

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

POST-EFFECTIVE AMENDMENT NO. 2
TO
FORM S-1
REGISTRATION STATEMENT

Under
The Securities Act of 1933

OPGEN, INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of incorporation or
organization)

8071
(Primary Standard Industrial
Classification Code Number)

06-1614015
(I.R.S. Employer
Identification Number)

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Gaithersburg, MD 20878
(240) 813-1260

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Evan Jones
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Copies to:

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Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, as amended, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer

Accelerated Filer

Non-Accelerated Filer

Smaller Reporting Company

Emerging Growth Company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided to Section 7(a)(2)(B) of the Securities Act.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until this registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

EXPLANATORY NOTE

This Post-Effective Amendment No. 2 to Form S-1 Registration Statement contains an updated prospectus relating to the continued offering and sale of common stock issuable upon the exercise of common warrants that were issued by OpGen, Inc. to investors in connection with the registrant's July 2017 public offering of units and pre-funded units. Each unit consisted of one-twenty-fifth of a share of common stock and one common warrant to purchase one-twenty-fifth of a share of common stock, or a common warrant. In addition, the registrant issued warrants to H.C. Wainwright & Co., the placement agent in the public offering, or the placement agent warrants, each of which is exercisable to purchase one-twenty-fifth of a share of common stock at an exercise price of \$12.50 per share. The common warrants and the placement agent warrants were all initially registered by the registrant on the Registration Statement on Form S-1 (File No. 333-218392) declared effective by the Securities and Exchange Commission on July 12, 2017. All filing fees payable in connection with the registration of the shares issuable upon exercise of such warrants were previously paid in connection with the filing of the original registration statement.

The information in this preliminary prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to Completion: Dated March 15, 2019

Preliminary Prospectus



1,050,000 shares of Common Stock issuable upon the exercise of warrants

This prospectus relates to up to 1,050,000 shares of common stock which are issuable upon the exercise of outstanding common warrants and placement agent warrants issued in our public offering of units, pre-funded units and placement agent warrants which closed on July 18, 2017, pursuant to a prospectus dated July 14, 2017.

Each common warrant is exercisable into one-twenty-fifth of a share of common stock, at an exercise price of \$10.625 per share, collectively, the common warrants. Common warrants became exercisable on July 18, 2017, the date of issuance, and will remain exercisable for five years from the issuance date. Each warrant to purchase one-twenty-fifth of a share of common stock issued to the placement agent, or collectively, the placement agent warrants, became exercisable on July 18, 2017, the date of issuance, and will remain exercisable for five years from the issuance date at an exercise price of \$12.50 per share.

We will receive all of the proceeds from the exercise for cash of the common warrants and the placement agent warrants, which are referred to collectively as the warrants in this prospectus.

Our common stock is listed on the Nasdaq Capital Market under the symbol "OPGN." On March 11, 2019, the last reported sale price of our common stock on the Nasdaq Capital Market was \$1.27 per share. We will not apply for listing of any of the warrants on any securities exchange or other nationally recognized trading system. There is no established public trading market for any of the warrants, and we do not expect a market to develop.

Following receipt of approval from stockholders at a special meeting of stockholders held on January 17, 2018, we filed an amendment to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of the issued and outstanding shares of our common stock, at a ratio of one share for twenty-five shares, and to reduce the authorized shares of our common stock from 200,000,000 to 50,000,000 shares. All share and per share prices in this prospectus have been adjusted to reflect the reverse stock split.

We are an "emerging growth company" as the term is used in the Jumpstart Our Business Startups Act of 2012 and, as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings. See "Prospectus Summary - Implications of Being an Emerging Growth Company."

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 12.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

Prospectus dated _____, 2019

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You should rely only on the information contained in this prospectus. We have not authorized any person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus is not an offer to sell securities in any state where the offer or solicitation is not permitted. The information contained in this prospectus is complete and accurate as of the date on the front cover of this prospectus, but information may have changed since that date. We are responsible for updating this prospectus to ensure that all material information is included and will update this prospectus to the extent required by law.

This prospectus includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe that these industry publications and third-party research, surveys and studies are reliable, we have not independently verified such data and we do not make any representation as to the accuracy of the information.

We own various U.S. federal trademark registrations and applications and unregistered trademarks and servicemarks, including OpGen®, Acuitas®, Acuitas Lighthouse®, AdvanDx®, QuickFISH® and PNA FISH®. All other trademarks, servicemarks or trade names referred to in this prospectus are the property of their respective owners. Solely for convenience, the trademarks and trade names in this prospectus are sometimes referred to without the ® and ™ symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend the use or display of other companies' trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies, products or services.

PROSPECTUS SUMMARY

This summary highlights information contained in greater detail elsewhere in this prospectus or incorporated by reference herein. This summary is not complete and does not contain all of the information you should consider in making your investment decision. You should read the entire prospectus carefully before making an investment in our common stock. You should carefully consider, among other things, our financial statements and the related notes and the sections entitled “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included elsewhere in, or incorporated by reference into, this prospectus. When we refer to OpGen, Inc. we use the terms “OpGen,” “the Company,” “us,” “we” and “our.”

Overview

We are a precision medicine company harnessing the power of molecular diagnostics and informatics to help combat infectious disease. We are developing molecular information products and services for global healthcare settings, helping to guide clinicians with more rapid and actionable information about life threatening infections, improve patient outcomes, and decrease the spread of infections caused by multidrug-resistant microorganisms, or MDROs. Our proprietary DNA tests and informatics address the rising threat of antibiotic resistance by helping physicians and other healthcare providers optimize care decisions for patients with acute infections.

Our molecular diagnostics and informatics products, product candidates and services combine our Acuitas® molecular diagnostics and Acuitas Lighthouse® informatics platform for use with our proprietary, curated MDRO knowledgebase. We are working to deliver our products and services, some in development, to a global network of customers and partners.

- Our Acuitas molecular diagnostic tests provide rapid microbial identification and antibiotic resistance gene information. These products include our Acuitas antimicrobial resistance, or AMR, Gene Panel (Urine) test in development for patients at risk for complicated urinary tract infections, or cUTI, our Acuitas AMR Gene Panel (Isolates) test in development for testing bacterial isolates, and our QuickFISH and PNA FISH FDA-cleared and CE-marked diagnostics used to rapidly detect pathogens in positive blood cultures. Each of our Acuitas AMR Gene Panel tests is available for sale for research use only, or RUO.
- Our Acuitas Lighthouse informatics systems are cloud-based HIPAA compliant informatics offerings that combine clinical lab test results with patient and hospital information to provide analytics and actionable insights to help manage MDROs in the hospital and patient care environment. Components of our informatics systems include the Acuitas Lighthouse Knowledgebase and the Acuitas Lighthouse Software. The Acuitas Lighthouse Knowledgebase is a relational database management system and a proprietary data warehouse of genomic data matched with antibiotic susceptibility information for bacterial pathogens. The Acuitas Lighthouse Software system includes the Acuitas Lighthouse Portal, a suite of web applications and dashboards, the Acuitas Lighthouse Prediction Engine, which is a data analysis software, and other supporting software components. The Acuitas Lighthouse Software can be customized and made specific to a healthcare facility or collaborator, such as a pharmaceutical company. The Acuitas Lighthouse Software is not distributed commercially for antibiotic resistance prediction and is not for use in diagnostic procedures.

Financing Needs

We have incurred substantial losses since our inception, and we expect to continue to incur additional losses for the next several years. For the years ended December 31, 2018 and 2017, we had net losses of \$13.4 million and \$15.4 million, respectively. From our inception through December 31, 2018, we had an accumulated deficit of \$162.1 million. The report of our independent registered public accounting firm on our financial statements for the years ended December 31, 2018 and 2017 contains explanatory language that substantial doubt exists about our ability to continue as a going concern. We completed a number of financings in 2018 and 2017. The net proceeds from such financings were approximately \$26.7 million.

We expect to continue to incur significant operating expenses relating to, among other things:

- developing our Acuitas AMR Gene Panel products and services for antibiotic resistance testing;
- commercializing our Acuitas AMR Gene Panel tests and Acuitas Lighthouse informatics services, as RUO products and, once cleared, as diagnostic products and services;
- conducting additional clinical trials as we seek regulatory approval for some of our product offerings;
- developing, presenting and publishing additional clinical and economic utility data intended to increase clinician adoption of our current and future products and services;
- expanding our operating capabilities;
- developing additional collaborative arrangements;
- maintaining, expanding and protecting our intellectual property portfolio and trade secrets;
- expanding the size and geographic reach of our sales force and our marketing capabilities to commercialize potential future products and services; and
- recruiting and retaining our quality assurance and compliance personnel and maintaining compliance with regulatory requirements.

In order to achieve our strategy, we expect to pursue additional financing transactions. We are currently evaluating all alternatives available to the Company, including additional equity or debt offerings, pursuit of non-dilutive collaboration revenue and/or business combinations or other significant transactions. We cannot assure you that additional transactions will not occur as we seek to secure sufficient funding to implement our strategy.

Our Business

We have established a number of commercial arrangements to support execution of our business strategy as we work to address the more than \$2 billion potential market for precision medicine MDRO solutions. Our relationship with Merck & Co., Inc. includes investment from Merck Global Health Innovation Fund, or MGHIF, and a research agreement with Merck Sharp & Dohme, or MSD, to provide access to MSD's 250,000 clinical isolate SMART bacterial surveillance archive. In December 2017, we entered into a subcontractor agreement with ILÚM Health Solutions, LLC, an entity created by Merck's Healthcare Services and Solutions division, whereby ILÚM Health Solutions provided us with services to the Company in the performance of the Company's CDC contract to deploy ILÚM's commercially-available cloud- and mobile-based software platform for infectious disease management in three medical sites in Colombia with the aim of improving antibiotic use in resource-limited settings.

In October 2018, we entered into a supply agreement with QIAGEN N.V. to advance our rapid diagnostics for antimicrobial resistance. Under the agreement, we will work to commercialize QIAGEN's EZ1 Advanced XL automated nucleic acid purification instrumentation (EZ1) and reagent kits in the United States to be used with our Acuitas AMR Gene Panel products. Under the terms of the agreement, we will purchase EZ1 instruments and reagent kits from QIAGEN and sell or place them with customers in the United States for use with the Acuitas AMR Gene Panel products, both RUO and, when 510(k) clearance is obtained, as diagnostic products. The EZ1 is a Class I Medical Device listed with the FDA that provides full automation with sample preparation throughput of up to 14 samples per one-hour run. QIAGEN is the global leader for nucleic acid sample preparation with a full line of instruments and reagents. There are thousands of EZ1 instruments currently used in laboratories worldwide.

In September 2018, we announced a collaboration with the New York State Department of Health, or DOH, and ILÚM to develop a state-of-the-art research program to detect, track, and manage antimicrobial-resistant infections at healthcare institutions in New York State. The collaboration is called the New York State Infectious Disease Digital Health Initiative. The first portion of the collaboration is the completion of a development project, expected to last one year, that we believe will lead to a statewide program. Under the demonstration project, OpGen will work with DOH's Wadsworth Center and ILÚM to develop an infectious disease digital health and precision medicine platform that connects healthcare institutions to DOH and uses genomic microbiology for statewide surveillance and control of antimicrobial resistance. The DOH, ILÚM and OpGen will work collaboratively to build a sustainable, flexible infectious diseases reporting, tracking and surveillance tool for antimicrobial resistance that can be applied across New York State. The goal of this project is to improve patient outcomes and save healthcare dollars by integrating real-time epidemiologic surveillance with rapid delivery of resistance results to care-givers via web-based and mobile platforms. ILÚM is leading the project with the implementation of its technology platform. OpGen is providing its Acuitas AMR Gene Panel for rapid detection of multidrug-resistant bacterial pathogens along with its Acuitas Lighthouse Software for high resolution pathogen tracking. Under the agreement, OpGen will receive approximately \$1.6 million for the 12-month demonstration portion of the project, with the potential for full implementation during the next four years, should certain milestones be achieved by all parties involved.

In June 2017, the Company entered into a global supply agreement to use Thermo Fisher Scientific's technology to support the commercialization of its rapid molecular products. Under the terms of the agreement, OpGen will commercialize the AMR Gene Panel tests for Pathogen ID and resistance genes on Thermo Fisher's new mid-throughput real-time PCR system. In January 2018, the Company entered into a second global supply agreement to incorporate Thermo Fisher Scientific's real-time PCR technology in the company's Acuitas AMR Gene Panel tests. Specific products covered under these agreements include the QuantStudio 5 Real-Time PCR System, TaqMan® Fast Advanced Master Mix and TaqMan® Probes for quick, multiplexed gene detection.

In October 2017, the Company announced that it was awarded a contract from the Centers for Disease Control and Prevention, or CDC, to develop smartphone-based clinical decision support solutions for antimicrobial stewardship, or AMS, and infection control in low- and middle-income countries. The one-year \$860,000 award began September 30, 2017 and funded development and evaluation of cloud-based mobile software. The Company worked with partners ILÚM and Universidad El Bosque, or UEB, of Bogota, Colombia. The Company's teaming partner ILÚM provided its cloud- and mobile-based software platform, which integrates electronic patient data and local empiric treatment guidelines to support antimicrobial stewardship. The ILÚM platform is state-of-the-art mobile AMS software that is commercially available and in use in major medical centers. The mobile platform was translated into Spanish and was extended to quickly identify patients requiring infection control precautions, assist with the implementation of appropriate precautions, and assist with the collection and tracking of indicators for monitoring implementation of infection control precautions. During 2018 we deployed the software in three medical sites in Colombia to assess the effectiveness of the effort. Through the initial pilot, we gained experience and positive results to support the expansion of this important initiative further. The three sites from the project intend to continue using the Insight software tool, and we are in discussions with ILÚM to establish a distribution relationship for Colombia and the region.

We believe more rapid genetic identification methods will reduce morbidity from MDROs, reduce healthcare costs through reduced length of stay, and assist in the identification of targeted antibiotic therapy. Current conventional microbiology, largely unchanged in 50 years, requires one to two days for growth and phenotypic analysis and often leads to the use of broad spectrum antibiotic therapy in the early stages of infection.

We are developing high resolution Acuitas AMR Gene Panel tests designed to determine pathogen levels in clinical specimens and the key drug resistance gene profiles of Gram-negative organisms. Our Acuitas AMR Gene Panel (RUO) tests are available for sale for research use only. Following completion of our research and development efforts and receipt of appropriate regulatory clearances, we anticipate our Acuitas AMR Gene Panel tests will be used in the clinical setting to provide pathogen and antibiotic resistance gene information to aid in decision-making for patients at risk for cUTI, lower respiratory tract infections, blood stream infections, and for testing of bacterial isolates.

Current Diagnostic Tests and Informatics

Our FDA cleared and CE marked QuickFISH and PNA FISH products are powered by PNA technology and provide rapid pathogen identification, typically in less than 30 minutes from a positive blood culture result.

We currently offer our Acuitas AMR Gene Panel (RUO) tests to contract research organizations, or CROs, pharmaceutical companies, hospitals and other healthcare providers for research use only.

We offer our Acuitas Lighthouse Software to health care facilities and public health facilities for infection control and surveillance purposes.

Lead Diagnostics and Informatics Products in Development

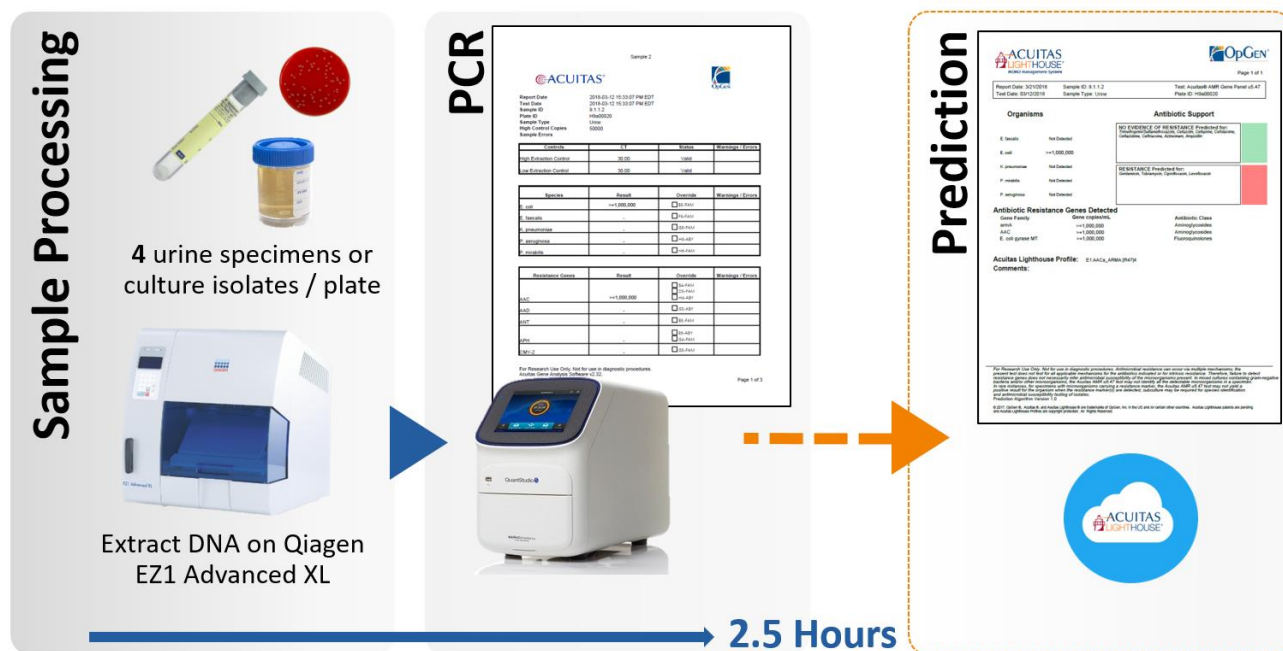
Acuitas AMR Gene Panel and Acuitas Lighthouse Software

The Acuitas AMR Gene Panel is a qualitative and semi-quantitative nucleic acid-based in vitro diagnostic test that is capable of simultaneous detection and identification of multiple bacterial nucleic acids and select genetic determinants of antimicrobial resistance in urine specimens or bacterial colonies isolated from urine and other body sites. The Acuitas AMR Gene Panel (Urine) is intended as an aid in the diagnosis of specific agents of UTIs for patients at risk of cUTI. The Acuitas AMR Gene Panel (Urine) employs automated deoxyribonucleic acid, or DNA, extraction on the Qiagen® EZ1 Advanced XL and multiplex real-time PCR on the Applied Biosystems™ QuantStudio 5 PCR System. The Acuitas AMR Gene Panel (Urine) test detects 47 gene targets which span 600 subtypes and convey resistance to 9 classes of antibiotics directly from urine and isolated colonies, and is currently sold as a RUO test. Gene families detected include: KPC, NDM, VIM, IMP, OXA, CTXM-1, CTXM-9, CMY, MCR, and resistance genes to fluoroquinolone antibiotics. From urine specimens, the Acuitas AMR Gene Panel (Urine) will semi-quantitatively detect the most common bacterial causes of cUTI (*E. coli*, *K. pneumoniae*, *P. aeruginosa*, *P. mirabilis*, *E. faecalis*). While the test is currently designed to detect only five bacterial species, this test will detect resistance genes in other organisms if present without providing species identification. Test results are provided in under three hours, compared with traditional microbiology methods, which can take two to three days.

We are also developing the Acuitas AMR Gene Panel (Isolates) test for testing bacterial isolates. The RUO test is being used in the New York State Infectious Disease Digital Health Initiative for testing of bacterial isolates. The test is genotyping carbapenem resistant isolates from three health systems in the New York City Metro Area. Results are subsequently analyzed by the Acuitas Lighthouse Software to support a series of infection control tracking capabilities that are of interest to the Department of Public Health and healthcare providers. Following the anticipated FDA clearance of the Acuitas AMR Gene Panel (Isolates) test, we expect use of the test to expand to include use of the test information to support antibiotic decision making in acute care patient management of patients with MDRO infections.

The Acuitas Lighthouse Software manages and evaluates data that identify the most common microbial causes of cUTI and key genetic determinants of antibiotic drug resistance, based on the amplification data of gene targets extracted from urine specimens. Through analysis of this data, the Acuitas Lighthouse Software can identify five bacterial species and predict resistance to up to fourteen different antibiotics from across nine antibiotic classes including: Aminoglycosides, Carbapenems, Cephalosporins, Fluoroquinolones, Polymyxins, Penicillins, Sulfonamides, Trimethoprim and Vancomycin. The Acuitas Lighthouse Software consists of the Acuitas Lighthouse Portal, a web application; the Acuitas Lighthouse Prediction Engine, data analysis software; and draws from the Lighthouse Knowledgebase, a relational database management system; and minor supporting software components. The Acuitas Lighthouse Software was selected by the New York State Department of Health Wadsworth Laboratories for the genomic microbiology component of the New York State Infectious Disease Digital Health Initiative. All components of the Acuitas Lighthouse Software are securely hosted in a cloud-hosted, web-based application. The input to Acuitas Lighthouse Software is a data file generated by processing the results from the Acuitas AMR Gene Panel (Urine) test through the Acuitas AMR Gene Panel (Urine) Gene Analysis Software. This input file indicates which gene targets were detected by the assay and is loaded into the Acuitas Lighthouse Software via an interface of the Acuitas Lighthouse Portal, accessed by the user through a web browser. The Acuitas AMR Gene Panel (Urine) Gene Analysis Software results are retained by the Acuitas Lighthouse Knowledgebase and are sent to the Acuitas Lighthouse Prediction Engine for analysis. The Acuitas Lighthouse Prediction Engine contains software implementations of data models that were derived using a training panel of thousands of bacterial isolates with detailed genotypic and phenotypic characterizations, all stored within the Acuitas Lighthouse Knowledgebase. These models, each specific to one (1) microbial species and antibiotic drug pairing, are used to make predictions of antibiotic resistance by analyzing the loaded input data. The results from the Acuitas Lighthouse Prediction Engine indicate whether there is evidence of resistance detected through the presence of specific genes, and if there is known intrinsic resistance to certain drugs. These final results are reported to the user via a Prediction Report and the Resistance Dashboard interface in the Acuitas Lighthouse Portal; both displays present the Acuitas Lighthouse Prediction Engine output in combination with selected input data and metadata, as well as the semi-quantitative counts of gene copies / mL for urine specimens. Development of the Acuitas Lighthouse Software and the Acuitas AMR Gene Panel (Urine) was the result of a comprehensive, multi-year development effort to help address urgent clinical needs for improved rapid antibiotic decision-making capabilities.

The figure below describes the workflow for the Acuitas AMR Gene Panel (Urine) test and the Acuitas Lighthouse Software.



Our Strategy

We are using our current product and service offerings, and will use our products in development to build and commercialize a comprehensive precision medicine solution for combatting infectious disease with a focus on developing diagnostic tests for rapid pathogen identification and genetic profiling, antibiotic resistance analysis and advanced informatics to store and analyze MDRO and other infectious disease data for hospitals, out-patient settings and other healthcare providers.

We believe that antimicrobial resistance is an urgent global healthcare issue. MDROs have been prioritized as an urgent national and global threat by the CDC, the executive branch of the federal government and the World Health Organization. In September 2014, The White House issued a National Strategy for Combating Antibiotic-Resistant Bacteria. This strategy calls for the strengthening of surveillance efforts to combat resistance, the development and use of innovative diagnostic tests for identification and characterization of resistant bacteria and antibiotic stewardship and development.

The CDC estimates that in the United States more than two million people are sickened every year with antibiotic-resistant infections, with at least 23,000 dying as a result. Antibiotic-resistant infections add considerable but often avoidable costs to the U.S. healthcare system. In most cases, these infections require prolonged and/or costlier treatments, extended hospital stays, additional doctor visits and healthcare facilities use, and result in greater disability and death compared with infections that are treatable with antibiotics. Estimates for the total economic cost to the U.S. economy are difficult to calculate but the CDC has estimated such costs to be as high as \$20 billion in excess direct healthcare costs annually. As described in a December 2014 report issued by the Review on Antimicrobial Resistance commissioned by the U.K. Prime Minister, titled “Antimicrobial Resistance: Tackling a Crisis for the Health and Wealth of Nations,” there are estimated to be 700,000 deaths each year from antimicrobial resistance, including 50,000 deaths annually in the U.S. and Europe.

The two core components of our strategy are development and commercialization of rapid diagnostic tests and leveraging our Acuitas Lighthouse informatics services into new markets and channels.

- Rapid diagnostics** – We are developing OpGen-branded Acuitas AMR Gene Panel tests for use on the Thermo Fisher Scientific Applied Biosystems™ QuantStudio™ 5 Real-Time PCR System. The first of these new tests will be for antibiotic resistance testing of bacterial isolates. The second indication for the Acuitas AMR Gene Panel is for management of patients with cUTI. We anticipate developing tests for additional clinical indications such as lower respiratory tract infections and for new antibiotic decision-making applications. The second rapid diagnostics growth driver is anticipated to be through strategic partner relationships where we will work to expand channel access for our proprietary DNA tests through development and subsequent use of these tests, utilizing the Acuitas Lighthouse Software on established rapid in vitro diagnostic testing platforms.
- Acuitas Lighthouse informatics and services** – We are pursuing commercial opportunities to provide our Acuitas Lighthouse informatics and companion genomic testing to pharmaceutical companies, CROs, health systems, third party in vitro diagnostic companies, and government agencies. Through our participation in the New York State Infectious Disease Digital Health Initiative we anticipate deploying our Acuitas Lighthouse Software throughout the State to help identify and track patients with Superbug infections.

Our focus in the health system segment is on helping guide antibiotic decision-making and supporting patient safety initiatives. We are actively pursuing government funding for development and deployment of our Acuitas Lighthouse informatics in the United States and internationally.

In support of our strategy we are working to:

- complete development, clinical evaluations, obtain necessary regulatory approvals, and successfully commercialize our Acuitas AMR Gene Panel (Urine) for cUTIs with a goal of achieving three-hour antibiotic resistance analysis from the time of specimen collection;
- commercialize our Acuitas AMR Gene Panel tests for RUO, which started in January 2018;
- make a FDA 510(k) submission for the Acuitas AMR Gene Panel (Isolates) test in the first or second quarter of 2019 to support commercial launch;
- follow with additional FDA 510(k) submissions for the Acuitas AMR Gene Panel (Urine) test anticipated in the third quarter of 2019, and the Acuitas Lighthouse Software (AMR Gene Panel Prediction) anticipated in the second half of 2019;
- successfully complete the demonstration project of the New York State Digital Health Initiative to support Statewide deployment in subsequent years;
- obtain third party funding to expand our Acuitas AMR Gene Panel test development and access to additional third party rapid testing platforms;
- expand our business collaborations with Merck and other pharmaceutical companies;
- capitalize on opportunities to deploy our Acuitas Lighthouse informatics and genomic testing for pharmaceutical/CRO services;
- grow our Acuitas Lighthouse data warehouse offerings for resistance and susceptibility data in hospital, hospital system, or broader community applications through continued development of the Acuitas Lighthouse Knowledgebase;
- seek government funding to advance programs focused on identification and treatment of MDROs; and
- continue development of our Acuitas Lighthouse Software and work to install Acuitas Lighthouse Software to customer sites in the United States and globally.

Molecular Information Business

We are working to build a unique and highly proprietary molecular information business. Our approach combines FDA-cleared and CE-marked rapid diagnostics with our Acuitas Lighthouse Software. We are developing an integrated solution based on a genomic knowledgebase of drug-resistant pathogens. Our approach involves sourcing thousands of pathogens from hospitals worldwide and completing genomic analysis including DNA sequencing and drug susceptibility testing of each individual pathogen. These data are combined along with hospital patient data and other information in our Acuitas Lighthouse Knowledgebase. We anticipate using this information and insights we derive from it to help power our rapid diagnostic products, healthcare management solutions and new applications to support pharmaceutical companies.

Risk Factors

Our business is subject to numerous risks and uncertainties, including those incorporated by reference herein. These risks include, but are not limited to, the following:

- we have a history of losses and expect to incur losses for the next several years;
- we will require additional financing and if we are not successful in raising additional capital through debt or equity issuances, we may pursue alternative transactions, including business combinations;
- the process to obtain FDA clearance and/or approval is time-consuming and expensive process, and we may not be successfully obtaining such clearances or approvals in a timely manner or at all;
- our products may never achieve significant commercial market acceptance;
- our contracts with government agencies could be subject to uncertain future funding;
- our sales cycle is lengthy and variable; and
- we may not be able to compete successfully with the products and services sold by other companies in our industry, who are better capitalized than we are.

THE OFFERING

Common Warrants

Number of Common Warrants 1,000,000

Terms of Common Warrants: Each common warrant has an exercise price of \$10.625 per share and is exercisable at any time after the date of issuance for five years from its date of issuance. To better understand the terms of the common warrants, you should carefully read the “Description of the Offered Securities” section of this prospectus. You should also read the form of common warrant, which is filed as an exhibit to the registration statement of which this prospectus forms a part.

Placement Agent Warrants

Number of Placement Agent Warrants 50,000

Terms of Placement Agent Warrants: Each placement agent warrant has an exercise price of \$12.50 per share and is exercisable at any time after the date of issuance for five years from its date of issuance.

Common stock outstanding before this offering: 8,645,720 shares of common stock

Common stock outstanding after this offering: 9,695,720 shares of common stock

Use of Proceeds: Assuming that the warrants are exercised for cash, we will use the net proceeds of this offering for general corporate purposes, including working capital and product development, particularly development of our one to three hour antibiotic resistance diagnostic product. See “Use of Proceeds” on page 17 of this prospectus.

Risk Factors: Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page 12 of this prospectus and the other information included or incorporated by reference in this prospectus.

Nasdaq Capital Market symbol: “OPGN.” There is no established trading market for the common warrants or the placement agent warrants, and we do not expect a trading market to develop. We will not list the common warrants or the placement agent warrants on any securities exchange or other trading market. Without a trading market, the liquidity of the common warrants or placement agent warrants will be extremely limited.

The number of shares of common stock to be outstanding immediately after this offering is based on 8,645,720 shares of our common stock outstanding as of December 31, 2018, and excludes:

- 211,559 shares of common stock issuable upon the exercise of outstanding options granted as of December 31, 2018, under our equity incentive plans at a weighted average exercise price of \$20.58 per share;
- 3,525,797 shares of common stock issuable upon the exercise of outstanding warrants issued as of December 31, 2018, at a weighted average exercise price of \$14.84 per share;

- 250 shares of common stock issuable upon vesting of outstanding restricted stock units granted as of December 31, 2018; and
- 50,863 shares of common stock available for future issuance under our equity incentive plans as of December 31, 2018.

The number of outstanding options, restricted stock units and shares of common stock available for future issuances under our equity incentive plan does not reflect the addition of 345,829 shares to the available shares under the 2015 Plan as of January 1, 2019 as a result of the evergreen provision of the 2015 Plan.

Company and Other Information

OpGen, Inc. was incorporated in Delaware in 2001. On July 14, 2015, the Company acquired AdvanDx, Inc., a Delaware corporation, as a wholly owned subsidiary in a merger transaction, or the AdvanDx Merger. Our principal executive office is located at 708 Quince Orchard Road, Gaithersburg, Maryland, 20878, and our telephone number is (240) 813-1260. The Company also has operations in Woburn, Massachusetts, Copenhagen, Denmark and Bogota, Colombia. Our website address is www.opgen.com. We do not incorporate the information on or accessible through our website into this prospectus, and you should not consider any information on, or that can be accessed through, our website as part of this prospectus.

Implications of Being an Emerging Growth Company

As a company with less than \$1.07 billion in revenue during our last fiscal year, we qualify as an “emerging growth company” as defined in the Jumpstart Our Business Startups Act, or the JOBS Act, enacted in April 2012. An “emerging growth company” may take advantage of exemptions from some of the reporting requirements that are otherwise applicable to public companies. These exceptions include:

- being permitted to present only two years of audited financial statements and only two years of related Management’s Discussion and Analysis of Financial Condition and Results of Operations in this prospectus;
- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended;
- reduced disclosure obligations regarding executive compensation in our periodic reports, proxy statements and registration statements; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

We may take advantage of these provisions until the last day of our fiscal year following the fifth anniversary of the closing of our initial public offering in May 2015. However, if certain events occur prior to the end of such five-year period, including if we become a “large accelerated filer,” our annual gross revenue exceeds \$1.07 billion or we issue more than \$1.0 billion of non-convertible debt in any three-year period, we will cease to be an emerging growth company prior to the end of such five-year period.

We have elected to take advantage of certain of the reduced disclosure obligations in this prospectus and may elect to take advantage of other reduced reporting requirements in future filings. As a result, the information that we provide to our stockholders may be different than you might receive from other public reporting companies in which you hold equity interests.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. We have irrevocably elected not to avail ourselves of this exemption and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

SUMMARY FINANCIAL DATA

The following summary financial data should be read together with our financial statements and related notes, and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” incorporated by reference into this prospectus. The summary statements of operations data for the years ended December 31, 2018 and 2017, and the balance sheet data as of December 31, 2018 have been derived from our audited financial statements incorporated by reference into this prospectus. Historical results are not necessarily indicative of the results that may be expected in the future.

| | Year Ended December 31, | |
|--|--|-------------|
| | 2018 | 2017 |
| | (In thousands, except per share data) | |
| Statements of Operation Data: | | |
| Revenue | \$ 2,946 | \$ 3,211 |
| Operating expenses: | | |
| Cost of products sold | 1,223 | 1,613 |
| Cost of services ⁽¹⁾ | 626 | 520 |
| Research and development ⁽¹⁾ | 5,677 | 6,883 |
| General and administrative ⁽¹⁾ | 7,069 | 6,693 |
| Sales and marketing ⁽¹⁾ | 1,532 | 2,768 |
| Total operating expenses ⁽¹⁾ | 16,127 | 18,477 |
| Operating loss | (13,181) | (15,266) |
| Interest and other (expense) income | 5 | (87) |
| Interest expense | (191) | (233) |
| Foreign currency transaction gains (losses) | (10) | 23 |
| Change in fair value of derivative financial instruments | 8 | 144 |
| Provision for income taxes | - | - |
| Net loss | \$ (13,369) | \$ (15,419) |
| Net loss per common share, basic and diluted | \$ (2.22) | \$ (9.80) |
| Weighted average shares outstanding—basic and diluted | 6,009 | 1,574 |

(1) Includes stock-based compensation as follows:

| | Year Ended December 31, | |
|--------------------------------|------------------------------------|-------------|
| | 2018 | 2017 |
| Cost of services | \$ 964 | \$ 13,776 |
| Research and development | 241,122 | 237,103 |
| General and administrative | 574,244 | 603,787 |
| Sales and marketing | 45,951 | 56,732 |
| Total stock-based compensation | \$ 862,281 | \$ 911,398 |

| | As of December 31, 2018 | |
|----------------------------|--------------------------------|--------------------|
| | Actual | As Adjusted |
| | (In thousands) | |
| Balance Sheet Data: | | |
| Cash and cash equivalents | \$ 4,572 | \$ 15,822 |
| Working capital | 1,402 | 12,652 |
| Total assets | 8,950 | 20,200 |
| Accumulated deficit | (162,079) | (162,079) |
| Total stockholders' equity | 3,308 | 14,558 |

The preceding table presents a summary of our balance sheet data as of December 31, 2018:

- on an actual basis;
- on an as adjusted basis, to give further effect to the issuance and sale in this offering of 1,050,000 shares of common stock upon the exercise of the common warrants at an exercise price of \$10.625 per share and of the placement agent warrants at an exercise price of \$12.50 per share.

RISK FACTORS

Investing in our securities involves a high degree of risk. You should consider carefully the risks and uncertainties described below, and incorporated by reference herein, together with all of the other information in, or incorporated by reference in, this prospectus, including our financial statements and related notes incorporated by reference herein, before making an investment decision. If any of these risks occur, our business, financial condition, results of operations and prospects could be materially and adversely affected. In that event, the trading price of our common stock could decline and you could lose part or all of your investment.

Risks Related to this Offering and Our Securities

We need to raise capital in this offering to support our operations. If the offering is not successful, our financial position will be materially adversely impacted.

We have incurred substantial losses since our inception, and we expect to continue to incur additional losses for the next several years. For the year ended December 31, 2018, we had a net loss of \$13.4 million. From our inception through December 31, 2018, we had an accumulated deficit of \$162.1 million. We believe that current cash on hand will be sufficient to fund operations into the second quarter of 2019. In the event we are unable to successfully raise sufficient capital in this offering, we will not have sufficient cash flows and liquidity to finance our business operations as currently contemplated. Accordingly, in such circumstances we would be compelled to reduce general and administrative expenses and delay research and development projects, including the purchase of scientific equipment and supplies, until we are able to obtain sufficient financing. We have no additional committed sources of capital and may find it difficult to raise money on terms favorable to us or at all. The failure to obtain sufficient capital to support our operations would have a material adverse effect on our business, financial condition and results of operations. If such sufficient financing is not received timely, we would then need to pursue a plan to license or sell assets, seek to be acquired by another entity, cease operations and/or seek bankruptcy protection.

If we are not able to continue to meet the Nasdaq rules for continued listing on the Nasdaq Capital Market, our common stock could be delisted.

If we are not able to meet the Nasdaq rules for continued listing on the Nasdaq Capital Market, notably, the minimum bid price rule and the stockholders' equity minimum, our common stock could be delisted.

If our common stock is delisted by Nasdaq, our common stock may be eligible for quotation on an over-the-counter quotation system or on the pink sheets. Upon any such delisting, our common stock would become subject to the regulations of the SEC relating to the market for penny stocks. A penny stock is any equity security not traded on a national securities exchange that has a market price of less than \$5.00 per share. The regulations applicable to penny stocks may severely affect the market liquidity for our common stock and could limit the ability of stockholders to sell securities in the secondary market. In such a case, an investor may find it more difficult to dispose of or obtain accurate quotations as to the market value of our common stock, and there can be no assurance that our common stock will be eligible for trading or quotation on any alternative exchanges or markets.

Delisting from Nasdaq could adversely affect our ability to raise additional financing through public or private sales of equity securities, would significantly affect the ability of investors to trade our securities and would negatively affect the value and liquidity of our common stock. Delisting could also have other negative results, including the potential loss of confidence by employees, the loss of institutional investor interest and fewer business development opportunities.

Management will have broad discretion as to the use of the net proceeds from this offering, and we may not use the proceeds effectively.

Our management will have broad discretion as to the application of the net proceeds and could use them for purposes other than those contemplated at the time of this offering. Our stockholders may not agree with the manner in which our management chooses to allocate and spend the net proceeds. Moreover, our management may use the net proceeds for corporate purposes that may not increase our results of operations or the market value of our common stock. Our failure to apply these funds effectively could have a material adverse effect on our business, delay the development and approval of our products and cause the price of our common stock to decline.

If you purchase our securities in this offering you may experience future dilution as a result of future equity offerings or other equity issuances.

In order to raise additional capital, we believe that we will offer and issue additional shares of our common stock or other securities convertible into or exchangeable for our common stock in the future. We cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors in this offering, and investors purchasing other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock or other securities convertible into or exchangeable for our common stock in future transactions may be higher or lower than the price per share in this offering.

In addition, we have a significant number of stock options and warrants outstanding. To the extent that outstanding stock options or warrants have been or may be exercised or other shares issued, you may experience further dilution. Further, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans.

The market price of our common stock has been, and may continue to be, highly volatile, and such volatility could cause the market price of our common stock to decrease and could cause you to lose some or all of your investment in our common stock.

During the period from our initial public offering in May 2015 through March 11, 2019, the market price of our common stock fluctuated from a high of \$136.00 per share to a low of \$0.76 per share, and our stock price continues to fluctuate. The market price of our common stock may continue to fluctuate significantly in response to numerous factors, some of which are beyond our control, such as:

- our ability to grow our revenue and customer base;
- the announcement of new products or product enhancements by us or our competitors;
- the trading volume of our common stock;
- developments concerning regulatory oversight and approvals;
- variations in our and our competitors' results of operations;
- changes in earnings estimates or recommendations by securities analysts, if our common stock is covered by analysts;
- successes or challenges in our collaborative arrangements or alternative funding sources;
- developments in the health care and life science industries;
- the results of product liability or intellectual property lawsuits;
- future issuances of common stock or other securities;
- the addition or departure of key personnel;
- announcements by us or our competitors of acquisitions, investments or strategic alliances; and
- general market conditions and other factors, including factors unrelated to our operating performance.

Further, the stock market in general, and the market for health care and life science companies in particular, has recently experienced extreme price and volume fluctuations. The volatility of our common stock is further exacerbated due to its low trading volume. Continued market fluctuations could result in extreme volatility in the price of our common stock, which could cause a decline in the value of our common stock and the loss of some or all of your investment.

Trading of our common stock is limited, and trading restrictions imposed on us by applicable regulations may further reduce trading in our common stock, making it difficult for our stockholders to sell their shares; and future sales of common stock could reduce our stock price.

Trading of our common stock is currently conducted on the Nasdaq Capital Market. The liquidity of our common stock is limited, not only in terms of the number of shares that can be bought and sold at a given price, but also as it may be adversely affected by delays in the timing of transactions and reduction in security analysts' and the media's coverage of us, if at all. These factors may result in different prices for our common stock than might otherwise be obtained in a more liquid market and could also result in a larger spread between the bid and asked prices for our common stock. In addition, without a large public float, our common stock is less liquid than the stock of companies with broader public ownership, and, as a result, the trading prices of our common stock may be more volatile. In the absence of an active public trading market, an investor may be unable to liquidate his investment in our common stock. Trading of a relatively small volume of our common stock may have a greater impact on the trading price of our stock than would be the case if our public float were larger. We cannot predict the prices at which our common stock will trade in the future, if at all.

The exercise of outstanding common stock purchase warrants and stock options will have a dilutive effect on the percentage ownership of our capital stock by existing stockholders.

As of December 31, 2018, we had outstanding warrants to acquire 3,525,797 shares of our common stock, including the warrants included in this offering, and stock options to purchase 211,559 shares of our common stock. The expiration of the term of such options and warrants range from March 2019 to June 2028. A significant number of such warrants are out of the money, but the holders have the right to effect a cashless exercise of such warrants. If a significant number of such warrants and stock options are exercised by the holders, the percentage of our common stock owned by our existing stockholders will be diluted.

We have never paid dividends on our capital stock, and we do not anticipate paying dividends in the foreseeable future.

We have never paid dividends on any of our capital stock and currently intend to retain any future earnings to fund the growth of our business. In addition, an amended and restated promissory note issued in June 2017 to Merck Global Health Innovation Fund, a principal investor, or the MGHIF Note, and the related security agreement restricts our ability to pay cash dividends on our common stock. We may also enter into credit agreements or other borrowing arrangements in the future that will restrict our ability to declare or pay cash dividends on our common stock. Any determination to pay dividends in the future will be at the discretion of our Board of Directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our Board of Directors may deem relevant. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for the foreseeable future.

Our ability to utilize our net operating loss carryforwards may be limited as a result of an "ownership change," as defined in Section 382 of the Internal Revenue Code triggered by this offering.

As of December 31, 2018, we had approximately \$178.2 million of net operating loss ("NOL") carryforwards for U.S. federal tax purposes. Under U.S. federal income tax law, we generally can use our NOL carryforwards (and certain tax credits) to offset ordinary taxable income, thereby reducing our U.S. federal income tax liability, for up to 20 years from the year in which the losses were generated, after which time they will expire. State NOL carryforwards (and certain tax credits) generally may be used to offset future state taxable income for 20 years from the year in which the losses are generated, depending on the state, after which time they will expire. The rate at which we can utilize our NOL carryforwards is limited (which could result in NOL carryforwards expiring prior to their use) each time we experience an "ownership change," as determined under Section 382 of the Internal Revenue Code. A Section 382 ownership change generally occurs if a shareholder or a group of shareholders who are deemed to own at least 5% of our common stock increase their ownership by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. If an ownership change occurs, Section 382 generally would impose an annual limit on the amount of post-ownership change taxable income that may be offset with pre-ownership change NOL carryforwards equal to the product of the total value of our outstanding equity immediately prior to the ownership change (reduced by certain items specified in Section 382) and the U.S. federal long-term tax-exempt interest rate in effect at the time of the ownership change. A number of special and complex rules apply in calculating this Section 382 limitation. While the complexity of Section 382 makes it difficult to determine whether and when an ownership change has occurred, and if a portion of our NOLs is subject to an annual limitation under Section 382, we believe that an additional ownership change may occur upon the consummation of this offering. In addition, our ability to use our NOL carryforwards will be limited to the extent we fail to generate enough taxable income in the future before they expire. Existing and future Section 382 limitations and our inability to generate enough taxable income in the future could result in a substantial portion of our NOL carryforwards expiring before they are used. In addition, under the 2017 Tax Cut and Jobs Act, effective for losses arising in taxable years beginning after December 31, 2017, the deduction for NOLs is limited to 80 percent of taxable income, NOLs can no longer be carried back, and NOLs can be carried forward indefinitely.

This prospectus includes forward-looking statements. All statements other than statements of historical facts contained in this prospectus, including statements regarding our future results of operations and financial position, strategy and plans, and our expectations for future operations, are forward-looking statements. The words “believe,” “may,” “will,” “estimate,” “continue,” “anticipate,” “design,” “intend,” “expect” or the negative version of these words and similar expressions are intended to identify forward-looking statements. We have based these forward-looking statements on our current expectations and projections about future events and trends that we believe may affect our financial condition, results of operations, strategy, short- and long-term business operations and objectives, and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in “Risk Factors”. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this prospectus may not occur, and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

- the completion of our development efforts for the Acuitas AMR Gene Panel tests and Acuitas Lighthouse Software, and the timing of commercialization;
- our ability to sustain or grow our customer base for our current products;
- our liquidity and working capital requirements, including our cash requirements over the next 12 months;
- our ability to maintain compliance with the ongoing listing requirements for the Nasdaq Capital Market;
- anticipated trends and challenges in our business and the competition that we face;
- the execution of our business plan and our growth strategy;
- our expectations regarding the size of and growth in potential markets;
- our opportunity to successfully enter into new collaborative agreements;
- regulations and changes in laws or regulations applicable to our business, including regulation by the FDA;
- compliance with the U.S. and international regulations applicable to our business; and
- our expectations regarding future revenue and expenses.

Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, level of activity, performance or achievements. In addition, neither we nor any other person assumes responsibility for the accuracy and completeness of any of these forward-looking statements. These risks should not be construed as exhaustive and should be read in conjunction with our other disclosures, including but not limited to the risk factors described in this prospectus. Other risks may be described from time to time in our filings made under the securities laws. New risks emerge from time to time. It is not possible for our management to predict all risks. All forward-looking statements in this prospectus speak only as of the date made and are based on our current beliefs and expectations. We undertake no obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

These factors should not be construed as exhaustive and should be read in conjunction with our other disclosures, including but not limited to the risk factors described in this prospectus. Other risks may be described from time to time in our filings made under the securities laws. New risks emerge from time to time. It is not possible for our management to predict all risks. All forward-looking statements in this prospectus speak only as of the date made and are based on our current beliefs and expectations. We undertake no obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

USE OF PROCEEDS

We will not receive any amounts pursuant to this offering unless the warrants are exercised for cash. Assuming the exercise of all of the warrants, we will receive gross proceeds of approximately \$11.25 million. We will use the net proceeds, if any, of this offering for research and development, including funding the continued development, submission of application for 501(k) clearance and manufacturing of our AMR Gene Panel tests, support acquisitions of products and technologies, capital expenditures, working capital and other general corporate purposes.

The primary programs and activities to which we intend to devote the net proceeds of this offering are:

- research and development and regulatory activities in support of the Company's anticipated FDA 510(k) submissions for the Acuitas AMR Gene Panel test and the Acuitas Lighthouse Software;
- commercialization of the Acuitas RUO products and Acuitas *in vitro* diagnostic products following receipt of FDA clearance;
- investments in manufacturing and operations infrastructure to support sales of the Company's products; and
- the balance for general corporate purposes, such as general and administrative expenses, capital expenditures and working capital needs.

The expected use of net proceeds of this offering represents our current intentions based upon our present plan and business conditions. We may use a portion of the net proceeds for the acquisitions of businesses, products, technologies or licenses that are complementary to our business, although we have no present commitments or agreements to do so. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering. Our management will have broad discretion in the application of the net proceeds, and investors will be relying on the judgment of our management regarding the application of the proceeds of this offering.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and capitalization as of December 31, 2018. You should read this table in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes included elsewhere in, or incorporated by reference into, this prospectus.

The information is set forth:

- on an actual basis; and
- on an as adjusted basis, to give further effect to the issuance and sale in this offering of 1,050,000 shares of common stock upon the exercise of the common warrants at an exercise price of \$10.625 per share and of the placement agent warrants at an exercise price of \$12.50 per share.

| | As of December 31, 2018 | |
|--|--|--------------------|
| | Actual | As Adjusted |
| | (In thousands, except share and per share data) | |
| Cash and cash equivalents | \$ 4,572 | \$ 15,822 |
| Short-term debt, net of discount | \$ 399 | \$ 399 |
| Stockholder’s (deficit) equity: | | |
| Common stock, par value \$0.01 per share: 50,000,000 shares authorized, 8,645,720 shares issued and outstanding, actual; 50,000,000 shares authorized, 9,695,720 issued and outstanding, as adjusted | 86 | 97 |
| Preferred stock, par value \$0.01 per share; 10,000,000 shares authorized, no shares outstanding, actual and as adjusted | - | - |
| Additional paid-in capital | 165,314 | 176,553 |
| Accumulated other comprehensive loss | (13) | (13) |
| Accumulated deficit | (162,079) | (162,079) |
| Total stockholders’ equity | <u>3,308</u> | <u>14,558</u> |
| Total capitalization | <u>\$ 3,707</u> | <u>\$ 14,957</u> |

The number of shares of common stock to be outstanding immediately after this offering is based on 8,645,720 shares of our common stock outstanding as of December 31, 2018, and excludes:

- 211,559 shares of common stock issuable upon the exercise of outstanding options granted as of December 31, 2018, under our equity incentive plans at a weighted average exercise price of \$20.58 per share;
- 3,525,797 shares of common stock issuable upon the exercise of outstanding warrants issued as of December 31, 2018, at a weighted average exercise price of \$14.84 per share;
- 250 shares of common stock issuable upon vesting of outstanding restricted stock units granted as of December 31, 2018; and
- 50,863 shares of common stock available for future issuance under our equity incentive plans as of December 31, 2018.

The number of outstanding options, restricted stock units and shares of common stock available for future issuances under our equity incentive plan does not reflect the addition of 345,829 shares to the available shares under the 2015 Plan as of January 1, 2019 as a result of the evergreen provision of the 2015 Plan.

DILUTION

Our net tangible book value as of December 31, 2018 was approximately \$1.6 million, or \$0.19 per share. Net tangible book value per share is determined by dividing our total tangible assets, less total liabilities, by the number of shares of our common stock outstanding as of December 31, 2018. Dilution with respect to net tangible book value per share represents the difference between the amount per share paid by purchasers of shares of common stock in this offering and the net tangible book value per share of our common stock immediately after this offering.

After giving effect to the exercise for cash of 1,050,000 warrants that are the subject of this offering for an aggregate exercise price of \$11.25 million, our as adjusted net tangible book value as of December 31, 2018 would have been approximately \$12.9 million, or \$1.33 per share. This represents an immediate increase in net tangible book value of \$1.14 per share to existing stockholders and immediate dilution of \$9.38 per share to investors purchasing our securities in this offering. The following table illustrates this dilution on a per share basis:

| | | | |
|---|----|-------------|-------------|
| Weighted average exercise price of warrant shares | | \$ | 10.71 |
| Net tangible book value per share of as December 31, 2018 | \$ | 0.19 | |
| Increase in net tangible book value per share attributable to this offering | \$ | <u>1.14</u> | |
| As adjusted net tangible book value per share as of December 31, 2018, after giving effect to this offering | | \$ | 1.33 |
| Dilution per share to new investors purchasing our common stock in this offering | | \$ | <u>9.38</u> |

The number of shares of common stock to be outstanding immediately after this offering is based on 8,645,720 shares of our common stock outstanding as of December 31, 2018, and excludes:

- 211,559 shares of common stock issuable upon the exercise of outstanding options granted as of December 31, 2018, under our equity incentive plans at a weighted average exercise price of \$20.58 per share;
- 3,525,797 shares of common stock issuable upon the exercise of outstanding warrants issued as of December 31, 2018, at a weighted average exercise price of \$14.84 per share;
- 250 shares of common stock issuable upon vesting of outstanding restricted stock units granted as of December 31, 2018; and
- 50,863 shares of common stock available for future issuance under our equity incentive plans as of December 31, 2018.

The number of outstanding options, restricted stock units and shares of common stock available for future issuances under our equity incentive plan does not reflect the addition of 345,829 shares to the available shares under the 2015 Plan as of January 1, 2019 as a result of the evergreen provision of the 2015 Plan.

Market Information

Our common stock and warrants we issued in our initial public offering, or the IPO Warrants, have traded on the Nasdaq Capital Market under the symbols “OPGN” and “OPGNW,” respectively, since May 5, 2015. Prior to such time, there was no public market for our common stock or our warrants. Stockholder Information

As of March 11, 2019, there were approximately 33 stockholders of record of our common stock, which does not include stockholders that beneficially own shares held in a “nominee” or in “street” name.

Dividends

We have never paid or declared any cash dividends on our common stock. We do not anticipate paying any cash dividends on our common stock in the foreseeable future, and we intend to retain all available funds and any future earnings to fund the development and expansion of our business. Any future determination to pay dividends will be at the discretion of our board of directors and will depend upon a number of factors, including our results of operations, financial condition, future prospects, contractual restrictions, restrictions imposed by applicable law and other factors our board of directors deems relevant.

Our authorized capital stock consists of 50,000,000 shares of common stock, par value \$0.01 per share, and 10,000,000 shares of preferred stock, par value \$0.01 per share, of which 7,690,572 shares are available for issuance. The following is a summary of the rights of our common and preferred stock, and some of the provisions of our amended and restated certificate of incorporation and amended and restated bylaws and the Delaware General Corporation Law. Because it is only a summary, it does not contain all of the information that may be important to you. Such summary is subject to and qualified in its entirety by our amended and restated certificate of incorporation and our amended and restated bylaws, a copy of each of which has been incorporated as an exhibit to the registration statement of which this prospectus forms a part.

Following receipt of approval from stockholders at a special meeting held on January 17, 2018, we filed an Amendment to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of the issued and outstanding shares of our common stock, at a ratio of one share for each twenty-five shares outstanding, and to reduce the authorized shares of common stock from 200,000,000 to 50,000,000 shares. In implementing the Reverse Stock Split, the number of shares of our common stock held by each stockholder was reduced by dividing the number of shares held immediately before the Reverse Stock Split by twenty-five and then rounding down to the nearest whole share. We paid cash to each stockholder in lieu of any fractional interest in a share to which each stockholder would otherwise be entitled as a result of the Reverse Stock Split. The Reverse Stock Split did not affect any stockholder's percentage ownership interest in our Company or proportionate voting power, except to the extent that interests in fractional shares were paid in cash.

In addition, we have adjusted all outstanding shares of any restricted stock units, stock options and warrants entitling the holders to purchase shares of our common stock as a result of the Reverse Stock Split, as required by the terms of these securities. In particular, we have reduced the conversion ratio for each security, and increased the exercise price in accordance with the terms of each security based on Reverse Stock Split ratio (i.e., the number of shares issuable under such securities have been divided by twenty-five, and the exercise price per share has been multiplied by twenty-five). Also, we reduced the number of shares reserved for issuance under our existing 2015 Equity Incentive Plan, or the 2015 Plan, proportionately based on the Reverse Stock Split ratio. The Reverse Stock Split does not otherwise affect any of the rights currently accruing to holders of our common stock, or options or warrants exercisable for our common stock.

Common Stock

As of March 11, 2019, there were 8,645,720 shares outstanding, 3,737,606 shares of common stock reserved for the exercise of outstanding stock options, warrants and restricted stock units, and approximately 33 record holders. The holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of the stockholders. The holders of our common stock do not have any cumulative voting rights. The Board of Directors are elected to a one year term; the Company does not have a staggered board. Holders of our common stock are entitled to receive ratably any dividends declared by the Board of Directors out of funds legally available for that purpose, subject to any preferential dividend rights of any outstanding preferred stock. Our common stock has no preemptive rights, conversion rights or other subscription rights or redemption or sinking fund provisions.

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in all assets remaining after payment of all debts and other liabilities and any liquidation preference of any outstanding preferred stock.

Preferred Stock

Series A Convertible Preferred Stock

Of the authorized preferred stock, the Company issued 2,309,428 shares of Series A Convertible Preferred Stock. As of August 10, 2016, no shares of the Series A Convertible Preferred Stock were outstanding. The holder of the Series A Convertible Preferred Stock converted all 2,309,428 shares of Series A Convertible Preferred Stock into 92,377 shares of common stock. All such converted shares of Series A Convertible Preferred Stock were canceled and will not be reissued.

Additional Series of Preferred Stock

Our Board of Directors has the authority, without further action by our stockholders, to issue from time to time 7,690,572 shares of preferred stock in one or more series. Our Board of Directors will have the authority to establish the number of shares to be included in each series and fix the powers, preferences and rights of the shares of each wholly unissued series and any of its qualifications, limitations or restrictions. Our Board of Directors will also be able to increase or decrease the number of shares of any series, but not below the number of shares of that series then outstanding, without any further vote or action by the stockholders.

The issuance of preferred stock could decrease the amount of earnings and assets available for distribution to the holders of common stock or adversely affect the rights and powers, including voting rights, of the holders of common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in control of our Company, which could depress the market price of our common stock. We have no current plans to issue any additional shares of preferred stock.

Outstanding Warrants

IPO Warrants

The warrants to purchase common stock that we issued in our initial public offering, or the IPO Warrants, entitle the registered holder to purchase one share of common stock at a price equal to \$165.00 per share, subject to adjustment as discussed below, immediately following the issuance of such IPO Warrants and terminate at 5:00 p.m., New York City time, on May 8, 2020 or earlier upon the dissolution or winding up of the Company. We have listed the IPO Warrants on the Nasdaq Capital Market, as a standalone security under the symbol "OPGNW."

The IPO Warrants were issued pursuant to a Warrant Agreement between us and our transfer agent as the Warrant Agent. The exercise price and number of shares of common stock issuable upon exercise of the IPO Warrants may be adjusted in certain circumstances, including in the event of a stock dividend or recapitalization, reorganization, merger or consolidation.

The IPO Warrants may be exercised upon surrender of the applicable Warrant Certificate on or prior to the applicable expiration date at the offices of the Warrant Agent, with the exercise form on the reverse side of the Warrant Certificate completed and executed as indicated, accompanied by full payment of the exercise price, by certified or official bank check payable to us, unless such holders are willing to exercise their IPO Warrants on a cashless basis, as further described in this Warrant Agreement, for the number of IPO Warrants being exercised. Under the terms of the Warrant Agreement, we have agreed to use our reasonable best efforts to maintain the effectiveness of a registration statement and prospectus relating to common stock issuable upon exercise of the IPO Warrants until the expiration of the IPO Warrants. The Offered Warrant holders do not have the rights or privileges of holders of common stock or any voting rights until they exercise their IPO Warrants and receive shares of common stock. After the issuance of shares of common stock upon exercise of the IPO Warrants, each holder will be entitled to one vote for each share held of record on all matters to be voted on by stockholders.

A holder may not exercise any portion of an Offered Warrant to the extent that the holder, together with its affiliates and any other person or entity acting as a group, would own more than 4.99% of the outstanding common stock after exercise, as such percentage ownership is determined in accordance with the terms of the Offered Warrant. The foregoing limitation on exercise shall not apply to any registered holder of an Offered Warrant who, together with his, her or its affiliates, and any persons acting as a group together with such registered holder and such registered holder's affiliates, owns in excess of 4.99% immediately prior to the closing of this offering. In addition, upon at least 61 days' prior notice from the holder to us, the holder may waive such limitation.

No fractional shares of common stock will be issued upon exercise of the IPO Warrants. If, upon exercise of the Offered Warrant, a holder would be entitled to receive a fractional interest in a share, we will, upon exercise, round to the nearest whole number of shares of common stock to be issued to the Offered Warrant holder. If multiple IPO Warrants are exercised by the holder at the same time, we will aggregate the number of whole shares issuable upon exercise of all the IPO Warrants.

2016 PIPE Warrants

Pursuant to the terms of the Amended & Restated Purchase Agreement, dated as of May 18, 2016, by and among the Company and the purchasers party thereto, the purchasers purchased 362,142 warrants, or the PIPE Warrants, exercisable for an aggregate of 271,606 shares of common stock, or the PIPE Warrant Shares, in the PIPE Financing. The PIPE Warrants are exercisable at an exercise price of \$32.8125 per share of common stock, became exercisable 90 days after the date of issuance, and may be exercised for five years from the date of issuance. The exercise price and the number of PIPE Warrant Shares will be adjusted to account for the subdivision or combination by the Company of outstanding shares of common stock. The exercise price may, at any time, also be voluntarily reduced at the discretion of the Board of Directors of the Company. The PIPE Warrants may be exercised pursuant to a cashless exercise, but only if a registration statement covering the resale of the PIPE Warrant Shares that are the subject of an exercise notice is not available for the resale of such PIPE Warrant Shares.

The PIPE Warrants also contain certain provisions providing for liquidated damages to be paid by the Company in the event the Company does not timely deliver registered shares of common stock to the holder upon exercise of a PIPE Warrant. Specifically, in addition to the PIPE Warrant holder's other available remedies, if the Company fails to issue and deliver (or cause to be delivered) to a holder by the required delivery date a certificate representing the shares so delivered to the Company by such holder that is free from all restrictive and other legends, the Company shall pay to a holder in cash, as partial liquidated damages and not as a penalty, an amount equal to 1% of the product of (A) the aggregate number of shares of common stock not issued to the holder on a timely basis and to which the holder is entitled and (B) the closing sale price on the trading day immediately preceding the required delivery date of the certificate, per trading day for each trading day after such required delivery date until such securities are delivered to the holder. In addition, if the Company fails to (i) issue and deliver (or cause to be delivered) to a holder by the required delivery date a certificate representing the shares so delivered to the Company by such holder that is free from all restrictive and other legends or (ii) if after the required delivery date such holder purchases (in an open market transaction or otherwise) shares of common stock to deliver in satisfaction of a sale by such holder of all or any portion of the number of shares of common stock, or a sale of a number of shares of common stock equal to all or any portion of the number of shares of common stock that such holder anticipated receiving from the Company without any restrictive legend, then, the Company shall either (y) pay cash to the holder in an amount equal to 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, or the Buy-In Price, at which point the Company's obligation to deliver such shares shall terminate, or (z) promptly honor its obligation to deliver to the holder a certificate or certificates representing such shares and pay cash to the holder in an amount equal to the excess (if any) of the Buy-In Price over the product of (1) such number of shares of common stock that the Company was required to deliver multiplied by (2) the lowest closing sale price of the common stock on any trading day during the period commencing on the date of the delivery by such holder to the Company of the applicable shares (as the case may be) and ending on the date of such delivery and payment under this clause (z).

Warrants issued in Bridge Financing

Pursuant to the Note Purchase Agreement and the underlying transactions, the Company has issued warrants to purchase shares of its common stock to jVen Capital in an amount equal to twenty percent (20%) of the principal of each of the two bridge financing notes issued, or the jVen Capital Warrants, and warrants to purchase shares of its common stock to MGHIF in an amount equal to twenty percent (20%) of the outstanding principal and accrued interest under the amended and restated MGHIF Note on June 28, 2017, the date of issuance. The warrants each have a five year term from issuance, are first exercisable on the date that is six months after the date of issuance and have an exercise price equal to 110% of the closing price of the Company's common stock on the date immediately prior to the date of issuance. The terms of the warrants issued in connection with the Bridge Financing (other than the exercise price and the number of shares) may be amended, in the discretion of the holder, to reflect the terms of the warrants issued in the July 2017 Public Offering.

The jVen Capital Warrants each include a blocker provision that prevents the exercise of the jVen Capital Warrants if such exercise, when aggregated with the other issuances contemplated under the Note Purchase Agreement, would violate Nasdaq Listing Rule 5635, unless stockholder approval is first obtained by the Company.

Warrants issued in the July 2017 Public Offering

The Company issued warrants in connection with the July 2017 Public Offering. The common warrants issued in the July 2017 Public Offering entitle the registered holder to purchase one twenty-fifth of a share of common stock at an exercise price of \$10.625 per share. In addition, the Company issued warrants to the placement agent that have an exercise price of \$12.50 per share of common stock. All of the warrants issued in the July 2017 Public Offering are immediately exercisable and have a five-year term from the date of issuance.

Warrants issued in the February 2018 Public Offering

The Company issued warrants in connection with the February 2018 Public Offering. The common warrants issued in the February 2018 Public Offering entitle the registered holder to purchase one-half of a share of common stock at an exercise price of \$3.25 per share. In addition, the Company issued warrants to the placement agent that have an exercise price of \$4.0625 per share of common stock. All of the warrants issued in the February 2018 Public Offering are immediately exercisable and have a five-year term from the date of issuance.

Registration Rights

Investors' Rights Agreement

Under the Third Amended and Restated Investors' Rights Agreement, dated as of December 18, 2013, among the Company and certain investors, or the investors' rights agreement, we granted registration rights to the holders of shares acquired prior to our initial public offering, or their permitted transferees. These rights are provided under the terms of the investors' rights agreement, and include demand registration rights, short-form registration rights and piggyback registration rights. All fees, costs and expenses of underwritten registrations will be borne by us and all selling expenses, including underwriting discounts and selling commissions, will be borne by the holders of the shares being registered. As of the date of this prospectus, the holders of 232,384 shares of our common stock have registration rights under the investors' rights agreement. The investors' rights agreement contains customary cross-indemnification provisions, under which we are obligated to indemnify holders of registrable shares in the event of material misstatements or omissions in the registration statement attributable to us, and they are obligated to indemnify us for material misstatements or omissions attributable to them. The registration rights granted under the investors' rights agreement will terminate at the earlier of the closing of a deemed liquidation event and when all of the holders of registrable securities are eligible to be sold without restrictions under Rule 144 promulgated under the Securities Act within any 90-day period.

AdvanDx Merger and MGHIF Investment

In connection with the July 2015 merger transaction among the Company, a merger sub and AdvanDx, Inc., and the related transactions in which MGHIF purchased shares of our common stock and initially issued the MGHIF Note, the Company also entered into a registration rights agreement with the AdvanDx stockholders receiving merger consideration and with MGHIF, pursuant to which the investors were granted certain demand registration rights and piggyback registration rights in connection with subsequent registered offerings of the Company's common stock. MGHIF also received rights to participate on a pro-rata basis in future securities offerings by the Company. MGHIF is the only holder of registrable securities under this registration rights agreement.

Bridge Financing Registration Rights

In connection with the bridge financing the Company entered into a registration rights agreement with jVen Capital and with MGHIF, pursuant to which the investors were granted certain demand registration rights and piggyback registration rights in connection with subsequent registered offerings of the Company's common stock. The registrable securities include the shares of common stock underlying the warrants issued to jVen Capital and to MGHIF under the terms of the bridge financing promissory notes.

We are offering 1,050,000 shares of common stock of OpGen Inc., which are issuable upon the exercise of outstanding common warrants and placement agent warrants issued in our July 2017 Public Offering.

Common Stock

The material terms and provisions of our common stock and each other class of our securities which qualifies or limits our common stock are described under the caption “Description of Capital Stock” in this prospectus.

Common Warrants and Placement Agent Warrants

The following summary of certain terms and provisions of common warrants and placement agent warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the common warrants, and the provisions of the placement agent warrants, as the case may be, the form of each of which is filed as an exhibit to the registration statement of which this prospectus forms a part. You should carefully review the terms and provisions of the form of common warrant or placement agent warrant for a complete description of the terms and conditions of the common warrants and placement agent warrants.

Duration and Exercise Price

Each common warrant has an initial exercise price per share equal to \$10.625. Each placement agent warrant has an initial exercise price per share equal to \$12.50. The common warrants and placement agent warrants are currently exercisable and will expire on the fifth anniversary of the original issuance date, which was July 18, 2017. The exercise price and number of shares of common stock issuable upon exercise is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting our common stock and the exercise price. The common warrants were issued separately from the common stock included in the units, or the pre-funded warrants included in the pre-funded units issued in the July 2017 Public Offering, as the case may be, and may be transferred separately immediately thereafter. The placement agent warrants were issued separately.

Cashless Exercise

If, at the time a holder exercises its common warrants or placement agent warrants, as the case may be, a registration statement registering the issuance of the shares of common stock underlying the common warrants or the placement agent warrants under the Securities Act is not then effective or available for the issuance of such shares, then in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the common warrants and the placement agent warrants.

Exercisability

The common warrants or placement agent warrants will be exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our common stock purchased upon such exercise (except in the case of a cashless exercise as discussed above). A holder (together with its affiliates) may not exercise any portion of the common warrant or a placement agent warrant to the extent that the holder would own more than 4.99% of the outstanding common stock immediately after exercise, except that upon at least 61 days’ prior notice from the holder to us, the holder may increase the amount of ownership of outstanding stock after exercising the holder’s common warrants or placement agent warrants up to 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the common warrants or the placement agent warrants.

Fractional Shares

No fractional shares of common stock will be issued upon the exercise of the common warrants or placement agent warrants. Rather, the number of shares of common stock to be issued will, at our election, either be rounded up to the nearest whole number or we will pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the exercise price.

Transferability

Subject to applicable laws, a common warrant and a placement agent warrant may be transferred at the option of the holder upon surrender of the common warrant or placement agent warrant to us together with the appropriate instruments of transfer.

Exchange Listing

We do not intend to list the common warrants or placement agent warrants on any securities exchange or nationally recognized trading system.

Right as a Stockholder

Except as otherwise provided in the common warrants or placement agent warrants, or by virtue of such holder's ownership of shares of our common stock, the holders of the common warrants or placement agent warrants do not have the rights or privileges of holders of our common stock, including any voting rights, until they exercise their common warrants or placement agent warrants, as the case may be.

Fundamental Transaction

In the event of a fundamental transaction which is approved by our Board, the holders of the common warrants and placement agent warrants have the right to require us or a successor entity to redeem the warrant for cash in the amount of the Black-Scholes value of the unexercised portion of the warrant on the date of the consummation of the fundamental transaction. In the event of a fundamental transaction which is not approved by our Board, the holders of the common warrants and placement agent warrants have the right to require us or a successor entity to redeem the warrant for the consideration paid in the fundamental transaction in the amount of the Black Scholes value of the unexercised portion of the warrant on the date of the consummation of the fundamental transaction.

Anti-Takeover Effects of Our Certificate of Incorporation, Bylaws and Delaware Law

Our certificate of incorporation and bylaws include a number of provisions that may have the effect of delaying, deferring or preventing another party from acquiring control of us and encouraging persons considering unsolicited tender offers or other unilateral takeover proposals to negotiate with our Board of Directors rather than pursue non-negotiated takeover attempts. These provisions include the items described below. The following descriptions are summaries of the material terms of our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws. We refer in this section to our Amended and Restated Certificate of Incorporation as our certificate of incorporation, and we refer to our Amended and Restated Bylaws as our bylaws.

Meetings of Stockholders

Our certificate of incorporation and bylaws provide that only the Chair of the Board, the Chief Executive Officer or a majority of the members of our Board of Directors then in office may call special meetings of stockholders and only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of stockholders. Our bylaws limit the business that may be conducted at an annual meeting of stockholders to those matters properly brought before the meeting.

Advance Notice Requirements

Our bylaws establish advance notice procedures with regard to stockholder proposals relating to the nomination of candidates for election as directors or new business to be brought before meetings of our stockholders. These procedures provide that notice of stockholder proposals must be timely given in writing to our corporate secretary prior to the meeting at which the action is to be taken. Generally, to be timely, notice must be received at our principal executive offices not less than 90 days nor more than 120 days prior to the first anniversary date of the annual meeting for the preceding year. Our bylaws specify the requirements as to form and content of all stockholders' notices. These requirements may preclude stockholders from bringing matters before the stockholders at an annual or special meeting.

Amendment to Certificate of Incorporation and Bylaws

Any amendment of our certificate of incorporation must first be approved by a majority of our Board of Directors, and if required by law or our certificate of incorporation, must thereafter be approved by a majority of the outstanding shares entitled to vote on the amendment, except that the amendment of the provisions relating to stockholder action, board composition, limitation of liability and the amendment of our certificate of incorporation must be approved by not less than 66 2/3% of the outstanding shares entitled to vote on the amendment, and not less than 66 2/3% of the outstanding shares of each class entitled to vote thereon as a class. Our bylaws may be amended by the affirmative vote of a majority of the directors then in office, subject to any limitations set forth in the bylaws; and may also be amended by the affirmative vote of at least 66 2/3% of the outstanding shares entitled to vote on the amendment, or, if our Board of Directors recommends that the stockholders approve the amendment, by the affirmative vote of the majority of the outstanding shares entitled to vote on the amendment, in each case voting together as a single class.

Undesignated Preferred Stock

Our Board of Directors has the authority, without further action by our stockholders, to issue from time to time 7,690,572 shares of preferred stock in one or more series. The existence of authorized but unissued shares of preferred stock may enable our Board of Directors to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise. For example, if in the due exercise of its fiduciary obligations, our Board of Directors were to determine that a takeover proposal is not in the best interests of our stockholders, our Board of Directors could cause shares of preferred stock to be issued without stockholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer or insurgent stockholder or stockholder group. In this regard, our certificate of incorporation grants our Board of Directors broad power to establish the rights and preferences of authorized and unissued shares of preferred stock. The issuance of shares of preferred stock could decrease the amount of earnings and assets available for distribution to holders of shares of common stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring or preventing a change in control of us.

Exclusive Jurisdiction for Certain Actions

Our certificate of incorporation provides that, once our common stock is a “covered security,” unless we consent in writing to the selection of an alternative forum, 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 our behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, our certificate of incorporation or our bylaws, or (iv) any action asserting a claim against us governed by the internal affairs doctrine. Although we believe this provision benefits us by providing increased consistency in the application of Delaware law in the types of lawsuits to which it applies, the provision may have the effect of discouraging lawsuits against our directors and officers. The enforceability of similar exclusive forum provisions in other companies’ certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could rule that this provision in our certificate of incorporation is inapplicable or unenforceable.

Section 203 of the Delaware General Corporation Law

We are subject to the provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions:

- before the stockholder became interested, our Board of Directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;

- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, shares owned by persons who are directors and also officers, and employee stock plans, in some instances, but not the outstanding voting stock owned by the interested stockholder; or
- at or after the time the stockholder became interested, the business combination was approved by our Board of Directors and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 defines a business combination to include:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, lease, pledge or other disposition involving the interested stockholder of 10% or more of the assets of the corporation;
- subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- subject to exceptions, any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; and
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by the entity or person.

Listing

Our common stock is listed on the Nasdaq Capital Market under the symbol “OPGN” and our IPO Warrants are listed on the Nasdaq Capital Market under the symbol “OPGNW.”

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Philadelphia Stock Transfer, Inc. The transfer agent’s address is 2320 Haverford Rd., Suite 230, Ardmore, PA 19003.

PLAN OF DISTRIBUTION

We are offering the warrants and shares of our common stock issuable upon the exercise of the warrants issued in the July 2017 Public Offering. The warrants are exercisable in whole or in part, at the election of the holder, in cash or pursuant to a cashless exercise if a registration statement covering the warrants is not then effective. The common stock issuable upon the exercise of the warrants will not be offered through underwriters, or brokers or dealers. We will not pay any compensation in connection with the offering of the shares upon exercise of the warrants.

The holders of the warrants may, from time to time, sell, transfer or otherwise dispose of any or all of their warrants or shares of our common stock covered by this prospectus on the Nasdaq Capital Market or any other stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices. The holders may use any one or more of the following methods when disposing of shares:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales entered into after the effective date of the registration statement of which this prospectus is a part;
- broker-dealers may agree with the holders to sell a specified number of such shares at a stipulated price per share;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law (including underwritten transactions).

The holders may also sell shares under Rule 144 under the Securities Act, if available, rather than under this prospectus.

Broker-dealers, underwriters and agents engaged by a holder may arrange for other broker-dealers, underwriters or agents to participate in sales. Broker-dealers, underwriters or agents may receive commissions, discounts or concessions from the holder (or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA rules.

In connection with the sale of the common stock or interests therein, a holder may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. A holder may also sell shares of the common stock short and deliver these securities to close out their short positions, or loan or pledge the common stock to broker-dealers that in turn may sell these securities. A holder may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The holders and any broker-dealers, underwriters or agents that are involved in selling the shares may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers, underwriters or agents and any profit on the resale of the shares purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. If a holder qualifies as an “underwriter,” it will be subject to the prospectus delivery requirements of Section 5(b)(2) of the Securities Act.

All costs and expenses incurred in connection with the registration under the Securities Act of the offering made hereby will be paid by us, other than any brokerage fees and commissions, fees and disbursements of legal counsel for the holders and stock transfer and other taxes attributable to the sale of the shares, which will be paid by the applicable holder.

Because the holders may be deemed to be “underwriters” within the meaning of the Securities Act, they will be subject to the prospectus delivery requirements of the Securities Act including Rule 172 thereunder.

The resale shares will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale shares may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale shares may not simultaneously engage in market making activities with respect to the common stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the holder will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of shares of our common stock by the holder or any other person. We will make copies of this prospectus available to the holders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

LEGAL MATTERS

The validity of the securities offered by this prospectus will be passed upon for us by Ballard Spahr LLP, Philadelphia, Pennsylvania.

EXPERTS

The consolidated financial statements of OpGen, Inc. and its subsidiaries as of December 31, 2018 and 2017, and for each of the years in the two year period ended December 31, 2018, have been incorporated by reference herein in reliance upon the report of CohnReznick LLP, an independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing. The audit report covering the December 31, 2018 consolidated financial statements contains an explanatory paragraph that states that the Company has experienced losses and negative cash flows from operations since its inception, has an accumulated deficit, and has debt obligations which raise substantial doubt about its ability to continue as a going concern. The consolidated financial statements do not include any adjustments that might result from the outcome of that uncertainty.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We filed with the Securities and Exchange Commission a registration statement under the Securities Act of 1933 for the shares of common stock in this offering. This prospectus does not contain all of the information in the registration statement and the exhibits and schedule that were filed with the registration statement. For further information with respect to us and our common stock, we refer you to the registration statement and the exhibits and schedule that were filed with the registration statement. Statements contained in this prospectus about the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and we refer you to the full text of the contract or other document filed as an exhibit to the registration statement. A copy of the registration statement and the exhibits and schedules that were filed with the registration statement may be inspected without charge at the Public Reference Room maintained by the Securities and Exchange Commission at 100 F Street, N.E. Washington, DC 20549, and copies of all or any part of the registration statement may be obtained from the Securities and Exchange Commission upon payment of the prescribed fee. Information regarding the operation of the Public Reference Room may be obtained by calling the Securities and Exchange Commission at 1-800-SEC-0330. The Securities and Exchange Commission maintains a website that contains reports, proxy and information statements, and other information regarding registrants that file electronically with the SEC. The address of the website is www.sec.gov.

We file periodic reports under the Securities Exchange Act of 1934, including annual, quarterly and special reports, and other information with the Securities and Exchange Commission. These periodic reports and other information are available for inspection and copying at the regional offices, public reference facilities and website of the Securities and Exchange Commission referred to above.

We make available free of charge on or through our internet website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus, while information that we file later with the SEC will automatically update and supersede the information in this prospectus. We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC (Commission File No. 001-37367):

- our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on February 27, 2019;
- our Current Report on Form 8-K filed with the SEC on February 25, 2019 (Items 5.02 and 9.01); and
- the description of our common stock contained in the Registration Statement on Form 8-A filed on April 30, 2015 and any amendments to such Registration Statement filed subsequently thereto, including all amendments or reports filed for the purpose of updating such description.

We also incorporate by reference any future filings (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, until the termination of the offering of the shares of our common stock made by this prospectus and will become a part of this prospectus from the date that such documents are filed with the SEC. Information in such future filings updates and supplements the information provided in this prospectus. Any statements in any such future filings will automatically be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

We will furnish to you, on written or oral request, a copy of any or all of the documents that have been incorporated by reference, including exhibits to these documents. You may request a copy of these filings at no cost by writing or telephoning our Secretary at the following address and telephone number:

OpGen, Inc.
Attention: Timothy C. Dec, Corporate Secretary
708 Quince Orchard Road, Suite 205
Gaithersburg, MD 20878
Telephone No.: (240) 813-1260

Copies of these filings are also available through the “Investor” section of our website at www.opgen.com. For other ways to obtain a copy of these filings, please refer to “Where You Can Find More Information” above.

Any information in any of the foregoing documents will automatically be deemed to be modified or superseded to the extent that information in this prospectus modifies or replaces such information.



1,050,000 shares of Common Stock issuable upon the exercise of Warrants

PRELIMINARY PROSPECTUS

DATED MARCH 15, 2019

Information Not Required in Prospectus***Item 14. Indemnification of Directors and Officers.***

The Registrant maintains insurance providing for indemnification of its officers and directors and certain other persons against liabilities and expenses incurred by any of them in certain stated proceedings and under certain stated conditions.

Delaware Corporations

Section 145 of the Delaware General Corporation Law, or DGCL, provides that a corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful. Section 145 further provides that a corporation similarly may indemnify any such person serving in any such capacity who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that the person is or was a director, officer, employee or agent of the corporation or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with the defense or settlement of such action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Delaware Court of Chancery or such other court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Delaware Court of Chancery or such other court shall deem proper.

Certificate of Incorporation and Bylaws

The Registrant's certificate of incorporation, as amended, provides that a director of the Registrant shall not be personally liable to the Registrant or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the Registrant or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the DGCL, or (iv) for any transaction from which the director derived an improper personal benefit. If the DGCL is hereafter amended to authorize the further elimination or limitation of the liability of directors, then the liability of the directors of the Registrant, in addition to the limitation on personal liability provided herein, shall be limited to the fullest extent permitted by the amended DGCL. Any repeal or modification of this paragraph by the stockholders of the Registrant shall be prospective only, and shall not adversely affect any limitation on the personal liability of a director of the corporation at the time of such repeal or modification. The Registrant's certificate of incorporation further provides that the Registrant's officers and directors shall be indemnified by the Registrant as provided in the Registrant's bylaws.

Under the provisions of the Registrant's bylaws, as amended, any person who is or was a party or is threatened to be made a party of any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the Registrant) by reason of the fact that he or she is or was a director, officer, employee or agent of the Registrant or is or was serving at the Registrant's request as a director, officer, employee or agent of another company or other entity shall be indemnified by the Registrant against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by him or her in connection with such action, suit or proceeding if he or she acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, the Registrant's best interests, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful. The Registrant shall further indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the Registrant to procure a judgment in its favor by reason of the fact that he is or was a director, officer, employee or agent of the Registrant or is or was serving at the request of the Registrant as a director, officer, employee or agent of another corporation or other entity against expenses (including attorneys' fees) actually and reasonably incurred by him in connection with the defense or settlement of such action or suit if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the Registrant. Notwithstanding the foregoing, no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the Registrant unless and only to the extent that the Delaware Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Delaware Court of Chancery or such other court shall deem proper.

The termination of any action, suit or proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not, of itself, create a presumption that the person did not act in good faith and in a manner which he or she reasonably believed to be in, or not opposed to, the Registrant's best interests and, with respect to any criminal action or proceeding, had reasonable cause to believe that his or her conduct was unlawful.

In addition, to the extent that such a person is successful on the merits or otherwise in defense of any action, suit, or proceeding brought against him or her by reason of the fact that he or she is the Registrant's director, officer, employee or agent, he or she shall be indemnified against expenses, including attorneys' fees, actually and reasonably incurred in connection therewith.

The Registrant's bylaws, as amended, provide that expenses (including attorneys' fees) incurred by a director or officer in defending a civil, criminal, administrative, or investigative action, suit or proceeding may be paid by the Registrant in advance of the final disposition of such action, suit or proceeding upon receipt of an undertaking by or on behalf of the director or officer to repay such amount if it shall ultimately be determined that he or she is not entitled to be indemnified by the Registrant. Such expenses, including attorneys' fees, incurred by other employees and agents may be paid upon such terms and conditions as the Board of Directors deems appropriate.

Any indemnification under the provisions summarized above (unless ordered by a court) shall be made by the Registrant only as authorized in each specific case upon a determination that indemnification of such person is proper under the circumstances because he or she has met the applicable standard of conduct set forth in the applicable provision. Such determination shall be made (1) by a majority vote of the Registrant's directors who are not parties to the action, suit or proceeding (even though less than a quorum), (2) if there are no such directors, or if such directors so direct, by independent legal counsel in a written opinion, or (3) by the stockholders.

The Registrant maintains director and officer insurance with respect to those claims described above in customary amounts.

The above discussion of the certificate of incorporation and bylaws of the Registrant and the DGCL is not intended to be exhaustive and is qualified in its entirety by such certificates of incorporation, bylaws and the DGCL.

The Registrant has entered into indemnification agreements with each of our directors and executive officers. These agreements provide that we will indemnify each of our directors, such executive officers and, at times, their affiliates to the fullest extent permitted by Delaware law. We will advance expenses, including attorneys' fees (but excluding judgments, fines and settlement amounts), to each indemnified director, executive officer or affiliate in connection with any proceeding in which indemnification is available and we will indemnify our directors and officers for any action or proceeding arising out of that person's services as a director or officer brought on behalf of us and/or in furtherance of our rights. Additionally, each of our directors may have certain rights to indemnification, advancement of expenses and/or insurance provided by their affiliates, which indemnification relates to and might apply to the same proceedings arising out of such director's services as a director referenced herein. Nonetheless, we have agreed in the indemnification agreements that our obligations to those same directors are primary and any obligation of the affiliates of those directors to advance expenses or to provide indemnification for the expenses or liabilities incurred by those directors are secondary.

We also maintain general liability insurance which covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers, including liabilities under the Securities Act.

Item 15. Recent Sales of Unregistered Securities.

The following list sets forth information as to all securities we have sold since January 1, 2016, which were not registered under the Securities Act.

(1) In May and June 2016, the Company offered and sold units in a private offering to members of management and employees and to accredited investors, including Merck Global Health Innovation Fund and jVen Capital, each unit consisting of either (i) one twenty-fifth of a share of common stock and a detachable stock purchase warrant to purchase an additional 0.03 of one share of common stock, or (ii) one share of non-voting convertible preferred stock and a detachable stock purchase warrant to purchase an additional 0.03 of one share of common stock, at a price of \$1.14 per unit. The total net proceeds to the Company, after deducting offering commissions and expenses was \$9.5 million.

(2) On May 31, 2017, the Company entered into a Note Purchase Agreement with jVen Capital, which Note Purchase Agreement was amended and restated on July 10, 2017, under which jVen Capital agreed to lend bridge financing in an aggregate principal amount of up to \$1,500,000 to the Company in the form of three \$500,000 secured convertible promissory notes. Pursuant to the terms of the amended and restated Note Purchase Agreement and the underlying bridge financing notes, if a “qualified financing” (offering of debt or equity securities with net proceeds of \$5 million or more to the Company) occurs, the Company has the obligation to repay the outstanding bridge financing notes within five business days after the closing of the qualified financing. If a qualified financing does not occur, and an event of default occurs (the Company fails to pay any outstanding bridge financing notes when due, seeks to liquidate the Company, enters into a bankruptcy proceeding, or fails to pay other indebtedness when due), the then-outstanding bridge financing notes would acquire a two times liquidation preference for unpaid principal and interest. Alternatively, jVen Capital may forego the two times liquidation preference and elect to convert the bridge financing notes to Series B Convertible Preferred Stock, or Preferred Stock, at a ratio of one share of non-voting Preferred Stock per \$1.00 of principal and interest, which non-voting Preferred Stock would be convertible into 10 shares of voting common stock, otherwise no further preferences are provided to the Preferred Stock. The bridge financing notes contain, and the Certificate of Designation for the Preferred Stock will contain, a blocker provision that prevents any issuance of securities as repayment of the bridge financing notes, or any conversion of the Preferred Stock into common stock if such conversion would violate Nasdaq Listing Rule 5635.

(3) In connection with the bridge financing transaction described in (1) above, the Company issued warrants to purchase 11,983 shares of common stock to jVen Capital, and warrants to purchase 13,119 shares of common stock the MGHIF.

(4) In September 2017, the Company issued common stock with an aggregate value of \$110,000 to settle a dispute related to pre-Merger AdvanDx activities.

(5) On June 11, 2018, the Company executed an Allonge to its Second Amended and Restated Senior Secured Promissory Note, dated June 28, 2017, with a principal amount of \$1,000,000 issued to MGHIF. The Allonge provided that accrued and unpaid interest of \$285,512 due as of July 14, 2018, the original maturity date, would be paid through the issuance of shares of OpGen’s common stock in a private placement transaction. In addition, the Allonge revised and extended the maturity date for payment of the Note to six semi-annual payments of \$166,667 plus accrued and unpaid interest beginning on January 2, 2019 and ending on July 1, 2021. On July 30, 2018, the Company issued 144,238 shares of common stock to MGHIF in a private placement transaction for \$285,512 of accrued and unpaid interest due as of July 14, 2018 under the MGHIF Note.

As of March 11, 2019, none of the warrants issued in these transactions have been exercised.

We deemed the offers, sales and issuances of the securities described in paragraphs (1) through (5) above to be exempt from registration under the Securities Act, in reliance on Section 4(a)(2) of the Securities Act, including Regulation D and Rule 506 promulgated thereunder, regarding transactions by an issuer not involving a public offering. All purchasers of securities in transactions exempt from registration pursuant to Regulation D represented to us that they were accredited investors and were acquiring the shares for investment purposes only and not with a view to, or for sale in connection with, any distribution thereof and that they could bear the risks of the investment and could hold the securities for an indefinite period of time. The purchasers received written disclosures that the securities had not been registered under the Securities Act and that any resale must be made pursuant to a registration statement or an available exemption from such registration.

All certificates representing the securities issued in the transactions described in this Item 15 included appropriate legends setting forth that the securities had not been offered or sold pursuant to a registration statement and describing the applicable restrictions on transfer of the securities. There were no underwriters employed in connection with any of the transactions set forth in this Item 15.

EXHIBIT INDEX

| Exhibit Number | Description |
|----------------|---|
| 3.1 | <u>Amended and Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 of Current Report on Form 8-K, File No. 001-37367, filed on May 13, 2015)</u> |
| 3.2 | <u>Certificate of Correction to Amended and Restated Certificate of Incorporation of the Registrant, dated June 6, 2016 (incorporated by reference to Exhibit 3.1 of Current Report on Form 8-K, filed on June 6, 2016)</u> |
| 3.3 | <u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Registrant dated and filed with the Delaware Secretary of State on January 17, 2018 (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K filed on January 17, 2018)</u> |
| 3.4 | <u>Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant’s Form S-1, File No. 333-202478, filed on March 3, 2015)</u> |
| 4.1 | <u>Form of Common Stock Certificate of the Registrant (incorporated by reference to Exhibit 4.1 to the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2018, filed on February 27, 2019)</u> |
| 4.2 | <u>Form of Warrant to Purchase Common Stock (issued to jVen Capital, LLC and Merck Global Health Innovation Fund) (incorporated by reference to Exhibit 4.1 to the Registrant’s Current Report on Form 8-K Amendment No. 2, filed on July 10, 2017)</u> |
| 4.3 | <u>Form of Common Stock Purchase Warrant for February 2018 Public Offering (incorporated by reference to Exhibit 4.3 to the Registrant’s Form S-1/A, File No. 333-222140, filed on January 31, 2018)</u> |
| 4.4 | <u>Form of Pre-Funded Common Stock Purchase Warrant for February 2018 Public Offering (incorporated by reference to Exhibit 4.4 to the Registrant’s Form S-1/A, File No. 333-222140, filed on January 31, 2018)</u> |
| 4.5 | <u>Form of Placement Agent Warrant for February 2018 Public Offering (incorporated by reference to Exhibit 4.5 to the Registrant’s Form S-1/A, File No. 333-222140, filed on January 31, 2018)</u> |
| 4.6 | <u>Form of Common Stock Purchase Warrant for July 2017 Public Offering (incorporated by reference to Exhibit 4.4 to the Registrant’s Form S-1, Amendment No. 2, File No. 333-218392, filed on July 11, 2017)</u> |
| 4.7 | <u>Form of Placement Agent Warrant for July 2017 Public Offering (incorporated by reference to Exhibit 4.5 to the Registrant’s Form S-1, File No. 333-218392, filed on July 11, 2017)</u> |
| 5.1* | <u>Opinion of Ballard Spahr LLP</u> |
| 10.1 | <u>Lease Agreement, dated as of June 30, 2008, between the Registrant and ARE-708 Quince Orchard, LLC (the “Landlord”) (incorporated by reference to Exhibit 10.1 of Form S-1/A, file No. 333-202478, filed March 3, 2015)</u> |
| 10.1.1 | <u>First Amendment to Lease, dated as of April 4, 2011, between the Registrant and the Landlord (incorporated by reference to Exhibit 10.1.1 of Form S-1, File No. 333-202478, filed March 3, 2015)</u> |
| 10.1.2 | <u>Second Amendment to Lease Agreement, dated as of August 15, 2012, between the Registrant and the Landlord (incorporated by reference to Exhibit 10.1.2 of Form S-1, File No. 333-202478, filed March 3, 2015)</u> |
| 10.1.3 | <u>Third Amendment to Lease, dated as of December 30, 2013, between the Registrant and the Landlord (incorporated by reference to Exhibit 10.1.3 of Form S-1, File No. 333-202478, filed March 3, 2015)</u> |
| 10.1.4 | <u>Fourth Amendment to Lease Agreement, dated as of March 21, 2014, between the Registrant and the Landlord (incorporated by reference to Exhibit 10.4 of Form S-1, File No. 333-202478, filed March 3, 2015)</u> |

| Exhibit Number | Description |
|-----------------------|--|
| 10.1.5 | <u>Fifth Amendment to Lease Agreement, dated as of March 20, 2015, between the Registrant and the Landlord (incorporated by reference to Exhibit 10.1.5 of Form S-1, Amendment No. 1, File No. 333-202478, filed on March 20, 2015)</u> |
| 10.1.6 | <u>Sixth Amendment to Lease Agreement (and Amendment to Reimbursement Agreement), dated as of April 30, 2015, between the Registrant and the Landlord (incorporated by reference to Exhibit 10.1.6 of Form S-1, Amendment No. 8, File No. 333-202478, filed on May 1, 2015)</u> |
| 10.1.7 | <u>Seventh Amendment to Lease Agreement, dated as of June 30, 2015, between the Registrant and the Landlord (incorporated by reference to Exhibit 10.1 of Current Report on Form 8-K, filed on July 7, 2015)</u> |
| 10.1.8 | <u>Eighth Amendment to Lease Agreement, dated September 8, 2015, between the Registrant and the Landlord (incorporated by reference to Exhibit 10.6 of Quarterly Report on Form 10-Q, filed on November 13, 2015)</u> |
| 10.2 | <u>Lease Extension #6, dated October 14, 2016, by and between the Registrant and Cummings Properties, LLC (related to AdvanDx facility).(incorporated by reference to Exhibit 10.2 of Quarterly Report on Form 10-Q, filed November 14, 2016)</u> |
| 10.3 | <u>Form of Indemnification Agreement between the Registrant and each of its directors and executive officers (incorporated by reference to Exhibit 10.2 of Form S-1, File No. 333-202478, filed on March 3, 2015)</u> |
| 10.4 | <u>2015 Equity Incentive Plan, as amended and restated on March 29, 2018 (incorporated by reference to Exhibit 10.4 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2017, filed on March 29, 2018)</u> |
| 10.5 ! | <u>Non-Employee Director Compensation Policy (incorporated by reference to Exhibit 10.16 to the Registrant's Form S-1, Amendment No. 2, File No. 333-202478, filed on April 6, 2015)</u> |
| 10.6 | <u>Warrant Agreement, dated as of May 8, 2015, between the Registrant and Philadelphia Stock Transfer, Inc., as warrant agent (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on May 13, 2015)</u> |
| 10.7.1 ! | <u>Form of Stock Option Agreement under the 2015 Equity Incentive Plan for employees and consultants (incorporated by reference to Exhibit 10.9.1 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 24, 2017)</u> |
| 10.7.2 ! | <u>Form of Stock Option Agreement under the 2015 Equity Incentive Plan for non-employee directors (initial grant).(incorporated by reference to Exhibit 10.9.2 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 24, 2017)</u> |
| 10.7.3 ! | <u>Form of Stock Option Agreement under the 2015 Equity Incentive Plan for non-employee directors (annual grant).(incorporated by reference to Exhibit 10.9.3 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed on March 24, 2017)</u> |
| 10.8 ! | <u>Form of Restricted Stock Unit Award Agreement under 2015 Equity Incentive Plan (incorporated by reference to Exhibit 10.10 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed March 24, 2017)</u> |
| 10.9 | <u>Common Stock and Note Purchase Agreement, dated as of July 14, 2015, between the Registrant and Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on July 16, 2015)</u> |
| 10.10 | <u>Senior Secured Promissory Note, dated as of July 14, 2015, between the Registrant and Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, filed on July 16, 2015)</u> |
| 10.10.1 | <u>Second Amended & Restated Senior Secured Promissory Note, dated June 28, 2017, by and between the Registrant and Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K, Amendment No. 1, filed on June 28, 2017)</u> |

| Exhibit Number | Description |
|-----------------------|--|
| 10.10.2 | <u>Allonge, dated June 11, 2018, to the Second Amended and Restated Senior Secured Promissory Note, dated June 28, 2017, with a principal amount of \$1,000,000 issued by OpGen, Inc. to Merck Global Health Innovation Fund, LLC (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on June 11, 2018)</u> |
| 10.11 | <u>Third Amended and Restated Investors' Rights Agreement, dated as of December 18, 2013, among the Registrant and, certain investors (registration rights provisions) (incorporated by reference to Exhibit 4.2 to the Registrant's Form S-1, File No. 333-202478, filed on March 3, 2015)</u> |
| 10.12 | <u>Registration Rights Agreement, dated as of July 14, 2015, among the Registrant, Merck Global Health Innovation Fund, LLC, SLS Invest AB and LD Pensions (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K, filed on July 16, 2015)</u> |
| 10.13 | <u>Letter Agreement, dated July 12, 2015, between the Registrant and Fluidigm Corporation (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2015, filed on August 14, 2015)</u> |
| 10.14 | <u>Securities Purchase Agreement, dated as of May 12, 2016, by and between the Registrant the Purchasers party thereto (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on May 17, 2016)</u> |
| 10.15 | <u>Amended and Restated Securities Purchase Agreement, dated as of May 18, 2016, by and between the Registrant and the Purchasers party thereto (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on May 20, 2016)</u> |
| 10.16 ! | <u>Stock Option Award Agreement, dated April 28, 2016, by and between the Registrant and Evan Jones (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016, filed on August 11, 2016)</u> |
| 10.17 | <u>Common Stock Sales Agreement, dated September 13, 2016, by and between the Registrant and Cowen and Company, LLC (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on September 14, 2016)</u> |
| 10.18 | <u>Amended & Restated Note Purchase Agreement, dated as of July 10, 2017, by and between the Registrant and jVen Capital, LLC (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, Amendment No. 2, filed on July 10, 2017)</u> |
| 10.19 | <u>Form of Secured Convertible Promissory Note #1 to be issued to jVen Capital, LLC (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K/A, filed on July 10, 2017)</u> |
| 10.20 | <u>Form of Secured Promissory Note #2 and #3 to be issued to jVen Capital, LLC (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K/A, filed on July 10, 2017)</u> |
| 10.21 | <u>Amended and Restated Registration Rights Agreement, dated as of June 6, 2017, by and between the Registrant and the Investors party thereto (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K, filed on June 6, 2017)</u> |
| 10.22± | <u>Supply Agreement, dated as of June 15, 2017, by and between the Registrant and Life Technologies Corporation (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on June 19, 2017)</u> |
| 10.23 | <u>Securities Purchase Agreement, dated as of July 12, 2017, among the Registrant and the purchasers signatory thereto, (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on July 14, 2017)</u> |
| 10.24 | <u>Engagement Letter with H.C Wainwright & Co., dated as of June 12, 2017 (incorporated by reference to Exhibit 1.2 to the Registrant's Registration Statement on Form S-1, Amendment No. 2, File No. 333-218392, filed on July 11, 2017)</u> |
| 10.25 ! | <u>Executive Change In Control and Severance Benefits Agreement, dated September 24, 2018 between OpGen, Inc. and Evan Jones (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, filed on September 25, 2018)</u> |

| Exhibit Number | Description |
|-----------------------|--|
| 10.26 ! | Executive Change In Control and Severance Benefits Agreement, dated September 24, 2018 between OpGen, Inc. and Timothy C. Dec (incorporated by reference to Exhibit 10.3 to the Registrant’s Current Report on Form 8-K, filed on September 25, 2018) |
| 10.27 ! | Executive Change In Control and Severance Benefits Agreement, dated September 24, 2018 between OpGen, Inc. and Vadim Sapiro (incorporated by reference to Exhibit 10.4 to the Registrant’s Current Report on Form 8-K, filed on September 25, 2018). |
| 10.28 | Form of Securities Purchase Agreement between the Registrant and the purchasers signatory thereto (incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K, filed on February 2, 2018) |
| 10.29 | Engagement Letter, dated as of December 18, 2017, between the Registrant and H.C. Wainwright & Co., LLC (incorporated by reference to Exhibit 1.2 to the Registrant’s Registration Statement on Form S-1, Amendment No. 1, File No. 333-222140, filed on January 31, 2018) |
| 10.30 ! | OpGen, Inc. Retention Plan for Executives (incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K, filed on September 25, 2018) |
| 21.1 | Subsidiaries of the Registrant (incorporated by reference to Exhibit 21.1 to the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2018, filed on February 27, 2019) |
| 23.1 * | Consent of CohnReznick LLP |
| 23.2 * | Consent of Ballard Spahr LLP (included in Exhibit 5.1) |
| 24.1 | Power of attorney (included on signature page to Form S-1 Registration Statement, File No. 333-218392, filed on June 1, 2017) |

- * Filed herewith
- ! Denotes management compensation plan or contract
- ± Confidential treatment has been requested for certain portions of this agreement pursuant to an application for confidential treatment filed with the Securities and Exchange Commission on June 19, 2017. Such provisions have been filed separately with the Commission.

(b) Financial Statements Schedules:

Schedules have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or notes thereto.

Item 17. Undertakings.

The undersigned Registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of this registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high and of the estimated maximum offering range may be reflected in the form of prospectus filed with the Securities and Exchange Commission (the “Commission”) pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the “Calculation of Registration Fee” table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in this registration statement or any material change to such information in this registration statement;

provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act to any purchaser:

(i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or date of the first sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which the prospectus forms a part, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of this registration statement or made in a document incorporated or deemed incorporated by reference into this registration statement or prospectus that is a part of this registration statement will, as to a purchaser with a time of contract sale prior to such effective date, supersede or modify any statement that was made in this registration statement or prospectus that was a part of this registration statement or made in any such document immediately prior to such effective date.

(5) That, for the purpose of determining liability of the registrant under the Securities Act to any purchaser in the initial distribution of the securities, in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) the portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Act and is therefore unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes that:

For purposes of determining any liability under the Securities Act of 1933, as amended, the information omitted from a form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in the form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act of 1933, as amended, shall be deemed to be part of this registration statement as of the time it was declared effective.

For the purpose of determining any liability under the Securities Act of 1933, as amended, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this Post-Effective Amendment No. 2 to the Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Gaithersburg, State of Maryland, on March 15, 2019.

OPGEN, INC.

By: /s/ Evan Jones

Evan Jones
Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, as amended, this Post-Effective Amendment No. 2 to the Registration Statement has been signed by the following person in the capacities and on the date indicated.

| Signature | Title | Date |
|--|--|----------------|
| <u>/s/ Evan Jones</u> Evan Jones | Chief Executive Officer and Director (principal executive officer) | March 15, 2019 |
| <u>/s/ Timothy C. Dec</u> Timothy C. Dec | Chief Financial Officer (principal financial officer and principal accounting officer) | March 15, 2019 |
| <u>R. Donald Elsey</u> | Director | |
| <u>* Timothy J.R. Harris</u> | Director | March 15, 2019 |
| <u>* Tina S. Nova</u> | Director | March 15, 2019 |
| <u>David M. Rubin</u> | Director | |
| <u>* Misti Ushio</u> | Director | March 15, 2019 |
| <u>* /s/ Timothy C. Dec</u> Timothy C. Dec, as attorney in fact | | March 15, 2019 |

Ballard Spahr LLP
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Philadelphia, PA 19103-7599
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FAX: 215.864.8999
www.ballardspahr.com

March 15, 2019

OpGen, Inc.
708 Quince Orchard Road
Suite 205
Gaithersburg, Maryland 20878

RE: OpGen, Inc.

Ladies and Gentlemen:

We have acted as counsel to OpGen, Inc., a Delaware corporation (the "Company"), in connection with the preparation of a Post-Effective Amendment No. 2 to a Registration Statement on Form S-1 (File No. 333-218392) (the "Registration Statement") filed by the Company with the U.S. Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"), on March 15, 2019, with respect to the offer and sale of up to 1,050,000 shares of common stock, \$0.01 par value per share (the "Common Stock"), which are issuable upon the exercise of outstanding common warrants and placement agent warrants issued by the Company in a public offering of units, pre-funded units and placement agent warrants which closed on July 18, 2017, pursuant to a prospectus dated July 14, 2017. The common warrants and the placement agent warrants are collectively referred to herein as the "Warrants" and the shares of Common Stock underlying the Warrants are referred to herein as the "Securities."

The Securities are to be sold by the Company pursuant to a prospectus filed with the Post-Effective Amendment No. 2 to the Registration Statement (the "Prospectus") and the Warrants.

We have examined originals or copies (certified or otherwise identified to our satisfaction) of (i) the Amended and Restated Certificate of Incorporation of the Company together with all amendments thereto; (ii) the Certificate of Correction to the Amended and Restated Certificate of Incorporation; (iii) the form of Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock; (iv) the Amended and Restated Bylaws of the Company; (v) the Post-Effective Amendment No. 2 to the Registration Statement and the exhibits thereto; (vi) the Prospectus; (vii) the Warrants; (viii) such other corporate records, agreements, documents and instruments; and (ix) such certificates or comparable documents of public officials and other sources, believed by us to be reliable, and of officers and representatives of the Company, and have made such inquiries of such officers and representatives, as we have deemed relevant and necessary as a basis for the opinions hereinafter set forth.

In such examination, we have assumed the genuineness of all signatures, the legal capacity of all natural persons, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified, conformed or photostatic copies and the authenticity of the originals of such latter documents. As to all questions of fact material to this opinion that have not been independently established, we have relied upon certificates or comparable documents of officers and representatives of the Company.

Based upon the foregoing, as subject to the qualifications, assumptions and limitations set forth herein, we are of the opinion that the Securities issuable upon exercise of the Warrants have been duly authorized and reserved for issuance and, when issued and sold by the Company to the Warrant holders in accordance with the terms of the Warrants, will be validly issued, fully paid and non-assessable.

Our opinion is limited to the laws of the State of Delaware, the laws of the State of New York and the United States federal laws, and we express no opinion with respect to the laws of any other jurisdiction. No opinion is expressed herein with respect to the qualification of the Securities under the securities or blue sky laws of any state or any foreign jurisdiction.

We hereby consent to the filing of this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K promulgated under the Securities Act, and to the use of this firm's name therein and in the Prospectus under the caption "Legal Matters." In giving this consent, we do not admit that we are within the category of persons whose consent is required by Section 7 of the Securities Act and the rules and regulations promulgated

Sincerely yours,

/s/ Ballard Spahr LLP

Consent of Independent Registered Public Accounting Firm

We consent to the inclusion in Amendment No. 2 to the Registration Statement on Form S-1 (No. 333-218392) of OpGen, Inc. of our report dated February 27, 2019, which includes an explanatory paragraph related to OpGen, Inc.'s ability to continue as a going concern, on our audits of the consolidated financial statements of OpGen, Inc. as of December 31, 2018 and 2017 and for the years then ended. We also consent to the reference to our firm in the caption "Experts."

/s/ CohnReznick LLP

Tysons, Virginia
March 15, 2019