as modified herein shall remain in full force and effect as so modified.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of the date first written above.

GENOCEA BIOSCIENCES, INC.

By:

Name:

Title:

Agreed and Accepted:

LIGHTHOUSE CAPITAL PARTNERS VI, L.P.

By:

LIGHTHOUSE MANAGEMENT PARTNERS VI, L.L.C.,

its general partner

By:

Name:

Title:

INVESTOR:

By:

Name:

Title:

EXHIBIT D

GENOCEA BIOSCIENCES, INC.

AMENDMENT NO. 1 TO THE

AMENDED AND RESTATED VOTING AGREEMENT

THIS AMENDMENT NO. 1 (the “Amendment”) is made as of October , 2011, by and among GENOCEA BIOSCIENCES, INC., a Delaware corporation (the “Company”), Lighthouse Capital Partners VI, L.P. (“Lighthouse”) and the Investors set forth on the signature pages hereto and it amends that certain Amended and Restated Voting Agreement, dated as of December 17, 2010 (the “Voting Agreement”) by and among the Company and the Investors. Capitalized terms used herein but not otherwise defined shall have the meanings given to such terms in the Voting Agreement.

The Company and the Investors are parties to the Voting Agreement. In connection with a working capital credit facility with Lighthouse (the “Financing”), the Company will issue a warrant to Lighthouse (the “Warrant”) to acquire shares of the Company’s Series B Convertible Preferred Stock, par value $0.001 per share (the “Series B Preferred Stock”);

In connection with the Financing, Lighthouse has agreed to be bound by certain obligations with respect to the shares of Series B Preferred Stock issued upon exercise of the Warrant and the Company’s Common Stock issuable upon conversion of the Series B Preferred Stock, and the Investors desire to amend the Voting Agreement to include Lighthouse with respect to certain provisions thereunder;

The Voting Agreement may be amended only by the written agreement of the Company and the Holders of at least sixty percent (60%) in voting power of the then outstanding Series B Preferred Stock and sixty percent (60%) in voting power of the then outstanding Series A Preferred Stock, and, in each case, Common Stock issued upon conversion of shares of such series of Preferred Stock other than Disqualified Shares; and

The Investors listed on the signature pages hereto hold at least sixty percent (60%) in voting power of the then outstanding Series B Preferred Stock and sixty percent (60%) in voting power of the then outstanding Series A Preferred Stock, and, in each case, Common Stock issued upon conversion of shares of such series of Preferred Stock other than Disqualified Shares;

NOW, THEREFORE, in consideration of the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. A new Section 17 shall be added and shall read in its entirety as follows:

“Effective upon Lighthouse Capital Partners VI, L.P.’s exercise of its right to purchase shares of Series B Preferred Stock under that certain Preferred Stock Purchase Warrant dated October , 2011, for purposes of Sections 3, 5, 7, 8, 9, 10, 12, 13 and 14, Lighthouse Capital Partners VI, L.P. shall be deemed to be an “Investor”, a “Stockholder” and a party to this Agreement.”

2. All notices and other communications under the Voting Agreement shall be made to Lighthouse at the address specified below and thereafter at such other address, notice of which is given in accordance with Section 6 of the Voting Agreement:

Lighthouse Capital Partners VI, L.P.

3555 Alameda de las Pulgas, Suite 200

Menlo Park, California 94025

Attn: Contract Administration

Phone: (650) 233-1001

Fax: (650) 233-0114

3. This Amendment may be executed in any number of counterparts, each such counterpart shall be deemed to be an original instrument, and all such counterparts together shall constitute but one agreement. Any such counterpart may contain one or more signature pages. This Amendment may be executed by facsimile signature pages.

4. The Voting Agreement as modified herein shall remain in full force and effect as so modified.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of the date first written above.

GENOCEA BIOSCIENCES, INC.

By:

Name:

Title:

Agreed and Accepted:

LIGHTHOUSE CAPITAL PARTNERS VI, L.P.

By:

LIGHTHOUSE MANAGEMENT PARTNERS VI, L.L.C.,

its general partner

By:

Name:

Title:

INVESTOR:

By:

Name:

Title: