

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, DC 20549

FORM 8-K

CURRENT REPORT

**Pursuant to Section 13 or 15(d) of the
Securities Exchange Act of 1934**

Date of Report (Date of earliest event reported): May 7, 2015

OpGen, Inc.

(Exact name of registrant as specified in its charter)

**Delaware
(State or other jurisdiction of
incorporation or organization)**

**001-37367
(Commission
File Number)**

**06-1614015
(I.R.S. Employer
Identification No.)**

**708 Quince Orchard Road, Suite 160
Gaithersburg, MD 20878
(Address of principal executive offices, including zip code)**

**(240) 813-1260
(Registrant's telephone number, including area code)**

**Not Applicable
(Former name or former address, if changed since last report)**

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
 - Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
 - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
 - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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Item 1.01 Entry into a Material Definitive Agreement.

Offered Warrants and Warrant Agreement

On May 8, 2015, OpGen, Inc. (the “Company”) closed its initial public offering of 2,850,000 units (the “Units”) which were sold at a public offering price of \$6.00 per unit. In addition, on May 8, 2015, the Company issued and sold an additional 422,500 warrants in connection with the partial exercise of the underwriters’ overallotment option. Each Unit represented the right to receive one share of the Company’s common stock, par value \$0.01 per share (“Common Stock”) and one warrant to purchase one share of common stock at a price per share of \$6.60 (each, an “Offered Warrant”). The exercise price and number of shares of Common Stock issuable upon exercise of the Offered Warrants may be adjusted in certain circumstances, including in the event of a stock dividend or recapitalization, reorganization, merger or consolidation. The Offered Warrants will be exercisable for a period of 60 months after the closing of the initial public offering or earlier upon the dissolution or winding up of the Company.

The Units immediately and automatically separated upon issuance, and each of the Common Stock and the Offered Warrants are listed and trade separately on the NASDAQ Capital Market.

The Offered Warrants were issued pursuant to a Warrant Agreement, dated as of May 8, 2015, between the Company and Philadelphia Stock Transfer, Inc., as warrant agent. The form of Offered Warrant and the Warrant Agreement are filed herewith as Exhibit 4.1 and 10.1 hereto, respectively, and are incorporated herein by reference.

Underwriter Warrant

In addition, on May 8, 2015, as part of the consideration paid to the underwriters in connection with the initial public offering, the Company issued a warrant to purchase 185,249 shares of the Common Stock (the “Underwriter Warrant”). The Underwriter Warrant has an exercise price equal to \$6.60 per share of Common Stock and expires on May 4, 2020. The Underwriter Warrant is not subject to redemption by the Company, and will entitle the holder thereof to certain registration rights for up to seven years following the effective date of the Company’s Registration Statement on Form S-1 (File No. 333-202478) in connection with the initial public offering (the “Registration Statement”).

The Underwriter Warrant is filed herewith as Exhibit 4.2 and is incorporated herein by reference.

Item 5.03 Amendments to Articles of Incorporation or Bylaws; Change in Fiscal Year.

On May 7, 2015, the Company’s Amended and Restated Certificate of Incorporation (the “Charter”) became effective. A description of the Company’s capital stock, giving effect to the adoption of the Charter, is described in the Registration Statement. The Charter is filed herewith as Exhibit 3.1, and is incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

The following exhibits are filed herewith:

<u>Exhibit</u>	<u>Description</u>
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3.1	Amended and Restated Certificate of Incorporation of OpGen, Inc., dated as of May 7, 2015.
4.1	Form of Warrant to Purchase Common Stock of OpGen, Inc. (included in Exhibit 10.1).
4.2	Warrant to Purchase Common Stock of OpGen, Inc., dated as of May 8, 2015.
10.1	Warrant Agreement, dated as of May 8, 2015, between OpGen, Inc. and Philadelphia Stock Transfer, Inc., as warrant agent.

EXHIBIT INDEX

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**AMENDED AND RESTATED
CERTIFICATE OF INCORPORATION
OF
OPGEN, INC.**

OpGen, Inc., a corporation organized and existing under and by virtue of the provisions of the General Corporation Law of the State of Delaware (the “**General Corporation Law**”)

DOES HEREBY CERTIFY THAT:

1. The name of this corporation is OpGen, Inc.

2. The Certificate of Incorporation of this corporation was originally filed with the Secretary of State of the State of Delaware on January 22, 2001 under the name eDNA Genomics, Inc.

3. The Certificate of Incorporation of the corporation was most recently amended and restated pursuant to a Ninth Amended and Restated Certificate of Incorporation filed with the Secretary of State of the State of Delaware on July 10, 2014, as further amended by a Certificate of Amendment filed with the Secretary of State of the State of Delaware on February 13, 2015, and is hereby further amended and restated pursuant to Sections 242 and 245 of the General Corporation Law.

4. The Certificate of Incorporation of the corporation shall be amended and restated to read in full as follows:

FIRST: The name of this corporation is OpGen, Inc. (the “**Corporation**”).

SECOND: The address of the registered office of the Company in the State of Delaware is 1209 Orange Street, in the City of Wilmington, County of New Castle 19801. 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.

FOURTH: The aggregate number of shares of all classes of capital stock which the Corporation shall have authority to issue is 210,000,000 shares of capital stock, consisting of 200,000,000 shares designated as Common Stock, \$0.01 par value per share, and 10,000,000 shares of Preferred Stock, \$0.01 par value per share.

The board of directors of the Corporation may determine the times when, the terms under which and the consideration for which the Corporation shall issue, dispose of or receive subscriptions for its shares, including treasury shares, or acquire its own shares. The consideration for the issuance of the shares shall be paid in full before their issuance and shall not be less than the par value per share. Upon payment of such consideration, such shares shall be deemed to be fully paid and nonassessable by the Corporation.

A description of the different classes and series of the Corporation’s capital stock and a statement of the powers, designations, preferences, limitations and relative rights of the shares of each class of and series of capital stock are as follows:

A. Common Stock. Except as provided in this Article FOURTH (or in any resolution or resolutions adopted by the board of directors pursuant hereto) the holders of the Common Stock shall exclusively possess all voting power. Each holder of shares of Common Stock shall be entitled to one vote for each share held by such holder. There shall be no cumulative voting rights in the election of directors. Each share of Common Stock shall have the same relative rights as and be identical in all respects with all shares of Common Stock.

Whenever there shall have been paid, or declared and set aside for payment, to the holders of the outstanding shares of any class of stock having preference over the Common Stock as to the payment of dividends, the full amount of dividends and or sinking fund or other retirement payments, if any, to which such holders are respectively entitled in preference to the Common Stock, then dividends may be paid on the Common Stock and on any class or series of stock entitled to participate therewith as to dividends, out of any assets legally available for the payment of dividends but only when and as declared by the board of directors.

In the event of any liquidation, dissolution or winding up of the Corporation, after there shall have been paid to or set aside for the holders of any class having preferences over the Common Stock in the event of liquidation, dissolution or winding up of the full preferential amounts to which they are respectively entitled, the holders of the Common Stock, and of any class or series of stock entitled to participate therewith, in whole or in part, as to distribution of assets, shall be entitled after payment or provision for payment of all debts and liabilities of the Corporation, to receive the remaining assets of the Corporation available for distribution, in cash or in kind.

B. Preferred Stock. The board of directors of the Corporation is authorized, subject to limitations prescribed by law and the provisions of this Article FOURTH, to provide by resolution for the issuance of Preferred Stock in series, including convertible Preferred Stock, to establish from time to time the number of shares to be included in each such series, and to fix the designations, powers, preferences and relative, participating, optional and other special rights of the shares of each such series and the qualifications, limitations or restrictions thereof.

The authority of the board of directors with respect to each series shall include, but not be limited to, determination of the following: (i) the number of shares constituting that series and the distinctive designation of that series; (ii) the dividend rate on the shares of that series, whether dividends shall be cumulative, and, if so, from which date or dates, and the relative rights of priority, if any, of payment of dividends on shares of that series; (iii) whether that series shall have voting rights, in addition to the voting rights provided by law, and, if so, the terms of such rights; (iv) whether that series shall have conversion privileges, and, if so, the terms and conditions of such conversion, including provision for adjustment of the conversion rate in such events as the board of directors shall determine; (v) whether or not the shares of that series shall be redeemable, and, if so, the terms and conditions of such redemption, including the date or dates after which they shall be redeemable, and the amounts per share payable in case of redemption, which amounts may vary under different conditions and at different redemption dates; (vi) whether the series shall have a sinking fund for the redemption or purchase of shares of that series, and, if so, the terms and amounts of such sinking fund; (vii) the rights of the shares of that series in the event of voluntary or involuntary liquidation, dissolution, or winding up of the Corporation, and the relative rights of priority, if any, of payment of shares of that series; and (viii) any other relative rights, preferences and limitations of that series.

C. No Participation Rights. No holder of any of the shares of any class of the Corporation shall be entitled as of right to subscribe for, purchase or otherwise acquire any shares of any class of the Corporation which the Corporation proposes to issue or any rights or options which the Corporation proposes to grant for the purchase of shares of any class of the Corporation or for the purchase of any shares, bonds, securities or obligations of the Corporation which are convertible into or exchangeable for, or which carry any rights, to subscribe for, purchase or otherwise acquire shares of any class of the Corporation; and any and all of such shares, bonds, securities or obligations of the Corporation, whether now or hereafter authorized or created, may be issued, or may be reissued or transferred if the same have been reacquired and have treasury status, and any and all of such rights and options may be granted by the board of directors to such persons, firms, corporations and associations, and for such lawful consideration, and on such terms, as the board of directors in its discretion may determine, without first offering the same, or any thereof, to any said holder.

FIFTH: The business and affairs of the Corporation shall be managed by a board of directors. Subject to the rights of holders of any series of Preferred Stock to elect directors, the number of directors of the Corporation shall be established from time to time by the board of directors. Election of directors need not be by written ballot, except as and to the extent provided in the Bylaws of the Corporation. The terms, classifications, qualifications and election of the board of directors and the filling of vacancies thereon shall be as provided in the Bylaws. Advance notice of stockholder nominations for election of directors and other business to be brought by stockholders before a meeting of stockholders shall be given in the manner provided by the Bylaws of the Corporation.

SIXTH: In furtherance and not in limitation of the powers conferred upon it by the General Corporation Law, and subject to the terms of any series of Preferred Stock:

A. The board of directors shall have the power to adopt, amend, alter or repeal the Bylaws of the Corporation. The stockholders may not adopt, amend, alter or repeal the Bylaws of the Corporation, or adopt any provision inconsistent therewith, unless such action is approved, in addition to any other vote required by this Certificate of Incorporation, by the affirmative vote of the holders of at least sixty-six and two-thirds percent (66 2/3%) of the voting power of the outstanding shares of capital stock of the Corporation entitled to vote thereon.

B. The books of the Corporation may be kept at such place within or without the State of Delaware as the Bylaws of the Corporation may provide or as may be designated from time to time by the board of directors.

C. No action required or permitted to be taken at any annual or special meeting of the stockholders may be taken without a meeting and the power of stockholders to consent in writing, without a meeting, to the taking of any action is specifically denied.

D. Special meetings of the stockholders of the Corporation may be called only by the Chairman of the board of directors or the Chief Executive Officer of the Corporation or by a resolution adopted by the affirmative vote of a majority of the board of directors, and any power of stockholders to call a special meeting of stockholders is specifically denied.

E. Unless the Corporation consents in writing to the selection of an alternative forum, from and after the time the Common Stock is first a "covered security" pursuant to Section 18(b)(1) of the Securities Act of 1933, as amended, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on behalf of the Corporation, (ii) any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of the Corporation to the Corporation or the Corporation's stockholders, (iii) any action asserting a claim arising pursuant to any provision of the General Corporation Law, or (iv) any action asserting a claim governed by the internal affairs doctrine. Any person or entity purchasing or otherwise acquiring any interest in shares of capital stock of the Corporation shall be deemed to have notice of and consented to the provisions of this Article SIXTH, Paragraph E.

SEVENTH: Notwithstanding the provisions of the General Corporation Law, this Certificate of Incorporation or the Bylaws of the Corporation, and notwithstanding the fact that a lesser percentage may be specified by law, no amendment of any provision of this Certificate of Incorporation shall be made unless such amendment has been approved both by the board of directors of the Corporation and by the stockholders of the Corporation by the affirmative vote of the holders of at least sixty-six and two-thirds percent (66 2/3%) of the voting power of the outstanding shares of capital stock of the Corporation entitled to vote thereon.

EIGHTH: The following provisions are inserted to limit the liability of directors and officers of the Corporation to the full extent of the law allowable and for the conduct of the affairs of the Corporation, and it is expressly provided that they are intended to be in furtherance and not in limitation or exclusion of the powers conferred by law:

A. Limitation on Liability. To the fullest extent permitted by the General Corporation Law, as the same exists or as may hereafter be amended (including, but not limited to Section 102(b)(7) of the General Corporation Law), a director of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director. If the General Corporation Law hereafter is amended to further eliminate or limit the liability of directors, then the liability of a director of the Corporation, in addition to the limitation on personal liability provided herein, shall be limited to the fullest extent permitted by the amended General Corporation Law. Any repeal or modification of this paragraph by the stockholders of the Corporation shall be prospective only, and shall not adversely affect any limitation on the personal liability of a director of the Corporation existing at the time of such repeal or modification.

B. Indemnification. Each person who 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 or of a partnership, joint venture, trust, employee benefit plan or other enterprise (including the heirs, executors, administrators or estate of such person), shall be indemnified and advanced expenses by the Corporation, in accordance with the Bylaws of the Corporation, to the fullest extent authorized by the General Corporation Law, as the same exists or may hereafter be amended (but, in the case of any such amendment, only to the extent that such amendment permits the Corporation to provide broader indemnification rights than said law permitted the Corporation to provide prior to such amendment), or any other applicable laws as presently or hereinafter in effect. The right to indemnification and advancement of expenses hereunder shall not be exclusive of any other right that any person may have or hereafter acquire under any statute, provision of the certificate of incorporation or Bylaws of the Corporation, agreement, vote of stockholders or disinterested directors or otherwise.

C. Insurance. The Corporation may, to the fullest extent permitted by law, purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the Corporation or another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise against any expense, liability or loss incurred by such person in any such capacity or arising out of such person's status as such, whether or not the Corporation would have the power to indemnify such person against such expense, liability or loss under the General Corporation Law.

D. Repeal and Modification. Any repeal or modification of the foregoing provisions of this Article EIGHTH shall not adversely affect any right or protection existing hereunder immediately prior to such repeal or modification

The provisions herein shall be applicable to all claims, actions, suits, or proceedings made or commenced after the adoption hereof, whether arising from acts or omissions to act occurring before or after the adoption hereof.

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 all rights conferred upon stockholders herein are granted subject to this reservation. The affirmative vote of the holders of at least sixty-six and two-thirds percent (66 2/3%) of the voting power of the shares of the capital stock of the Corporation entitled to vote generally in the election of directors, voting together as a single class, shall be required to amend in any respect or repeal this Article NINTH, Article FIFTH, or Articles SIXTH, SEVENTH or EIGHTH.

IN WITNESS WHEREOF, the corporation has caused this certificate to be signed by its Chief Executive Officer this 7th day of May, 2015.

OPGEN, INC.

By: /s/ Timothy C. Dec

Timothy C. Dec, Chief Financial Officer

THIS WARRANT AND THE SECURITIES ISSUABLE UPON EXERCISE HEREOF MAY NOT BE SOLD, TRANSFERRED, ASSIGNED, PLEDGED, OR HYPOTHECATED, OR BE THE SUBJECT OF ANY HEDGING, SHORT SALE, DERIVATIVE, PUT, OR CALL TRANSACTION THAT WOULD RESULT IN THE EFFECTIVE ECONOMIC DISPOSITION OF SUCH SECURITIES BY ANY PERSON FOR A PERIOD OF ONE HUNDRED AND EIGHTY (180) DAYS IMMEDIATELY FOLLOWING THE DATE OF EFFECTIVENESS OF THE PUBLIC OFFERING OF THE COMPANY'S SECURITIES PURSUANT TO REGISTRATION STATEMENT NO. 333-202478 AS FILED WITH THE SECURITIES AND EXCHANGE COMMISSION, EXCEPT IN ACCORDANCE WITH FINRA RULE 5110(g)(2).

COMMON STOCK PURCHASE WARRANT

OPGEN, INC.

Warrant Shares: 185,249

Issuance Date: May 8, 2015

THIS COMMON STOCK PURCHASE WARRANT (the "Warrant") certifies that, for value received, Maxim Partners LLC or its assigns (the "Holder") is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after the date that is 180 days from the effective date ("Effective Date") of the Registration Statement (the "Initial Exercise Date") and on or prior to the close of business on the five (5) year anniversary of the Effective Date (the "Termination Date") but not thereafter, to subscribe for and purchase from OpGen, Inc., a Delaware corporation (the "Company"), up to 185,249 shares (as subject to adjustment hereunder, the "Warrant Shares") of Common Stock. The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b).

Section 1. Definitions. Capitalized terms used and not otherwise defined herein shall have the meanings set forth in that certain Underwriting Agreement (the "Agreement"), May 4, 2015, between the Company and Maxim Partners LLC on behalf of the Underwriters named on Schedule A thereto.

Section 2. Exercise.

(a) Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company (or such other office or agency of the Company as the Company may designate by notice in writing to the registered Holder at the address of the Holder appearing on the books of the Company) of a duly executed facsimile copy of the Notice of Exercise form attached hereto. Within three (3) trading days following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the shares specified in the applicable Notice of Exercise by wire transfer or cashier's check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is available and specified in the applicable Notice of Exercise. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) trading days of the date the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases; provided that the records of the Company, absent manifest error, will be conclusive with respect to the number of Warrant Shares purchasable from time to time hereunder. The Company shall deliver any objection to any Notice of Exercise form within one (1) business day of receipt of such notice. **The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.**

(b) Exercise Price. The exercise price per share of the Common Stock under this Warrant shall be \$6.60, subject to adjustment hereunder (the "Exercise Price"). Except as where otherwise permitted in accordance with Section 2(c), this Warrant may only be exercised by means of payment by wire transfer or cashier's check drawn on a United States bank.

(c) Cashless Exercise. If, and only if, at the time of exercise hereof there is no effective registration statement registering, or the prospectus contained therein is not available for the issuance of, the Warrant Shares, then, and only then, this Warrant may, at the option of the Holder, be exercised, in whole or in part, at such time by means of a "cashless exercise" in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing $[(A-B) * (X)]$ by (A), where:

(A) = the VWAP on the trading day immediately preceding the date on which the Holder elects to exercise this Warrant by means of a "cashless exercise," as set forth in the applicable Notice of Exercise;

(B) = the Exercise Price of this Warrant, as adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

"VWAP" means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a national securities exchange within the meaning of Section 6 of the Exchange Act (a "Trading Market"), the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. ("Bloomberg") (based on a trading day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if the OTC Bulletin Board (or its successor entity) is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the OTC Bulletin Board, (c) if the Common Stock is not then listed or quoted for trading on the OTC Bulletin Board (or its successor entity) and if prices for the Common Stock are then listed or quoted for trading on the OTCQX or OTCQB marketplaces of the OTC Markets Group, Inc., the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on such marketplace, (d) if the Common Stock is not then listed or quoted for trading on the OTCQX or OTCQB marketplaces of the OTC Markets Group, Inc. and if prices for the Common Stock are then reported in the "Pink Sheets" published by the OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (e) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Board of Directors of the Company and reasonably acceptable to the Holder, the fees and expenses of which shall be paid by the Company.

(d) Mechanics of Exercise.

(i) Delivery of Warrant Shares upon Exercise. The Company shall use best efforts to cause the Warrant Shares purchased hereunder to be transmitted by the Transfer Agent to the Holder by crediting the account of the Holder's prime broker with The Depository Trust Company through its Deposit or Withdrawal at Custodian system ("DWAC") if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares or resale of the Warrant Shares or (B) this Warrant is being exercised via cashless exercise, and otherwise by physical delivery to the address specified by the Holder in the Notice of Exercise by the date that is five (5) trading days after the latest of (A) the delivery to the Company of the Notice of Exercise, (B) surrender of this Warrant (if required) and (C) payment of the aggregate Exercise Price as set forth above (including by cashless exercise, if permitted) (such date, the "Warrant Share Delivery Date"). The Warrant Shares shall be deemed to have been issued, and the Holder or any other person so designated to be named therein shall be deemed to have become a holder of record of such shares for all purposes, as of the date the Warrant has been exercised, with payment to the Company of the Exercise Price (or by cashless exercise, if permitted) and all taxes required to be paid by the Holder, if any, pursuant to Section 2(d)(vi) prior to the issuance of such shares, having been paid.

(ii) Delivery of New Warrants upon Exercise. If this Warrant shall have been exercised in part, the Company shall, at the request of a Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

(iii) Rescission Rights. If the Company fails to cause its transfer agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d)(i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

(iv) Compensation for Buy-In on Failure to Timely Deliver Warrant Shares upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity, including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

(v) No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share.

(vi) Charges, Taxes and Expenses. Issuance of Warrant Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that, in the event Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder, and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise.

(vii) Closing of Books. The Company will not close its stockholder books or records in any manner which prevents the timely exercise of this Warrant pursuant to the terms hereof.

(e) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and a Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, non-exercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates and (ii) exercise or conversion of the unexercised or non-converted portion of any other securities of the Company (including, without limitation, any other security of the Company or any other entity that is convertible into, or exercisable or exchangeable for, Common Stock, or any warrant or other right to purchase Common Stock or any other security of the Company or any other entity that is convertible into, or exercisable or exchangeable for, Common Stock ("Common Stock Equivalents")) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates. Except as set forth in the preceding sentence, for purposes of this Section 2(e), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(e) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the submission of a Notice of Exercise, shall be deemed to be the Holder's determination of whether, and representation and certification to the Company that, this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 2(e), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within two (2) trading days confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates since the date as of which such number of outstanding shares of Common Stock was reported. The "Beneficial Ownership Limitation" shall be 4.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon not less than 61 days' prior notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(e), provided that the Beneficial Ownership Limitation in no event exceeds 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant held by the Holder, and the provisions of this Section 2(e) shall continue to apply. Any such increase or decrease will not be effective until the 61st day after such notice is delivered to the Company. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(e) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Warrant.

Section 3. Certain Adjustments.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions on shares of its Common Stock or any other equity or equity equivalent securities payable in shares of Common Stock (which, for the avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon exercise of this Warrant), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then in each case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, if any) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event, and the number of shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Exercise Price of this Warrant shall remain unchanged. Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

(b) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 3(a) above, if at any time during which this Warrant is outstanding the Company grants, issues or sells any Common Stock Equivalents or other rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock ("Purchase Rights"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation). The provisions of this Section 3(b) will not apply to any grant, issuance or sale of Common Stock Equivalents or other rights to purchase stock, warrants, securities or other property of the Company which is not made pro rata to the record holders of any class of shares of Common Stock.

(c) Pro Rata Distributions. During such time as this Warrant is outstanding, if the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spinoff, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "Distribution"), at any time after the issuance of this Warrant, then, in each such case and to the extent permitted by FINRA Rule 5110(f)(2)(G), the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including, without limitation, the Beneficial Ownership Limitation) immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, to the extent that the Holder's right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of such shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

(d) Fundamental Transaction. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another Person, (ii) the Company, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or more related transactions, (iii) any direct or indirect purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spinoff or scheme of arrangement) with another Person or group of Persons whereby such other Person or group acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other Person or other Persons making or party to, or associated or affiliated with, the other Persons making or party to such stock or share purchase agreement or other business combination) (each a "Fundamental Transaction"), then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction (without regard to any limitation in Section 2(e) on the exercise of this Warrant), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional or alternative consideration (the "Alternative Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 2(e) on the exercise of this Warrant). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternative Consideration based on the amount of Alternative Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternative Consideration in a reasonable manner reflecting the relative value of any different components of the Alternative Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternative Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. Notwithstanding anything to the contrary, in the event of a Fundamental Transaction that is (1) an all cash transaction, (2) a "Rule 13e-3 transaction" as defined in Rule 13e-3 under the Exchange Act, or (3) a Fundamental Transaction involving a person or entity not traded on a Trading Market, including, but not limited to, the NYSE, the NYSE MKT, the Nasdaq Global Select Market, the Nasdaq Global Market, or the Nasdaq Capital Market, the Company or any Successor Entity (as defined below) shall, at the option of the Holder or the Company or any Successor Entity, exercisable at any time concurrently with, or within 30 days after, the consummation of the Fundamental Transaction, purchase this Warrant from the Holder by paying to the Holder an amount of cash equal to the Black Scholes Value of the remaining unexercised portion of this Warrant on the date of the consummation of such Fundamental Transaction. "Black Scholes Value" means the value of this Warrant based on the Black and Scholes Option Pricing Model obtained from the "OV" function on Bloomberg determined as of the day of consummation of the applicable Fundamental Transaction for pricing purposes and reflecting (A) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Termination Date, (B) an expected volatility equal to the greater of 100% and the 100 day volatility obtained from the HVT function on Bloomberg as of the trading day immediately following the public announcement of the applicable Fundamental Transaction, (C) the underlying price per share used in such calculation being the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Fundamental Transaction and (D) a remaining option time equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Termination Date. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "Successor Entity") to assume in writing all of the obligations of the Company under this Warrant in accordance with the provisions of this Section 3(e), and to deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the Exercise Price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction). Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant and the other Transaction Documents referring to the "Company" shall refer instead to the Successor Entity), and may exercise every right and power of, the Company and shall assume all of the obligations of the Company, under this Warrant and the other Transaction Documents with the same effect as if such Successor Entity had been named as the Company herein.

(e) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

(f) Notice to Holder.

(i) Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly mail to the Holder a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

(ii) Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Company shall authorize the granting to all holders of the Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or any rights, (D) the approval of any stockholders of the Company shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Company is a party, any sale or transfer of all or substantially all of the assets of the Company, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property, or (E) the Company shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company, then, in each case, the Company shall cause to be mailed to the Holder at its last address as it shall appear upon the Warrant Register of the Company, at least 10 business days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange; provided that the failure to mail such notice or any defect therein or in the mailing thereof shall not affect the validity of the corporate action required to be specified in such notice. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Company, the Company shall, simultaneously with the mailing of such notice, file such notice with the Commission pursuant to a Current Report on Form 8-K. The Holder shall remain entitled to exercise this Warrant during the period commencing on the date of such notice to the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

Section 4. Transfer of Warrant.

(a) Transferability. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued. Neither this Warrant nor any Warrant Shares issued upon exercise of this Warrant shall be sold, transferred, assigned, pledged, or hypothecated, or be the subject of any hedging, short sale, derivative, put, or call transaction that would result in the effective economic disposition of the securities, by any person for a period of 180 days immediately following the date of effectiveness or commencement of sales of the offering pursuant to which this Warrant is being issued, except:

(i) the transfer of any security by operation of law or by reason of reorganization of the Company;

(ii) the transfer of any security to any FINRA member firm participating in the offering and the officers or partners thereof, if all securities so transferred remain subject to the lock-up restriction in this Section 4(a) for the remainder of the time period; or

(iii) the exercise or conversion of any security, if all securities received remain subject to the lock-up restriction in this Section 4(a) for the remainder of the time period.

(b) New Warrants. This Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the initial issuance date of this Warrant and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

(c) Warrant Register. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the "Warrant Register"), in the name of the record Holder hereof from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

Section 5. Registration Rights.

(a) Registration of Common Stock. The Company shall use its best efforts to maintain the effectiveness of the Registration Statement and a current Prospectus relating thereto, until the Termination Date. During any period when the Company fails to have maintained an effective Registration Statement or a current Prospectus relating thereto and the Holder desires to exercise the Warrant and, in the opinion of counsel to the Holder, Rule 144 is not available as an exemption from registration for the resale of the Warrant Shares held by the Holder, the Company shall immediately file a registration statement registering the resale of the Warrant Shares and use its best efforts to have it declared effective by the Commission within 30 days.

(b) Demand Registration Rights. To the extent the Company does not maintain an effective registration statement for the Warrant Shares, then for a period commencing on the Initial Exercise Date and terminating on the Termination Date, the Holder is entitled to one “demand” registration right at the Company’s expense, and additional “demand” registration rights at the Holder’s expense. Upon receipt of a demand registration request from the registered Holder, the Company shall file a registration statement on Form S-3 (“Form S-3”) or, if Form S-3 is not available, on any other appropriate form, including Form S-1, and cause such registration statement to become effective in an expeditious manner. A registration requested pursuant to this Section 5(b) shall not be deemed to have been effected: (i) unless a registration statement with respect thereto has become effective or (ii) if, after it has become effective, such registration is interfered with by any stop order, injunction or other order or requirement of the SEC or other governmental agency or court of competent jurisdiction for any reason, other than by reason of some act or omission by the Holder.

(c) Piggyback Registration Rights. To the extent the Company does not maintain an effective registration statement for the Warrant Shares and in the further event that the Company files a registration statement with the Securities and Exchange Commission covering the sale of its shares of Common Stock (other than a registration statement on Form S-4 or S-8, or on another form, or in another context, in which such “piggyback” registration would be inappropriate), then, for a period commencing on the Initial Exercise Date and terminating on the seventh (7th) anniversary of the Effective Date, the Company shall give written notice of such proposed filing to the holders of Warrant Shares as soon as practicable but in no event less than twenty (20) days before the anticipated filing date, which notice shall describe the amount and type of securities to be included in such offering, the intended method(s) of distribution, and the name of the proposed managing underwriter or underwriters, if any, of the offering, and offer to the holders of Warrant Shares in such notice the opportunity to register the sale of such number of shares of Warrant Shares as such holders may request in writing within ten (10) days following receipt of such notice (a “Piggyback Registration”). The Company shall cause such Warrant Shares to be included in such registration and shall use its best efforts to cause the managing underwriter or underwriters of a proposed underwritten offering to permit the Warrant Shares requested to be included in a Piggyback Registration on the same terms and conditions as any similar securities of the Company and to permit the sale or other disposition of such Warrant Shares in accordance with the intended method(s) of distribution thereof. All holders of Warrant Shares proposing to distribute their securities through a Piggyback Registration that involves an underwriter or underwriters shall enter into an underwriting agreement in customary form with the underwriter or underwriters selected for such Piggyback Registration.

(a) No Rights as Stockholder until Exercise. This Warrant does not entitle the Holder to any voting rights, dividend rights or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2, except as expressly set forth in Section 3.

(b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

(c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a business day, then, such action may be taken or such right may be exercised on the next succeeding business day.

(d) Authorized Shares. The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of executing stock certificates to execute and issue the necessary Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such commercially reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the Common Stock may be listed. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending 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 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 actions as may be necessary or appropriate to protect the rights of the Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any Warrant Shares above the amount payable therefor upon the exercise of this Warrant, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all authorizations, exemptions or consents from any regulatory body having jurisdiction thereof, as may be necessary to enable the Company to perform its obligations under this Warrant.

Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations therefor, exemptions thereof and consents thereto, as may be necessary from any regulatory body having jurisdiction thereof.

(e) Jurisdiction. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be determined in accordance with the laws of the State of New York, without regard to conflict of laws principles, and federal or state courts sitting in the City of New York shall have exclusive jurisdiction over matters arising out of this Warrant.

(f) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant, if not registered, and the Holder does not utilize cashless exercise, will have restrictions upon resale imposed by state and federal securities laws.

(g) Nonwaiver and Expenses. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies. Without limiting any other provision of this Warrant or the Agreement, if the Company willfully and knowingly fails to comply with any provision of this Warrant, which results in any material damages to the Holder, the Company shall pay to the Holder such amounts as shall be sufficient to cover any costs and expenses including, but not limited to, reasonable attorneys' fees, including those of appellate proceedings, incurred by the Holder in collecting any amounts due pursuant hereto or in otherwise enforcing any of its rights, powers or remedies hereunder.

(h) Notices. Any notice, request or other document required or permitted to be given or delivered to the Holder by the Company shall be delivered in accordance with the notice provisions of the Agreement.

(i) Limitation of Liability. No provision hereof, in the absence of affirmative action by the Holder sufficient to exercise this Warrant to purchase Warrant Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

(j) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance or other equitable remedy that a remedy at law would be adequate.

(k) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

(l) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company and the Holder.

(m) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Warrant.

(n) Headings. The headings used in this Warrant are for reference only and shall not, for any purpose, be deemed a part of this Warrant.

(Signature Page Follows)

IN WITNESS WHEREOF, the Company has caused this Warrant to be executed by its officer thereunto duly authorized as of the date first above indicated.

OPGEN, INC.

By: /s/ Evan Jones
Name: Evan Jones
Title: Chief Executive Officer

NOTICE OF EXERCISE

TO: OPGEN, INC.

(1) The undersigned hereby elects to purchase _____ Warrant Shares of the Company pursuant to the terms of the attached Warrant, dated May 4, 2015, and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

- lawful money of the United States by wire transfer or cashier's check drawn on a United States bank; or
- if permitted by the terms of the Warrant, the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c) of the Warrant, to exercise the Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c) of the Warrant.

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name or names as is specified below:

The Warrant Shares shall be delivered to the following DWAC Account Number: _____

[SIGNATURE OF HOLDER:]

Name of Holder: _____

Signature of Authorized Signatory: _____

Name of Authorized Signatory: _____

Title of Authorized Signatory: _____

Date: _____



ASSIGNMENT FORM

(To assign the foregoing Warrant, execute this form and supply the required information. Do not use this form to exercise the Warrant.)

FOR VALUE RECEIVED, all of or a [____] portion of the foregoing Warrant and all rights evidenced thereby are hereby assigned to

_____, whose address is

[SIGNATURE OF HOLDER:]

Name of Holder: _____

Signature of Authorized Signatory: _____

Name of Authorized Signatory: _____

Title of Authorized Signatory: _____

Date: _____

Signature Guaranteed: _____

NOTE: The signature to this Assignment Form must correspond with the name as it appears on the face of the Warrant, without alteration or enlargement or any change whatsoever, and must be guaranteed by a bank or trust company. Officers of corporations and those acting in a fiduciary or other representative capacity should file proper evidence of authority to assign the foregoing Warrant.

WARRANT AGREEMENT

THIS WARRANT AGREEMENT (this “**Agreement**”), dated as of May 8, 2015, is by and between OpGen, Inc., a Delaware corporation (the “**Company**”), and Philadelphia Stock Transfer, Inc., a Pennsylvania corporation, as Warrant Agent (the “**Warrant Agent**”).

WHEREAS, the Company is engaged in a public offering (the “**Offering**”) of units consisting of common stock of the Company, par value \$0.01 per share (“**Common Stock**”) and warrants to purchase shares of Common Stock of the Company (“**Warrants**”) and, in connection therewith, has determined to issue and deliver up to 3,277,500 Warrants to public investors in the Offering, each such Warrant evidencing the right of the holder thereof to purchase one share of Common Stock of the Company for \$6.60 per share, subject to adjustment as described herein, and

WHEREAS, the Company has filed with the Securities and Exchange Commission (the “**Commission**”) a registration statement, as amended, on Form S-1, No. 333-202478 (the “**Registration Statement**”) and prospectus (the “**Prospectus**”), for the registration, under the Securities Act of 1933, as amended (the “**Securities Act**”), of the units to be sold in the Offering, the shares of Common Stock included in the units to be sold in the Offering, and the Warrants included in the units to be sold in the Offering and the shares of Common Stock underlying the Warrants; and

WHEREAS, the Company desires the Warrant Agent to act on behalf of the Company, and the Warrant Agent is willing to so act, in connection with the issuance, registration, transfer, exchange and exercise of the Warrants; and

WHEREAS, the Company desires to provide for the form and provisions of the Warrants, the terms upon which they shall be issued and exercised, and the respective rights, limitation of rights, and immunities of the Company, the Warrant Agent, and the holders of the Warrants (each a “**Holder**”), and

WHEREAS, all acts and things have been done and performed which are necessary to make the Warrants, when executed on behalf of the Company and countersigned by or on behalf of the Warrant Agent, as provided herein, the valid, binding and legal obligations of the Company, and to authorize the execution and delivery of this Agreement.

NOW, THEREFORE, in consideration of the mutual agreements herein contained, the parties hereto agree as follows:

1. Appointment of Warrant Agent. The Company hereby appoints the Warrant Agent to act as agent for the Company for the Warrants, and the Warrant Agent hereby accepts such appointment and agrees to perform the same in accordance with the terms and conditions set forth in this Agreement.

2. Warrants.

2.1 Form of Warrant. Each Warrant shall be issued in registered form only and shall be in substantially the form of Exhibit A hereto, the provisions of which are incorporated herein. Each Warrant shall be signed by, or bear the facsimile signature of, the Chairman of the Board, President, Chief Executive Officer, Secretary or other principal officer of the Company. In the event the person whose facsimile signature has been placed upon any Warrant shall have ceased to serve in the capacity in which such person signed the Warrant before such Warrant is issued, it may be issued with the same effect as if he or she had not ceased to be such at the date of issuance. All of the Warrants shall initially be represented by one or more book-entry certificates (each a “Book Entry Warrant Certificate”). Warrants held by certain affiliates of the Company shall be recorded in “restricted” book-entry form by the Warrant Agent.

2.2 Effect of Countersignature. Unless and until countersigned by the Warrant Agent pursuant to this Agreement, a Warrant shall be invalid and of no effect and may not be exercised by the holder thereof.

2.3 Registration.

2.3.1 Warrant Register. The Warrant Agent shall maintain books (the “**Warrant Register**”), for the registration of original issuance and the registration of transfer of the Warrants. Upon the initial issuance of the Warrants, the Warrant Agent shall issue and register the Warrants in the names of the respective holders thereof in such denominations and otherwise in accordance with instructions delivered to the Warrant Agent by the Company. To the extent the Warrants are DTC eligible as of the Issuance Date, all of the Warrants shall be represented by one or more Book Entry Warrant Certificate deposited with the Depository Trust Company (“DTC”) and registered in the name of its nominee, CEDE & Co. Ownership of beneficial interests in the Book-Entry Warrant Certificates shall be shown on, and the transfer of such ownership shall be effected through, records maintained (i) by Depository Trust Company or its nominee for each Book-Entry Warrant Certificate; (ii) by institutions that have accounts with DTC, or (iii) directly on the book-entry records of the Warrant Agent with respect only to owners of beneficial interests that represent such direct registration.

2.3.2 Registered Holder. Prior to due presentment for registration of transfer of any Warrant, the Company and the Warrant Agent may deem and treat the person in whose name such Warrant is registered in the Warrant Register (the “**Registered Holder**”) as the absolute owner of such Warrant and of each Warrant represented thereby (notwithstanding any notation of ownership or other writing on the Warrant Certificate (as defined below) made by anyone other than the Company or the Warrant Agent), for the purpose of any exercise thereof, and for all other purposes, and neither the Company nor the Warrant Agent shall be affected by any notice to the contrary.

3. Terms and Exercise of Warrants.

- 3.1 Exercise Price. Each Warrant shall, when countersigned by the Warrant Agent, entitle the Registered Holder thereof, subject to the provisions of such Warrant and of this Warrant Agreement, to purchase from the Company the number of shares of Common Stock stated therein, at the price of \$6.60 per share, subject to the adjustments provided herein. The term “**Exercise Price**” as used in this Warrant Agreement shall mean the price per share at which shares of Common Stock may be purchased at the time a Warrant is exercised.
- 3.2 Duration of Warrants. A Warrant may be exercised only during the period (the “**Exercise Period**”) commencing on the date of issuance thereof and ending on the earlier of: (a) May 5, 2020; or (b) upon the dissolution and winding up of the Company (the “**Expiration Date**”); provided, however, that the exercise of any Warrant shall be subject to the satisfaction of any applicable conditions, as set forth in subsection 3.3.2 below with respect to an effective registration statement. Each Warrant not exercised on or before the Expiration Date shall become void, and all rights thereunder and all rights in respect thereof under this Agreement shall cease at 5:00 p.m. New York City time on the Expiration Date.
- 3.3 Exercise of Warrants.
- 3.3.1 Payment. Subject to the provisions of the Warrant and this Warrant Agreement, a Warrant, when countersigned by the Warrant Agent, may be exercised by the Registered Holder thereof by submitting a duly executed election to purchase attached to the applicable Warrant, at the office of the Warrant Agent in the City of Ardmore, Commonwealth of Pennsylvania, which may be done by fax or email delivery, and by paying, within two days of the date of exercise, in full the Exercise Price for each full share of Common Stock as to which the Warrant is exercised, in lawful money of the United States, by wire transfer or in good certified check or good bank draft payable to the order of the Company or by Cashless Exercise in accordance with Section 3.2.2 hereof. The Registered Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. Upon delivery of an exercise notice, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which a Warrant has been exercised, irrespective of the date such Warrant Shares are credited to the Holder’s DTC account or the date of delivery of the certificates evidencing such Warrant Shares (as the case may be).
- 3.3.2 Cashless Exercise. Notwithstanding anything contained herein to the contrary, if and only if an effective registration statement covering the issuance of the shares of Common Stock that are subject to the exercise notice is not available for the issuance of such shares of Common Stock, the Registered Holder may exercise this Warrant in whole or in part and, in lieu of making the cash payment otherwise contemplated to be made to the Company upon such exercise in payment of the aggregate Exercise Price, elect instead to receive upon such exercise the “Net Number” of shares of Common Stock determined according to the following formula (a “**Cashless Exercise**”):

$$\text{Net Number} = \frac{(A \times B) - (A \times C)}{B}$$

For purposes of the foregoing formula:

A = the total number of shares with respect to which this Warrant is then being exercised.

B = the arithmetic average of the Closing Sale Prices (as defined below) of the Common Stock for the five (5) consecutive Trading Days ending on the date immediately preceding the date of the Exercise Notice.

C = the Exercise Price then in effect for the applicable shares of Common Stock at the time of such exercise.

The term “**Closing Sale Price**” means, for any security as of any date, the last closing bid price and last closing trade price, respectively, for such security on the Nasdaq Capital Market, as reported by Bloomberg, or, if the Nasdaq Capital Market begins to operate on an extended hours basis and does not designate the closing bid price or the closing trade price, as the case may be, then the last bid price or the last trade price, respectively, of such security prior to 4:00:00 p.m., New York time, as reported by Bloomberg, or, if the Nasdaq Capital Market is not the principal securities exchange or trading market for such security, the last closing bid price or last trade price, respectively, of such security on the principal securities exchange or trading market where such security is listed or traded as reported by Bloomberg, or if the foregoing do not apply, the last closing bid price or last trade price, respectively, of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg, or, if no closing bid price or last trade price, respectively, is reported for such security by Bloomberg, the average of the bid prices, or the ask prices, respectively, of any market makers for such security as reported in the OTC Link or “pink sheets” by OTC Markets Group Inc. (formerly Pink OTC Markets Inc.). If the Closing Sale Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Sale Price of such security on such date shall be the fair market value as mutually determined by the Company and the Registered Holder. If the Company and the Registered Holder are unable to agree upon the fair market value of such security, then such dispute shall be resolved pursuant to Section 8.3 hereof. All such determinations to be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during the applicable calculation period.

For purposes of Rule 144(d) promulgated under the Securities Act, as in effect on the date hereof, assuming the Registered Holder is not an affiliate of the Company, the shares of Common Stock issued in a Cashless Exercise shall be deemed to have been acquired by the Registered Holder, and the holding period for the shares of Common Stock shall be deemed to have commenced, on the date this Warrant was originally issued.

- 3.3.3 Issuance of Common Stock on Exercise. Assuming funds for exercise are paid on or before the second trading day following the date of receipt by the Company of an exercise notice, then on or before the third trading day following the date upon which the Company has received an exercise notice for a Warrant, the Company shall cause its transfer agent to (i) provided that the transfer agent is participating in The Depository Trust Company (“DTC”) Fast Automated Securities Transfer Program, and the Warrant holder’s broker has correctly initiated said deposit, credit such aggregate number of shares of Common Stock to which the Holder is entitled pursuant to such exercise to the Holder’s or its designee’s balance account with DTC through its Deposit/Withdrawal at Custodian System, or (ii) if the transfer agent is not participating in the DTC Fast Automated Securities Transfer Program, issue and deliver to the Holder, or at the Holder’s instruction pursuant to the delivered exercise notice, the Holder’s agent or designee, in each case pursuant to this clause (ii), sent by reputable overnight courier to the address specified in the applicable exercise notice, a certificate, registered in the Company’s share register in the name of the Holder or its designee (as indicated in the applicable exercise notice), for the number of shares of Common Stock to which the Holder is entitled pursuant to such exercise.
- 3.3.4 Valid Issuance. All Common Stock issued or issuable upon the proper exercise of a Warrant in conformity with this Agreement shall be validly issued, fully paid and nonassessable.
- 3.3.5 Date of Issuance. Each person in whose name any certificate for the Common Stock is issued shall for all purposes be deemed to have become the holder of record of such Common Stock on the date on which the Warrant was surrendered and, other than in the case of a Cashless Exercise, payment of the Exercise Price was made, irrespective of the date of delivery of such certificate, except that, if the date of such surrender and payment is a date when the share transfer books of the Company are closed, such person shall be deemed to have become the holder of such shares at the close of business on the next succeeding date on which the share transfer books are open.

3.3.6 **Share Delivery Failure.** If the Company shall fail, for any reason or for no reason, to issue to the Holder within three (3) trading days after receipt of the applicable exercise notice (the “**Share Delivery Deadline**”), a certificate for the number of shares of Common Stock to which the Holder is entitled upon Holder’s exercise of a Warrant or credit the Holder’s balance account with DTC for such number of shares of Common Stock to which the Holder is entitled upon the Holder’s exercise of this Warrant (as the case may be, but in each case without a restrictive legend) (a “**Delivery Failure**”), and if on such or after such Share Delivery Deadline the Holder purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of all or any portion of the number of shares of Common Stock issuable upon such exercise that the Holder so anticipated receiving from the Company, then, in addition to all other remedies available to it, the Company shall, within three (3) Business Days after the Holder’s request and in the Holder’s discretion, either (i) pay cash to the Holder in an amount equal to 100% of the Holder’s total purchase price (including brokerage commissions and other out-of-pocket expenses, if any) for the shares of Common Stock so purchased (including, without limitation, by any other person in respect, or on behalf, of the Holder) (the “**Buy-In Price**”), at which point the Company’s obligation to so issue and deliver such certificate or credit the Holder’s balance account with DTC for the number of shares of Common Stock to which the Holder is entitled upon the Holder’s exercise hereunder (as the case may be) (and to issue such shares of Common Stock) shall terminate, or (ii) promptly honor its obligation to so issue and deliver to the Holder a certificate or certificates representing such shares of Common Stock or credit the Holder’s balance account with DTC for the number of shares of Common Stock to which the Holder is entitled upon the Holder’s exercise hereunder (as the case may be) and pay cash to the Holder in an amount equal to the excess (if any) of the Buy-In Price over the product of (A) such number of shares of Common Stock multiplied by (B) the lowest Closing Sale Price of the shares of Common Stock on any trading day during the period commencing on the date of the applicable exercise notice and ending on the date immediately preceding the date of such issuance and payment under this clause (ii).

3.4 Beneficial Ownership Limitation on Exercises. The Company shall not affect the exercise of any portion of a Warrant, and the Registered Holder of such Warrant shall not have the right to exercise any portion of such Warrant, to the extent that after giving effect to such exercise, the Registered Holder (together with the Registered Holder's affiliates, and any persons acting as a group together with the Holder or any Registered Holder's affiliates) would beneficially own in excess of 4.99% (the "**Maximum Percentage**") of the Common Stock outstanding immediately after giving effect to such exercise, provided, however, that the foregoing limitation on exercise shall not apply to any Registered Holder who, together with such Registered Holder's affiliates, and any persons acting as a group together with such Registered Holder and such Registered Holder's affiliates, owns in excess of the Maximum Percentage immediately prior to the closing of the Offering. For purposes of the foregoing sentence, the aggregate number of shares of Common Stock beneficially owned by such Registered Holder and its affiliates shall include the number of shares of Common Stock issuable upon exercise of the Warrant with respect to which the determination of such sentence is being made, but shall exclude shares of Common Stock which would be issuable upon (i) exercise of the remaining, unexercised portion of the Warrant beneficially owned by the Registered Holder and its affiliates and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company beneficially owned by the Registered Holder and its affiliates (including, without limitation, any convertible notes or convertible preferred stock or warrants) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Registered Holder or any of its affiliates. Except as set forth in the preceding sentence, for purposes of this paragraph, beneficial ownership shall be calculated in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"). To the extent that the limitation contained in this Section 3.4 applies, the Registered Holder's submission of an Election to Purchase shall be deemed to be the Registered Holder's determination of whether a Warrant is exercisable (in relation to any other securities owned by the Registered Holder together with any affiliates) and of which portion of a Warrant is exercisable, in each case subject to the Maximum Percentage, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of the Warrants, in determining the number of outstanding shares of Common Stock, the Registered Holder may rely on the number of outstanding shares of Common Stock as reflected in the most recent of (1) the Company's most recent Form 10-K, Form 10-Q, Current Report on Form 8-K or other public filing with the Commission, as the case may be, (2) a more recent public announcement by the Company or (3) any other notice by the Company or its transfer agent setting forth the number of shares of Common Stock outstanding. For any reason at any time, upon the written or oral request of the Registered Holder, the Company shall within three (3) trading days confirm to the Registered Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including any Warrant, by the Registered Holder and its affiliates since the date as of which such number of outstanding shares of Common Stock was reported. By written notice to the Company, the Registered Holder may from time to time increase or decrease the Maximum Percentage to any other percentage of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of a Warrant and the provisions of this Section 3.4 shall continue to apply; provided that (i) any such increase will not be effective until the sixty-first (61st) day after such notice is delivered to the Company, and (ii) any such increase or decrease will apply only to that Registered Holder. For purposes of clarity, the Common Stock underlying any Warrant in excess of the Maximum Percentage for a Registered Holder shall not be deemed to be beneficially owned by that Registered Holder for any purpose including for purposes of Section 13(d) or Rule 16a-1(a)(1) of the Exchange Act. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 3.4 to the extent necessary to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended beneficial ownership limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation.

4. Adjustments.

4.1 Stock Dividends.

- 4.1.1 Split-Ups. If after the date hereof, and subject to the provisions of Section 4.5 below, the number of outstanding shares of Common Stock is increased by a stock dividend payable in Common Stock, or by a split-up of Common Stock or other similar event, then, on the effective date of such stock dividend, split-up or similar event, the number of shares of Common Stock issuable on exercise of each Warrant shall be increased in proportion to such increase in the outstanding shares of Common Stock and the Exercise Price shall be proportionally decreased such that the aggregate Exercise Price, after such adjustments, remains the same for each Warrant.
- 4.1.2 Dividends and Other Distributions. If the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction), except to the extent an adjustment was already made pursuant to Section 4.1.1 or 4.2 (a “**Distribution**”), at any time after the issuance of this Warrant, then, in each such case, the Company shall reserve and put aside the maximum Distribution amount the Holder would have been entitled to receive if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Maximum Percentage) immediately before the date on which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of Common Stock are to be determined for the participation in such Distribution. Upon exercise of this Warrant, in whole or in part, the Company shall, contemporaneously with the delivery of the Warrant Shares, distribute to the Holder a pro rata portion of such Distribution based on the portion of the Warrant that has been exercised (provided, however, to the extent that the Holder’s right to participate in any such Distributions would result in the Holder exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Distribution at such time and to such extent (or the beneficial ownership of any such Common Stock as a result of such Distribution to such extent) and such Distribution to such extent shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Maximum Percentage, at which time or times the Holder shall be granted such Distribution (and any Distributions declared or made on such initial Distribution or on any subsequent Distribution to be held similarly in abeyance) to the same extent as if there had been no such limitation).

- 4.2 Aggregation of Shares. If after the date hereof, and subject to the provisions of Section 4.5 hereof, the number of outstanding shares of Common Stock is decreased by a consolidation, combination, reverse stock split or reclassification of Common Stock or other similar event, then, on the effective date of such consolidation, combination, reverse stock split, reclassification or similar event, the number of shares of Common Stock issuable on exercise of each Warrant shall be decreased in proportion to such decrease in outstanding shares of Common Stock and the Exercise Price shall be proportionally increased such that the aggregate Exercise Price, after such adjustments, remains the same for each Warrant.
- 4.3 Purchase Rights. If at any time the Company grants, issues or sells any options, convertible securities or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of Common Stock (the “**Purchase Rights**”), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Maximum Percentage) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, to the extent that the Holder’s right to participate in any such Purchase Right would result in the Holder exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Maximum Percentage, at which time or times the Holder shall be granted such right (and any Purchase Right granted, issued or sold on such initial Purchase Right or on any subsequent Purchase Right to be held similarly in abeyance) to the same extent as if there had been no such limitation).

4.4 **Fundamental Transactions.** If, at any time while the Warrants are outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another person, (ii) the Company, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another person or group of persons whereby such other person or group acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other person or other persons making or party to, or associated or affiliated with the other persons making or party to, such stock or share purchase agreement or other business combination) (each a “**Fundamental Transaction**”), then, upon any subsequent exercise of a Warrant, the Registered Holder of each Warrant shall have the right to receive, for each share of Common Stock that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the Registered Holder (without regard to any limitation in Section 3.4 on the exercise of the Warrants), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the “**Alternate Consideration**”) receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which a Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 3.4 on the exercise of the Warrants). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then each Registered Holder shall be given the same choice as to the Alternate Consideration such Registered Holder receives upon any exercise of a Warrant following such Fundamental Transaction. Notwithstanding anything to the contrary, in the event of a Fundamental Transaction, the Company shall, at a Registered Holder’s option, exercisable at any time prior to the consummation of the Fundamental Transaction, purchase such Registered Holder’s Warrant immediately prior to the consummation of such Fundamental Transaction from the Registered Holder by paying cash by wire transfer of immediately available funds in an amount equal to the Black Scholes Value of the remaining unexercised portion of such Registered Holder’s Warrant immediately prior to the consummation of such Fundamental Transaction. “**Black Scholes Value**” means the value of a Warrant based on the Black and Scholes Option Pricing Model obtained from the “OV” function on Bloomberg, L.P. (“**Bloomberg**”) determined immediately prior to the consummation of the applicable Fundamental Transaction for pricing purposes and reflecting (A) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Expiration Date, (B) an expected volatility equal to the greater of 100% and the 100 day volatility obtained from the HVT function on Bloomberg as of the trading day immediately following the public announcement of the applicable Fundamental Transaction, (C) the underlying price per share used in such calculation shall be the sum of the price per share of Common Stock being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Fundamental Transaction (the “**FMV**”) and (D) a remaining option time equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Expiration Date. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the “**Successor Entity**”) to assume in writing all obligations of the Company under each Warrant in accordance with the provisions of this Section 4.3 pursuant to agreements in form and substance reasonably satisfactory to the Registered Holders and approved by the Registered Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of each Registered Holder, deliver to such Registered Holder in exchange for such Registered Holder’s Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to such Registered Holder’s Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of such Warrant (without regard to the limitations on exercise set forth in Section 3.4) prior to such Fundamental Transaction, and with an exercise price which applies the Exercise Price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of such Warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Registered Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Agreement and each Warrant referring to the “Company” shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Agreement and each Warrant with the same effect as if such Successor Entity had been named as the Company herein.

- 4.5 Calculations. All calculations under this Section 4 shall be made to the nearest cent or the nearest whole share, as the case may be. For purposes of this Section 4, any calculation of the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall not include treasury shares, if any. Notwithstanding anything to the contrary in this Section 4, no adjustment in the Exercise Price shall be required unless such adjustment would require an increase or decrease of at least 1% in such price; provided however, that any adjustments which by reason of the immediately preceding sentence are not required to be made shall be carried forward and taken into account in any subsequent adjustment. In any case in which this Section 4 shall require that an adjustment in the Exercise Price be made effective as of a record date for a specified event, if the Registered Holder exercises a Warrant after such record date, the Company may elect to defer, until the occurrence of such event, the issuance of the shares of Common Stock and other capital stock of the Company in excess of the shares of Common Stock and other capital stock of the Company, if any, issuable upon such exercise on the basis of the Exercise Price in effect prior to such adjustment; provided, however, that in such case the Company or the Warrant Agent shall deliver to the Registered Holder a due bill or other appropriate instrument evidencing the Registered Holder's right to receive such additional shares and/or other capital securities upon the occurrence of the event requiring such adjustment.
- 4.6 Notices of Changes in Warrant. Upon every adjustment of the Exercise Price or the number of shares issuable upon exercise of a Warrant, the Company shall give written notice thereof to the Warrant Agent, which notice shall state the Exercise Price resulting from such adjustment and the increase or decrease, if any, in the number of shares purchasable at such price upon the exercise of a Warrant, setting forth in reasonable detail the method of calculation and the facts upon which such calculation is based. Upon occurrence of any event specified in Sections 4.1, 4.2 or 4.3, the Company shall give written notice of the occurrence of such event to each Warrant holder, at the last address set forth for such holder in the Warrant Register, of the record date or the effective date of the event. Failure to give such notice, or any defect therein, shall not affect the legality or validity of such event.
- 4.7 No Fractional Shares. Notwithstanding any provision contained in this Warrant Agreement to the contrary, the Company shall not issue fractional shares upon exercise of Warrants. If, by reason of any adjustment made pursuant to this Section 4, the holder of any Warrant would be entitled, upon the exercise of such Warrant, to receive a fractional interest in a share, the Company shall, upon such exercise, round to the nearest whole number, the number of the shares of Common Stock to be issued to such holder.
- 4.8 Form of Warrant. The form of Warrant need not be changed because of any adjustment pursuant to this Section 4, and Warrants issued after such adjustment may state the same Exercise Price and the same number of shares as is stated in the Warrants initially issued pursuant to this Agreement.

4.9 Other Events. In case any event shall occur affecting the Company as to which none of the provisions of preceding subsections of this Section 4 are strictly applicable, but which would require an adjustment to the terms of the Warrants in order to (i) avoid an adverse impact on the Warrants and (ii) effectuate the intent and purpose of this Section 4, then, in each such case, the Company shall appoint a firm of independent public accountants, investment banking or other appraisal firm of recognized national standing, which shall give its opinion as to whether or not any adjustment to the rights represented by the Warrants is necessary to effectuate the intent and purpose of this Section 4 and, if they determine that an adjustment is necessary, the terms of such adjustment. The Company shall adjust the terms of the Warrants in a manner that is consistent with any adjustment recommended in such opinion.

5. Transfer and Exchange of Warrants.

- 5.1 Registration of Transfer. The Warrant Agent shall register the transfer, from time to time, of any outstanding Warrant upon the Warrant Register, upon surrender of such Warrant for transfer, properly endorsed with signatures properly guaranteed and accompanied by appropriate instructions for transfer. Upon any such transfer, a new Warrant representing an equal aggregate number of Warrants shall be issued and the old Warrant shall be cancelled by the Warrant Agent. The Warrants so cancelled shall be delivered by the Warrant Agent to the Company from time to time upon request.
- 5.2 Procedure for Surrender of Warrants. Warrants may be surrendered to the Warrant Agent, together with a written request for exchange or transfer, and thereupon the Warrant Agent shall issue in exchange therefor one or more new Warrants as requested by the Registered Holder of the Warrants so surrendered, representing an equal aggregate number of Warrants.
- 5.3 Fractional Warrants. The Warrant Agent shall not be required to effect any registration of transfer or exchange which shall result in the issuance of a warrant certificate for a fraction of a warrant.
- 5.4 Warrant Execution and Countersignature. The Warrant Agent is hereby authorized to countersign and to deliver, in accordance with the terms of this Agreement, the Warrants required to be issued pursuant to the provisions of this Section 5.

6. Other Provisions Relating to Rights of Holders of Warrants.

- 6.1 No Rights as Stockholder. A Warrant does not entitle the Registered Holder thereof to any of the rights of a stockholder of the Company, including, without limitation, except as otherwise set forth herein or in any Warrant, the right to receive dividends, or other distributions, exercise any preemptive rights to vote or to consent or to receive notice as stockholders in respect of the meetings of stockholders or the election of directors of the Company or any other matter.
- 6.2 Lost, Stolen, Mutilated, or Destroyed Warrants. If any Warrant is lost, stolen, mutilated, or destroyed, the Company and the Warrant Agent may on such terms as to indemnity bond or otherwise as they may in their discretion impose (which shall, in the case of a mutilated Warrant, include the surrender thereof), issue a new Warrant of like denomination, tenor, and date as the Warrant so lost, stolen, mutilated, or destroyed. Any such new Warrant shall constitute a substitute contractual obligation of the Company, whether or not the allegedly lost, stolen, mutilated, or destroyed Warrant shall be at any time enforceable by anyone.
- 6.3 Reservation of Common Stock. The Company shall at all times reserve and keep available a number of its authorized but unissued shares of Common Stock that shall be sufficient to permit the exercise in full of all outstanding Warrants issued pursuant to this Agreement.
- 6.4 Registration of Common Stock. The Company registered the Warrants and shares of Common Stock underlying the Warrants in the Registration Statement. The Company will use its reasonable best efforts to maintain the effectiveness of such Registration Statement and the current status of the Prospectus or to file and maintain the effectiveness of another registration statement and another current prospectus covering the shares of Common Stock issuable upon exercise of the Warrants at any time that the Warrants are exercisable. In addition, the Company agrees to use its reasonable best efforts to register such shares of Common Stock under the blue sky laws of the states of residence of the exercising Warrant holders to the extent an exemption from such registration is not available. If at any time, the Company does not have an effective registration statement covering the shares of Common Stock underlying the Warrants, and Rule 144 is not available to cover such shares of Common Stock due to the failure of the Company to be currently reporting under the Securities Exchange Act of 1934 (“**Public Information Failure**”), then the Company shall pay in cash by wire transfer of immediately available funds an amount per month equal to 1% of the aggregate VWAP of the shares into which a Warrant is converted which are not able to be delivered without legend because of such Public Information Failure to the Holder thereof until such shares are able to be delivered without legend (to be pro-rated for any periods which are less than one month).

7. Concerning the Warrant Agent and Other Matters.

- 7.1 Payment of Taxes. The Company shall from time to time promptly pay all taxes and charges that may be imposed upon the Company or the Warrant Agent in respect of the issuance or delivery of shares of Common Stock upon the exercise of the Warrants, but the Company shall not be obligated to pay any transfer taxes in respect of the Warrants or such shares.
- 7.2 Resignation, Consolidation, or Merger of Warrant Agent.
- 7.2.1 Appointment of Successor Warrant Agent. The Warrant Agent, or any successor hereafter appointed, may resign its duties and be discharged from all further duties and liabilities hereunder after giving sixty (60) days' notice in writing to the Company. If the office of the Warrant Agent becomes vacant by resignation or incapacity to act or otherwise, the Company shall appoint in writing a successor Warrant Agent in place of the Warrant Agent. If the Company shall fail to make such appointment within a period of thirty (30) days after it has been notified in writing of such resignation or incapacity by the Warrant Agent or by the holder of a Warrant (who shall, with such notice, submit his Warrant for inspection by the Company), then the holder of any Warrant may apply to the Supreme Court of the State of New York for the County of New York for the appointment of a successor Warrant Agent at the Company's cost. Any successor Warrant Agent, whether appointed by the Company or by such court, shall be a corporation in good standing in the State of _____ and having its principal office in the City of _____, and authorized under such laws to exercise corporate trust powers and subject to supervision or examination by federal or state authority. After appointment, any successor Warrant Agent shall be vested with all the authority, powers, rights, immunities, duties, and obligations of its predecessor Warrant Agent with like effect as if originally named as Warrant Agent hereunder, without any further act or deed; but if for any reason it becomes necessary or appropriate, the predecessor Warrant Agent shall execute and deliver, at the expense of the Company, an instrument transferring to such successor Warrant Agent all the authority, powers, and rights of such predecessor Warrant Agent hereunder; and upon request of any successor Warrant Agent the Company shall make, execute, acknowledge, and deliver any and all instruments in writing for more fully and effectually vesting in and confirming to such successor Warrant Agent all such authority, powers, rights, immunities, duties, and obligations.
- 7.2.2 Notice of Successor Warrant Agent. In the event a successor Warrant Agent shall be appointed, the Company shall give notice thereof to the predecessor Warrant Agent and the transfer agent for the Common Stock not later than the effective date of any such appointment.
- 7.2.3 Merger or Consolidation of Warrant Agent. Any company into which the Warrant Agent may be merged or with which it may be consolidated or any corporation resulting from any merger or consolidation to which the Warrant Agent shall be a party shall be the successor Warrant Agent under this Agreement without any further act.

7.3 Fees and Expenses of Warrant Agent.

- 7.3.1 Remuneration. The Company agrees to pay the Warrant Agent reasonable remuneration for its services as such Warrant Agent hereunder and any transfer agent fees which are in addition thereto and shall, pursuant to its obligations under this Agreement, reimburse the Warrant Agent upon demand for all expenditures that the Warrant Agent may reasonably incur in the execution of its duties hereunder.
- 7.3.2 Further Assurances. The Company agrees to perform, execute, acknowledge, and deliver or cause to be performed, executed, acknowledged, and delivered all such further and other acts, instruments, and assurances as may reasonably be required by the Warrant Agent for the carrying out or performing of the provisions of this Agreement.

7.4 Liability of Warrant Agent.

- 7.4.1 Reliance on Company Statement. Whenever in the performance of its duties under this Agreement, the Warrant Agent shall deem it necessary or desirable that any fact or matter be proved or established by the Company prior to taking or suffering any action hereunder, such fact or matter (unless other evidence in respect thereof be herein specifically prescribed) may be deemed to be conclusively proved and established by a statement signed by the President or Chairman of the Board of the Company and delivered to the Warrant Agent. The Warrant Agent may rely upon such statement for any action taken or suffered in good faith by it pursuant to the provisions of this Agreement.
- 7.4.2 Indemnity. The Warrant Agent shall be liable hereunder only for its own gross negligence, willful misconduct or bad faith. The Company agrees to indemnify the Warrant Agent and save it harmless against any and all liabilities, including judgments, costs and reasonable counsel fees, for anything done or omitted by the Warrant Agent in the execution of this Agreement, except as a result of the Warrant Agent's gross negligence, willful misconduct or bad faith.
- 7.4.3 Exclusions. The Warrant Agent shall have no responsibility with respect to the validity of this Agreement or with respect to the validity or execution of any Warrant (except its countersignature thereof). The Warrant Agent shall not be responsible for any breach by the Company of any covenant or condition contained in this Agreement or in any Warrant. The Warrant Agent shall not be responsible to make any adjustments required under the provisions of Section 4 hereof or responsible for the manner, method, or amount of any such adjustment or the ascertaining of the existence of facts that would require any such adjustment; nor shall it by any act hereunder be deemed to make any representation or warranty as to the authorization or reservation of any shares of Common Stock to be issued pursuant to this Agreement or any Warrant or as to whether any shares of Common Stock shall, when issued, be valid and fully paid and nonassessable.

7.5 Acceptance of Agency. The Warrant Agent hereby accepts the agency established by this Agreement and agrees to perform the same upon the terms and conditions herein set forth and among other things, shall account promptly to the Company with respect to Warrants exercised and concurrently account for, and pay to the Company, all monies received by the Warrant Agent for the purchase of shares of Common Stock through the exercise of the Warrants.

8. Miscellaneous Provisions.

8.1 Successors. All the covenants and provisions of this Agreement by or for the benefit of the Company or the Warrant Agent shall bind and inure to the benefit of their respective successors and assigns.

8.2 Notices. Any notice, statement or demand authorized by this Warrant Agreement to be given or made by the Warrant Agent or by the holder of any Warrant to or on the Company shall be sufficiently given (i) when so delivered if by hand or overnight delivery, (ii) when sent, if delivered by facsimile (provided confirmation of transmission is mechanically or electronically generated and kept on file by the sending party) or by electronic mail, or (iii) if sent by certified mail or private courier service within five (5) days after deposit of such notice, postage prepaid, addressed (until another address is filed in writing by the Company with the Warrant Agent), as follows:

OpGen, Inc.
708 Quince Orchard Road, Suite 160
Gaithersburg, MD 20878

with copies to:

Ballard Spahr LLP
1735 Market Street, 51st Floor
Philadelphia, PA 19103
ATTN: Mary J. Mullany

8.3 Applicable Law. The validity, interpretation, and performance of this Agreement and of the Warrants shall be governed in all respects by the laws of the State of New York, without giving effect to conflicts of law principles that would result in the application of the substantive laws of another jurisdiction. The Company hereby agrees that any action, proceeding or claim against it arising out of or relating in any way to this Agreement shall be brought and enforced in the courts of the State of Maryland or the United States District Court for the District of Maryland, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company hereby waives any objection to such exclusive jurisdiction and that such courts represent an inconvenient forum.

- 8.4 Persons Having Rights under this Agreement. Nothing in this Agreement shall be construed to confer upon, or give to, any person or corporation other than the parties hereto and the Registered Holders of the Warrants any right, remedy, or claim under or by reason of this Warrant Agreement or of any covenant, condition, stipulation, promise, or agreement hereof. All covenants, conditions, stipulations, promises, and agreements contained in this Warrant Agreement shall be for the sole and exclusive benefit of the parties hereto and their successors and assigns and of the Registered Holders of the Warrants.
- 8.5 Examination of the Warrant Agreement. A copy of this Agreement shall be available at all reasonable times at the office of the Warrant Agent in the City of Ardmore, Commonwealth of Pennsylvania, for inspection by the Registered Holder of any Warrant. The Warrant Agent may require any such holder to submit his Warrant for inspection by it.
- 8.6 Counterparts. This Agreement may be executed in any number of original or facsimile counterparts and each of such counterparts shall for all purposes be deemed to be an original, and all such counterparts shall together constitute but one and the same instrument.
- 8.7 Effect of Headings. The section headings herein are for convenience only and are not part of this Warrant Agreement and shall not affect the interpretation thereof.
- 8.8 Amendments. This Agreement may be amended by the parties hereto without the consent of any Registered Holder for the purpose of curing any ambiguity, or curing, correcting or supplementing any defective provision contained herein or adding or changing any other provisions with respect to matters arising under this Agreement as the parties may deem necessary or desirable and that the parties deem shall not adversely affect the interest of the Registered Holders. All other modifications or amendments shall require the written consent of the Company and the Registered Holders holding Warrants to purchase at least 65% of the shares of Common Stock underlying the then outstanding Warrants. No consideration shall be offered by the Company to any Registered Holder in connection with a modification, amendment or waiver of this Warrant Agreement or any Warrant without also offering the same consideration to all Registered Holders.
- 8.9 Severability. This Warrant Agreement shall be deemed severable, and the invalidity or unenforceability of any term or provision hereof shall not affect the validity or enforceability of this Warrant Agreement or of any other term or provision hereof. Furthermore, in lieu of any such invalid or unenforceable term or provision, the parties hereto intend that there shall be added as a part of this Warrant Agreement a provision as similar in terms to such invalid or unenforceable provision as may be possible and be valid and enforceable.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the date first above written.

OPGEN, INC.

By: /s/ Timothy C. Dec

Name: Timothy C. Dec

Title: Chief Financial Officer

PHILADELPHIA STOCK TRANSFER, INC.,
as Warrant Agent

By: /s/ Bob Winterle

Name: Bob Winterle

Title: President

[Signature Page to Warrant Agreement]

[FORM OF WARRANT CERTIFICATE]

Number

Warrants

**THIS WARRANT SHALL BE VOID IF NOT EXERCISED PRIOR TO
THE EXPIRATION OF THE EXERCISE PERIOD PROVIDED FOR
IN THE WARRANT AGREEMENT DESCRIBED BELOW**

OPGEN, INC.

Incorporated Under the Laws of the State of Delaware

CUSIP

Warrant Certificate

This Warrant Certificate certifies that, or registered assigns, is the registered holder of warrant(s) (the “**Warrants**” and each, a “**Warrant**”) to purchase shares of Common Stock, par value \$0.01 (“**Common Stock**”), of OpGen, Inc., a Delaware corporation (the “**Company**”). Each Warrant entitles the holder, upon exercise during the period set forth in the Warrant Agreement referred to below, to receive from the Company that number of fully paid and nonassessable shares of Common Stock as set forth below, at the exercise price (the “**Exercise Price**”) as determined pursuant to the Warrant Agreement, payable in lawful money (or through “**cashless exercise**” as provided for in the Warrant Agreement) of the United States of America upon surrender of this Warrant Certificate and payment of the Exercise Price at the office or agency of the Warrant Agent referred to below, subject to the conditions set forth herein and in the Warrant Agreement. Defined terms used in this Warrant Certificate but not defined herein shall have the meanings given to them in the Warrant Agreement (as defined on the reverse hereof).

Each Warrant is initially exercisable for one fully paid and non-assessable share of Common Stock. The number of the shares of Common Stock issuable upon exercise of the Warrants is subject to adjustment upon the occurrence of certain events set forth in the Warrant Agreement.

The initial Exercise Price per share of Common Stock for any Warrant is equal to \$_____ per share. The Exercise Price is subject to adjustment upon the occurrence of certain events set forth in the Warrant Agreement.

Subject to the conditions set forth in the Warrant Agreement, the Warrants may be exercised only during the Exercise Period and to the extent not exercised by the end of such Exercise Period, such Warrants shall become void.

Reference is hereby made to the further provisions of this Warrant Certificate set forth on the reverse hereof and such further provisions shall for all purposes have the same effect as though fully set forth at this place.

This Warrant Certificate shall not be valid unless countersigned by the Warrant Agent, as such term is used in the Warrant Agreement.

This Warrant Certificate shall be governed by and construed in accordance with the internal laws of the State of Maryland, without regard to conflicts of laws principles thereof.

OPGEN, INC.

By: _____
Name:
Title:

PHILADELPHIA STOCK TRANSFER, INC.,
as Warrant Agent

By: _____
Name:
Title:

[Form of Warrant Certificate]

[Reverse]

The Warrants evidenced by this Warrant Certificate are part of a duly authorized issue of Warrants entitling the holder on exercise to receive shares of Common Stock and are issued or to be issued pursuant to a Warrant Agreement dated as of [_____], 2015 (the “**Warrant Agreement**”), duly executed and delivered by the Company to [_____], as warrant agent (the “**Warrant Agent**”), which Warrant Agreement is hereby incorporated by reference in and made a part of this instrument and is hereby referred to for a description of the rights, limitation of rights, obligations, duties and immunities thereunder of the Warrant Agent, the Company and the holders (the words “**holders**” or “**holder**” meaning the Registered Holders or Registered Holder) of the Warrants. A copy of the Warrant Agreement may be obtained by the holder hereof upon written request to the Company. Defined terms used in this Warrant Certificate but not defined herein shall have the meanings given to them in the Warrant Agreement.

Warrants may be exercised at any time during the Exercise Period set forth in Section 3.3 of the Warrant Agreement.

Notwithstanding anything else in this Warrant Certificate or the Warrant Agreement, no Warrant may be exercised unless at the time of exercise (i) a registration statement covering the shares of Common Stock to be issued upon exercise is effective under the Securities Act and (ii) a prospectus thereunder relating to the shares of Common Stock is current, except through “**cashless exercise**” as provided for in the Warrant Agreement.

The Warrant Agreement provides that upon the occurrence of certain events the number of shares of Common Stock issuable upon exercise of the Warrants set forth on the face hereof may, subject to certain conditions, be adjusted. If, upon exercise of a Warrant, the holder thereof would be entitled to receive a fractional interest in a share of Common Stock, the Company shall, upon exercise, round up to the nearest whole number of shares of Common Stock to be issued to the holder of the Warrant.

Warrant Certificates, when surrendered at the principal corporate trust office of the Warrant Agent by the Registered Holder thereof in person or by legal representative or attorney duly authorized in writing, may be exchanged, in the manner and subject to the limitations provided in the Warrant Agreement, but without payment of any service charge, for another Warrant Certificate or Warrant Certificates of like tenor evidencing in the aggregate a like number of Warrants.

Upon due presentation for registration of transfer of this Warrant Certificate at the office of the Warrant Agent a new Warrant Certificate or Warrant Certificates of like tenor and evidencing in the aggregate a like number of Warrants shall be issued to the transferee(s) in exchange for this Warrant Certificate, subject to the limitations provided in the Warrant Agreement, without charge except for any tax or other governmental charge imposed in connection therewith.

The Company and the Warrant Agent may deem and treat the Registered Holder(s) hereof as the absolute owner(s) of this Warrant Certificate (notwithstanding any notation of ownership or other writing hereon made by anyone), for the purpose of any exercise hereof, of any distribution to the holder(s) hereof, and for all other purposes, and neither the Company nor the Warrant Agent shall be affected by any notice to the contrary. Neither the Warrants nor this Warrant Certificate entitles any holder hereof to any rights of a stockholder of the Company.

Election to Purchase

(To Be Executed Upon Exercise of Warrant)

The undersigned hereby irrevocably elects to exercise the right, represented by this Warrant Certificate, to receive shares of Common Stock and herewith tenders payment for such shares to the order of OpGen, Inc. (the “**Company**”) in the amount of \$[_____] in accordance with the terms hereof. The undersigned requests that a certificate for such shares be registered in the name of [_____], whose address is and that such shares be delivered to whose address is _____. If said number of shares is less than all of the shares of Common Stock purchasable hereunder, the undersigned requests that a new Warrant Certificate representing the remaining balance of such shares be registered in the name of [_____], whose address is [_____], and that such Warrant Certificate be delivered to [_____], whose address is [_____].

In the event that the Warrant is to be exercised on a “cashless” basis pursuant to Section 3.3.2 of the Warrant Agreement, the number of shares that this Warrant is exercisable for shall be determined in accordance with Section 3.3.2 of the Warrant Agreement.

_____ a “Cash Exercise” with respect to _____ Warrant Shares; and/or

_____ a “Cashless Exercise” with respect to _____ Warrant Shares, resulting in a delivery obligation by the Company to the Holder of shares of Common Stock representing the applicable Net Number, subject to adjustment.

In the event that the Warrant may be exercised, to the extent allowed by the Warrant Agreement, through cashless exercise (i) the number of shares that this Warrant is exercisable for would be determined in accordance with the relevant section of the Warrant Agreement which allows for such cashless exercise and (ii) the holder hereof shall complete the following: The undersigned hereby irrevocably elects to exercise the right, represented by this Warrant Certificate, through the cashless exercise provisions of the Warrant Agreement, to receive shares of Common Stock. If said number of shares is less than all of the shares of Common Stock purchasable hereunder (after giving effect to the cashless exercise), the undersigned requests that a new Warrant Certificate representing the remaining balance of such shares be registered in the name of [_____], whose address is [_____], and that such Warrant Certificate be delivered to [_____], whose address is [_____].

Date: _____, 20

(Signature)

(Address)

(Tax Identification Number)