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# SECURITIES AND EXCHANGE COMMISSION

Washington, DC 20549

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## SCHEDULE 13D

Under the Securities Exchange Act of 1934  
(Amendment No. )

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### OPGEN, INC.

(Name of Issuer)

Common Stock, \$0.01 par value  
(Title of Class of Securities)

68373L109  
(CUSIP Number)

William Taranto, President  
Merck Global Health Innovation Fund, LLC  
One Merck Drive 2W116  
Whitehouse Station, NJ 08889  
908-423-6551

(Name, Address and Telephone Number of Person Authorized to Receive Notices and Communications)

July 14, 2015  
(Date of Event Which Requires Filing of This Statement)

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If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box.

\* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

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| 1.  | Names of reporting persons.<br><br>Merck Global Health Innovation Fund, LLC.   |   |
| 2.  | Check the appropriate box if a member of a group (see instructions)<br>(a) <input type="checkbox"/> (b) <input type="checkbox"/> |   |
| 3.  | SEC use only   |   |
| 4.  | Source of funds (see instructions)<br><br>OO   |   |
| 5.  | Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e) <input type="checkbox"/>                     |   |
| 6.  | Citizenship or place of organization<br><br>Delaware   |   |
| Number of shares beneficially owned by each reporting person with | 7.   | Sole voting power<br><br>1,479,022      |
|   | 8.   | Shared voting power<br><br>0            |
|   | 9.   | Sole dispositive power<br><br>1,479,022 |
|   | 10.  | Shared dispositive power<br><br>0       |
| 11.   | Aggregate amount beneficially owned by each reporting person<br><br>1,479,022**  |   |
| 12.   | Check if the aggregate amount in Row (11) excludes certain shares (see instructions) <input type="checkbox"/>                    |   |
| 13.   | Percent of class represented by amount in Row (11)<br><br>11.80*%  |   |
| 14.   | Type of reporting person (see instructions)<br><br>OO  |   |

\* Based upon an aggregate of 12,537,466 Issuer shares outstanding, consisting of (i) 10,719,284 Issuer shares outstanding as reported by Issuer; (ii) 1,136,364 shares issued for purchase pursuant to Purchase Agreement; and (iii) 681,818 shares issued in aggregate in connection with Merger Agreement. See Item 6.

\*\* Includes (i) 1,136,364 shares issued to Purchaser pursuant to the Purchase Agreement; and (ii) 342,658 shares issued to Purchaser pursuant to the Merger Agreement (including 68,532 shares subject to holdback by Issuer, pursuant to the Merger Agreement terms). See Item 6.

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|---|--|---|
| 1.  | Names of reporting persons.<br><br>Merck Sharp & Dohme Corp.   |   |
| 2.  | Check the appropriate box if a member of a group (see instructions)<br>(a) <input type="checkbox"/> (b) <input type="checkbox"/> |   |
| 3.  | SEC use only   |   |
| 4.  | Source of funds (see instructions)<br><br>WC   |   |
| 5.  | Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e) <input type="checkbox"/>                     |   |
| 6.  | Citizenship or place of organization<br><br>New Jersey   |   |
| Number of shares beneficially owned by each reporting person with | 7.   | Sole voting power<br><br>1,479,022      |
|   | 8.   | Shared voting power<br><br>0            |
|   | 9.   | Sole dispositive power<br><br>1,479,022 |
|   | 10.  | Shared dispositive power<br><br>0       |
| 11.   | Aggregate amount beneficially owned by each reporting person<br><br>1,479,022**  |   |
| 12.   | Check if the aggregate amount in Row (11) excludes certain shares (see instructions) <input type="checkbox"/>                    |   |
| 13.   | Percent of class represented by amount in Row (11)<br><br>11.80*%  |   |
| 14.   | Type of reporting person (see instructions)<br><br>CO  |   |

\* Based upon an aggregate of 12,537,466 Issuer shares outstanding, consisting of (i) 10,719,284 Issuer shares outstanding as reported by Issuer; (ii) 1,136,364 shares issued for purchase pursuant to Purchase Agreement; and (iii) 681,818 shares issued in aggregate in connection with Merger Agreement. See Item 6.

\*\* Includes (i) 1,136,364 shares issued to Purchaser pursuant to the Purchase Agreement; and (ii) 342,658 shares issued to Purchaser pursuant to the Merger Agreement (including 68,532 shares subject to holdback by Issuer, pursuant to the Merger Agreement terms). See Item 6.

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|---|--|---|
| 1.  | Names of reporting persons.<br><br>Merck & Co., Inc.   |   |
| 2.  | Check the appropriate box if a member of a group (see instructions)<br>(a) <input type="checkbox"/> (b) <input type="checkbox"/> |   |
| 3.  | SEC use only   |   |
| 4.  | Source of funds (see instructions)<br><br>OO   |   |
| 5.  | Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e) <input type="checkbox"/>                     |   |
| 6.  | Citizenship or place of organization<br><br>New Jersey   |   |
| Number of shares beneficially owned by each reporting person with | 7.   | Sole voting power<br><br>1,479,022      |
|   | 8.   | Shared voting power<br><br>0            |
|   | 9.   | Sole dispositive power<br><br>1,479,022 |
|   | 10.  | Shared dispositive power<br><br>0       |
| 11.   | Aggregate amount beneficially owned by each reporting person<br><br>1,479,022**  |   |
| 12.   | Check if the aggregate amount in Row (11) excludes certain shares (see instructions) <input type="checkbox"/>                    |   |
| 13.   | Percent of class represented by amount in Row (11)<br><br>11.80*%  |   |
| 14.   | Type of reporting person (see instructions)<br><br>CO  |   |

\* Based upon an aggregate of 12,537,466 Issuer shares outstanding, consisting of (i) 10,719,284 Issuer shares outstanding as reported by Issuer; (ii) 1,136,364 shares issued for purchase pursuant to Purchase Agreement; and (iii) 681,818 shares issued in aggregate in connection with Merger Agreement. See Item 6.

\*\* Includes (i) 1,136,364 shares issued to Purchaser pursuant to the Purchase Agreement; and (ii) 342,658 shares issued to Purchaser pursuant to the Merger Agreement (including 68,532 shares subject to holdback by Issuer, pursuant to the Merger Agreement terms). See Item 6.

**Item 1. Security and Issuer.**

This statement on Schedule 13D (this “Statement”) relates to the shares of common stock, \$0.01 par value per share (the “Common Stock”), of OpGen, Inc., a Delaware corporation (the “Company”). The Company’s principal executive offices are located at 708 Quince Orchard Road, Suite 160, Gaithersburg, MD 20878.

**Item 2. Identity and Background.**

This Schedule 13D is being filed by Merck Global Health Innovation Fund, LLC (the “Purchaser”), Merck Sharp & Dohme Corp. (“MSD”) and Merck & Co., Inc. (“Merck” and, together with the Purchaser and MSD, the “Reporting Persons”).

Attached as Schedule A hereto is certain information concerning the executive officers and directors of the Purchaser, MSD and Merck.

Merck is a global health care company that delivers innovative health solutions through its prescription medicines, vaccines, biologic therapies, and animal health products, which it markets directly and through its joint ventures. MSD is a wholly owned subsidiary of Merck, and is also a global health care company that delivers innovative health solutions through its prescription medicines, vaccines, biologic therapies and animal health products, which it markets directly and through its joint ventures. The Purchaser is a wholly owned subsidiary of MSD and is principally engaged in the business of investing in healthcare companies outside of its parent’s core operations.

The Purchaser is a Delaware limited liability company. MSD is a New Jersey corporation. Merck is a New Jersey corporation.

The address of the principal executive offices of the Purchaser is One Merck Drive, 2W116, Whitehouse Station, NJ 08889. The address of the principal offices of MSD is One Merck Drive, 2W116, Whitehouse Station, NJ 08889. The address of the principal offices of Merck is 2000 Galloping Hill Road, Kenilworth NJ 07033.

During the last five years, none of the Reporting Persons nor, to the best knowledge of the Reporting Persons, any of the persons listed on Schedule A, has been convicted in any criminal proceeding (excluding traffic violations or similar misdemeanors) or was a party to a civil proceeding of any judicial or administrative body of competent jurisdiction as a result of which such person was or is subject to a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding of any violation with respect to such laws.

**Item 3. Source and Amount of Funds or Other Consideration.**

The source of the purchase price for the purchase was capital contributions from MSD. No borrowed funds were used in the purchase.

**Item 4. Purpose of Transaction.**

The information set forth under Items 3 and 6 is hereby incorporated by reference.

All of the securities of the Issuer acquired under the Common Stock and Note Purchase Agreement described in Item 6 were acquired for investment purposes. The Reporting Persons intend to review on a continuing basis the investment in the Issuer. Based on such review, the Reporting Persons may acquire, or cause to be disposed, such securities at any time or formulate other purposes, plans or proposals regarding the Issuer or any of its securities, to the extent deemed advisable in light of general investment and trading policies of the Reporting Persons, the Issuer’s business, financial condition and operating results, general market and industry conditions or other factors.

Dr. David Rubin, an employee of MSD, has been elected to the board of directors of the Issuer. Except as otherwise described in this Schedule 13D, or pursuant to the transactions contemplated by the Purchase Agreement, none of the Reporting Persons nor, to the best knowledge of the Reporting Persons, any of the persons listed on Schedule A to this Schedule 13D, currently has any plans or proposals that would result in:

- (a) The acquisition by any person of additional securities of the Issuer, or the disposition of securities of the Issuer;

- (b) An extraordinary corporate transaction, such as a merger, reorganization or liquidation, involving the Issuer or any of its subsidiaries;
- (c) A sale or transfer of a material amount of assets of the Issuer or any of its subsidiaries;
- (d) Any change in the present board of directors or management of the Issuer, including any plans or proposals to change the number or term of directors or to fill any existing vacancies on the Board;
- (e) Any material change in the present capitalization or dividend policy of the Issuer;
- (f) Any other material change in the Issuer's business or corporate structure including but not limited to, if the Issuer is a registered closed-end investment company, any plans or proposals to make any changes in its investment policy for which a vote is required by section 13 of the Investment Company Act of 1940;
- (g) Changes in the Issuer's charter, bylaws or instruments corresponding thereto or other actions which may impede the acquisition of control of the Issuer by any person;
- (h) Causing a class of securities of the Issuer to be delisted from a national securities exchange or to cease to be authorized to be quoted in an inter-dealer quotation system of a registered national securities association;
- (i) A class of equity securities of the Issuer becoming eligible for termination of registration pursuant to Section 12(g)(4) of the Securities Exchange Act of 1934; or
- (j) Any action similar to any of those enumerated above.

However, as part of the ongoing evaluation of this investment and investment alternatives, the Reporting Persons may consider such matters and, subject to applicable law, may formulate a plan with respect to such matters, and, from time to time, may hold discussions with or make formal proposals to management or the Board of the Issuer, other stockholders of the Issuer or other third parties regarding such matters.

**Item 5. Interest in Securities of the Issuer.**

- (a) The Reporting Persons may be deemed to beneficially own 1,479,022 shares of common stock. The common stock voting rights represent 11.80% of the total number of shares of common stock treated as outstanding for purposes of such vote. The ownership percentages set forth in this Schedule 13D, according to information provided by the Issuer. As a result of their direct and indirect ownership of the Purchaser, each of MSD and Merck may be deemed to have the power to vote and dispose of common stock held in the name of the Purchaser.
- (b) Each of the Reporting Persons has the power to vote or direct the vote of the 1,479,022 votes that may be cast in actions taken by common stockholders as a result of the shares of Common Stock held in the name of the Purchaser and each of the Reporting Persons has the power to dispose or direct the disposition of any shares of common stock.
- (c) To the best knowledge of the Reporting Persons, none of the Reporting Persons nor the individuals named in Schedule A to this Schedule 13D has effected a transaction in shares of the Issuer during the past 60 days (other than the transactions contemplated by the Purchase Agreement described below).
- (d) Other than the Reporting Persons, no other person is known to have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of the Reporting Persons' securities.
- (e) Not applicable.

**Item 6. Contracts, Arrangements, Understandings or Relationships With Respect to Securities of the Issuer.**

The following descriptions are qualified in their entirety by reference to the Common Stock and Note Purchase Agreement, the Note, the Registration Rights Agreement and the Director Indemnification Agreement which are incorporated by reference as indicated on Exhibits 1, 2, 4 and 5 hereto, respectively, and incorporated herein by reference.

**MERGER AGREEMENT**

On July 14, 2015, immediately prior to the purchase of Issuer Common Stock by Purchaser, Issuer entered into an Agreement and Plan of Merger (the "Merger Agreement") with AdvanDx, Inc., a Delaware corporation ("AdvanDx"), Velox Acquisition Corp., a Delaware corporation and wholly owned subsidiary of the Issuer (the "Merger Sub"), and the Stockholder Parties and the Representatives signatory to the Merger Agreement. On July 14, 2015, the Issuer completed the strategic acquisition of AdvanDx. Pursuant to the Merger Agreement, the Merger Sub merged with and into AdvanDx, with AdvanDx surviving as a wholly owned subsidiary of the Issuer (the "Merger") in accordance with the General Corporation Law of the State of Delaware. The consideration for the acquisition of AdvanDx by Issuer consisted of an aggregate of 681,818 shares of Issuer common stock (the "Merger Consideration"). Purchaser owned shares in AdvanDx and as a result of the consummation of the merger contemplated by the Merger Agreement, Purchaser received 342,658 shares, of which 68,532 shares were subject to a holdback (the "Holdback Shares") as security for certain indemnification obligations of Purchaser under the Merger Agreement. The Holdback Shares are held in an escrow account for a period of up to 12 months from the closing of the Merger (the "Closing") for half of the Holdback Shares and up to 18 months from the Closing for the remaining Holdback Shares, during which the Issuer may be entitled, under certain circumstances, to offset any indemnifiable claims against the Holdback Shares.

The foregoing is subject to and qualified by the terms and conditions contained in the Merger Agreement, a copy of which is incorporated by reference to this Schedule 13D as Exhibit 2.

**PURCHASE AGREEMENT**

On July 14, 2015, the Issuer and the Purchaser entered into a Common Stock and Note Purchase Agreement (the "Purchase Agreement"). Under the Purchase Agreement, the Issuer sold to the Purchaser 1,136,364 shares of the Issuer's Common Stock (the "Common Stock") for a purchase price of \$5,000,001.60. Pursuant to the Purchase Agreement, the Issuer also issued to Purchaser a Senior Secured Promissory Note (the "Note") in the principal amount of \$1,000,000.00 with a two-year maturity date from the date of issuance. The Issuer's obligations under the Note are secured by a lien on all of the Issuer's assets pursuant to the terms of a Security Agreement, dated as of July 14, 2015, by and among the Issuer and AdvanDx, as debtors, and Purchaser as the secured party.

In connection with Purchaser's acquisition of common stock pursuant to the Purchase Agreement, Issuer provided Purchaser with the right of first offer as to Purchaser's pro rata share of Issuer new securities issuances (subject to certain exemptions) that shall terminate in the event (i) that Purchaser no longer holds at least five percent (5%) of the outstanding common stock of the Issuer, or (ii) of a change of control of Issuer. In addition, Purchaser has the right, to designate a director to serve on Issuer's board of directors. Purchaser designated David Rubin as its designee and at the closing of the transaction the Issuer's board was expanded to seven directors and Mr. Rubin was added as a director of Issuer. For as long as Purchaser holds at least 5% of the outstanding common stock of the Issuer, the Board of Directors shall nominate such Purchaser designee, (subject to the consent of the Issuer which consent shall not be unreasonably withheld) or any replacement, if applicable for election by the stockholders at each annual meeting or special meeting of the stockholders at which directors are elected.

The foregoing is subject to and qualified by the terms and conditions contained in the Purchase Agreement and the Note, copies of which are incorporated by reference to this Schedule 13D as Exhibit 1 and Exhibit 2, respectively.

#### PURCHASER RIGHTS

In connection with the Purchase Agreement, the Issuer entered into a Registration Rights Agreement with the Purchaser on July 14, 2015 (the "Registration Rights Agreement"). Pursuant to the Registration Rights Agreement, the Purchaser was granted certain demand registration rights and piggyback registration rights to participate in subsequent registered offerings of the Issuer's common stock.

The foregoing is subject to and qualified by the terms and conditions contained in the Registration Rights Agreement, a copy of which is incorporated by reference to this Schedule 13D as Exhibit 4.

#### DIRECTOR INDEMNIFICATION AGREEMENT

In connection with the financing contemplated by the Purchase Agreement, the Issuer entered into an Indemnification Agreement dated July 14, 2015 with new director David Rubin, an employee of the MSD. The foregoing is subject to and qualified by the terms and conditions contained in the Director Indemnification Agreement, a copy of which is incorporated by reference to this Schedule 13D as Exhibit 5.

#### **Item 7. Material to be Filed as Exhibits.**

1. Common Stock and Note Purchase Agreement dated July 14, 2015 between OpGen, Inc. and Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.1 to Current Report on Form 8-K filed by OpGen, Inc. with the Securities and Exchange Commission on July 16, 2015).
2. Senior Secured Promissory Note, dated as of July 14, 2015, by and between OpGen, Inc. and Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.2 to Current Report on Form 8-K filed by OpGen, Inc. with the Securities and Exchange Commission on July 16, 2015).
3. Merger Agreement dated July 14, 2015 between OpGen, Inc., AdvanDx Inc. and the Stockholder Parties (incorporated by reference to Exhibit 2.1 to Current Report on Form 8-K filed by OpGen, Inc. with the Securities and Exchange Commission on July 16, 2015).
4. Registration Rights Agreement dated July 14, 2015 between OpGen, Inc. and Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.3 to Current Report on Form 8-K filed by OpGen, Inc. with the Securities and Exchange Commission on July 16, 2015).
5. Director Indemnification Agreement dated July 14, 2015 between OpGen, Inc. and David Rubin (filed herewith).
6. Joint Filing Agreement, dated as of July 23, 2015 (filed herewith).
7. Powers of Attorney, dated as of July 23, 2015 (filed herewith).



**Signatures**

After reasonable inquiry and to the best of its knowledge and belief, the undersigned certify that the information set forth in this statement is true, complete and correct.

Dated this 23<sup>rd</sup> day of July, 2015.

**MERCK GLOBAL HEALTH INNOVATION FUND, LLC**

By: /s/ William J. Taranto

Name: William J. Taranto

Title: President

**MERCK SHARP & DOHME CORP.**

By: /s/ Katie E. Fedosz

Name: Katie E. Fedosz

Title: Assistant Secretary

**MERCK & CO., INC.**

By: /s/ Katie E. Fedosz

Name: Katie E. Fedosz

Title: Senior Assistant Secretary

The name, present principal occupation or employment, and the name, principal business and address of any corporation or other organization in which such employment is conducted, of each of the executive officers and directors of each of the Reporting Persons is set forth below.

**MERCK GLOBAL HEALTH INNOVATION FUND, LLC**

**EXECUTIVE OFFICERS AND DIRECTORS**

| <u>Name</u>               | <u>Principal Occupation</u>       | <u>Business Address</u>                          | <u>Citizenship</u> |
|---------------------------|-----------------------------------|--|--------------------|
| Arthur Ceconi, Jr.        | Vice President, Tax               | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Donna Daidone-Yahara      | Assistant Vice President, Finance | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Robert Davis              | Manager / Vice President          | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Katie Fedosz              | Assistant Secretary               | 2000 Galloping Hill Road<br>Kenilworth NJ, 07033 | USA                |
| Jon Filderman             | Secretary                         | 2000 Galloping Hill Road<br>Kenilworth NJ, 07033 | USA                |
| Jay Galeota               | Manager / Vice President          | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Clark Golestani           | Manager                           | 3070 Route 22 West<br>Branchburg, NJ 08876-3598  | USA                |
| Michael J. Holston        | Manager                           | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Juanita Lee               | Assistant Treasurer               | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Mark E. McDonough         | Vice President and Treasurer      | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Kathleen McGrath Nicastro | Assistant Secretary               | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Joseph Miletich           | Manager                           | 126 E. Lincoln Avenue<br>Rahway, NJ 07065        | USA                |
| Joseph Promo              | Assistant Treasurer               | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Michael Rosenblatt        | Manager                           | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| Mark Simon                | Assistant Treasurer               | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                |
| William J. Taranto        | Manager / President               | One Merck Drive,<br>Whitehouse Station, NJ 08889 | USA                |

**MERCK SHARP & DOHME CORP.**

**EXECUTIVE OFFICERS AND DIRECTORS**

| <b><u>Name</u></b>        | <b><u>Principal Occupation</u></b>         | <b><u>Business Address</u></b>                   | <b><u>Citizenship</u></b> |
|---------------------------|--|--|---------------------------|
| Arthur Ceconi, Jr.        | Assistant Secretary / Tax                  | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Katie Fedosz              | Assistant Secretary                        | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Jon Filderman             | Director / Assistant Secretary             | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Rita Karachun             | Director / President                       | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Juanita Lee               | Assistant Treasurer                        | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Mark E. McDonough         | Director /<br>Vice President and Treasurer | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Robert McGovern           | Vice President, Tax                        | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Kathleen McGrath Nicastro | Assistant Secretary                        | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Joseph Promo              | Assistant Treasurer                        | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Geralyn Ritter            | Secretary                                  | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Mark Simon                | Assistant Treasurer                        | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |
| Cheryl Vesselli           | Assistant Secretary                        | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA                       |

**MERCK & CO., INC.****EXECUTIVE OFFICERS**

| <u>Name</u>             | <u>Principal Occupation</u>  | <u>Business Address</u>                               | <u>Citizenship</u> |
|-------------------------|--|---|--------------------|
| Kenneth C. Frazier      | Chairman, President and Chief Executive Officer / Director, Merck & Co., Inc.  | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Adele D. Ambrose        | Senior Vice President and Chief Communications Officer, Merck & Co., Inc.  | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Robert Davis            | Executive Vice President & Chief Financial Officer, Merck & Co., Inc.  | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Willie A. Deese         | Executive Vice President and President, Merck Manufacturing Division (“MMD”), Merck & Co., Inc.                      | One Merck Drive,<br>Whitehouse Station, NJ 08889-0100 | USA                |
| Richard R. DeLuca, Jr.  | Executive Vice President and President, Merck Animal Health  | Giralda Farms 2<br>Madison, NJ 07940                  | USA                |
| Katie Fedosz            | Senior Assistant Secretary, Merck & Co., Inc.  | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Julie Gerberding        | Executive Vice President for Strategic Communications, Global Public Policy and Population Health, Merck & Co., Inc. | 770 Sumneytown Pike,<br>West Point, PA 19486          | USA                |
| Clark Golestani         | Executive Vice President and Chief Information Officer, Merck & Co., Inc.  | 3070 Route 22 West<br>Branchburg, NJ 08876-3598       | USA                |
| Mirian M. Graddick-Weir | Executive Vice President, Human Resources, Merck & Co., Inc.   | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Michael J. Holston      | Executive Vice President and General Counsel, Merck & Co., Inc.  | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Rita Karachun           | Senior Vice President Finance – Global Controller, Merck & Co., Inc.   | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Juanita Lee             | Assistant Treasurer, Merck & Co., Inc.   | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Mark McDonough          | Senior Vice President and Treasurer, Merck & Co., Inc.   | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Roger Perlmutter        | Executive Vice President and President, Merck Research Laboratories  | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Joseph Promo            | Assistant Treasurer, Merck & Co., Inc.   | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      | USA                |
| Geralyn Ritter          | Senior Vice President, Corporate Secretary and Assistant General Counsel, Merck & Co., Inc.                          | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033      |                    |

|                          |  |  |     |
|--------------------------|--|--|-----|
| Michael Rosenblatt, M.D. | Executive Vice President and Chief Medical Officer, Merck & Co., Inc.          | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA |
| Adam H. Schechter        | Executive Vice President and President, Global Human Health, Merck & Co., Inc. | 600 Corporate Drive,<br>Lebanon, NJ 08833        | USA |
| Mark Simon               | Assistant Treasurer, Merck & Co., Inc.   | 2000 Galloping Hill Road<br>Kenilworth, NJ 07033 | USA |

**MERCK & CO., INC.**

**DIRECTORS**

|                          |  |  |                   |
|--------------------------|--|--|-------------------|
| Leslie A. Brun           | Chairman and Chief Executive Officer, Sarr Group, LLC                              | 435 Devon Park Drive,<br>700 Building,<br>Wayne, PA 19087  | USA               |
| Thomas R. Cech           | Investigator, Howard Hughes Medical Institute and Faculty, University of Colorado. | University of Colorado,<br>University Chemistry Building 215,<br>Boulder, CO 80309-0215          | USA               |
| Thomas H. Glocer         | Retired Chief Executive Officer, Thomson Reuters Corporation                       | 19 West 44th Street,<br>18th Floor,<br>New York, NY 10036  | USA               |
| William B. Harrison, Jr. | Retired Chairman of the Board, JPMorgan Chase & Co.                                | 277 Park Avenue,<br>35th Floor,<br>New York, NY 10172-0003                                       | USA               |
| C. Robert Kidder         | Former Chairman and Chief Executive Officer, 3Stone Advisors LLC                   | 191 West Nationwide Boulevard,<br>Suite 600,<br>Columbus, OH 43215                               | USA               |
| Rochelle B. Lazarus      | Chairman Emeritus, Ogilvy & Mather   | 636 11th Avenue,<br>New York, NY 10036-2010  | USA               |
| Carlos E. Represas       | Retired Chairman, Grupo Nestle Mexico  | Av. Ejercito Nacional<br>No. 453, Colonia<br>Granada, 11520 Mexico,<br>D.F., Mexico              | Mexico &<br>Spain |
| Patricia F. Russo        | Retired Chief Executive Officer and Director, Alcatel-Lucent                       | 600 Mountain Avenue,<br>Murray Hill, NJ 07974  | USA               |
| Craig B. Thompson        | President and Chief Executive Officer of Memorial Sloan-Kettering Cancer Center    | Memorial Sloan-Kettering Cancer Center,<br>r1275 York Avenue,<br>Room M110<br>New York, NY 10065 | USA               |
| Wendell P. Weeks         | President, Chairman and Chief Executive Officer, Corning Incorporated              | 1 Riverfront Plaza,<br>Corning, NY 14831-0001  | USA               |
| Peter C. Wendell         | Managing Director, Sierra Ventures   | 1400 Fashion Island Blvd.<br>Suite 1010<br>San Mateo, CA 94404                                   | USA               |

## EXHIBIT INDEX

### Item 7. Material to be Filed as Exhibits.

1. Common Stock and Note Purchase Agreement dated July 14, 2015 between OpGen, Inc. and Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.1 to Current Report on Form 8-K filed by OpGen, Inc. with the Securities and Exchange Commission on July 16, 2015).
2. Senior Secured Promissory Note, dated as of July 14, 2015, by and between OpGen, Inc. and Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.2 to Current Report on Form 8-K filed by OpGen, Inc. with the Securities and Exchange Commission on July 16, 2015).
3. Merger Agreement dated July 14, 2015 between OpGen, Inc., AdvanDx Inc. and the Stockholder Parties (incorporated by reference to Exhibit 2.1 to Current Report on Form 8-K filed by OpGen, Inc. with the Securities and Exchange Commission on July 16, 2015).
4. Registration Rights Agreement dated July 14, 2015 between OpGen, Inc. and Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.3 to Current Report on Form 8-K filed by OpGen, Inc. with the Securities and Exchange Commission on July 16, 2015).
5. Director Indemnification Agreement dated July 14, 2015 between OpGen, Inc. and David Rubin (filed herewith).
6. Joint Filing Agreement, dated as of July 23, 2015 (filed herewith).
7. Powers of Attorney, dated as of July 23, 2015 (filed herewith).

## INDEMNIFICATION AGREEMENT

THIS INDEMNIFICATION AGREEMENT (the “**Agreement**”) is made and entered into as of July 14, 2015 between OpGen, Inc., a Delaware corporation (the “**Company**”), and David M. Rubin (“**Indemnitee**”).

WITNESSETH THAT:

WHEREAS, highly competent persons have become more reluctant to serve corporations as directors or in other capacities unless they are provided with adequate protection through insurance or adequate indemnification against inordinate risks of claims and actions against them arising out of their service to and activities on behalf of the corporation;

WHEREAS, the Board of Directors of the Company (the “**Board**”) has determined that, in order to attract and retain qualified individuals, the Company will attempt to maintain on an ongoing basis, at its sole expense, liability insurance to protect persons serving the Company and its subsidiaries from certain liabilities. Although the furnishing of such insurance has been a customary and widespread practice among United States-based corporations and other business enterprises, the Company believes that, given current market conditions and trends, such insurance may be available to it in the future only at higher premiums and with more exclusions. At the same time, directors, officers, and other persons in service to corporations or business enterprises are being increasingly subjected to expensive and time-consuming litigation relating to, among other things, matters that traditionally would have been brought only against the Company or business enterprise itself. The By-laws and Certificate of Incorporation of the Company require indemnification of the officers and directors of the Company. Indemnitee may also be entitled to indemnification pursuant to the General Corporation Law of the State of Delaware (“**DGCL**”). The By-laws and Certificate of Incorporation and the DGCL expressly provide that the indemnification provisions set forth therein are not exclusive, and thereby contemplate that contracts may be entered into between the Company and members of the board of directors, officers and other persons with respect to indemnification;

WHEREAS, the uncertainties relating to such insurance and to indemnification have increased the difficulty of attracting and retaining such persons;

WHEREAS, the Board has determined that the increased difficulty in attracting and retaining such persons is detrimental to the best interests of the Company’s stockholders and that the Company should act to assure such persons that there will be increased certainty of such protection in the future;

WHEREAS, it is reasonable, prudent and necessary for the Company contractually to obligate itself to indemnify, and to advance expenses on behalf of, such persons to the fullest extent permitted by applicable law so that they will serve or continue to serve the Company free from undue concern that they will not be so indemnified;

WHEREAS, this Agreement is a supplement to and in furtherance of the By-laws and Certificate of Incorporation of the Company and any resolutions adopted pursuant thereto, and shall not be deemed a substitute therefor, nor to diminish or abrogate any rights of Indemnitee thereunder; and

WHEREAS, Indemnitee does not regard the protection available under the Company's By-laws and Certificate of Incorporation and insurance as adequate in the present circumstances, and may not be willing to serve as an officer or director without adequate protection, and the Company desires Indemnitee to serve in such capacity. Indemnitee is willing to serve, continue to serve and to take on additional service for or on behalf of the Company on the condition that he be so indemnified; and

WHEREAS, Indemnitee has certain rights to indemnification and/or insurance provided by Merck Global Health Innovation Fund, LLC and its affiliates which Indemnitee and Merck Global Health Innovation Fund, LLC and its affiliates intend to be secondary to the primary obligation of the Company to indemnify Indemnitee as provided herein, with the Company's acknowledgement and agreement to the foregoing being a material condition to Indemnitee's willingness to serve on the Board.

NOW, THEREFORE, in consideration of Indemnitee's agreement to serve as a director from and after the date hereof, the parties hereto agree as follows:

1. Indemnity of Indemnitee. The Company hereby agrees to hold harmless and indemnify Indemnitee to the fullest extent permitted by law, as such may be amended from time to time. In furtherance of the foregoing indemnification, and without limiting the generality thereof:

(a) Proceedings Other Than Proceedings by or in the Right of the Company. Indemnitee shall be entitled to the rights of indemnification provided in this Section 1(a) if, by reason of his Corporate Status (as hereinafter defined), the Indemnitee is, or is threatened to be made, a party to or participant in any Proceeding (as hereinafter defined) other than a Proceeding by or in the right of the Company. Pursuant to this Section 1(a), Indemnitee shall be indemnified against all Expenses (as hereinafter defined), judgments, penalties, fines and amounts paid in settlement actually and reasonably incurred by him, or on his behalf, in connection with such Proceeding or any claim, issue or matter therein, if the Indemnitee acted in good faith and in a manner the Indemnitee reasonably believed to be in or not opposed to the best interests of the Company, and with respect to any criminal Proceeding, had no reasonable cause to believe the Indemnitee's conduct was unlawful.

(b) Proceedings by or in the Right of the Company. Indemnitee shall be entitled to the rights of indemnification provided in this Section 1(b) if, by reason of his Corporate Status, the Indemnitee is, or is threatened to be made, a party to or participant in any Proceeding brought by or in the right of the Company. Pursuant to this Section 1(b), Indemnitee shall be indemnified against all Expenses actually and reasonably incurred by the Indemnitee, or on the Indemnitee's behalf, in connection with such Proceeding if the Indemnitee acted in good faith and in a manner the Indemnitee reasonably believed to be in or not opposed to the best interests of the Company; provided, however, if applicable law so provides, no indemnification against such Expenses shall be made in respect of any claim, issue or matter in such Proceeding as to which Indemnitee shall have been adjudged to be liable to the Company unless and to the extent that the Court of Chancery of the State of Delaware shall determine that such indemnification may be made.



(c) Indemnification for Expenses of a Party Who is Wholly or Partly Successful. Notwithstanding any other provision of this Agreement, to the extent that Indemnitee is, by reason of his Corporate Status, a party to and is successful, on the merits or otherwise, in any Proceeding, he shall be indemnified to the maximum extent permitted by law, as such may be amended from time to time, against all Expenses actually and reasonably incurred by him or on his behalf in connection therewith. If Indemnitee is not wholly successful in such Proceeding but is successful, on the merits or otherwise, as to one or more but less than all claims, issues or matters in such Proceeding, the Company shall indemnify Indemnitee against all Expenses actually and reasonably incurred by him or on his behalf in connection with each successfully resolved claim, issue or matter. For purposes of this Section and without limitation, the termination of any claim, issue or matter in such a Proceeding by dismissal, with or without prejudice, shall be deemed to be a successful result as to such claim, issue or matter.

(d) If (i) Indemnitee is or was affiliated with one or more venture capital funds that has invested in the Company (an “**Appointing Stockholder**”), and (ii) the Appointing Stockholder is, or is threatened to be made, a party to or a participant in any Proceeding relating to or arising by reason of Appointing Stockholder’s position as a stockholder of, or lender to, the Company, or Appointing Stockholder’s appointment of or affiliation with Indemnitee or any other director, including without limitation any alleged misappropriation of a Company asset or corporate opportunity, any claim of misappropriation or infringement of intellectual property relating to the Company, any alleged false or misleading statement or omission made by the Company (or on its behalf) or its employees or agents, or any allegation of inappropriate control or influence over the Company or its Board members, officers, equity holders or debt holders, then the Appointing Stockholder will be entitled to indemnification hereunder for Expenses to the same extent as Indemnitee, and the terms of this Agreement as they relate to procedures for indemnification of Indemnitee and advancement of Expenses shall apply to any such indemnification of Appointing Stockholder.

2. Additional Indemnity. In addition to, and without regard to any limitations on, the indemnification provided for in Section 1 of this Agreement, the Company shall and hereby does indemnify and hold harmless Indemnitee against all Expenses, judgments, penalties, fines and amounts paid in settlement actually and reasonably incurred by him or on his behalf if, by reason of his Corporate Status, he is, or is threatened to be made, a party to or participant in any Proceeding (including a Proceeding by or in the right of the Company), including, without limitation, all liability arising out of the negligence or active or passive wrongdoing of Indemnitee. The only limitation that shall exist upon the Company’s obligations pursuant to this Agreement shall be that the Company shall not be obligated to make any payment to Indemnitee that is finally determined (under the procedures, and subject to the presumptions, set forth in Sections 6 and 7 hereof) to be unlawful.

### 3. Contribution.

(a) Whether or not the indemnification provided in Sections 1 and 2 hereof is available, in respect of any threatened, pending or completed action, suit or proceeding in which the Company is jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), the Company shall pay, in the first instance, the entire amount of any judgment or settlement of such action, suit or proceeding without requiring Indemnitee to contribute to such

payment and the Company hereby waives and relinquishes any right of contribution it may have against Indemnitee. The Company shall not enter into any settlement of any action, suit or proceeding in which the Company is jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding) unless such settlement provides for a full and final release of all claims asserted against Indemnitee.

(b) Without diminishing or impairing the obligations of the Company set forth in the preceding subparagraph, if, for any reason, Indemnitee shall elect or be required to pay all or any portion of any judgment or settlement in any threatened, pending or completed action, suit or proceeding in which the Company is jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), the Company shall contribute to the amount of Expenses, judgments, fines and amounts paid in settlement actually and reasonably incurred and paid or payable by Indemnitee in proportion to the relative benefits received by the Company and all officers, directors or employees of the Company, other than Indemnitee, who are jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), on the one hand, and Indemnitee, on the other hand, from the transaction from which such action, suit or proceeding arose; provided, however, that the proportion determined on the basis of relative benefit may, to the extent necessary to conform to law, be further adjusted by reference to the relative fault of the Company and all officers, directors or employees of the Company other than Indemnitee who are jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), on the one hand, and Indemnitee, on the other hand, in connection with the events that resulted in such expenses, judgments, fines or settlement amounts, as well as any other equitable considerations which the Law may require to be considered. The relative fault of the Company and all officers, directors or employees of the Company, other than Indemnitee, who are jointly liable with Indemnitee (or would be if joined in such action, suit or proceeding), on the one hand, and Indemnitee, on the other hand, shall be determined by reference to, among other things, the degree to which their actions were motivated by intent to gain personal profit or advantage, the degree to which their liability is primary or secondary and the degree to which their conduct is active or passive.

(c) The Company hereby agrees to fully indemnify and hold Indemnitee harmless from any claims of contribution which may be brought by officers, directors or employees of the Company, other than Indemnitee, who may be jointly liable with Indemnitee.

(d) To the fullest extent permissible under applicable law, if the indemnification provided for in this Agreement is unavailable to Indemnitee for any reason whatsoever, the Company, in lieu of indemnifying Indemnitee, shall contribute to the amount incurred by Indemnitee, whether for judgments, fines, penalties, excise taxes, amounts paid or to be paid in settlement and/or for Expenses, in connection with any claim relating to an indemnifiable event under this Agreement, in such proportion as is deemed fair and reasonable in light of all of the circumstances of such Proceeding in order to reflect (i) the relative benefits received by the Company and Indemnitee as a result of the event(s) and/or transaction(s) giving cause to such Proceeding; and/or (ii) the relative fault of the Company (and its directors, officers, employees and agents) and Indemnitee in connection with such event(s) and/or transaction(s).

4. Indemnification for Expenses of a Witness or in Response to a Subpoena. Notwithstanding any other provision of this Agreement, to the extent that Indemnitee is, by reason

of his Corporate Status, a witness, or receives a subpoena or is made (or asked to) respond to discovery requests, in any Proceeding to which Indemnitee is not a party, he shall be indemnified against all Expenses actually and reasonably incurred by him or on his behalf in connection therewith.

5. Advancement of Expenses. Notwithstanding any other provision of this Agreement, the Company shall advance all Expenses incurred by or on behalf of Indemnitee in connection with any Proceeding by reason of Indemnitee's Corporate Status within thirty (30) days after the receipt by the Company of a statement or statements from Indemnitee requesting such advance or advances from time to time, whether prior to or after final disposition of such Proceeding. Such statement or statements shall reasonably evidence the Expenses incurred by Indemnitee and shall include or be preceded or accompanied by a written undertaking by or on behalf of Indemnitee to repay any Expenses advanced if it shall ultimately be determined that Indemnitee is not entitled to be indemnified against such Expenses. Any advances and undertakings to repay pursuant to this Section 5 shall be unsecured and interest free and made without regard to the Indemnitee's ability to repay such advances.

6. Procedures and Presumptions for Determination of Entitlement to Indemnification. It is the intent of this Agreement to secure for Indemnitee rights of indemnity that are as favorable as may be permitted under the DGCL and public policy of the State of Delaware. Accordingly, the parties agree that the following procedures and presumptions shall apply in the event of any question as to whether Indemnitee is entitled to indemnification under this Agreement:

(a) To obtain indemnification under this Agreement, Indemnitee shall submit to the Company a written request, including therein or therewith such documentation and information as is reasonably available to Indemnitee and is reasonably necessary to determine whether and to what extent Indemnitee is entitled to indemnification. The Secretary of the Company shall, promptly upon receipt of such a request for indemnification, advise the Board in writing that Indemnitee has requested indemnification. Notwithstanding the foregoing, any failure of Indemnitee to provide such a request to the Company, or to provide such a request in a timely fashion, shall not relieve the Company of any liability that it may have to Indemnitee unless, and to the extent that, such failure actually and materially prejudices the interests of the Company.

(b) Upon written request by Indemnitee for indemnification pursuant to the first sentence of Section 6(a) hereof, a determination with respect to Indemnitee's entitlement thereto shall be made in the specific case by one of the following four methods, which shall be at the election of the board: (1) by a majority vote of the Disinterested Directors, even though less than a quorum, (2) by a committee of Disinterested Directors designated by a majority vote of the Disinterested Directors, even though less than a quorum, (3) if there are no Disinterested Directors or if the Disinterested Directors so direct, by Independent Counsel in a written opinion to the Board, a copy of which shall be delivered to the Indemnitee, or (4) if so directed by the Board, by the stockholders of the Company.

(c) If the determination of entitlement to indemnification is to be made by Independent Counsel pursuant to Section 6(b) hereof, the Independent Counsel shall be

selected as provided in this Section 6(c). The Independent Counsel shall be selected by the Board. Indemnitee may, within 10 days after such written notice of selection shall have been given, deliver to the Company a written objection to such selection; provided, however, that such objection may be asserted only on the ground that the Independent Counsel so selected does not meet the requirements of “**Independent Counsel**” as defined in Section 13 of this Agreement, and the objection shall set forth with particularity the factual basis of such assertion. Absent a proper and timely objection, the person so selected shall act as Independent Counsel. If a written objection is made and substantiated, the Independent Counsel selected may not serve as Independent Counsel unless and until such objection is withdrawn or a court has determined that such objection is without merit. If, within 20 days after submission by Indemnitee of a written request for indemnification pursuant to Section 6(a) hereof, no Independent Counsel shall have been selected and not objected to, either the Company or Indemnitee may petition the Court of Chancery of the State of Delaware or other court of competent jurisdiction for resolution of any objection which shall have been made by the Indemnitee to the Company’s selection of Independent Counsel and/or for the appointment as Independent Counsel of a person selected by the court or by such other person as the court shall designate, and the person with respect to whom all objections are so resolved or the person so appointed shall act as Independent Counsel under Section 6(b) hereof. The Company shall pay any and all reasonable fees and expenses of Independent Counsel incurred by such Independent Counsel in connection with acting pursuant to Section 6(b) hereof, and the Company shall pay all reasonable fees and expenses incident to the procedures of this Section 6(c), regardless of the manner in which such Independent Counsel was selected or appointed.

(d) In making a determination with respect to entitlement to indemnification hereunder, the person or persons or entity making such determination shall presume that Indemnitee is entitled to indemnification under this Agreement. Anyone seeking to overcome this presumption shall have the burden of proof and the burden of persuasion by clear and convincing evidence. Neither the failure of the Company (including by its directors or Independent Counsel) to have made a determination prior to the commencement of any action pursuant to this Agreement that indemnification is proper in the circumstances because Indemnitee has met the applicable standard of conduct, nor an actual determination by the Company (including by its directors or Independent Counsel) that Indemnitee has not met such applicable standard of conduct, shall be a defense to the action or create a presumption that Indemnitee has not met the applicable standard of conduct.

(e) Indemnitee shall be deemed to have acted in good faith if Indemnitee’s action is based on the records or books of account of the Enterprise, including, without limitation, financial statements, or on information supplied to Indemnitee by the officers of the Enterprise (as hereinafter defined) in the course of their duties, or on the advice of legal counsel for the Enterprise or on information or records given or reports made to the Enterprise by an independent certified public accountant or by an appraiser or other expert selected with reasonable care by the Enterprise. In addition, the knowledge and/or actions, or failure to act, of any director, officer, agent or employee of the Enterprise shall not be imputed to Indemnitee for purposes of determining the right to indemnification under this Agreement. Whether or not the foregoing provisions of this Section 6(e) are satisfied, it shall in any event be presumed that Indemnitee has at all times acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the Company. Anyone seeking to overcome this presumption shall have the burden of proof and the burden of persuasion by clear and convincing evidence.

(f) If the person, persons or entity empowered or selected under Section 6 to determine whether Indemnitee is entitled to indemnification shall not have made a determination within sixty (60) days after receipt by the Company of the request therefor, the requisite determination of entitlement to indemnification shall be deemed to have been made and Indemnitee shall be entitled to such indemnification absent (i) a misstatement by Indemnitee of a material fact, or an omission of a material fact necessary to make Indemnitee's statement not materially misleading, in connection with the request for indemnification, or (ii) a prohibition of such indemnification under applicable law; provided, however, that such 60-day period may be extended for a reasonable time, not to exceed an additional thirty (30) days, if the person, persons or entity making such determination with respect to entitlement to indemnification in good faith requires such additional time to obtain or evaluate documentation and/or information relating thereto; and provided, further, that the foregoing provisions of this Section 6(f) shall not apply if the determination of entitlement to indemnification is to be made by the stockholders pursuant to Section 6(b) of this Agreement and if (A) within fifteen (15) days after receipt by the Company of the request for such determination, the Board or the Disinterested Directors, if appropriate, resolve to submit such determination to the stockholders for their consideration at an annual meeting thereof to be held within seventy-five (75) days after such receipt and such determination is made thereat, or (B) a special meeting of stockholders is called within fifteen (15) days after such receipt for the purpose of making such determination, such meeting is held for such purpose within sixty (60) days after having been so called and such determination is made thereat.

(g) Indemnitee shall cooperate with the person, persons or entity making such determination with respect to Indemnitee's entitlement to indemnification, including providing to such person, persons or entity upon reasonable advance request any documentation or information which is not privileged or otherwise protected from disclosure and which is reasonably available to Indemnitee and reasonably necessary to such determination. Any Independent Counsel, member of the Board or stockholder of the Company shall act reasonably and in good faith in making a determination regarding the Indemnitee's entitlement to indemnification under this Agreement. Any costs or expenses (including, without limitation, attorneys' fees and disbursements) incurred by Indemnitee in so cooperating with the person, persons or entity making such determination shall be borne by the Company (irrespective of the determination as to Indemnitee's entitlement to indemnification) and the Company hereby indemnifies and agrees to hold Indemnitee harmless therefrom.

(h) The Company acknowledges that a settlement or other disposition short of final judgment may be successful if it permits a party to avoid expense, delay, distraction, disruption and uncertainty. In the event that any action, claim or proceeding to which Indemnitee is a party is resolved in any manner other than by adverse judgment against Indemnitee (including, without limitation, settlement of such action, claim or proceeding with or without payment of money or other consideration) it shall be presumed that Indemnitee has been successful on the merits or otherwise in such action, suit or proceeding. Anyone seeking to overcome this presumption shall have the burden of proof and the burden of persuasion by clear and convincing evidence.

(i) The termination of any Proceeding or of any claim, issue or matter therein, by judgment, order, settlement or conviction, or upon a plea of nolo contendere or its equivalent, shall not (except as otherwise expressly provided in this Agreement) of itself adversely affect the right of Indemnitee to indemnification or create a presumption that Indemnitee did not act in good faith and in a manner which he reasonably believed to be in or not opposed to the best interests of the Company or, with respect to any criminal Proceeding, that Indemnitee had reasonable cause to believe that his conduct was unlawful.

## 7. Remedies of Indemnitee.

(a) In the event that (i) a determination is made pursuant to Section 6 of this Agreement that Indemnitee is not entitled to indemnification under this Agreement, (ii) advancement of Expenses is not timely made pursuant to Section 5 of this Agreement, (iii) no determination of entitlement to indemnification is made pursuant to Section 6(b) of this Agreement within 90 days after receipt by the Company of the request for indemnification, (iv) payment of indemnification is not made pursuant to this Agreement within ten (10) days after receipt by the Company of a written request therefor or (v) payment of indemnification is not made within ten (10) days after a determination has been made that Indemnitee is entitled to indemnification or such determination is deemed to have been made pursuant to Section 6 of this Agreement, Indemnitee shall be entitled to an adjudication in an appropriate court of the State of Delaware, or in any other court of competent jurisdiction, of Indemnitee's entitlement to such indemnification. Indemnitee shall commence such proceeding seeking an adjudication within 180 days following the date on which Indemnitee first has the right to commence such proceeding pursuant to this Section 7(a). The Company shall not oppose Indemnitee's right to seek any such adjudication.

(b) In the event that a determination shall have been made pursuant to Section 6(b) of this Agreement that Indemnitee is not entitled to indemnification, any judicial proceeding commenced pursuant to this Section 7 shall be conducted in all respects as a de novo trial on the merits, and Indemnitee shall not be prejudiced by reason of the adverse determination under Section 6(b).

(c) If a determination shall have been made pursuant to Section 6(b) of this Agreement that Indemnitee is entitled to indemnification, the Company shall be bound by such determination in any judicial proceeding commenced pursuant to this Section 7, absent (i) a misstatement by Indemnitee of a material fact, or an omission of a material fact necessary to make Indemnitee's misstatement not materially misleading in connection with the application for indemnification, or (ii) a prohibition of such indemnification under applicable law.

(d) In the event that Indemnitee, pursuant to this Section 7, seeks a judicial adjudication of his rights under, or to recover damages for breach of, this Agreement, or to recover under any directors' and officers' liability insurance policies maintained by the Company, the Company shall pay on his behalf, in advance, any and all expenses (of the types described in the definition of Expenses in Section 13 of this Agreement) actually and reasonably incurred by him in such judicial adjudication, regardless of whether Indemnitee ultimately is determined to be entitled to such indemnification, advancement of expenses or insurance recovery.

(e) The Company shall be precluded from asserting in any judicial proceeding commenced pursuant to this Section 7 that the procedures and presumptions of this Agreement are not valid, binding and enforceable and shall stipulate in any such court that the Company is bound by all the provisions of this Agreement. The Company shall indemnify Indemnitee against any and all Expenses and, if requested by Indemnitee, shall (within ten (10) days after receipt by the Company of a written request therefore) advance, to the extent not prohibited by law, such expenses to Indemnitee, which are incurred by Indemnitee in connection with any action brought by Indemnitee for indemnification or advance of Expenses from the Company under this Agreement or under any directors' and officers' liability insurance policies maintained by the Company, regardless of whether Indemnitee ultimately is determined to be entitled to such indemnification, advancement of Expenses or insurance recovery, as the case may be.

(f) Notwithstanding anything in this Agreement to the contrary, no determination as to entitlement to indemnification under this Agreement shall be required to be made prior to the final disposition of the Proceeding.

8. Non-Exclusivity; Survival of Rights; Insurance; Primacy of Indemnification; Subrogation.

(a) The rights of indemnification as provided by this Agreement shall not be deemed exclusive of any other rights to which Indemnitee may at any time be entitled under applicable law, the Certificate of Incorporation, the By-laws, any agreement, a vote of stockholders, a resolution of directors or otherwise, of the Company. No amendment, alteration or repeal of this Agreement or of any provision hereof shall limit or restrict any right of Indemnitee under this Agreement in respect of any action taken or omitted by such Indemnitee in his Corporate Status prior to such amendment, alteration or repeal. To the extent that a change in the DGCL, whether by statute or judicial decision, permits greater indemnification than would be afforded currently under the Certificate of Incorporation, By-laws and this Agreement, it is the intent of the parties hereto that Indemnitee shall enjoy by this Agreement the greater benefits so afforded by such change. No right or remedy herein conferred is intended to be exclusive of any other right or remedy, and every other right and remedy shall be cumulative and in addition to every other right and remedy given hereunder or now or hereafter existing at law or in equity or otherwise. The assertion or employment of any right or remedy hereunder, or otherwise, shall not prevent the concurrent assertion or employment of any other right or remedy.

(b) To the extent that the Company maintains an insurance policy or policies providing liability insurance for directors, officers, employees, or agents or fiduciaries of the Company or of any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise that such person serves at the request of the Company, Indemnitee shall be covered by such policy or policies in accordance with its or their terms to the maximum extent of the coverage available for any director, officer, employee, agent or fiduciary under such policy or policies. If, at the time of the receipt of a notice of a claim pursuant to the terms hereof, the Company has director and officer liability insurance in effect, the Company shall give prompt notice of the commencement of such proceeding to the insurers in accordance with the procedures set forth in the respective policies. The Company shall thereafter take all necessary or desirable action to cause such insurers to pay, on behalf of the Indemnitee, all amounts payable as a result of such proceeding in accordance with the terms of such policies.

(c) The Company hereby acknowledges that Indemnitee has certain rights to indemnification, advancement of expenses and/or insurance provided by Merck Global Health Innovation Fund, LLC and its affiliates (collectively, the “**Fund Indemnitors**”). The Company hereby agrees (i) that it is the indemnitor of first resort (i.e., its obligations to Indemnitee are primary and any obligation of the Fund Indemnitors to advance expenses or to provide indemnification for the same expenses or liabilities incurred by Indemnitee are secondary), (ii) that it shall be required to advance the full amount of expenses incurred by Indemnitee and shall be liable for the full amount of all Expenses, judgments, penalties, fines and amounts paid in settlement to the extent legally permitted and as required by the terms of this Agreement and the Certificate of Incorporation or Bylaws of the Company (or any other agreement between the Company and Indemnitee), without regard to any rights Indemnitee may have against the Fund Indemnitors, and, (iii) that it irrevocably waives, relinquishes and releases the Fund Indemnitors from any and all claims against the Fund Indemnitors for contribution, subrogation or any other recovery of any kind in respect thereof. The Company further agrees that no advancement or payment by the Fund Indemnitors on behalf of Indemnitee with respect to any claim for which Indemnitee has sought indemnification from the Company shall affect the foregoing and the Fund Indemnitors shall have a right of contribution and/or be subrogated to the extent of such advancement or payment to all of the rights of recovery of Indemnitee against the Company. The Company and Indemnitee agree that the Fund Indemnitors are express third party beneficiaries of the terms of this Section 8(c).

(d) Except as provided in paragraph (c) above, in the event of any payment under this Agreement, the Company shall be subrogated to the extent of such payment to all of the rights of recovery of Indemnitee (other than against the Fund Indemnitors), who shall execute all papers required and take all action necessary to secure such rights, including execution of such documents as are necessary to enable the Company to bring suit to enforce such rights.

(e) Except as provided in paragraph (c) above, the Company shall not be liable under this Agreement to make any payment of amounts otherwise indemnifiable hereunder if and to the extent that Indemnitee has otherwise actually received such payment under any insurance policy, contract, agreement or otherwise.

(f) Except as provided in paragraph (c) above, the Company’s obligation to indemnify or advance Expenses hereunder to Indemnitee who is or was serving at the request of the Company as a director, officer, employee or agent of any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise shall be reduced by any amount Indemnitee has actually received as indemnification or advancement of expenses from such other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise.

9. Exception to Right of Indemnification. Notwithstanding any provision in this Agreement, the Company shall not be obligated under this Agreement to make any indemnity in connection with any claim made against Indemnitee:

(a) for which payment has actually been made to or on behalf of Indemnitee under any insurance policy or other indemnity provision, except with respect to any excess beyond the amount paid under any insurance policy or other indemnity provision, provided, that the foregoing shall not affect the rights of Indemnitee or the Fund Indemnitors set forth in Section 8(c) above; or



(b) for an accounting of profits made from the purchase and sale (or sale and purchase) by Indemnitee of securities of the Company within the meaning of Section 16(b) of the Securities Exchange Act of 1934, as amended, or similar provisions of state statutory law or common law; or

(c) in connection with any Proceeding (or any part of any Proceeding) initiated by Indemnitee, including, without limitation, any Proceeding (or any part of any Proceeding) initiated by Indemnitee against the Company or its directors, officers, employees or other indemnitees, unless (i) the Board authorized the Proceeding (or any part of any Proceeding) prior to its initiation or (ii) the Company provides the indemnification, in its sole discretion, pursuant to the powers vested in the Company under applicable law.

10. Duration of Agreement. All agreements and obligations of the Company contained herein shall continue during the period Indemnitee is an officer or director of the Company (or is or was serving at the request of the Company as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise) and shall continue thereafter until and terminate upon the later of: (a) ten (10) years after the date that Indemnitee shall have ceased to serve as a director of the Company or (b) one (1) year after the final termination of any Proceeding (or any proceeding commenced under Section 7 hereof) then pending in respect of which Indemnitee is granted rights of indemnification or advancement of Expenses hereunder. This Agreement shall be binding upon and inure to the benefit of and be enforceable by the parties hereto and their respective successors (including, without limitations, any direct or indirect successor by purchase, merger, consolidation or otherwise to all or substantially all of the business or assets of the Company), assigns, spouses, heirs, executors and personal and legal representatives.

11. Security. To the extent requested by Indemnitee and approved by the Board, the Company may at any time and from time to time provide security to Indemnitee for the Company's obligations hereunder through an irrevocable bank line of credit, funded trust or other collateral. Any such security, once provided to Indemnitee, may not be revoked or released without the prior written consent of the Indemnitee.

12. Enforcement.

(a) The Company expressly confirms and agrees that it has entered into this Agreement and assumes the obligations imposed on it hereby in order to induce Indemnitee to serve as an officer or director of the Company, and the Company acknowledges that Indemnitee is relying upon this Agreement in serving as an officer or director of the Company.

(b) This Agreement constitutes the entire agreement between the parties hereto with respect to the subject matter hereof and supersedes all prior agreements and understandings, oral, written and implied, between the parties hereto with respect to the subject matter hereof including, without limitation, the Original Agreement.

13. Definitions. For purposes of this Agreement:

(a) **“Corporate Status”** describes the status of a person who is or was a director, officer, employee, agent or fiduciary of or consultant to the Company or of any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise that such person is or was serving at the express written request of the Company.

(b) **“Disinterested Director”** means a director of the Company who is not and was not a party to the Proceeding in respect of which indemnification is sought by Indemnitee.

(c) **“Enterprise”** shall mean the Company and any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise that Indemnitee is or was serving at the express written request of the Company as a director, officer, employee, agent or fiduciary.

(d) **“Expenses”** shall include all reasonable attorneys’ fees, retainers, court costs, transcript costs, fees of experts, witness fees, travel expenses, duplicating costs, printing and binding costs, telephone charges, postage, delivery service fees and all other disbursements or expenses of the types customarily incurred in connection with prosecuting, defending, preparing to prosecute or defend, investigating, participating, or being or preparing to be a witness in a Proceeding, or responding to, or objecting to, a request to provide discovery in any Proceeding. Expenses also shall include Expenses incurred in connection with any appeal resulting from any Proceeding and any federal, state, local or foreign taxes imposed on the Indemnitee as a result of the actual or deemed receipt of any payments under this Agreement, including without limitation the premium, security for, and other costs relating to any cost bond, supersede as bond, or other appeal bond or its equivalent. Expenses, however, shall not include amounts paid in settlement by Indemnitee or the amount of judgments or fines against Indemnitee.

(e) **“Independent Counsel”** means a law firm, or a member of a law-firm, that is experienced in matters of corporation law and neither presently is, nor in the past five years has been, retained to represent: (i) the Company or Indemnitee in any matter material to either such party (other than with respect to matters concerning Indemnitee under this Agreement, or of other indemnitees under similar indemnification agreements), or (ii) any other party to the Proceeding giving rise to a claim for indemnification hereunder. Notwithstanding the foregoing, the term “Independent Counsel” shall not include any person who, under the applicable standards of professional conduct then prevailing, would have a conflict of interest in representing either the Company or Indemnitee in an action to determine Indemnitee’s rights under this Agreement. The Company agrees to pay the reasonable fees of the Independent Counsel referred to above and to fully indemnify such counsel against any and all Expenses, claims, liabilities and damages arising out of or relating to this Agreement or its engagement pursuant hereto.

(f) **“Proceeding”** includes any threatened, pending or completed action, suit, arbitration, alternate dispute resolution mechanism, investigation, inquiry,

administrative hearing or any other actual, threatened or completed proceeding, whether brought by or in the right of the Company or otherwise and whether civil, criminal, administrative or investigative, in which Indemnitee was, is or will be involved as a party or otherwise, by reason of the fact that Indemnitee is or was an officer or director of the Company, by reason of any action taken by him or of any inaction on his part while acting as an officer or director of the Company, or by reason of the fact that he is or was serving at the request of the Company as a director, officer, employee, agent or fiduciary of another corporation, partnership, joint venture, trust or other Enterprise; in each case whether or not he is acting or serving in any such capacity at the time any liability or expense is incurred for which indemnification can be provided under this Agreement; including one pending on or before the date of this Agreement, but excluding one initiated by an Indemnitee pursuant to Section 7 of this Agreement to enforce his rights under this Agreement.

14. Severability. The invalidity or unenforceability of any provision hereof shall in no way affect the validity or enforceability of any other provision. Further, the invalidity or unenforceability of any provision hereof as to either Indemnitee or Appointing Stockholder shall in no way affect the validity or enforceability of any provision hereof as to the other. Without limiting the generality of the foregoing, this Agreement is intended to confer upon Indemnitee and Appointing Stockholder indemnification rights to the fullest extent permitted by applicable laws. In the event any provision hereof conflicts with any applicable law, such provision shall be deemed modified, consistent with the aforementioned intent, to the extent necessary to resolve such conflict.

15. Modification and Waiver. No supplement, modification, termination or amendment of this Agreement shall be binding unless executed in writing by both of the parties hereto. No waiver of any of the provisions of this Agreement shall be deemed or shall constitute a waiver of any other provisions hereof (whether or not similar) nor shall such waiver constitute a continuing waiver.

16. Notice By Indemnitee. Indemnitee agrees promptly to notify the Company in writing upon being served with or otherwise receiving any summons, citation, subpoena, complaint, indictment, information or other document relating to any Proceeding or matter which may be subject to indemnification covered hereunder. The failure to so notify the Company shall not relieve the Company of any obligation which it may have to Indemnitee under this Agreement or otherwise unless and only to the extent that such failure or delay materially prejudices the Company.

17. Notices. All notices and other communications given or made pursuant to this Agreement shall be in writing and shall be deemed effectively given: (a) upon personal delivery to the party to be notified, (b) when sent by confirmed electronic mail or facsimile if sent during normal business hours of the recipient, and if not so confirmed, then on the next business day, (c) five (5) days after having been sent by registered or certified mail, return receipt requested, postage prepaid, or (d) one (1) day after deposit with a nationally recognized overnight courier, specifying next day delivery, with written verification of receipt. All communications shall be sent:

(a) To Indemnitee at the address set forth below Indemnitee signature hereto.

(b) To the Company at:

OpGen, Inc.  
708 Quince Orchard Road  
Gaithersburg, Maryland 20878  
Attention: Chief Executive Officer

or to such other address as may have been furnished to Indemnitee by the Company or to the Company by Indemnitee, as the case may be.

18. Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same Agreement. This Agreement may also be executed and delivered by facsimile signature and in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

19. Headings. The headings of the paragraphs of this Agreement are inserted for convenience only and shall not be deemed to constitute part of this Agreement or to affect the construction thereof.

20. Governing Law and Consent to Jurisdiction. This Agreement and the legal relations among the parties shall be governed by, and construed and enforced in accordance with, the laws of the State of Delaware, without regard to its conflict of laws rules. The Company and Indemnitee hereby irrevocably and unconditionally (i) agree that any action or proceeding arising out of or in connection with this Agreement shall be brought only in the Chancery Court of the State of Delaware (the "**Delaware Court**"), and not in any other state or federal court in the United States of America or any court in any other country, (ii) consent to submit to the exclusive jurisdiction of the Delaware Court for purposes of any action or proceeding arising out of or in connection with this Agreement, (iii) waive any objection to the laying of venue of any such action or proceeding in the Delaware Court, and (iv) waive, and agree not to plead or to make, any claim that any such action or proceeding brought in the Delaware Court has been brought in an improper or inconvenient forum.

***SIGNATURE PAGE FOLLOWS***

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on and as of the day and year first above written.

**COMPANY**

**OPGEN, INC.**

By: /s/ Timothy C. Dec

Name: Timothy C. Dec

Title: Chief Financial Officer

**INDEMNITEE**

/s/ David M. Rubin

Name: David M. Rubin

## JOINT FILING AGREEMENT

Pursuant to Rule 13d-1(k)(1) under the Securities Exchange Act of 1934, the undersigned hereby agree that only one statement containing the information required by Schedule 13D need be filed with respect to the ownership by each of the undersigned of securities of OpGen, Inc.

EXECUTED this 23<sup>rd</sup> day of July, 2015.

**MERCK GLOBAL HEALTH INNOVATION FUND, LLC**

By: /s/ William J. Taranto

Name: William J. Taranto

Title: Manager / President

**MERCK SHARP & DOHME CORP.**

By: /s/ Katie E. Fedosz

Name: Katie E. Fedosz

Title: Assistant Secretary

**MERCK & CO., INC.**

By: /s/ Katie E. Fedosz

Name: Katie E. Fedosz

Title: Senior Assistant Secretary

## POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that the undersigned, hereby constitute and appoint Katie E. Fedosz and Jon Filderman, and each of them, true and lawful attorneys-in-fact and agents of the undersigned, with full power of substitution and resubstitution for the undersigned and in its name, place and stead, to sign any Schedules 13D, reports on Form 3 (Initial Statement of Beneficial Ownership of Securities), Form 4 (Statement of Changes in Beneficial Ownership of Securities) and Form 5 (Annual Statement of Beneficial Ownership of Securities) relating to holdings of and transactions by the undersigned in securities of OpGen, Inc. and all amendments thereto, and to file the same, together with this power of attorney, with the Securities and Exchange Commission and the appropriate securities exchange, granting unto said attorneys-in-fact and agents, and each of them, or their substitutes, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully to all intents and purposes as the undersigned might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, and each of them, or their substitutes, may lawfully do or cause to be done by virtue hereof. This Power of Attorney shall be effective until such time as the undersigned delivers a written revocation thereof to the above-named attorneys-in-fact and agents.

Dated: this 23<sup>rd</sup> day of July, 2015.

**MERCK GLOBAL HEALTH INNOVATION FUND, LLC**

By: /s/ William J. Taranto

Name: William J. Taranto

Title: Manager / President

**MERCK SHARP & DOHME CORP.**

By: /s/ Katie E. Fedosz

Name: Katie E. Fedosz

Title: Assistant Secretary

**MERCK & CO., INC.**

By: /s/ Katie E. Fedosz

Name: Katie E. Fedosz

Title: Senior Assistant Secretary