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As filed with the Securities and Exchange Commission on June 13, 2018

Registration No. 333-225041

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

Amendment No. 3

To

FORM S-1

REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

CONTRAVIR PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization)	2834 (Primary Standard Industrial Classification Code Number)	46-2783806 (I.R.S. Employer Identification Number)
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**399 Thornall Street, First Floor
Edison, NJ 08837
(732) 902-4000**

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

**James R. Sapirstein
Chief Executive Officer
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399 Thornall Street, First Floor
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(Name, address, including zip code, and telephone number, including area code, of agent for service)

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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, 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, a smaller reporting company or an emerging growth 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
(Do not check if a
smaller reporting
company)

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.

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered	Proposed Maximum Aggregate Offering Price(1)	Amount of Registration Fee
Units consisting of shares of Series C Convertible Preferred Stock, par value \$0.0001 per share, and warrants to purchase shares of common stock, par value \$0.0001 per share	\$20,000,000	\$2,490
Non-transferable rights to purchase units(2)	—	—
Series C Convertible Preferred Stock included as part of the units	Included with units above	—
Warrants to purchase shares of common stock included as part of the units(3)	Included with units above	—
Common stock issuable upon conversion of the Series C Convertible Preferred Stock(4)(5)	—	—
Common stock issuable upon exercise of the warrants(5)	\$10,000,000	\$1,245
Total	\$30,000,000	\$3,735(6)

- (1) Estimated solely for purposes of calculating the registration fee in accordance with Rule 457(o) of the Securities Act of 1933, as amended (the "Act").
- (2) The rights are being issued without consideration. Pursuant to Rule 457(g), no separate registration fee is payable with respect to the rights being offered hereby since the rights are being registered in the same registration statement as the securities to be offered upon exercise of such rights.
- (3) Pursuant to Rule 457(g) of the Act, no separate registration fee is required for the warrants because the warrants are being registered in the same registration statement as the common stock of the Registrant issuable upon exercise of the warrants.
- (4) Pursuant to Rule 457(i) of the Act, no separate registration fee is required for the common stock issuable upon conversion of the Series C Convertible Preferred Stock because no additional consideration will be received in connection with the exercise of the conversion privilege.
- (5) In addition to the shares of common stock set forth in this table, pursuant to Rule 416 under the Act, this registration statement also registers such indeterminate number of shares of common stock as may become issuable upon conversion or exercise of these securities as the same may be adjusted as a result of stock splits, stock dividends, recapitalizations or other similar transactions.
- (6) Of this amount, \$2,490 was previously paid.

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, as amended, or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

The information in this 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 prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

Subject to Completion, dated June 13, 2018

PRELIMINARY PROSPECTUS



**Subscription Rights to Purchase Up to 20,000 Units
Consisting of an Aggregate of Up to 20,000 Shares of Series C Convertible Preferred
Stock and Warrants to Purchase Up to 6,460,000 Shares of Common Stock
at a Subscription Price of \$1,000 Per Unit**

We are distributing to holders of our common stock and to certain warrant holders, at no charge, non-transferable subscription rights to purchase units. Each unit consists of one share of Series C Convertible Preferred Stock and 323 warrants. Each warrant will be exercisable for one share of our common stock. We refer to the offering that is the subject of this prospectus as the rights offering. In the rights offering, you will receive one subscription right for every share of common stock owned or deemed owned at 5:00 p.m., Eastern Time, on June 14, 2018, the record date of the rights offering. Shares that are "deemed owned" refer to the shares issuable upon exercise of outstanding warrants that we issued in October 2015, April 2016 and April 2017, whose holders have the right to participate in this rights offering. The Series C Convertible Preferred Stock and the warrants comprising the units will be separate upon the closing of the rights offering and will be issued separately, however, they may only be purchased as a unit, and the units will not trade as a separate security. The subscription rights will not be tradable.

Each subscription right will entitle you to purchase one unit, at a subscription price of \$1,000 per unit, which we refer to as the basic subscription right. Each warrant entitles you to purchase one share of common stock at an exercise price of \$1.55 per share from the date of issuance through its expiration five (5) years after the date of issuance. If you fully exercise your basic subscription right, you may also exercise an over-subscription privilege to purchase additional units that remain unsubscribed to at the expiration of the rights offering, subject to the availability and pro rata allocation of units among stockholders exercising this over-subscription privilege. If all the rights are exercised, the total purchase price of the units offered in the rights offering will be approximately \$20 million.

The subscription rights will expire if they are not exercised by 5:00 p.m., Eastern Time, on June 28, 2018, unless we extend the rights offering period. You should carefully consider whether to exercise your subscription rights prior to the expiration of the rights offering. All exercises of subscription rights are irrevocable, even if the rights offering is extended by our board of directors.

We have not entered into any standby purchase agreement or other similar arrangement in connection with the rights offering. The rights offering is being conducted on a best-efforts basis and there is no minimum amount of proceeds necessary to be received in order for us to close the rights offering.

Our board of directors is making no recommendation regarding your exercise of the subscription rights. The subscription rights may not be sold, transferred or assigned and will not be listed for trading on any stock exchange or market or on the NASDAQ Capital Market. Our board of directors may cancel the rights offering at any time prior to the expiration of the rights offering for any reason. In the event the rights offering is cancelled, all subscription payments received by the subscription agent will be returned, without interest, as soon as practicable.

We have engaged Maxim Group LLC to act as dealer-manager for this offering.

Philadelphia Stock Transfer, Inc. will serve as the subscription agent for the rights offering. The subscription agent will hold in escrow the funds we receive from subscribers until we complete, abandon or terminate the rights offering. If you want to participate in this rights offering and you are the record holder of your shares of common stock, we recommend that you submit your subscription documents to the subscription agent well before the deadline of the rights offering period. If you want to participate in this rights offering and you hold shares through your broker, dealer, custodian bank or other nominee, you should promptly contact your broker, dealer, custodian, bank or other nominee and submit your subscription documents in accordance with the instructions and within the time period provided by your nominee.

Our board of directors reserves the right to terminate the rights offering for any reason any time before the closing of the rights offering. If we terminate the rights offering, all subscription payments received will be returned within 10 business days, without interest or deduction. We expect the rights offering to expire on or about June 28, 2018, subject to our right to extend the rights offering as described above, and that we would close on subscriptions within five business days.

Our common stock is currently quoted on the NASDAQ Capital Market under the symbol "CTRV". On June 12, 2018, the last reported sale price per share of our common stock on the NASDAQ Capital Market was \$1.59. We do not currently intend to apply for listing of the Series C Convertible Preferred Stock or warrants on any securities exchange or recognized trading system.

Our principal executive offices are located at 399 Thomall Street, First Floor, Edison, New Jersey 08837.

	Per Unit	Total(2)
Subscription price	\$1,000	\$20,000,000
Dealer-manager fees and expenses(1)	\$60	\$1,200,000
Proceeds to us, after fees and before expenses	\$940	\$18,800,000

- (1) In connection with the rights offering, we have agreed to pay Maxim Group LLC as the dealer-manager a cash fee equal to 6.0% of the gross proceeds received by us directly from exercises of the subscription rights. We have also advanced the dealer-manager \$20,000 and agreed to pay to the dealer-manager a non-accountable expense allowance equal to \$30,000. Please see "Plan of Distribution."
- (2) Assumes the rights offering is fully subscribed, but excludes proceeds from the exercise of warrants included in the units.

Investing in our securities involves risks. You should carefully consider the Risk Factors beginning on page 22 of this prospectus before you make an investment in our securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

Dealer-Manager

Maxim Group LLC

The date of this prospectus is _____, 2018

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Neither we nor the dealer-manager has authorized anyone to provide any information or to make any representations other than those contained in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus is an offer to sell only the units offered hereby, but only under the circumstances and in the jurisdictions where it is lawful to do so. The information contained in this prospectus or in any applicable free writing prospectus is current only as of its date, regardless of its time of delivery or any sale of shares of our common stock. Our business, financial condition, results of operations and prospects may have changed since that date. We are not, and the dealer-manager is not, making an offer of these securities in any jurisdiction where such offer is not permitted.

For investors outside the United States: Neither we nor the dealer-manager has done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of securities and the distribution of this prospectus outside the United States.

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You should read this prospectus, any applicable prospectus supplement and the information incorporated by reference in this prospectus before making an investment in the securities of ContraVir Pharmaceuticals, Inc. See "*Where You Can Find Additional Information*" on page 60 for more information. You should rely only on the information contained in or incorporated by reference in this prospectus or a prospectus supplement. The Company has not authorized anyone to provide you with different information. This document may be used only in jurisdictions where offers and sales of these securities are permitted. You should assume that information contained in this prospectus, or in any document incorporated by reference, is accurate only as of any date on the front cover of the applicable document. Our business, financial condition, results of operations and prospects may have changed since that date.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain, in addition to historical information, certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended, that include information relating to future events, future financial performance, strategies, expectations, competitive environment, regulation and availability of resources. Such forward-looking statements include those that express plans, anticipation, intent, contingency, goals, targets or future development and/or otherwise are not statements of historical fact. These forward-looking statements are based on our current expectations and projections about future events and they are subject to risks and uncertainties known and unknown that could cause actual results and developments to differ materially from those expressed or implied in such statements.

In some cases, you can identify forward-looking statements by terminology, such as "expects," "anticipates," "intends," "estimates," "plans," "believes," "seeks," "may," "should", "could" or the negative of such terms or other similar expressions. Accordingly, these statements involve estimates, assumptions and uncertainties that could cause actual results to differ materially from those expressed in them. Any forward-looking statements are qualified in their entirety by reference to the factors discussed throughout this prospectus or incorporated herein by reference.

You should read this prospectus and the documents we have incorporated by reference or filed as exhibits to the registration statement, of which this prospectus is part, completely and with the understanding that our actual future results may be materially different from what we expect. You should not assume that the information contained in this prospectus or any prospectus supplement or free writing prospectus is accurate as of any date other than the date on the front cover of those documents, or that the information contained in any document incorporated by reference is accurate as of any date other than the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any sale of a security.

Risks, uncertainties and other factors that may cause our actual results, performance or achievements to be different from those expressed or implied in our written or oral forward-looking statements may be found in this prospectus under the heading "Risk Factors" and in our Transition Report on Form 10-KT for the transition period from July 1, 2017 to December 31, 2017, under the headings "Risk Factors" and "Business," as updated in our Quarterly Report(s) on Form 10-Q.

Forward-looking statements speak only as of the date they are made. You should not put undue reliance on any forward-looking statements. We assume no obligation to update forward-looking statements to reflect actual results, changes in assumptions or changes in other factors affecting forward-looking information, except to the extent required by applicable securities laws. If we do update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect to those or other forward-looking statements.

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New factors emerge from time to time, and it is not possible for us to predict which factors will arise. In addition, we cannot assess the impact of each factor on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements. We qualify all of the information presented in this prospectus and incorporated herein by reference, and particularly our forward-looking statements, by these cautionary statements.

PROSPECTUS SUMMARY

The following summary highlights certain of the information contained elsewhere in or incorporated by reference into this prospectus. Because this is only a summary, however, it does not contain all the information you should consider before investing in our securities and it is qualified in its entirety by, and should be read in conjunction with, the more detailed information included elsewhere in or incorporated by reference into this prospectus. Before you make an investment decision, you should read this entire prospectus carefully, including the risks of investing in our securities discussed under the section of this prospectus entitled "Risk Factors" and similar headings in the other documents that are incorporated by reference into this prospectus. You should also carefully read the information incorporated by reference into this prospectus, including our financial statements, and the exhibits to the registration statement of which this prospectus is a part.

Unless the context otherwise requires, references to "we," "our," "us," "ContraVir" or the "Company" in this prospectus mean ContraVir Pharmaceuticals, Inc. on a consolidated basis with its wholly-owned subsidiary, as applicable. All share and per share information in this prospectus gives effect to a 1-for-8 reverse stock split of our issued and outstanding common stock effected on May 25, 2018.

Our Company

We are a biopharmaceutical company (incorporated in Delaware, May 15, 2013) focused on the development of antiviral drugs with a primary emphasis on the treatment of Hepatitis B virus ("HBV") infection.

We are developing two orally dosed compounds to treat HBV infection, Tenofovir Exalidex ("TXL™"), formerly known as CMX157, and CRV431. TXL™ is a highly potent oral lipid conjugated prodrug of tenofovir, which is the active moiety of the approved drugs Viread® ("TDF") and Vemlidy® ("TAF"), marketed by Gilead Sciences, Inc. Prodrugs are designed to improve the characteristics of drugs, such as better organ-specific targeting and efficacy, lower pill burden, improved safety, etc. CRV431 is a novel drug candidate also designed for the treatment of chronic HBV infection.

On December 18, 2014, we and Chimerix, Inc. ("Chimerix"), entered into a Licensing Agreement pursuant to which we licensed TXL™ from Chimerix for further clinical development and commercialization. On June 10, 2016, we completed the acquisition of Ciclofilin Pharmaceuticals, Inc. ("Ciclofilin"), a Delaware corporation, pursuant to an Agreement and Plan of Merger dated May 26, 2016. At the closing of the merger we acquired all of the outstanding equity interests in Ciclofilin in exchange for Ciclofilin having the right to receive future milestone payments. These milestone payments, if received, will be allocated among the holders of Ciclofilin common stock and certain creditors who converted their debt into equity immediately prior to the Closing. The milestone payments consist of up to \$17 million cash and up to 10% of our issued and outstanding common stock as of June 10, 2016, and will be paid upon the achievement of certain developmental and/or regulatory milestones related to CRV431, Ciclofilin's lead development candidate.

Our Programs Under Development

Hepatitis B Therapies

TXL™—Background

TXL™ is a nucleoside analog lipid prodrug of tenofovir that utilizes a proprietary technology developed by Chimerix. The proprietary technology is utilized to covalently modify a drug molecule with a lipid side-chain that mimics a naturally occurring phospholipid component of cell membranes. The lipid-conjugated molecule can then utilize natural lipid uptake pathways to optimize delivery to the target organ (liver) and subsequent sequestration in liver (hepatic) cells. This molecular modification is

designed to yield higher hepatic intracellular concentrations of the active tenofovir species (tenofovir diphosphate) while simultaneously reducing the concentration of tenofovir circulating outside the liver. This latter property is intended to reduce the overall likelihood of encountering potential off-target toxicities and side-effects. Chimerix tested TXL™ in a Phase 1 trial in 2010. The study was a randomized, double blind, placebo controlled, single dose escalation study conducted in healthy volunteers. The purpose of the study was to evaluate the safety, tolerability, and pharmacokinetics of TXL™.

We in-licensed TXL™ from Chimerix in exchange for an upfront payment of 120,000 shares of our preferred stock, valued at \$1.2 million (as at the time of the deal). We are developing TXL™ globally for the treatment of chronic HBV infection. A recently issued composition of matter patent for TXL™ provides intellectual property protection to at least 2031.

The overall development strategy for TXL™ is to develop the compound to serve as a critical backbone therapy in future HBV curative combination therapies. It is thought that the cure for chronic HBV will necessarily include a nucleos(t)ide such as TXL™ to reduce viremia.

We completed a Phase 1b safety and pharmacokinetic study in 2016. Data from the Phase 1b study demonstrate that TXL™ was safe and well tolerated by healthy volunteers in all five dosing groups, receiving once daily oral dosing of 5, 10, 25, 50 or 100 mg. In addition to demonstrating an excellent safety profile, plasma levels of TXL™ and tenofovir showed a dose-dependent pharmacokinetic profile. As expected, the novel structure of TXL™ resulted in decreased levels of systemically circulating tenofovir. Overall, therefore, the potential for the renal and bone side effects associated with Viread® ("TDF"), marketed by Gilead, was reduced.

In 2016 we initiated a Phase 2 multiple ascending dose proof of concept clinical trial. The study enrolled 62 treatment-naïve patients with chronic HBV infection and compared TXL™ to TDF. The sequential dose escalation consisted of 10 patients per cohort receiving four weeks of a once-daily dose of either 5, 10, 25, 50 or 100 mg of TXL™, and two patients per cohort receiving 300 mg of TDF, the standard dose of TDF, as active treatment reference product.

There were no serious adverse events ("SAEs") or discontinuations due to AEs, and other safety parameters (e.g., electrocardiograms, vital signs, safety laboratory results) showed no patterns, clusters, or relationship to the TXL™ dose. Interim data in the POC study have demonstrated that doses of TXL™ from 50-mg to 100-mg resulted in comparable mean HBV viral load reductions to the 300-mg dose of Viread® after 28 days of treatment. The data demonstrated that TXL™, at all doses tested, resulted in substantially lower systemic circulating levels of tenofovir in the blood compared to Viread®. These results demonstrate the potential for TXL™ to reduce the risk of bone- and kidney-related toxicities associated with Viread®.

We submitted an Investigational New Drug application ("IND") to the U.S. Food and Drug Administration ("FDA") to support initiation of our HBV clinical development program in the United States and received a notice of approval in September 2017. We subsequently initiated a safety study in patients with severe renal impairment during the fourth quarter of 2017 and released the positive results of this study in January of 2018. Data from this study further supported the strong safety profile of TXL™ in patients with comorbidities.

The study of 16 subjects included 8 healthy subjects with normal kidney function and 8 subjects with severely impaired kidney function. Results from the study confirmed that TXL™ was safe and well tolerated in both patient groups.

Importantly, the data showed that the blood concentrations of TFV in severely renally-impaired subjects receiving 50 mg of TXL™ were similar to the TFV exposure levels observed after dosing of TDF 300 mg, the current standard of care. These findings indicate that dosing strength adjustments of TXL™ is not warranted in patients with compromised renal function.

We received approval for our Clinical Trial Application ("CTA") in the United Kingdom and have completed Part I of the formulation optimization program in both humans and animals, demonstrating positive signals. Results from both preclinical and clinical studies will help us identify a potential lead formulation that is anticipated to deliver greater antiviral activity at lower doses, which will further build upon the safety and tolerability profile already established for TXL™. Final formulation optimization is currently underway, in anticipation of introducing the most appropriate formulation to HBV patients in the second half of 2018.

On January 8, 2018, our Executive Team met with the FDA's Division of Antiviral Products at the Center for Drug Evaluation and Research, to review and discuss the data generated for TXL™ to date, as well as the data package that would be required for the filing of an NDA and successful registration of TXL™ in the U.S. leveraging the 505(b)2 Regulatory Pathway. On February 7, 2018, we received final written minutes from the FDA summarizing the outcome of the meeting and feedback received.

Key highlights from the meeting outcome include:

- Agreement on an abbreviated non-clinical Development Program
- Agreement on a Clinical Pharmacology Package
- Agreement on the major elements of Phase 3 trial design in treatment-naïve patients with chronic hepatitis B (both HBeAg and HeAg), including duration of treatment, clinical endpoints, comparator and;
- Agreement on number of patients for the safety database needed for NDA submission

The outcome of the meeting with FDA is a positive step towards the further execution of the streamlined development and registration of TXL™ in the U.S., which is expected to allow a faster and more cost-effective path to approval and commercialization in the U.S.

On February 21, 2018, we received notification from the FDA of the orphan designation to our lead investigation drug, TXL™, for the treatment of chronic hepatitis B in a pediatric patient population (0 to 11 years old).

Chronic hepatitis B virus is a major public health burden affecting more than 350 million people worldwide. Children are infected at birth or in early childhood. Current treatment options available for children generally require lifelong treatment and have had limited success, creating a great need for improved therapies, ultimately leading to a functional cure.

Orphan designation qualifies the sponsor of the drug for various development incentives, including tax credits for qualified clinical testing. Orphan drug designation qualifies TXL™ for seven years of market exclusivity in the U.S. upon approval, financial assistance in clinical research and development, and an accelerated evaluation of the registration package by the FDA. Additionally, a marketing application for a prescription drug product that has received orphan designation is not subject to a prescription drug user fee for the rare disease or condition for which the drug is designated.

CRV431—Background

CRV431 is a novel drug candidate designed to target a class of host proteins called cyclophilins, of which there are many types. Cyclophilins play a role in health and in the pathogenesis of certain diseases, and are known as peptidyl prolyl isomerases. The isomerase activity plays an important role in a number of biological processes including, for example, folding of proteins to confer certain 3-dimensional configurations. Three-dimensional configuration of proteins is a key element in determination of protein function. Additionally, specific host cyclophilins (e.g., cyclophilin A, B, C, D) play a role in the life cycle of certain viruses, including for example, HBV, HIV, and hepatitis C virus ("HCV") infections. CRV431 has been developed to inhibit the role of these host cyclophilins and

therefore interfere in the propagation of these viruses. CRV431 does not directly target the virus and, as such, may be less susceptible to drug resistance, borne from viral mutations.

Thus far, in vitro testing of CRV431 has been conducted in-house and in collaboration with external research groups including for example, the Scripps Research Institute ("Scripps"). Data in various cell lines of either transfected or infected HBV demonstrates nanomolar efficacy (EC50 values) and micromolar toxicity (CC50 values). The selective index (SI), therefore, is wide and suggests that CRV431 presents a viable clinical drug candidate for the treatment of viral infections, including HBV. Additional testing in a transgenic mouse model of HBV indicated that CRV431 reduced HBV DNA in the liver. In a non-alcoholic steatohepatitis (NASH) mouse model, CRV431 demonstrated anti-fibrotic potential, thus addressing an important concern of the downstream effects of chronic HBV infection and liver disease. Both animal models confirmed that CRV431 is orally active and appeared to be well tolerated.

On May 10, 2018, we submitted an IND to the FDA to support initiation of our CRV431 HBV clinical development program in the United States. Our clinical program for CRV431 is expected to commence in the second half of 2018.

Market Opportunities

We believe the Hepatitis B Market is poised for exceptional growth. HBV is a member of the hepadnavirus family that causes both acute and chronic liver infections. Transmission of the virus occurs by exposure to infected blood or bodily fluids, with the most typical modes being sexual contact, blood transfusion, re-use of contaminated syringes, and transmission from mother to child during childbirth.

Acute infection with the hepatitis B virus typically results in a loss of appetite, nausea, vomiting, body aches, mild fever, and jaundice. More than 90% of adults infected with the hepatitis B virus will recover and be completely disease free within six months. A vaccine to prevent hepatitis B infection has been available in the U.S. for over 30 years. It is administered as a series of three shots and is now believed to offer indefinite protection against infection (Van Damme et al., 2007). The vaccine is both safe and effective, with over one billion doses administered worldwide since its introduction, with less than 1% of vaccinated children developing chronic infection.

It is estimated that approximately 350-400 million people worldwide have a chronic, lifelong infection. According to the World Health Organization, the likelihood of developing a chronic hepatitis B infection is highly dependent upon the age when the infection occurs (WHO fact sheet N°204):

- 80-90% of infants infected during the first year of life develop chronic infections;
- 30-50% of children infected before the age of six develop chronic infections;
- Less than 5% of otherwise healthy adults will develop chronic infection;

Chronic HBV infection is associated with significant morbidity and mortality. If left untreated, 15-40% of chronically infected individuals will develop serious complications, such as hepatitis B associated liver cirrhosis or cancer (AASLD, 2009). Globally, there were 750 thousand HBV-related deaths in 2010 (Lavancy 2004), primarily due to end stage liver disease and liver cancer. Complications due to chronic HBV infection currently represent 5% to 10% of cases of liver transplantation.

Two different types of drugs are utilized in the treatment of chronic HBV infection: conventional or pegylated interferon alpha (INF or PEG-INF) and nucleoside/nucleotide analogs ("NAs"). Treatment is dependent upon: serum HBV DNA levels, serum ALT levels, and severity of liver disease. NAs available for the treatment of chronic HBV infection include:

- Nucleoside analogs: clevudine, emtricitabine, entecavir, lamivudine, telbivudine
- Nucleotide analogs: adefovir and tenofovir.

NAs are quite effective at inhibiting HBV replication; however, these treatments are not curative and require lifelong dosing. With the exception of tenofovir and entecavir, long-term treatment with these NAs is associated with a high risk of developing drug resistance. Entecavir is less effective in patients who had previously been treated with lamivudine (PI), a widely used treatment for HBV. Long-term treatment with the currently licensed prodrug of tenofovir, Viread®, is associated with kidney and bone toxicity (Scaglione et al., 2012)(PI).

Tenofovir is a NA inhibitor of reverse transcriptase, an enzyme that has diverse functions during HBV replication (Jones et al., 2013). Tenofovir was originally synthesized in the mid 1980's and was initially shown to have anti-HIV activity. However, due to its very limited bioavailability, the compound did not have the potential for widespread use. TDF is a prodrug of tenofovir that was developed to allow for oral administration. TDF was approved by the FDA for the treatment of HIV in 2001 and for the treatment of chronic HBV infection in 2008. The drug is marketed under the name Viread® by Gilead Sciences, or Gilead. Gilead has also developed tenofovir alafenamide fumarate ("TAF"), currently marketed as Vemlidy®, as a follow-on compound to TDF. In both HIV and HBV clinical studies, TAF exhibits similar antiviral activity to TDF but at much lower concentrations of tenofovir in the blood. The lower blood concentration of tenofovir following metabolism of TAF supports the notion that kidney and bone toxicity will be reduced compared to treatment with TDF (Ruane et al., 2013, Agarwal et al., 2015 and Sax et al., 2015).

A critical limitation of current therapies is the inability to achieve control of the infection in the vast majority of patients without lifelong treatment. HBV exists in the liver as viral cccDNA. The infected person is unable to eliminate this persistent form of the virus despite available therapies. This underscores the need for combination therapy with new classes of agents. Combinations of agents with new and complimentary mechanisms of action that attack the virus at different parts of its lifecycle will be needed to achieve a functional cure. It is our intention to develop TXL™, the prodrug of a well-established anti-HBV nucleotide analog, tenofovir, to be a pivotal component of a curative combination therapy for HBV. An example of such a combination would be TXL™ and CRV431.

The drive to find meaningful combination therapy for the treatment of chronic HBV infection stems from the generally accepted principle that a functional cure should address: 1) reduction of HBV DNA; 2) reduction in expression of HBeAg and HBsAg; 3) development of anti-HBsAg antibodies; and 4) reduction/elimination of cccDNA. TXL™ has been primarily developed to reduce HBV DNA (viral load). Layering CRV431 on top of TXL™ is a strategy that begins to address this need for combination therapy to target multiple stages of the HBV life cycle, as preliminary findings indicate CRV431 suppresses HBV DNA and suppresses both HBeAg and HBsAg.

License Agreement

Under the terms of the License Agreement, we licensed TXL™ from Chimerix in exchange for an upfront payment consisting of 120,000 shares of our Series B Convertible Preferred Stock with a stated value of \$1.2 million. In addition, Chimerix is eligible to receive up to approximately \$20 million in clinical, regulatory and initial commercial milestones in the United States and Europe, as well as royalties and additional milestones based on commercial sales in those territories. Either party may terminate the License Agreement upon the occurrence of a material breach by the other party (subject to standard cure periods), or upon certain events involving the bankruptcy or insolvency of the other party. We may also terminate the License Agreement without cause on a country by country basis upon sixty (60) days' prior written notice to Chimerix.

Secured Convertible Promissory Note

On May 8, 2018, we entered into a securities purchase agreement (the "Securities Purchase Agreement") with Iliad Research and Trading, L.P. ("IRT"), pursuant to which we issued to IRT a

secured convertible promissory note (the "Note") in the aggregate principal amount of \$3,325,000 for an aggregate purchase price of \$2,000,000 cash and \$1,000,000 aggregate principal amount of investor notes (the "Investor Notes") payable to us. Closing occurred on May 9, 2018. The Note carries an original issue discount of \$300,000, and the initial principal balance also includes \$25,000 to cover IRT's transaction expenses. The Note bears interest at the rate of 10% per annum and matures on November 8, 2019. Beginning on November 8, 2018, IRT has the right to redeem all or any portion of the Note up to the Maximum Monthly Redemption Amount which is \$500,000. Payments of each redemption amount may be made in cash or shares of our common stock at our election (so long as the various conditions to paying stock set forth in the Note are satisfied) provided, however, that if our common stock is trading below \$1.60 per share, the redemption(s) must be in cash. Common stock issued upon redemption will be issued at a price equal to 80% of the lowest trade price of the common stock for the 20 consecutive trading days prior to the date of redemption, subject to adjustments; provided, however, that in no event will the redemption price be less than \$1.60.

We also entered into a security agreement with IRT, pursuant to which IRT will receive a security interest in substantially all of our assets, except for intellectual property.

Implications of Being an Emerging Growth Company

We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, and, for as long as we continue to be an "emerging growth company," we may choose to take advantage of exemptions from various reporting requirements applicable to other public companies but not to "emerging growth companies," including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy 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 could be an "emerging growth company" for up to five years, or until the earliest of (i) the last day of the first fiscal year in which our annual gross revenues exceed \$1 billion, (ii) the date that we become a "large accelerated filer" as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, which would occur if the market value of our common shares that is held by non-affiliates exceeds \$700 million as of the last business day of our most recently completed second fiscal quarter, or (iii) the date on which we have issued more than \$1 billion in non-convertible debt during the preceding three-year period. We are choosing to "opt out" of the extended transition periods available under the JOBS Act for complying with new or revised accounting standards, and intend to take advantage of the other exemptions.

Corporate Information

We were incorporated in Delaware on May 15, 2013 for the purpose of holding certain FV-100 assets of Synergy Pharmaceuticals Inc., or Synergy. We were a majority-owned subsidiary of Synergy until February 18, 2014, the date Synergy completed the spinout of our shares of common stock. Our principal executive offices are located at 399 Thornall Street, First Floor, Edison, New Jersey 08837. Our telephone number is (732) 902-4000 and our website address is www.contravir.com. The information on our website is not a part of, and should not be construed as being incorporated by reference into, this prospectus supplement or the accompanying prospectus.

SUMMARY OF THE RIGHTS OFFERING

Securities to be Offered:	We are distributing to you, at no charge, one non-transferable subscription right to purchase one unit for every share of our common stock that you owned, or were deemed to own, as of the record date. Each unit consists of one share of Series C Convertible Preferred Stock and 323 warrants.
Size of Offering:	20,000 units.
Subscription Price:	\$1,000 per unit.
Series C Convertible Preferred Stock:	Each share of Series C Convertible Preferred Stock will be convertible, at our option at any time on or after the first anniversary of the closing of the rights offering, subject to certain conditions, or at the option of the holder at any time, into the number of shares of our common stock determined by dividing the \$1,000 stated value per share of the Series C Convertible Preferred Stock by a conversion price of \$1.55 per share, subject to adjustment. The Series C Convertible Preferred Stock has certain conversion rights, dividend rights and liquidation preferences.
Warrants:	Each warrant entitles the holder to purchase one share of common stock at an exercise price of \$1.55 per share, subject to adjustment, through its expiration five (5) years from the date of issuance. The warrants will be exercisable for cash, or, solely during any period when a registration statement for the exercise of the warrants is not in effect, on a cashless basis. We may redeem the warrants for \$0.01 per warrant if our common stock closes above \$6.20 per share for ten consecutive trading days, provided that we may not do so prior to the first anniversary of closing of the rights offering.
Record Date:	5:00 p.m., Eastern Time, on June 14, 2018.
Basic Subscription Rights:	Each subscription right entitles you to purchase one unit at the subscription price.
Over-Subscription Privilege:	If you exercise your basic subscription rights in full, you may also choose to purchase a portion of the units that are not purchased by our other holders through the exercise of their basic subscription rights, subject to proration and stock ownership limitations described elsewhere in this prospectus.
Expiration Date:	5:00 p.m., Eastern Time, on June 28, 2018.
Procedure for Exercising Subscription Rights:	To exercise your subscription rights, you must take the following steps:

If you are a record holder of our common stock or a holder of certain outstanding warrants as of the record date, you must deliver payment and a properly completed rights certificate to the subscription agent to be received before 5:00 p.m., Eastern Time, on June 28, 2018. You may deliver the documents and payments by first class mail or courier service. If you use first class mail for this purpose, we recommend using registered mail, properly insured, with return receipt requested.

If you are a beneficial owner of shares that are registered in the name of a broker, dealer, bank or other nominee, you should instruct your broker, dealer, bank or other nominee to exercise your subscription rights on your behalf. Please follow the instructions of your nominee, who may require that you meet a deadline earlier than 5:00 p.m., Eastern Time, on June 28, 2018.

Delivery of Shares and Warrants:

As soon as practicable after the expiration of the rights offering, and within five business days thereof, we expect to close on subscriptions and for the subscription agent to arrange for the issuance of the shares of Series C Convertible Preferred Stock and warrants purchased pursuant to the rights offering. All shares and warrants that are purchased in the rights offering will be issued in book-entry, or uncertificated, form meaning that you will receive a direct registration, or DRS, account statement from our transfer agent reflecting ownership of these securities if you are a holder of record of shares or warrants. If you hold your shares in the name of a bank, broker, dealer, or other nominee, DTC will credit your account with your nominee with the securities you purchased in the rights offering.

Non-Transferability of Subscription Rights:

Subscription rights may not be sold, transferred, assigned or given away under any circumstances, and will not be listed for trading on any stock exchange or market.

Transferability of Warrants:

The warrants will be separately transferable following their issuance and through their expiration 5 years from the date of issuance.

Participation of Certain Warrant Holders:

Certain holders of our warrants to purchase common stock have the contractual right to participate in this offering. Each such warrant holder will receive one subscription right for each share of common stock that such warrant holder's warrant is exercisable for (or, as referred to elsewhere herein, for each share that such warrant holder is deemed to own). A total of _____ rights will be issued to these warrant holders.

No Board Recommendation:	Our Board of Directors (the "Board") is not making a recommendation regarding your exercise of the subscription rights. You are urged to make your decision to invest based on your own assessment of our business and financial condition, our prospects for the future, the terms of the rights offering, the information in this prospectus and other information relevant to your circumstances. Please see " <i>Risk Factors</i> " for a discussion of some of the risks involved in investing in our securities.
No Revocation:	All exercises of subscription rights are irrevocable.
Use of Proceeds:	Assuming the exercise of subscription rights to purchase all 20,000 units offered in the rights offering, after deducting dealer-manager fees and other fees and expenses, but excluding any proceeds received upon exercise of any warrants, we estimate the net proceeds from the rights offering will be approximately \$18.5 million. We intend to use the net proceeds to fund our research and development activities and for working capital and general corporate purposes. See " <i>Use of Proceeds</i> ."
Material U.S. Federal Income Tax Consequences:	For U.S. federal income tax purposes, we do not believe you should recognize income or loss upon receipt or exercise of a subscription right. You should consult your own tax advisor as to the tax consequences of the rights offering in light of your particular circumstances. See " <i>Material U.S. Federal Income Tax Consequences</i> ."
Extension and Termination:	We may extend the rights offering for additional time in our sole discretion, although we do not presently intend to do so. Our Board may also terminate the rights offering for any reason prior to its completion.
Subscription Agent Questions:	If you have any questions about the rights offering, please contact the subscription agent.
Subscription Agent	Philadelphia Stock Transfer, Inc.
Market for Common Stock:	Our common stock is listed on the NASDAQ Capital Market under the symbol "CTRV."
Market for Preferred Stock:	There is no established public trading market for the Series C Convertible Preferred Stock, and we do not expect a market to develop. In addition, we do not currently intend to apply for listing of the Series C Convertible Preferred Stock on any securities exchange or recognized trading system.
Market for Warrants	There is no established trading market for the warrants, the warrants may not be widely distributed and we do not expect a market to develop. In addition, we do not currently intend to apply for listing of the warrants on any securities exchange or recognized trading system.
Dealer-Manager:	Maxim Group LLC

Summary Financial Data

	Three months ended March 31, 2018	Three months ended March 31, 2017	Six months ended December 31, 2017	Twelve months ended June 30, 2017	Twelve months ended June 30, 2016
Weighted average common shares outstanding	10,124,112	7,912,710	9,678,329	7,286,304	3,382,541
Net loss	\$ (2,690,488)	\$ (7,618,626)	\$ (7,511,092)	\$ (14,891,050)	\$ (16,998,638)
Net loss per common share	\$ (0.27)	\$ (0.96)	\$ (0.78)	\$ (2.04)	\$ (5.03)

QUESTIONS AND ANSWERS ABOUT THE RIGHTS OFFERING

The following are examples of what we anticipate will be common questions about the rights offering. The answers are based on selected information included elsewhere in this prospectus. The following questions and answers do not contain all of the information that may be important to you and may not address all of the questions that you may have about the rights offering. This prospectus and the documents incorporated by reference herein contain more detailed descriptions of the terms and conditions of the rights offering and provide additional information about us and about our business, including potential risks related to the rights offering, the units offered hereby, and our business.

Exercising the subscription rights and investing in our securities involve a high degree of risk. We urge you to carefully read the section entitled "Risk Factors" beginning on page 22 of this prospectus and all other information included in, or incorporated by reference into, this prospectus in its entirety before you decide whether to exercise your subscription rights.

What is the rights offering?

We are distributing to holders of shares of our common stock and to holders of certain outstanding warrants as of 5:00 p.m., Eastern Time, on June 14, 2018, which is the record date for the rights offering, at no charge, non-transferable subscription rights to purchase units, each consisting of one share of Series C Convertible Preferred Stock and 323 warrants. Each whole warrant will be exercisable for one share of our common stock. You will receive one subscription right for every share of common stock you owned or were deemed to own as of 5:00 p.m., Eastern Time, on the record date. Each subscription right entitles the holder to a basic subscription right and an over-subscription privilege, which are described below. Upon closing of the rights offering, the Series C Convertible Preferred Stock and warrants will immediately separate. The common stock to be issued upon conversion of the Series C Convertible Preferred Stock or exercise of the warrants, like our existing shares of common stock, will be traded on the NASDAQ Capital Market under the symbol "CTRV."

Why are we conducting the rights offering?

We are conducting the rights offering to fund our research and development activities and for working capital and general corporate purposes. For a detailed discussion, see "Use of Proceeds."

Our Board has approved the rights offering and, based on information available to the Board and its subsequent analyses, believes that the rights offering is in the best interests of the Company and its stockholders. However, our Board is not making any recommendation regarding your exercise of the subscription rights.

What is the basic subscription right?

Each basic subscription right gives our stockholders or certain warrant holders the opportunity to purchase units consisting of one share of Series C Convertible Preferred Stock and 323 warrants, at a subscription price of \$1,000 per unit, subject to the limits described below. We have granted to you, as a stockholder or a holder of certain outstanding warrants of record as of 5:00 p.m., Eastern Time, on the record date, one subscription right for every share of our common stock you owned or were deemed to own, as the case may be, at that time. For example, if you owned 10,000 shares of our common stock as of 5:00 p.m., Eastern Time, on the record date, you would have received 10,000 subscription rights and would have the right to purchase 10,000 units for \$1,000 per unit subject to certain limitations. You may exercise all or a portion of your basic subscription rights or you may choose not to exercise any subscription rights at all. However, if you exercise fewer than all of your basic subscription rights, you will not be entitled to purchase any additional shares pursuant to the over-subscription privilege.

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If you hold CTRV stock certificates or warrants, the number of basic subscription rights you may exercise is indicated on the enclosed rights certificate. If you hold your shares in the name of a custodian bank, broker, dealer or other nominee, you will not receive a rights certificate. Instead, the Depository Trust Company ("DTC") will issue one subscription right to the nominee record holder for every share of our common stock that you own at the record date. If you are not contacted by your custodian bank, broker, dealer or other nominee, you should contact your nominee as soon as possible.

What is the over-subscription privilege?

We do not expect all of our stockholders or all eligible warrant holders to exercise all of such holder's basic subscription rights. The over-subscription privilege provides each holder that exercises all of such holder's basic subscription rights the opportunity to purchase the units that are not purchased by other holders. If you fully exercise your basic subscription right, the over-subscription privilege of each right entitles you to subscribe for additional units unclaimed by other holders of rights in the rights offering at the same subscription price per unit. If an insufficient number of units are available to fully satisfy all over-subscription privilege requests, the available units will be distributed proportionately among rights holders who exercise their over-subscription privileges based on the number of units each rights holder subscribed for under the basic subscription right.

In order to properly exercise your over-subscription privilege, you must deliver the subscription payment for exercise of your over-subscription privilege before the expiration of the rights offering. Because we will not know the total number of unsubscribed units before the expiration of the rights offering, if you wish to maximize the number of units you purchase pursuant to your over-subscription privilege, you will need to deliver payment in an amount equal to the aggregate subscription price for the maximum number of units available, assuming that no stockholder other than you has purchased any units pursuant to such stockholder's basic subscription right and over-subscription privilege. The subscription agent will return any excess payments by mail without interest or deduction promptly after the expiration of the subscription period. See "*The Rights Offering—The Subscription Rights—Over-Subscription Privilege*."

May the subscription rights that I exercise be reduced for any reason?

Yes. While we are distributing to holders of our common stock and certain warrant holders one subscription right for every share of common stock owned or deemed owned on the record date, we are only seeking to raise \$20 million dollars in gross proceeds in this rights offering. As a result, based on (1) shares of common stock outstanding and (2) shares of common stock deemed to be owned by certain warrant holders and deemed to be outstanding as of June 14, 2018, we would grant subscription rights to acquire units but will only accept subscriptions for 20,000 units. Accordingly, sufficient units may not be available to honor your subscription in full. If exercises of basic subscription rights exceed the number of units available in the rights offering, we will allocate the available units pro-rata among the record holders exercising the basic subscription rights in proportion to the number of shares of our common stock each of those record holders owned or were deemed to own on the record date, relative to the number of shares owned on the record date by all record holders exercising the basic subscription right. If this pro-rata allocation results in any record holders receiving a greater number of units than the record holder subscribed for pursuant to the exercise of the basic subscription rights, then such record holder will be allocated only that number of units for which the record holder subscribed, and the remaining units will be allocated among all other record holders exercising their basic subscription rights on the same pro rata basis described above. The proration process will be repeated until all units have been allocated. Please also see the discussion under "*The Rights Offering—The Subscription Rights—Over-Subscription Privilege*" and "*The Rights Offering—Limitation on the Purchase of Units*" for a description of potential proration as to the over-subscription privilege and certain stock ownership limitations.

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If for any reason the amount of units allocated to you is less than you have subscribed for, then the excess funds held by the subscription agent on your behalf will be returned to you, without interest, as soon as practicable after the rights offering has expired and all prorating calculations and reductions contemplated by the terms of the rights offering have been effected, and we will have no further obligations to you.

What are the terms of the Series C Convertible Preferred Stock?

Each share of Series C Convertible Preferred Stock will be convertible, at our option at any time on or after the first anniversary of the closing of the rights offering, subject to certain conditions, or at the option of the holder at any time, into the number of shares of our common stock determined by dividing the \$1,000 stated value per share of the Series C Convertible Preferred Stock by a conversion price of \$1.55 per share, subject to adjustment. The Series C Convertible Preferred Stock has certain conversion rights, dividend rights and liquidation preferences as described in more detail herein. We do not currently intend to list the Series C Convertible Preferred Stock on Nasdaq.

What are the terms of the warrants?

Each warrant entitles the holder to purchase one share of common stock at an exercise price of \$1.55 per share from the date of issuance through its expiration five (5) years from the date of issuance. The warrants will be exercisable for cash, or, solely during any period when a registration statement for the exercise of the warrants is not in effect, on a cashless basis. We may redeem the warrants for \$0.01 per warrant if our common stock closes above \$6.20 per share for ten consecutive trading days, provided that we may not do so prior to the first anniversary of closing of the rights offering .

Are the warrants listed?

The warrants are not listed on any exchange and we do not intend to apply to list the warrants on any exchange.

Will fractional shares be issued upon exercise of subscription rights or warrants?

No. We will distribute subscription rights to acquire whole units, rounding down the underlying number of common shares giving rise to such subscription rights to the nearest share. Any excess subscription payments received by the subscription agent will be returned within 10 business days after expiration of the rights offering, without interest or deduction. No fractional shares will be issued upon the conversion of the Series C Convertible Preferred Stock or upon exercise of warrants.

How was the subscription price determined?

The Board determined the subscription price based on a variety of factors, including historical and current trading prices for our common stock, general business conditions, our need for capital, alternatives available to us for raising capital, potential market conditions, and our desire to provide an opportunity to our stockholders to participate in the rights offering on a pro rata basis. In conjunction with its review of these factors, the Board also reviewed our history and prospects, including our past and present earnings, our prospects for future earnings, and the outlook for our industry, and our current financial condition.

The subscription price is not necessarily related to our book value, tangible book value, multiple of earnings or any other established criteria of value and may or may not be considered the fair value of our common stock to be offered in the rights offering. You should not consider the subscription price as an indication of value of the Company or our common stock. There is currently no market for our shares of Series C Convertible Preferred Stock and, unless we or you choose to convert such shares

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into shares of common stock, you will not be able to resell such shares. We cannot predict the price at which our shares of common stock will trade and, if listed, the warrants will trade after the rights offering. You should obtain a current quote for our common stock before exercising your subscription rights and make your own assessment of our business and financial condition, our prospects for the future, and the terms of the rights offering.

If I am a holder of only stock options or warrants, may I participate in the rights offering?

Holders of common stock issued as of the record date and holders of our warrants issued in October 2015, April 2016 and April 2017 may participate in the rights offering. Following the consummation of the rights offering, the Company anticipates making an equitable adjustment to unexercised stock options to reflect the issuance of shares in the rights offering.

Am I required to exercise all of the subscription rights I receive in the rights offering?

No. You may exercise any number of your subscription rights, or you may choose not to exercise any subscription rights. If you do not exercise any subscription rights, the number of shares of our common stock you own will not change; however, you will own a smaller proportional interest in the Company than if you had timely exercised all or a portion of your subscription rights. If you choose not to exercise your subscription rights or you exercise fewer than all of your subscription rights and other stockholders fully exercise their subscription rights or exercise a greater proportion of their subscription rights than you exercise, the percentage of our common stock owned by these other stockholders will increase relative to your ownership percentage, and your voting and other rights in the Company will likewise be diluted. In addition, if you do not exercise your basic subscription right in full, you will not be entitled to participate in the over-subscription privilege.

How soon must I act to exercise my subscription rights?

If you received a rights certificate and elect to exercise any or all of your subscription rights, the subscription agent must receive your completed and signed rights certificate and payment (and your payment must clear) prior to the expiration of the rights offering, which is June 28, 2018, at 5:00 p.m., Eastern Time, unless you have used the guaranteed delivery procedures described under "*The Rights Offering—Notice of Guaranteed Delivery*." If you hold your shares in the name of a custodian bank, broker, dealer or other nominee, your nominee may establish a deadline prior to 5:00 p.m., Eastern Time, on June 28, 2018 by which you must provide it with your instructions to exercise your subscription rights and payment for your shares. Our Board may, in its discretion, extend the rights offering one or more times. Our Board may cancel or amend the rights offering at any time before its expiration. In the event that the rights offering is cancelled, all subscription payments received will be returned promptly, without interest or penalty.

Although we will make reasonable attempts to provide this prospectus to holders of subscription rights, the rights offering and all subscription rights will expire at 5:00 p.m., Eastern Time, on June 28, 2018 (unless extended), whether or not we have been able to locate each person entitled to subscription rights.

All exercises of subscription rights are irrevocable, even if the rights offering is extended by our board of directors.

May I transfer my subscription rights?

No. You may not sell, transfer or assign your subscription rights to anyone. Subscription rights will not be listed for trading on the NASDAQ Capital Market or any other stock exchange or market. Rights certificates may only be completed by the stockholder who receives them.

Are we requiring a minimum subscription to complete the rights offering?

There is no aggregate minimum we must receive to complete the rights offering.

Has our Board made a recommendation to our stockholders regarding the rights offering?

No. Our Board is not making a recommendation regarding your exercise of the subscription rights. Stockholders who exercise subscription rights risk investment loss on new money invested. There is currently no market for our shares of Series C Convertible Preferred Stock or warrants and, unless we or you choose to convert your shares of Series C Convertible Preferred Stock into or exercise your warrants for shares of common stock, you will not be able to resell such shares. We cannot predict the price at which our shares of common stock will trade after the rights offering. On June 1, 2018, the last reported sale price of our common stock on Nasdaq was \$1.55 per share. You are urged to make your decision based on your own assessment of our business and the rights offering. Please see "*Risk Factors*" in this prospectus and all other information included in, or incorporated by reference into, this prospectus for a discussion of some of the risks involved in investing in our securities.

How do I exercise my subscription rights if I own shares in certificate form or if I am an eligible warrant holder?

If you hold a CTRV stock certificate or if you are an eligible warrant holder and you wish to participate in the rights offering, you must take the following steps:

- deliver a complete and executed rights certificate and related subscription documents to the subscription agent on or before 5:00 p.m. Eastern Time, on June 28, 2018; and
- deliver payment to the subscription agent on or before 5:00 p.m. Eastern Time, on June 28, 2018. Payment instructions will accompany your rights certificate.

In certain cases, you may be required to provide additional documentation or signature guarantees.

Please follow the delivery instructions on the rights certificate. Do not deliver documents to the Company. You are solely responsible for completing delivery to the subscription agent of your subscription documents, rights certificate and payment. We urge you to allow sufficient time for delivery of your subscription materials to the subscription agent so that the subscription agent receives the materials before 5:00 p.m., Eastern Time, on June 28, 2018.

If you cannot deliver your rights certificate to the subscription agent prior to the expiration of the rights offering, you may follow the guaranteed delivery procedures described under "*The Rights Offering—Notice of Guaranteed Delivery*."

If you send a payment that is insufficient to purchase the number of units you requested, or if the number of units you requested is not specified in the forms, the payment received will be applied to exercise your subscription rights to the fullest extent possible based on the amount of the payment received, subject to the availability of units in the rights offering and the elimination of fractional shares. Any excess subscription payments received by the subscription agent will be returned promptly, without interest, following the expiration of the rights offering.

What should I do if I want to participate in the rights offering, but my shares are held in the name of a custodian bank, broker, dealer or other nominee?

If you hold your shares of common stock through a custodian bank, broker, dealer or other nominee, then your nominee is the record holder of the shares you own. If you are not contacted by your nominee, you should contact your nominee as soon as possible. Your nominee must exercise the subscription rights on your behalf for the shares of common stock you wish to purchase. You will not receive a rights certificate. Please follow the instructions of your nominee. Your nominee may establish

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a deadline that may be before 5:00 p.m., Eastern Time, on June 28, 2018, the expiration date for the rights offering.

What form of payment is required to purchase units?

As described in the instructions accompanying the rights certificate, payments submitted to the subscription agent must be made in full United States currency by personal or certified check payable to Philadelphia Stock Transfer, Inc., the subscription agent, drawn upon a United States bank; U.S. Postal money order; or wire transfer.

If payment is issued by check, payment will be deemed to have been received by the subscription agent only upon the subscription agent's receipt of the check, receipt and clearance of such check.

Please note that funds paid by uncertified personal check may take at least seven business days to clear. Accordingly, if you wish to pay by means of an uncertified personal check, we urge you to make payment sufficiently in advance of the expiration date to ensure that the subscription agent receives cleared funds before that time.

When will I receive my new shares of Series C Convertible Preferred Stock and Warrants?

All shares that you purchase in the rights offering to which you are entitled will be issued in book-entry, or uncertificated, form. When issued, the shares will be registered in the name of the subscription rights holder of record. As soon as practicable after the expiration of the rights offering period, the subscription agent will arrange for the issuance of the shares of common stock purchased in the rights offering. Subject to state securities laws and regulations, we have the discretion to delay distribution of any shares you may have elected to purchase by exercise of your rights in order to comply with state securities laws.

After I send in my payment and rights certificate, may I cancel my exercise of subscription rights?

No. All exercises of subscription rights are irrevocable unless the rights offering is terminated, even if you later learn information about us or the rights offering that you consider to be unfavorable to the exercise of your subscription rights. You should not exercise your subscription rights unless you are certain that you wish to purchase shares of our common stock in the rights offering.

Have any stockholders agreed to exercise their rights?

Yes. _____, which own an aggregate of _____ shares of our common stock, or approximately _____ % of the shares outstanding, have agreed with us to exercise their respective basic subscription rights as well as exercise their over-subscription privilege pursuant to the rights offering in an amount not less than \$ _____ and \$ _____, respectively. No fees or other consideration will be paid by the Company to _____ or (or any respective affiliates) in exchange for such agreement to purchase common stock in connection with the rights offering. Any shares of common stock purchased in connection with the transactions described in this paragraph will be purchased directly from us on a private basis and are not being registered pursuant to the registration statement of which this prospectus is a part.

Will our directors and officers participate in the rights offering?

All holders of our common stock as of the record date for the rights offering and holders of certain warrants will receive, at no charge, the non-transferable subscription rights to purchase shares of our common stock as described in this prospectus. To the extent that our directors and officers held shares of our common stock (including shares of restricted common stock) or eligible warrants as of the record date, they will receive the subscription rights and, while they are under no obligation to do

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so, will be entitled to participate in the rights offering. Our directors and officers have not indicated to us whether they will purchase shares of our common stock in the offering pursuant to their basic subscription rights.

Will the equity awards of our employees, officers and directors automatically convert into common stock in connection with the rights offering?

Holders of our equity awards to employees, officers and directors, including outstanding stock options, will not receive rights in the rights offering in connection with such equity awards, but will receive subscription rights in connection with any shares of our common stock held as of the record date.

How will the rights offering affect our outstanding common stock?

As of June 14, 2018, we had shares of our common stock outstanding. Assuming no additional shares of common stock are issued by the Company prior to consummation of the rights offering and assuming all units are sold in the rights offering, we will have shares of common stock issued and outstanding, shares of Series C Convertible Preferred Stock outstanding, and warrants to purchase an additional shares of our common stock outstanding.

The issuance of Series C Convertible Preferred Stock and warrants exercisable for shares of our common stock in the rights offering will dilute, and thereby reduce, your proportionate ownership in our shares of common stock, unless you fully exercise your basic subscription rights.

How much will the Company receive in net proceeds from the rights offering?

We expect the aggregate proceeds, net of dealer-manager fees and other fees and expenses, from the rights offering will be approximately \$18.5 million, assuming all rights are exercised. We intend to use the net proceeds to provide for our general corporate purposes. Please see "*Use of Proceeds*."

Are there risks in exercising my subscription rights?

Yes. The exercise of your subscription rights involves risks. Exercising your subscription rights involves the purchase of our securities and should be considered as carefully as you would consider any other equity investment. Among other things, you should carefully consider the risks described under the heading "*Risk Factors*" in this prospectus and all other information included in, or incorporated by reference into, this prospectus.

Can the Board terminate or extend the rights offering?

Yes. Our Board may decide to terminate the rights offering at any time and for any reason before the expiration of the rights offering. We also have the right to extend the rights offering for additional periods in our sole discretion. We do not presently intend to extend the rights offering. We will notify stockholders and the public if the rights offering is terminated or extended by issuing a press release announcing the extension no later than 9:00 a.m., Eastern Time, on the next business day after the most recently announced expiration date of the rights offering.

If the rights offering is not completed, will my subscription payment be refunded to me?

Yes. The subscription agent will hold all funds it receives in a designated bank account until the rights offering is completed. If the rights offering is not completed, all subscription payments received by the subscription agent will be returned promptly, without interest or penalty. If your shares are held in the name of a custodian bank, broker, dealer or other nominee, it may take longer for you to

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receive the refund of your subscription payment than if you were a record holder of your shares because the subscription agent will return payments through the record holder of your shares.

Will I receive interest on any funds I deposit with the subscription agent?

No. You will not be entitled to any interest on any funds that are deposited with the subscription agent pending completion or cancellation of the rights offering. If the rights offering is cancelled for any reason, the subscription agent will return this money to subscribers, without interest or penalty, as soon as practicable.

How do I exercise my rights if I live outside of the United States?

The subscription agent will hold rights certificates for stockholders having addresses outside of the United States. In order to exercise subscription rights, foreign stockholders must notify the subscription agent and timely follow the procedures described in "*The Rights Offering—Foreign Stockholders*."

What are the U.S. federal income tax consequences of exercising my subscription rights?

The receipt and exercise of subscription rights by holders of shares of our common stock should generally not be taxable for U.S. federal income tax purposes. You should seek specific tax advice from your tax advisor in light of your particular circumstances and as to the applicability and effect of any other tax laws. See "*Material U.S. Federal Income Tax Consequences*."

What fees or charges apply if I purchase units in the rights offering?

We are not charging any fee or sales commission to issue subscription rights to you or to issue units to you if you exercise your subscription rights (other than the subscription price). If you exercise your subscription rights through a custodian bank, broker, dealer or other nominee, you are responsible for paying any fees your nominee may charge you.

Whom should I contact if I have other questions?

If you have other questions regarding the rights offering, please contact the information agent, Kingsdale Advisors, at 646-651-1640, or by email at contactus@kingsdaleadvisors.com.

To whom should I send my forms and payment?

If your shares are held in the name of a broker, dealer, custodian bank or other nominee, then you should send your subscription documents and subscription payment to that record holder. If you are the record holder, then you should send your subscription documents, rights certificate, subscription payment or, if applicable, notice of guaranteed delivery, to the address provided below. If sent by mail, we recommend that you send documents and payments by registered mail, properly insured, with return receipt requested, and that a sufficient number of days be allowed to ensure delivery to the subscription agent. Do not send or deliver these materials to the Company.

By Registered Certified or Express Mail

PHILADELPHIA STOCK TRANSFER, INC.
2320 HAVERFORD RD.
SUITE 230
ARDMORE, PA 19003

By Overnight Courier

PHILADELPHIA STOCK TRANSFER, INC.
2320 HAVERFORD RD.
SUITE 230
ARDMORE, PA 19003

You, or, if applicable, your nominee, are solely responsible for ensuring the subscription agent receives your subscription documents, rights certificate, notice of guaranteed delivery and subscription

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payment. You should allow sufficient time for delivery of your subscription materials to the subscription agent and clearance of payment before the expiration of the rights offering period.

Who is the dealer-manager?

Maxim Group LLC will act as dealer-manager for the rights offering. Under the terms and subject to the conditions contained in the dealer-manager agreement, the dealer-manager will use its best efforts to solicit the exercise of subscription rights. We have agreed to pay the dealer-manager certain fees for acting as dealer-manager and to reimburse the dealer-manager for certain accountable and non-accountable expenses incurred in connection with this offering. The dealer-manager is not underwriting or placing any of the subscription rights or the shares of Series C Convertible Preferred stock or warrants being issued in the rights offering and is not making any recommendation with respect to such subscription rights (including with respect to the exercise or expiration of such subscription rights), shares of Series C Convertible Preferred Stock or warrants.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before making an investment decision with respect to our securities, we urge you to carefully consider the risks described in the "Risk Factors" section of our Transition Report on Form 10-K for the transition period from July 1, 2017 to December 31, 2017, which is incorporated by reference into this prospectus. These risk factors relate to our business, intellectual property, regulatory matters, and ownership of our common stock. In addition, the following risk factors present material risks and uncertainties associated with the rights offering. The risks and uncertainties incorporated by reference into this prospectus or described below are not the only ones we face. Additional risks and uncertainties not presently known or which we consider immaterial as of the date hereof may also have an adverse effect on our business. If any of the matters discussed in the following risk factors were to occur, our business, financial condition, results of operations, cash flows or prospects could be materially adversely affected, the market price of our securities could decline and you could lose all or part of your investment in our securities.

Risks Related to the Rights Offering

Future sales of our common stock may depress our share price.

As of May 29, 2018, following a one-for-8 reverse stock split that was approved by our stockholders on March 9, 2018 and effected on May 25, 2018, we had 10,686,795 shares of our common stock outstanding. Sales of a number of shares of common stock in the public market, or the issuance of additional shares upon exercise of outstanding warrants, could cause the market price of our common stock to decline. We may also sell additional common stock or securities convertible into or exercisable or exchangeable for common stock in subsequent public or private offerings or other transactions, which may adversely affect the market price of our common stock.

We presently do not intend to pay cash dividends on our common stock.

We have never paid cash dividends in the past, and we currently anticipate that no cash dividends will be paid on the common stock in the foreseeable future.

Our stockholders may experience substantial dilution in the value of their investment if we issue additional shares of our capital stock.

Our charter allows us to issue up to 120,000,000 shares of our common stock, par value \$0.0001 per share, and to issue and designate the rights of, without stockholder approval, up to 20,000,000 shares of preferred stock, par value \$0.0001 per share. To raise additional capital, we may in the future sell additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that are lower than the prices paid by existing stockholders, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders, which could result in substantial dilution to the interests of existing stockholders.

We may issue debt and equity securities or securities convertible into equity securities, any of which may be senior to our common stock as to distributions and in liquidation, which could negatively affect the value of our common stock.

In the future, we may attempt to increase our capital resources by entering into debt or debt-like financing that is unsecured or secured by up to all of our assets, or by issuing additional debt or equity securities, which could include issuances of secured or unsecured commercial paper, medium-term notes, senior notes, subordinated notes, guarantees, preferred stock, hybrid securities, or securities convertible into or exchangeable for equity securities. In the event of our liquidation, our lenders and holders of our debt and preferred securities would receive distributions of our available assets before distributions to the holders of our common stock. Because our decision to incur debt and issue

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securities in future offerings may be influenced by market conditions and other factors beyond our control, we cannot predict or estimate the amount, timing or nature of our future offerings or debt financings. Further, market conditions could require us to accept less favorable terms for the issuance of our securities in the future.

Our management will have broad discretion over the use of the net proceeds from this offering, you may not agree with how we use the proceeds and the proceeds may not be invested successfully.

Our management will have broad discretion as to the use of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of commencement of this offering. Accordingly, you will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. It is possible that, pending their use, we may invest the net proceeds in a way that does not yield a favorable, or any, return for us. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flows.

Your interest in our company may be diluted as a result of this rights offering.

Stockholders who do not fully exercise their subscription rights should expect that they will, at the completion of this offering, own a smaller proportional interest in our company than would otherwise be the case had they fully exercised their subscription rights. Further, the shares issuable upon the exercise of the warrants to be issued pursuant to the rights offering will dilute the ownership interest of stockholders not participating in this offering or holders of warrants who have not exercised them.

Further, if you purchase units in this offering at the subscription price, you may suffer immediate and substantial dilution in the net tangible book value of our common stock. See "Dilution" in this prospectus for a more detailed discussion of the dilution which may incur in connection with this offering.

We may be or become the target of securities litigation, which is costly and time-consuming to defend.

In the past, following periods of market volatility in the price of a company's securities or the reporting of unfavorable news, security holders have often instituted class action litigation. If the market value of our securities experience adverse fluctuations and we become involved in this type of litigation, regardless of the outcome, we could incur substantial legal costs and our management's attention could be diverted from the operation of our business, causing our business to suffer.

There may be future sales or other dilution of our equity, which may adversely affect the market price of our common stock.

We are generally not restricted from issuing additional common stock, including any securities that are convertible into or exchangeable for, or that represent the right to receive, common stock. The market price of our common stock could decline as a result of sales of common stock or securities that are convertible into or exchangeable for, or that represent the right to receive, common stock after this rights offering or the perception that such sales could occur. For example, we have a currently effective registration statement that permits us to sell shares of our common stock from time to time at prevailing market prices, which could result in dilution to investors in the rights offering.

Completion of the rights offering is not subject to us raising a minimum offering amount.

Completion of the rights offering is not subject to us raising a minimum offering amount and, therefore, proceeds may be insufficient to meet our objectives, thereby increasing the risk to investors

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in this offering, including investing in a company that continues to require capital. See "Use of Proceeds."

This rights offering may cause the trading price of our common stock to decrease.

The subscription price, together with the number of shares of common stock issuable upon conversion of the Series C Convertible Preferred Stock and warrants issuable in this right offering, may result in an immediate decrease in the market price of our common stock. This decrease may continue after the completion of this rights offering. If that occurs, you may have committed to buy shares of our Series C Convertible Preferred Stock which are convertible into shares of our common stock at a price greater than the prevailing market price. We cannot predict the effect, if any, that the availability of shares for future sale represented by the warrants issued in connection with the rights offering will have on the market price of our common stock from time to time. Further, if a substantial number of subscription rights are exercised and the holders of the shares received upon exercise of those subscription rights or the related warrants choose to sell some or all of the shares underlying the subscription rights or the related warrants, the resulting sales could depress the market price of our common stock.

Holders of our warrants will have no rights as a common stockholder until such holders exercise their warrants and acquire our common stock.

Until holders of warrants acquire shares of our common stock upon exercise of the warrants, holders of warrants will have no rights with respect to the shares of our common stock underlying such warrants. Upon exercise of the warrants, the holders thereof will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

If we terminate this offering for any reason, we will have no obligation other than to return subscription monies within 10 business days.

We may decide, in our sole discretion and for any reason, to cancel or terminate the rights offering at any time prior to the expiration date. If this offering is cancelled or terminated, we will have no obligation with respect to subscription rights that have been exercised except to return within 10 business days, without interest or deduction, all subscription payments deposited with the subscription agent. If we terminate this offering and you have not exercised any subscription rights, such subscription rights will expire and be worthless.

The subscription price determined for this offering is not an indication of the fair value of our common stock.

In determining the subscription price, our board of directors considered a number of factors, including, but not limited to, our need to raise capital in the near term to continue our operations, the current and historical trading prices of our common stock, a price that would increase the likelihood of participation in the rights offering, the cost of capital from other sources, the value of the Series C Convertible Preferred Stock and warrants being issued as components of the unit, comparable precedent transactions, an analysis of stock price trading multiples for companies similar to us that, among other things, did not need to raise capital in the near-term, and our most recently forecasted revenue relative to our peer group. The subscription price does not necessarily bear any relationship to any established criteria for value. No valuation consultant or investment banker has opined upon the fairness or adequacy of the subscription price. You should not consider the subscription price as an indication of the value of our company or our common stock.

If you do not act on a timely basis and follow subscription instructions, your exercise of subscription rights may be rejected.

Holders of subscription rights who desire to purchase shares of our Series C Convertible Preferred Stock and warrants in this offering must act on a timely basis to ensure that all required forms and payments are actually received by the subscription agent prior to 5:00 p.m., Eastern Time, on the expiration date, unless extended. If you are a beneficial owner of shares of common stock and you wish to exercise your subscription rights, you must act promptly to ensure that your broker, dealer, bank, trustee or other nominee acts for you and that all required forms and payments are actually received by your broker, dealer, bank, trustee or other nominee in sufficient time to deliver such forms and payments to the subscription agent to exercise the subscription rights granted in this offering that you beneficially own prior to 5:00 p.m., Eastern Time on the expiration date, as may be extended. We will not be responsible if your broker, dealer, bank, trustee or other nominee fails to ensure that all required forms and payments are actually received by the subscription agent prior to 5:00 p.m., Eastern Time, on the expiration date.

If you fail to complete and sign the required subscription forms, send an incorrect payment amount, or otherwise fail to follow the subscription procedures that apply to your exercise in this rights offering, the subscription agent may, depending on the circumstances, reject your subscription or accept it only to the extent of the payment received. Neither we nor the subscription agent undertakes to contact you concerning an incomplete or incorrect subscription form or payment, nor are we under any obligation to correct such forms or payment. We have the sole discretion to determine whether a subscription exercise properly follows the subscription procedures.

You may not receive all of the units for which you subscribe.

While we are distributing to holders of our common stock and holders of certain outstanding warrants one subscription rights for every share of common stock owned or deemed to be owned on the Record Date, we are only seeking to raise \$20 million dollars in gross proceeds in this rights offering. As a result, based on _____ shares of common stock outstanding as of June 14, 2018, we would grant subscription rights to acquire _____ units but will only accept subscriptions for 20,000 units. Accordingly, sufficient units may not be available to honor your subscription in full. If excess units are available after the exercise of basic subscription rights, holders who fully exercise their basic subscription rights will be entitled to subscribe for an additional number of units. Over-subscription privileges will be allocated pro rata among rights holders who over-subscribed, based on the number of over-subscription units to which they have subscribed. We cannot guarantee that you will receive any or the entire amount of units for which you subscribed. If for any reason the amount of units allocated to you is less than you have subscribed for, then the excess funds held by the subscription agent on your behalf will be returned to you, without interest, as soon as practicable after the rights offering has expired and all prorating calculations and reductions contemplated by the terms of the rights offering have been effected, and we will have no further obligations to you.

Unless we otherwise agree in writing, a person or entity, together with related persons or entities, may not exercise subscription rights (including over-subscription privileges) to purchase units that, when aggregated with their existing ownership, would result in such person or entity, together with any related persons or entities, owning in excess of 19.99% of our issued and outstanding shares of common stock following the closing of the transactions contemplated by this rights offering. If the amount of units allocated to you is less than your subscription request, then the excess funds held by the subscription agent on your behalf will be returned to you, without interest, as soon as practicable after the rights offering has expired and all prorating calculations and reductions contemplated by the terms of the rights offering have been effected, and we will have no further obligations to you.

If you make payment of the subscription price by personal check, your check may not clear in sufficient time to enable you to purchase shares in this rights offering.

Any personal check used to pay for shares and warrants to be issued in this rights offering must clear prior to the expiration date of this rights offering, and the clearing process may require five or more business days. If you choose to exercise your subscription rights, in whole or in part, and to pay for shares and warrants by personal check and your check has not cleared prior to the expiration date of this rights offering, you will not have satisfied the conditions to exercise your subscription rights and will not receive the shares and warrants you wish to purchase.

The receipt of subscription rights may be treated as a taxable distribution to you.

We believe the distribution of the subscription rights in this rights offering should be a non-taxable distribution to holders of shares of common stock under Section 305(a) of the Internal Revenue Code of 1986, as amended, or the Code. Please see the discussion on the "*Material U.S. Federal Income Tax Consequences*" below. This position is not binding on the IRS, or the courts, however. If this rights offering is deemed to be part of a "disproportionate distribution" under Section 305 of the Code, your receipt of subscription rights in this offering may be treated as the receipt of a taxable distribution to you equal to the fair market value of the subscription rights. Any such distribution would be treated as dividend income to the extent of our current and accumulated earnings and profits, if any, with any excess being treated as a return of capital to the extent thereof and then as capital gain. Each holder of shares of common stock and each holder of a warrant providing for participation is urged to consult his, her or its own tax advisor with respect to the particular tax consequences of this rights offering.

Exercising the subscription rights limits your ability to engage in certain hedging transactions that could provide you with financial benefits.

By exercising the subscription rights, you are representing to us that you have not entered into any short sale or similar transaction with respect to our common stock since the record date for the rights offering. In addition, the subscription rights provide that, upon exercise of the subscription right, you agree not to enter into any short sale or similar transaction with respect to our common stock for so long as you continue to hold warrants issued in connection with the exercise of the subscription right. These requirements prevent you from pursuing certain investment strategies that could provide you greater financial benefits than you might have realized if the subscription rights did not contain these requirements.

The subscription rights are not transferable, and there is no market for the subscription rights.

You may not sell, transfer, assign or give away your subscription rights. Because the subscription rights are non-transferable, there is no market or other means for you to directly realize any value associated with the subscription rights. You must exercise the subscription rights to realize any potential value from your subscription rights.

Absence of a public trading market for the warrants may limit your ability to resell the warrants.

There is no established trading market for the warrants to be issued pursuant to this offering nor do we expect to list the warrants on an exchange, and the warrants may not be widely distributed. Even if a market for the warrants does develop, the price of the warrants may fluctuate and liquidity may be limited. Absence of a public trading market for the warrants will make it difficult for purchasers of the warrants to resell the warrants or sell the warrants at a favorable price for an extended period of time, if at all.

There is no public market for the Series C Convertible Preferred Stock in this offering.

There is no established public trading market for the Series C Convertible Preferred Stock, and we do not expect a market to develop. In addition, we do not currently intend to apply for listing of the Series C Convertible Preferred Stock on any securities exchange or recognized trading system.

The market price of our common stock may never exceed the exercise price of the warrants issued in connection with this offering.

The warrants being issued in connection with this offering become exercisable upon issuance and will expire five years from the date of issuance. The market price of our common stock may never exceed the exercise price of the warrants prior to their date of expiration. Any warrants not exercised by their date of expiration will expire worthless and we will be under no further obligation to the warrant holder.

The warrants contain features that may reduce your economic benefit from owning them.

The warrants contain features that allow us to redeem the warrants and that prohibit you from engaging in certain investment strategies. We may redeem the warrants for \$0.01 per warrant once the closing price of our common stock has equaled or exceeded \$6.20 per share, subject to adjustment, for ten consecutive trading days, provided that we may not do so prior to the first anniversary of closing of the rights offering, and only upon not less than 30 days' prior written notice of redemption. If we give notice of redemption, you will be forced to sell or exercise your warrants or accept the redemption price. The notice of redemption could come at a time when it is not advisable or possible for you to exercise the warrants. As a result, you may be unable to benefit from owning the warrants being redeemed. In addition, for so long as you continue to hold warrants, you will not be permitted to enter into any short sale or similar transaction with respect to our common stock. This could prevent you from pursuing investment strategies that could provide you greater financial benefits from owning the warrant.

The dealer-manager is not underwriting, nor acting as placement agent of, the subscription rights or the securities underlying the subscription rights.

Maxim Group LLC will act as dealer-manager for this rights offering. As provided in the dealer-manager agreement, the dealer-manager will provide marketing assistance in connection with this offering. The dealer-manager is not underwriting or placing any of the subscription rights or the shares of our Series C Convertible Preferred Stock or warrants being issued in this offering and is not making any recommendation with respect to such subscription rights (including with respect to the exercise or expiration of such subscription rights), shares or warrants. The dealer-manager will not be subject to any liability to us in rendering the services contemplated by the dealer-manager agreement except for any act of bad faith or gross negligence by the dealer-manager. The rights offering may not be successful despite the services of the dealer-manager to us in this offering.

Since the warrants are executory contracts, they may have no value in a bankruptcy or reorganization proceeding.

In the event a bankruptcy or reorganization proceeding is commenced by or against us, a bankruptcy court may hold that any unexercised warrants are executory contracts that are subject to rejection by us with the approval of the bankruptcy court. As a result, holders of the warrants may, even if we have sufficient funds, not be entitled to receive any consideration for their warrants or may receive an amount less than they would be entitled to if they had exercised their warrants prior to the commencement of any such bankruptcy or reorganization proceeding.

Risks Related to Our Business

Investors should carefully consider the risks and uncertainties and all other information contained or incorporated by reference in this prospectus, including the risks and uncertainties discussed under "*Risk Factors*" in our most recent Transition Report on Form 10-KT, as may be amended from time to time, and in subsequent filings that are incorporated herein by reference. All of these risk factors are incorporated by reference herein in their entirety. These risks and uncertainties are not the only ones facing us. Our business, financial condition or results of operations could be materially adversely affected by any of these risks. The trading price of our common stock could decline due to any of these risks, and you may lose all or part of your investment. This prospectus and the incorporated documents also contain forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks mentioned in this prospectus.

USE OF PROCEEDS

We will retain broad discretion over the use of the net proceeds from the sale of our securities offered hereby. Except as described in any prospectus supplement, we currently anticipate using the net proceeds from the sale of our securities offered hereby primarily for to fund our research and development activities and for working capital and general corporate purposes. Further, from time to time we may evaluate acquisition opportunities and engage in related discussions with other companies. Pending the use of the net proceeds, we intend to invest the net proceeds in short-term, interest-bearing, investment-grade securities.

MARKET PRICE OF OUR COMMON STOCK AND RELATED STOCKHOLDER MATTERS

Our common stock is traded on the NASDAQ Capital Market under the symbol "CTRV." Our common stock has, from time to time, traded on a limited, sporadic or volatile basis. The following tables show the high and low sales prices for our common stock for the periods indicated, as reported on the NASDAQ Capital Market. These prices do not reflect retail markups, markdowns or commissions.

	Price Ranges	
	High	Low
Quarter ended June 30, 2018 (through June 12, 2018)	\$ 2.60	1.30
Quarter ended March 31, 2018	\$ 2.96	1.68
Quarter ended December 31, 2017	\$ 6.64	2.56
Quarter ended September 30, 2017	\$ 5.36	3.60
Quarter ended June 30, 2017	\$ 14.24	4.64
Quarter ended March 31, 2017	\$ 14.16	10.08
Quarter ended December 31, 2016	\$ 18.80	8.72
Quarter ended September 30, 2016	\$ 10.00	7.84
Quarter ended June 30, 2016	\$ 9.44	6.56
Quarter ended March 31, 2016	\$ 13.92	7.04

The closing price of our common stock on June 12, 2018 was \$1.59 per share. As of June 14, 2018, we had approximately record holders of our common stock. Because so many of our shares are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of individual stockholders represented by these record holders.

DIVIDEND POLICY

We have never, and do not anticipate that we will, declare or pay a cash dividend. We expect to retain future earnings, if any, for our business and do not anticipate paying dividends on common stock or our Series C Convertible Preferred Stock at any time in the foreseeable future. Because we do not anticipate paying dividends in the future, the only opportunity for our stockholders to realize the creation of value in our common stock or our Series C Convertible Preferred Stock will likely be through a sale of those shares.

DILUTION

Purchasers of our common stock, which is issuable upon conversion of the Series C Convertible Preferred Stock and upon exercise of the warrants contained in the units, will experience an immediate dilution of the net tangible book value per share of our common stock. Our net tangible book value as of March 31, 2018 was approximately \$(2.0) million, or \$(0.19) per share of our common stock (based upon 10,618,901 shares of our common stock then outstanding). Net tangible book value per share is equal to our total tangible assets less our total liabilities, divided by the number of shares of our outstanding common stock.

Dilution per share of common stock equals the difference between the subscription price per unit paid by purchasers in the rights offering (ascribing no value to the warrants contained in the units) and the net tangible book value per share of our common stock immediately after the rights offering.

Based on the sale by us in this rights offering of a maximum of 20,000 units (consisting of 20,000 shares of Series C Convertible Preferred Stock, convertible into the number of shares of our common stock determined by dividing the \$1,000 stated value per share of the Series C Convertible Preferred Stock by a conversion price of \$1.55 per share, and warrants to purchase an aggregate of 6,460,000 shares of common stock upon exercise), at the subscription price of \$1,000 per unit, and after deducting estimated offering expenses and dealer-manager fees and expenses payable by us and assuming no exercise of the warrants, our pro forma net tangible book value as of March 31, 2018 would have been approximately \$16.5 million, or \$0.70 per share. This represents an immediate increase in pro forma net tangible book value to existing stockholders of \$0.89 per share and an immediate dilution to purchasers in the rights offering of \$0.85 per share. The following table illustrates this per-share dilution:

Subscription Price	\$ 1,000
Net tangible book value per share as of March 31, 2018	\$ (0.19)
Increase in net tangible book value per share attributable to Rights Offering	\$ 0.89
Pro forma net tangible book value per share as of March 31, 2018, after giving effect to rights offering	\$ 0.70
Dilution in net tangible book value per share to purchasers in the rights offering	\$ 0.85

THE RIGHTS OFFERING

All holders of our common stock and holders of certain outstanding warrants as of the record date are eligible to participate in the rights offering. Please read through the material terms of the rights offering described in this section. If you hold your shares in a brokerage account or through a broker, dealer, custodian bank or other nominee, please also refer to "*Method of Exercising Subscription Rights—Subscription by Beneficial Owners.*"

The Subscription Rights

We will distribute to holders of shares of our common stock and to holders of certain outstanding warrants as of 5:00 p.m., Eastern Time on June 14, 2018, the record date for the rights offering, at no charge, non-transferable subscription rights to purchase units, with each unit consisting of one share of Series C Convertible Preferred Stock and 323 warrants at \$1,000 per unit. Each holder of record of our common stock as of the record date will receive one subscription right for every share of common stock. Each holder of an eligible warrant will receive one subscription right for each share of common stock that such warrant holder's warrant is exercisable for. Each subscription right will entitle its holder to a basic subscription right and an over-subscription privilege. In the aggregate, the subscription rights entitle our holders of common stock to purchase a total of 20,000 units for a total price of approximately \$20 million. Shares of common stock issued upon conversion of the Series C Convertible Preferred Stock and warrants offered in the rights offering, like existing shares of our common stock, will be traded on the NASDAQ Capital Market under our stock symbol, "CTRV."

Basic Subscription Right. As described in the foregoing paragraph, the basic subscription right entitles its holder to purchase units, with each unit consisting of one share of Series C Convertible Preferred Stock and 323 warrants at a subscription price of \$1,000 per unit. In order to exercise the basic subscription right, you must deliver the required documents and payment of the subscription price to the subscription agent prior to the expiration of the rights offering. If you choose to exercise your basic subscription rights, you may do so in part or in full. However, you may exercise your over-subscription privilege unless you exercise all of your basic subscription rights.

Over-Subscription Privilege. If you exercise your basic subscription rights in full, you may also choose to exercise your over-subscription privilege. Subject to proration and the limitations described in this prospectus, we will seek to honor the over-subscription requests in full. If over-subscription requests exceed the number of units available, however, we will allocate the available units pro rata among the holders as of the record date exercising the over-subscription privilege in proportion to the number of shares of our common stock or shares underlying eligible warrants each of those holders owned on the record date, relative to the number of shares of common stock and shares issuable upon exercise of eligible warrants owned on the record date by all holders as of the record date exercising the over-subscription privilege. If this pro rata allocation results in any holder receiving a greater number of units than the record holder subscribed for pursuant to the exercise of the over-subscription privilege, then such record holder will be allocated only that number of units for which the record holder oversubscribed, and the remaining units will be allocated among all other holders exercising the over-Subscription Privilege on the same pro rata basis described above. The proration process will be repeated until all units have been allocated.

Philadelphia Stock Transfer, Inc., the subscription agent for the rights offering, will determine the over-subscription allocation based on the formula described above.

To the extent the aggregate subscription payment of the actual number of unsubscribed units available to you pursuant to the over-subscription privilege is less than the amount you actually paid in connection with the exercise of the over-subscription privilege, you will be allocated only the number of unsubscribed units available to you, and any excess subscription payments will be returned to you, without interest or deduction, with 10 business days after expiration of the rights offering.

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We can provide no assurances that you will actually be entitled to purchase the number of units issuable upon the exercise of your over-subscription privilege in full at the expiration of the rights offering. We will not be able to satisfy any requests for units pursuant to the over-subscription privilege if all of our holders exercise their basic subscription rights in full, and we will only honor an over-subscription privilege to the extent sufficient units are available following the exercise of basic subscription rights.

Reasons for the Rights Offering

We are conducting the rights offering in order to raise capital for our general capital purposes. Our Board has considered the rights offering to be the best option for raising capital as compared to other alternatives, in part because it will give current holders the opportunity to limit ownership dilution by buying additional shares of common stock.

Our Board has approved the rights offering and, based on information available to the Board and its subsequent analyses, believes that the rights offering is in the best interests of the Company and its stockholders. However, our Board is not making any recommendation regarding your exercise of the subscription rights.

Determination of Subscription Price

The Board determined the subscription price, based on a variety of factors, including historical and current trading prices for our common stock, general business conditions, our need for capital, alternatives available to us for raising capital, potential market conditions, and our desire to provide an opportunity to our stockholders to participate in the rights offering on a pro rata basis. In conjunction with its review of these factors, the Board also reviewed our history and prospects, including our past and present earnings, our prospects for future earnings, and the outlook for our industry, and our current financial condition.

The subscription price is not necessarily related to our book value, tangible book value, multiple of earnings or any other established criteria of value and may or may not be considered the fair value of our common stock to be offered in the rights offering. You should not consider the subscription price as an indication of value of the Company or our common stock. There is currently no market for our shares of Series C Convertible Preferred Stock and, unless we or you choose to convert such shares into shares of common stock, you will not be able to resell such shares. We cannot predict the price at which our shares of common stock will trade after the rights offering. You should obtain a current quote for our common stock before exercising your subscription rights and make your own assessment of our business and financial condition, our prospects for the future, and the terms of the rights offering.

No Short-Sales

By exercising the subscription rights, you are representing to us that you have not entered into any short sale or similar transaction with respect to our common stock since the record date for the rights offering. In addition, the subscription rights provide that, upon exercise of the subscription right, you represent that you have not since the record date and, for so long as you continue to hold warrants issued in connection with the exercise of the subscription right, agree to not to enter into any short sale or similar transaction with respect to our common stock. These requirements prevent you from pursuing certain investment strategies that could provide you greater financial benefits than you might have realized if the subscription rights did not contain these requirements.

No Recombination

The Series C Convertible Preferred Stock and warrants comprising the units will separate upon the exercise of the subscription rights, and the units will not trade as a separate security. Holders may not recombine shares of Series C Convertible Preferred Stock and warrants to receive a unit.

Non-Transferability of Subscription Rights

The subscription rights are non-transferable (other than by operation of law), and as a result, you may not sell, transfer, assign or give away your subscription rights to anyone. The subscription rights will not be listed for trading on any stock exchange or market.

Expiration Date

The subscription period, during which you may exercise your subscription rights, expires at 5:00 p.m., Eastern Time, on June 28, 2018, which is the expiration of the rights offering. If you do not exercise your subscription rights before that time, your subscription rights will expire and will no longer be exercisable. We will not be required to issue shares to you if the subscription agent receives your rights certificate or your subscription payment after that time. We have the option to extend the rights offering in our sole discretion, although we do not presently intend to do so. We may extend the rights offering by giving oral or written notice to the Subscription Agent before the rights offering expires. If we elect to extend the rights offering, we will issue a press release announcing the extension no later than 9:00 a.m., Eastern Time, on the next business day after the most recently announced expiration date of the rights offering.

If you hold your shares of common stock in the name of a broker, dealer, bank or other nominee, the nominee will exercise the subscription rights on your behalf in accordance with your instructions. Please note that the nominee may establish a deadline that may be before 5:00 p.m., Eastern Time, on June 28, 2018, which is the expiration date that we have established for the rights offering.

Termination

We may terminate the rights offering for any reason at any time prior to the completion of the rights offering. If we terminate the rights offering, we will issue a press release notifying stockholders and the public of the termination.

Method of Exercising Subscription Rights

You will receive one non-transferable subscription right for every share of our common stock that you owned or were deemed to own as of 5:00 p.m., Eastern Time, on June 14, 2018, the record date for the rights offering. The exercise of subscription rights is irrevocable and may not be cancelled or modified. You may exercise your subscription rights as follows:

Subscription by Registered Holders or Eligible Warrant Holders. If you are a registered holder of shares of our common stock, or if you are a warrant holder entitled to subscription rights, the number of subscription rights you may exercise is indicated on your rights certificate. You may exercise your subscription rights by properly completing and executing the rights certificate and forwarding it, together with your full payment, to the subscription agent at the address set forth below under "*Subscription Agent*," to be received prior to 5:00 p.m., Eastern Time, on June 28, 2018, the expiration date for the rights offering.

Subscription by Beneficial Owners. If you are a beneficial owner of shares of our common stock that are registered in the name of a custodian bank, broker, dealer or other nominee, you will not receive a rights certificate. Instead, one subscription right will be issued to the nominee record holder for every share of our common stock that you own at the record date. If you are not contacted by your

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nominee, you should promptly contact your nominee in order to subscribe for shares of our common stock in the rights offering.

If you hold your shares of common stock in the name of a custodian bank, broker, dealer or other nominee, your nominee will exercise the subscription rights on your behalf in accordance with your instructions. Your nominee may establish a deadline that may be before 5:00 p.m., Eastern Time, on June 28, 2018, the expiration date for the rights offering.

Payment Method

As described in the instructions accompanying the rights certificate, payments submitted to the subscription agent must be made in full United States currency by personal or certified check payable to Philadelphia Stock Transfer, Inc., the subscription agent, drawn upon a United States bank; U.S. Postal money order; or wire transfer.

If payment is issued by check, payment will be deemed to have been received by the subscription agent only upon the subscription agent's receipt of the check, receipt and clearance of such check.

Please note that funds paid by uncertified personal check may take at least seven business days to clear. Accordingly, if you wish to pay by means of an uncertified personal check, we urge you to make payment sufficiently in advance of the expiration date to ensure that the subscription agent receives cleared funds before that time.

Your subscription rights will not be successfully exercised unless the subscription agent actually receives from you, your custodian bank, broker, dealer or other nominee, as the case may be, all of the required documents and your full subscription price payment (and your payment has cleared) prior to 5:00 p.m., Eastern Time, on June 28, 2018, the scheduled expiration date of the rights offering, unless you have used the guaranteed delivery procedures described under "—Notice of Guaranteed Delivery ."

You should read and follow the instructions accompanying the rights certificate carefully. As described in the instructions accompanying the rights certificate, in certain cases additional documentation or signature guarantees may be required.

The method of delivery of payments of the subscription amount to the subscription agent will be at the risk of the holders of subscription rights. If sent by mail, we recommend that you send those documents and payments by registered mail, properly insured, with return receipt requested, and that a sufficient number of days be allowed to ensure timely delivery to the subscription agent. Do not send or deliver these materials to the Company.

There is no sales fee or commission payable by you in connection with the issuance of subscription rights or the issuance of shares of common stock if you exercise your subscription rights (other than the subscription price). We will pay all fees charged by the subscription agent. However, if you exercise your subscription rights through a custodian bank, broker, dealer or other nominee, you are responsible for paying any other commissions, fees, taxes or other expenses your nominee may charge you in connection with the exercise of the subscription rights.

Missing or Incomplete Subscription Information

If you fail to specify the number of units requested as an exercise of your basic subscription right or over-subscription privilege, or if you fail to include sufficient payment to purchase the number of units you requested, your payment will first be applied, to the fullest extent possible, to exercise your basic subscription rights. Any remaining payment amount will then be applied, to the fullest extent possible, to exercise your over-subscription privilege, to the extent over-subscription units are available for purchase.

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After expiration of the rights offering, the subscription agent will promptly return, without interest or penalty, any excess subscription payments received.

In order for us to honor the exercise of your subscription rights, your rights certificate, any other required documents and payment must be received as set forth in this prospectus.

Issuance of Series C Convertible Preferred Stock and Warrants

The shares of Series C Convertible Preferred Stock and warrants that are purchased in the rights offering as part of the units will be issued in book-entry, or uncertificated, form meaning that you will receive a DRS account statement from our transfer agent reflecting ownership of these securities if you are a holder of record of shares or warrants. If you hold your shares of common stock in the name of a bank, broker, dealer, or other nominee, DTC will credit your account with your nominee with the securities you purchased in the rights offering.

Subscription Agent

The subscription agent for the rights offering is Philadelphia Stock Transfer, Inc. The address to which rights certificates and payments should be mailed or delivered by overnight courier is provided below. If sent by mail, we recommend that you send documents and payments by registered mail, properly insured, with return receipt requested, and that you allow a sufficient number of days to ensure delivery to the subscription agent and clearance or payment before the rights offering expires. Do not send or deliver these materials to us.

By Registered Certified or Express Mail

PHILADELPHIA STOCK TRANSFER, INC.
2320 HAVERFORD RD.
SUITE 230
ARDMORE, PA 19003

By Overnight Courier

PHILADELPHIA STOCK TRANSFER, INC.
2320 HAVERFORD RD.
SUITE 230
ARDMORE, PA 19003

If you deliver the rights certificates in a manner different than as described herein, we may not honor your exercise of your subscription rights.

Please direct any questions or requests for assistance with exercise of your subscription rights to the subscription agent as follows:

Warrant Agent

The warrant agent for the warrants is Philadelphia Stock Transfer, Inc.

No Fractional Shares

We will not issue fractional shares of Series C Convertible Preferred Stock in the rights offering. Subscription rights holders will only be entitled to purchase a number of units representing a whole number of shares and warrants, rounded down to the nearest whole number that a holder would otherwise be entitled to purchase. Similarly, no fractional shares of common stock will be issued as a result of the exercise of a warrant. Instead, for any such fractional share that would otherwise have been issuable upon exercise of the Warrant, the holder will be entitled to a cash payment equal to the pro-rated per share market price of the common stock on the last trading day preceding the exercise.

Notice to Brokers and Nominees

If you are a broker, dealer, bank or other nominee holder that holds shares of our common stock for the account of others on the record date, you should notify the beneficial owners of the shares for whom you are the nominee of the rights offering as soon as possible to learn their intentions with

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respect to exercising their subscription rights. If a beneficial owner of our common stock so instructs, you should complete the rights certificate and submit it to the subscription agent with the proper subscription payment by the expiration date. You may exercise the number of subscription rights to which all beneficial owners in the aggregate otherwise would have been entitled had they been direct holders of our common stock on the record date, provided that you, as a nominee record holder, make a proper showing to the subscription agent by submitting the form entitled "Nominee Holder Certification," which is provided with your rights offering materials. If you did not receive this form, you should contact our subscription agent to request a copy.

Validity of Subscriptions

We will resolve all questions regarding the validity and form of the exercise of your subscription rights, including time of receipt and eligibility to participate in the rights offering. Our determination will be final and binding. Once made, subscriptions are irrevocable; we will not accept any alternative, conditional, or contingent subscriptions. We reserve the absolute right to reject any subscriptions not properly submitted or the acceptance of which would be unlawful. You must resolve any irregularities in connection with your subscriptions before the expiration date of the rights offering, unless we waive them in our sole discretion. Neither we nor the subscription agent is under any duty to notify you or your representative of defects in your subscriptions. A subscription will be considered accepted, subject to our right to withdraw or terminate the rights offering, only when the Subscription Agent receives a properly completed and duly executed rights certificate and any other required documents and the full subscription payment including final clearance of any personal check. Our interpretations of the terms and conditions of the rights offering will be final and binding.

Stockholder Rights

You will have no rights as a holder of the shares of our common stock issuable upon conversion of the Series C Convertible Preferred Stock issued in the rights offering until such Series C Convertible Preferred Stock is converted to common stock and such shares of common stock are issued in book-entry form or your account at your broker, dealer, bank or other nominee is credited with the shares of our common stock. Holders of warrants issued in connection with the rights offering will not have rights as holders of our common stock until such warrants are exercised and the shares of common stock underlying the warrants are issued to the holder.

Foreign Stockholders

We will not mail this prospectus or rights certificates to stockholders or warrant holders with addresses that are outside the United States or that have an army post office or foreign post office address. The subscription agent will hold these rights certificates for their account. To exercise subscription rights, our foreign stockholders or warrant holders must notify the subscription agent prior to 5:00 p.m., Eastern Time, on June 25, 2018, the third business day prior to the expiration date, of your exercise of subscription rights and provide evidence satisfactory to us, that the exercise of such subscription rights does not violate the laws of the jurisdiction in which such stockholder resides and payment by a U.S. bank in U.S. dollars before the expiration of the offer. If no notice is received by such time or the evidence presented is not satisfactory to us, the subscription rights represented thereby will expire.

No Revocation or Change

Once you submit the rights certificate or have instructed your nominee of your subscription request, you are not allowed to revoke or change the exercise or request a refund of monies paid. All exercises of subscription rights are irrevocable, even if you learn information about us that you consider to be unfavorable. You should not exercise your subscription rights unless you are certain that you wish to purchase shares at the subscription price.

U.S. Federal Income Tax Treatment of Rights Offering

For U.S. federal income tax purposes, we do not believe holders of shares of our common stock or warrants should recognize income or loss upon receipt or exercise of a subscription right. See "Material *U.S. Federal Income Tax Consequences*."

No Recommendation to Rights Holders

Our Board is not making a recommendation regarding your exercise of the subscription rights. You are urged to make your decision to invest based on your own assessment of our business and financial condition, our prospects for the future, the terms of the rights offering, the information in this prospectus and other information relevant to your circumstances.

Fees and Expenses

We will pay all fees charged by the subscription agent, and by the dealer-manager. You are responsible for paying any other commissions, fees, taxes or other expenses incurred in connection with the exercise of your subscription rights.

Listing

The subscription rights may not be sold, transferred, assigned or given away to anyone, and will not be listed for trading on any stock exchange or market. There is no established public trading market for the Series C Convertible Preferred Stock or the warrants and we do not currently intend to apply for listing of Series C Convertible Preferred Stock or the warrants on any securities exchange or recognized trading system. The shares of our common stock issuable upon conversion of the Series C Convertible Preferred Stock and underlying the warrants to be issued in the rights offering are traded on Nasdaq under the symbol "CTRV."

Distribution Arrangements

Maxim Group LLC is the dealer-manager for the rights offering. The dealer-manager will provide marketing assistance and advice to us in connection with the rights offering and will use its best efforts to solicit the exercise of subscription rights and participation in the over-subscription privilege. The dealer-manager is not underwriting or placing any of the subscription rights or the shares of our Series C Convertible Preferred Stock or warrants to be issued in the rights offering and does not make any recommendation with respect to such subscription rights (including with respect to the exercise or expiration of such subscription rights), shares or warrants. We have agreed to pay the dealer-manager certain fees and to reimburse the dealer-manager for certain accountable and non-accountable expenses incurred in connection with this offering. See "*Plan of Distribution*."

Other Matters

We are not making the rights offering in any state or other jurisdiction in which it is unlawful to do so, nor are we distributing or accepting any offers to purchase any units from subscription rights holders who are residents of those states or other jurisdictions or who are otherwise prohibited by federal or state laws or regulations from accepting or exercising the subscription rights. We may delay the commencement of the rights offering in those states or other jurisdictions, or change the terms of the rights offering, in whole or in part, in order to comply with the securities laws or other legal requirements of those states or other jurisdictions. Subject to state securities laws and regulations, we also have the discretion to delay allocation and distribution of any shares you may elect to purchase by exercise of your subscription privileges in order to comply with state securities laws. We may decline to make modifications to the terms of the rights offering requested by those states or other jurisdictions, in which case, if you are a resident in those states or jurisdictions or if you are otherwise prohibited by federal or state laws or regulations from accepting or exercising the subscription rights, you will not be eligible to participate in the rights offering. However, we are not currently aware of any states or jurisdictions that would preclude participation in the rights offering.

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES

The following discussion describes the material U.S. federal income tax consequences of the receipt and exercise (or expiration) of the subscription rights acquired through the rights offering, the ownership and disposition of shares of our Series C Convertible Preferred Stock and warrants received upon exercise of the subscription rights and the ownership and disposition of the shares of common stock received upon the conversion of our Series C Convertible Preferred Stock or the exercise of the warrants, and, insofar as it describes matters of federal income tax law or legal conclusions with respect thereto, constitutes the opinion of our tax counsel, Sheppard, Mullin, Richter & Hampton, LLP. This discussion does not purport to be a complete analysis of all potential tax effects. The effects of other U.S. federal tax laws, such as estate and gift tax laws, and any applicable state, local or non-U.S. tax laws are not discussed. This discussion is based on the U.S. Internal Revenue Code of 1986, as amended, or Code, Treasury Regulations promulgated thereunder, judicial decisions, and published rulings and administrative pronouncements of the U.S. Internal Revenue Service, or IRS, in each case in effect as of the date hereof. These authorities may change or be subject to differing interpretations. Any such change or differing interpretation may be applied retroactively in a manner that could adversely affect a holder of the subscription rights, shares of our Series C Convertible Preferred Stock, warrants or shares of our common stock. We have not sought and will not seek any rulings from the IRS regarding the matters discussed below. There can be no assurance the IRS or a court will not take a contrary position to that discussed below regarding the tax consequences of the receipt of subscription rights through the rights offering by persons holding shares of our common stock and warrants entitled to receive subscription rights pursuant to this rights offering (which we refer to as participating warrants), the exercise (or expiration) of the subscription rights, the acquisition, ownership and disposition of shares of our Series C Convertible Preferred Stock, the acquisition, ownership and disposition (or expiration) of warrants acquired upon exercise of the subscription rights, and the acquisition, ownership and disposition of shares of our common stock acquired upon conversion of our Series C Convertible Preferred Stock or exercise of the warrants.

This discussion is limited to the subscription rights acquired through the rights offering, shares of our Series C Convertible Preferred Stock and warrants acquired upon exercise of subscription rights and shares of our common stock acquired upon conversion of our Series C Convertible Preferred Stock or exercise of the warrants, in each case, that are held as a "capital asset" within the meaning of Section 1221 of the Code (generally, property held for investment). This discussion does not address all U.S. federal income tax consequences relevant to a holder's particular circumstances, including the impact of the alternative minimum tax or the unearned income Medicare contribution tax. In addition, it does not address consequences relevant to holders subject to particular rules, including, without limitation:

- U.S. expatriates and former citizens or long-term residents of the United States;
- persons holding our common stock, participating warrants, the subscription rights, shares of our Series C Convertible Preferred Stock, warrants or shares of our common stock as part of a hedge, straddle or other risk reduction strategy or as part of a conversion transaction or other integrated investment;
- banks, insurance companies, and other financial institutions;
- brokers, dealers or traders in securities or currencies or traders that elect to mark-to-market their securities;
- "controlled foreign corporations," "passive foreign investment companies," and corporations that accumulate earnings to avoid U.S. federal income tax;
- partnerships or other entities or arrangements treated as partnerships or other pass-through entities for U.S. federal income tax purposes (and investors therein);

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- real estate investment trusts, regulated investment companies, grantor trusts, tax-exempt organizations or governmental organizations;
- persons deemed to sell the subscription rights, shares of Series C Convertible Preferred Stock, or warrants or shares of our common stock under the constructive sale provisions of the Code;
- persons for whom our stock constitutes "qualified small business stock" within the meaning of Section 1202 of the Code;
- persons who received, hold or will receive shares of our common stock, participating warrants, the subscription rights, shares of our Series C Convertible Preferred Stock or warrants pursuant to the exercise of any employee stock option or otherwise as compensation and persons who hold restricted common stock;
- tax-qualified retirement plans; and
- U.S. holders (as defined below) that have a functional currency other than the U.S. dollar.

If an entity treated as a partnership for U.S. federal income tax purposes holds shares of our common stock, participating warrants, the subscription rights, shares of our Series C Convertible Preferred Stock and warrants acquired upon exercise of subscription rights or shares of our common stock acquired upon conversion of our Series C Convertible Preferred Stock or exercise of the warrants, as the case may be, the tax treatment of a partner in the partnership will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. Accordingly, partnerships and the partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

Tax Considerations Applicable to U.S. Holders

Definition of a U.S. Holder

For purposes of this discussion, a "U.S. holder" is any beneficial owner of shares of our common stock, participating warrants, our subscription rights, shares of our Series C Convertible Preferred Stock and warrants acquired upon exercise of subscription rights or shares of our common stock acquired upon conversion of our Series C Convertible Preferred Stock or exercise of warrants, as the case may be, that, for U.S. federal income tax purposes, is:

- an individual who is a citizen or resident of the United States;
- a corporation (or other entity treated as a corporation for U.S. federal income tax purposes) created or organized under the laws of the United States, any state thereof, or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust that (1) is subject to the primary supervision of a U.S. court and the control of one or more United States persons (within the meaning of Section 7701(a)(30) of the Code), or (2) has made a valid election under applicable Treasury Regulations to continue to be treated as a United States person.

Receipt of Subscription Rights

Although the authorities governing transactions such as this rights offering are complex and do not speak directly to the consequences of certain aspects of this rights offering, including the inclusion of the right to purchase warrants in the subscription rights (rather than the right to purchase only shares of our Series C Convertible Preferred Stock), the distribution of subscription rights to holders of participating warrants and the effects of the over-subscription privilege, a U.S. holder's receipt of

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subscription rights pursuant to the rights offering should not be treated as a taxable distribution with respect to its existing shares of common stock or participating warrants, as applicable, for U.S. federal income tax purposes. Section 305(a) of the Code generally provides that the receipt by a stockholder, or a holder of rights to acquire stock, of a right to acquire stock or warrants is not included in the taxable income of the stockholder; however, the general non-recognition rule in Section 305(a) of the Code is subject to exceptions described in Section 305(b) of the Code, which include "disproportionate distributions." A disproportionate distribution is generally a distribution or a series of distributions, including deemed distributions, that has the effect of the receipt of cash or other property by some stockholders (including holders of rights to acquire stock and holders of debt instruments convertible into stock) and an increase in the proportionate interest of other stockholders (including holders of rights to acquire stock and holders of debt instruments convertible into stock) in a corporation's assets or earnings and profits. During the last 36 months, the Company has not made any distributions of cash or property (other than stock or rights to acquire stock) with respect to: (i) its common stock or (ii) options or warrants to acquire its common stock. Currently the Company does not intend to make any future distributions of cash or property (other than stock or rights to acquire stock) with respect to: (i) its common stock or (ii) options or warrants to acquire its common stock; however, there is no guarantee that the Company will not make such distributions in the future. In addition, the Company does not currently have any convertible debt outstanding nor does the Company currently intend to issue any convertible debt.

The position regarding the tax-free treatment of the subscription right distribution is not binding on the IRS, or the courts. If this position is finally determined by the IRS or a court to be incorrect, whether because, contrary to our expectations, distributions of cash or property (other than stock or rights to acquire stock) are made with respect to our common stock, options or warrants, because the issuance of the subscription rights is a "disproportionate distribution" or otherwise, the fair market value of the subscription rights would be taxable to U.S. holders of common stock as a dividend to the extent of the U.S. holder's pro rata share of the company's current and accumulated earnings and profits, if any, with any excess being treated as a return of capital to the extent thereof and then as capital gain. Although no assurance can be given, the Company anticipates that it will not have current and accumulated earnings and profits through the end of 2018. Further, if the position regarding the tax-free treatment of the subscription rights distribution is incorrect, the treatment of holders of participating warrants is not clear, and it may differ from, and may be more adverse than, the treatment of the subscription rights distribution to the holders of common stock.

The following discussion is based upon the treatment of the subscription right issuance as a non-taxable distribution with respect to a U.S. holders' existing shares of common stock or participating warrants for U.S. federal income tax purposes.

Tax Basis in the Subscription Rights

If the fair market value of the subscription rights a U.S. holder receives is less than 15% of the fair market value of the U.S. holder's existing shares of common stock or participating warrants (in each case, with respect to which the subscription rights are distributed) on the date the U.S. holder receives the subscription rights, the subscription rights will be allocated a zero tax basis for U.S. federal income tax purposes, unless the U.S. holder elects to allocate the tax basis in the holder's existing shares of common stock or participating warrants between the existing shares of common stock or participating warrants and the subscription rights in proportion to the relative fair market values of the existing shares of common stock or participating warrants and the subscription rights determined on the date of receipt of the subscription rights. If a U.S. holder chooses to allocate tax basis between the holder's existing common shares or participating warrants and the subscription rights, the U.S. holder must make this election on a statement included with the holder's timely filed tax return (including extensions) for the taxable year in which the U.S. holder receives the subscription rights. Such an

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election is irrevocable. However, if the fair market value of the subscription rights a U.S. holder receives is 15% or more of the fair market value of the holder's existing shares of common stock or participating warrants on the date the U.S. holder receives the subscription rights, then the U.S. holder must allocate tax basis in the existing shares of common stock or participating warrants between those shares or warrants and the subscription rights the U.S. holder receives in proportion to their fair market values determined on the date the U.S. holder receives the subscription rights. Please refer to the discussion below regarding the U.S. tax treatment of a U.S. holder that, at the time of the receipt of the subscription right, no longer holds the common stock or participating warrants with respect to which the subscription right was distributed.

The fair market value of the subscription rights on the date that the subscription rights are distributed is uncertain, and we have not obtained, and do not intend to obtain, an appraisal of the fair market value of the subscription rights on that date. In determining the fair market value of the subscription rights, U.S. holders should consider all relevant facts and circumstances, including without limitation any difference between the subscription price of the subscription rights and the trading price of our shares of common stock on the date that the subscription rights are distributed, the fair market value and the conversion terms of the Series C Convertible Preferred Stock, the exercise price of the warrants, the length of the period during which the subscription rights may be exercised and the fact that the subscription rights are non-transferable.

Exercise of Subscription Rights

A U.S. holder will not recognize gain or loss upon the exercise of a subscription right in the rights offering. A U.S. holder's adjusted tax basis, if any, in the subscription right plus the subscription price should be allocated between the share of Series C Convertible Preferred Stock and the warrant acquired upon exercise of the subscription right. The basis in the stock or participating warrants upon which the subscription rights were issued which is allocated to the subscription rights under the prior section entitled "Tax Basis in the Subscription Rights" should be further allocated between the shares of Series C Convertible Preferred Stock and the warrant acquired upon exercise of the subscription right in proportion to their relative fair market values on the date the subscription rights were distributed. The subscription price should be allocated between the shares of Series C Convertible Preferred Stock and the warrant acquired upon exercise of the subscription right in proportion to their relative fair market values on the exercise date. These allocations will establish the U.S. holder's initial tax basis for U.S. federal income tax purposes in the shares of Series C Convertible Preferred Stock and warrants received upon exercise. The holding period of a share of Series C Convertible Preferred Stock or a warrant acquired upon exercise of a subscription right in the rights offering will begin on the date of exercise.

If, at the time of the receipt or exercise of the subscription right, the U.S. holder no longer holds the common stock or participating warrant with respect to which the subscription right was distributed, then certain aspects of the tax treatment of the receipt and exercise of the subscription right are unclear, including (1) the allocation of the tax basis between the shares of our common stock or participating warrants previously sold and the subscription right, (2) the impact of such allocation on the amount and timing of gain or loss recognized with respect to the shares of our common stock or participating warrants previously sold, and (3) the impact of such allocation on the tax basis of the shares of our Series C Convertible Preferred Stock and warrants acquired upon exercise of the subscription right. If a U.S. holder exercises a subscription right received in the rights offering after disposing of shares of our common stock or participating warrants with respect to which the subscription right is received, the U.S. holder should consult its tax advisor.

Expiration of Subscription Rights

If a U.S. holder allows subscription rights received in the rights offering to expire, the U.S. holder should not recognize any gain or loss for U.S. federal income tax purposes, and the U.S. holder should re-allocate any portion of the tax basis in its existing common shares or participating warrants previously allocated to the subscription rights that have expired to the existing common shares.

Sale or Other Disposition, Exercise or Expiration of Warrants

Upon the sale or other taxable disposition of a warrant (other than by exercise) received upon exercise of a subscription right, a U.S. holder will generally recognize capital gain or loss equal to the difference between the amount realized on the sale or other taxable disposition and the U.S. holder's tax basis in the warrant. This capital gain or loss will be long-term capital gain or loss if the U.S. holder's holding period in such warrant is more than one year at the time of the sale or other taxable disposition. The deductibility of capital losses is subject to certain limitations.

A U.S. holder will not be required to recognize income, gain or loss upon exercise of a warrant received upon a cash exercise of a subscription right (except to the extent the U.S. holder receives a cash payment for any fractional share that would otherwise have been issuable upon exercise of the warrant). A U.S. holder's tax basis in a share of our common stock received upon exercise of the warrants for cash will be equal to the sum of (1) the U.S. holder's tax basis in the warrants exchanged therefor and (2) the exercise price of such warrants, decreased by the adjusted tax basis allocable to any fractional share that would otherwise have been issuable upon exercise of the warrant. A U.S. holder's holding period in the shares of our common stock received upon exercise will commence on the day after such U.S. holder exercises the warrants.

In certain circumstances, the warrants will be exercisable on a cashless basis. The U.S. federal income tax treatment of an exercise of a warrant on a cashless basis is not clear, and could differ from the consequences described above. It is possible that a cashless exercise could be a taxable event. U.S. holders are urged to consult their tax advisors as to the consequences of an exercise of a warrant on a cashless basis, including with respect to whether the exercise is a taxable event, and their holding period and tax basis in the common stock received.

If a warrant expires without being exercised, a U.S. holder will recognize a capital loss in an amount equal to such holder's adjusted tax basis in the warrant. Such loss will be long-term capital loss if, at the time of the expiration, the U.S. holder's holding period in such warrant is more than one year. The deductibility of capital losses is subject to certain limitations.

Constructive Dividends on Warrants

As described in the section entitled "*Dividend Policy*," we do not anticipate declaring or paying dividends to holders of our common stock or our Series C Convertible Preferred Stock in the foreseeable future. However, if at any time during the period in which a U.S. holder holds warrants received upon exercise of a subscription right, we were to pay a taxable dividend to our stockholders and, in accordance with the anti-dilution provisions of the warrants, the exercise price of the warrants were decreased, that decrease would be deemed to be the payment of a taxable dividend to a U.S. holder of the warrants to the extent of our earnings and profits, notwithstanding the fact that such holder will not receive a cash payment. If the exercise price is adjusted in certain other circumstances (or in certain circumstances, there is a failure to make adjustments), or there is an adjustment to the number of common shares that will be issued on exercise of the warrants, such adjustments may also result in the deemed payment of a taxable dividend to a U.S. holder. U.S. holders should consult their tax advisors regarding the proper treatment of any adjustments to the exercise price of the warrants.

Distributions on Series C Convertible Preferred Stock and Common Stock

As described in the section entitled "*Dividend Policy*," we do not anticipate declaring or paying dividends to holders of our Series C Convertible Preferred Stock or common stock in the foreseeable future. However, if we do make distributions of cash or property on our Series C Convertible Preferred Stock or common stock, such distributions will constitute dividends to the extent paid out of our current or accumulated earnings and profits, as determined for U.S. federal income tax purposes. Dividends received by a corporate U.S. holder may be eligible for a dividends received deduction, subject to applicable limitations. Dividends received by certain non-corporate U.S. holders, including individuals, are generally taxed at the lower applicable capital gains rate provided certain holding period and other requirements are satisfied. Distributions in excess of our current and accumulated earnings and profits will constitute a return of capital and first be applied against and reduce a U.S. holder's adjusted tax basis in its Series C Convertible Preferred Stock or common stock, as the case may be, but not below zero. Any excess will be treated as capital gain and will be treated as described below in the section relating to the sale or disposition of our common stock.

Sale, Exchange or Other Disposition of Series C Convertible Preferred Stock and Common Stock

Upon a sale, exchange, or other taxable disposition of our Series C Convertible Preferred Stock (other than by conversion) or our common stock, a U.S. holder generally will recognize capital gain or loss equal to the difference between the amount realized (not including any amount attributable to declared and unpaid dividends, which will be taxable as described above to U.S. holders of record who have not previously included such dividends in income) and the U.S. holder's adjusted tax basis in our Series C Convertible Preferred Stock or our common stock. The U.S. holder's adjusted tax basis in our Series C Convertible Preferred Stock generally will equal its initial tax basis (discussed above under "*Exercise of Subscription Rights*"), reduced by the amount of any cash distributions treated as a return of capital as described above. A U.S. holder's adjusted tax basis in our common stock generally will equal its initial tax basis in our common stock (discussed below under "*Conversion of the Series C Convertible Preferred Stock into Our Common Stock*"), reduced by the amount of any cash distributions treated as a return of capital as described above. Such capital gain or loss generally will be long-term capital gain or loss if the U.S. holder's holding period for our Series C Convertible Preferred Stock or our common stock exceeded one year at the time of disposition (see the discussion below under "*Conversion of Our Series C Convertible Preferred Stock into Our Common Stock*" regarding a U.S. holder's holding period for our common stock). Long-term capital gains recognized by certain non-corporate U.S. Holders, including individuals, generally are subject to reduced rates of taxation. The deductibility of capital losses is subject to limitations.

Conversion of Our Series C Convertible Preferred Stock into Our Common Stock

A U.S. holder will not recognize any gain or loss in respect of the receipt of our common stock upon the conversion of our Series C Convertible Preferred Stock (except to the extent the U.S. holder receives a cash payment for any fractional share that would otherwise have been issuable upon conversion of the Series C Convertible Preferred Stock). The adjusted tax basis of our common stock that a U.S. holder receives on conversion will equal the adjusted tax basis of the Series C Convertible Preferred Stock converted (decreased by the adjusted tax basis allocable to any fractional share that would otherwise have been issuable upon conversion of the Series C Convertible Preferred Stock), and the holding period of such common stock received on conversion will include the period during which the U.S. holder held the Series C Convertible Preferred Stock prior to conversion.

In the event a U.S. holder's Series C Convertible Preferred Stock is converted pursuant to an election by such U.S. holder in the case of certain acquisitions or fundamental changes or pursuant to certain other transactions (including our consolidation or merger into another person), the tax treatment of such a conversion will depend upon the facts underlying the particular transaction

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triggering such a conversion. In this regard, it is possible that any related adjustments of the conversion rate would be treated as a constructive distribution to the U.S. holder as described below under "*Tax Consequences Applicable to U.S. Holders—Constructive Dividends on Series C Convertible Preferred Stock.*" U.S. holders should consult their own tax advisors to determine the specific tax treatment of a conversion under such circumstances.

Constructive Dividends on Series C Convertible Preferred Stock

The conversion rate of our Series C Convertible Preferred Stock is subject to adjustment under certain circumstances, as described above under "*Description of Securities—Preferred Stock—Series C Convertible Preferred Stock.*" Section 305(c) of the Code and Treasury regulations thereunder may treat a U.S. holder of our Series C Convertible Preferred Stock as having received a constructive distribution includable in such U.S. holder's income in the manner as described above under "*Tax Consequences Applicable to U.S. Holders—Distributions on Series C Convertible Preferred Stock and Common Stock,*" if and to the extent that certain adjustments in the conversion rate (or failures to make such an adjustment) increase the proportionate interest of such U.S. holder in our earnings and profits. In certain other circumstances, an adjustment to the conversion rate of our Series C Convertible Preferred Stock or a failure to make such an adjustment could potentially give rise to constructive distributions to U.S. holders of our common stock. Thus, under certain circumstances, U.S. holders may recognize income in the event of a constructive distribution even though they may not receive any cash or property.

Information Reporting and Backup Withholding

A U.S. holder will be subject to information reporting and may be subject to backup withholding when such holder receives dividend payments (including constructive dividends) or receives proceeds from the sale or other taxable disposition of the warrants, shares of our Series C Convertible Preferred Stock acquired through the exercise of subscription rights or shares of our common stock acquired through conversion of our Series C Convertible Preferred Stock or exercise of the warrants. Certain U.S. holders are exempt from backup withholding, including certain corporations and certain tax-exempt organizations. A U.S. holder will be subject to backup withholding if such holder is not otherwise exempt (or fails to properly establish an exemption) and such holder:

- fails to furnish the holder's taxpayer identification number, which for an individual is ordinarily his or her social security number;
- furnishes an incorrect taxpayer identification number;
- is notified by the IRS that the holder previously failed to properly report payments of interest or dividends; or
- fails to certify under penalties of perjury that the holder has furnished a correct taxpayer identification number and that the IRS has not notified the holder that the holder is subject to backup withholding.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a U.S. holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS. U.S. holders should consult their tax advisors regarding their qualification for an exemption from backup withholding and the procedures for obtaining such an exemption.

Tax Considerations Applicable to Non-U.S. Holders

For purposes of this discussion, a "non-U.S. holder" is a beneficial owner of shares of our common stock, participating warrants, our subscription rights, shares of our Series C Convertible Preferred Stock

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and warrants acquired upon exercise of subscription rights or shares of our common stock acquired upon conversion of our Series C Convertible Preferred Stock or exercise of warrants, as the case may be, that is neither a U.S. holder nor an entity treated as a partnership for U.S. federal income tax purposes.

Receipt, Exercise and Expiration of the Subscription Rights

The discussion assumes that the receipt of subscription rights will be treated as a nontaxable distribution. See "*Tax Consequences Applicable to U.S. Holders—Receipt of Subscription Rights*" above. In such case, non-U.S. holders will not be subject to U.S. federal income tax (or any withholding thereof) on the receipt, exercise or expiration of the subscription rights.

Exercise of Warrants

A non-U.S. holder will not be subject to U.S. federal income tax on the cash exercise of warrants into shares of our common stock (except to the extent the U.S. holder receives a cash payment for any fractional share that would otherwise have been issuable upon exercise of the warrant, which will be treated as a sale subject to the rules described under "*Tax Considerations Applicable to Non-U.S. Holders—Sale or Other Disposition of Series C Convertible Preferred Stock, Common Stock or Warrants*"). As discussed above in "*Tax Considerations Applicable to U.S. Holders—Sale or Other Disposition, Exercise or Expiration of Warrants*," the U.S. federal income tax treatment of an exercise of a warrant on a cashless basis is not clear. Non-U.S. holders are urged to consult their tax advisors as to the consequences of an exercise of a warrant on a cashless basis, including with respect to whether the exercise is a taxable event, and their holding period and tax basis in the common stock received.

Constructive Dividends on Warrants

As described in the section entitled "*Dividend Policy*," we do not anticipate declaring or paying dividends to holders of our Series C Convertible Preferred Stock or common stock in the foreseeable future. However, if at any time during the period in which a non-U.S. holder holds warrants received on the exercise of subscription rights, we were to pay a taxable dividend to our stockholders and, in accordance with the anti-dilution provisions of the warrants, the exercise price of the warrants were decreased, that decrease would be deemed to be the payment of a taxable dividend to a non-U.S. holder to the extent of our earnings and profits, notwithstanding the fact that such holder will not receive a cash payment. If the exercise price is adjusted in certain other circumstances (or in certain circumstances, there is a failure to make adjustments), or there is an adjustment to the number of common shares that will be issued on exercise of the warrants, such adjustments may also result in the deemed payment of a taxable dividend to a non-U.S. holder. Any resulting withholding tax attributable to deemed dividends may be collected from other amounts payable or distributable to the non-U.S. holder. Non-U.S. holders should consult their tax advisors regarding the proper treatment of any adjustments to the warrants.

Distributions on Series C Convertible Preferred Stock and Common Stock

As described in the section entitled "*Dividend Policy*," we do not anticipate declaring or paying dividends to holders of our Series C Convertible Preferred Stock or common stock in the foreseeable future. However, if we do make distributions of cash or property on our Series C Convertible Preferred Stock or common stock, such distributions will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Amounts not treated as dividends for U.S. federal income tax purposes will constitute a return of capital and first be applied against and reduce a non-U.S. holder's adjusted tax basis in its Series C Convertible Preferred Stock or common stock, as the case may be, but not below zero. Any excess will be treated as capital gain and will be treated as described below in the

section relating to the sale or disposition of our Series C Convertible Preferred Stock, our common stock or warrants. Because we may not know the extent to which a distribution is a dividend for U.S. federal income tax purposes at the time it is made, for purposes of the withholding rules discussed below we or the applicable withholding agent may treat the entire distribution as a dividend.

Subject to the discussion below on backup withholding and foreign accounts, dividends paid to a non-U.S. holder of our Series C Convertible Preferred Stock or common stock that are not effectively connected with the non-U.S. holder's conduct of a trade or business within the United States will be subject to U.S. federal withholding tax at a rate of 30% of the gross amount of the dividends (or such lower rate specified by an applicable income tax treaty).

Non-U.S. holders will be entitled to a reduction in or an exemption from withholding on dividends as a result of either (a) an applicable income tax treaty or (b) the non-U.S. holder holding our Series C Convertible Preferred Stock or common stock in connection with the conduct of a trade or business within the United States and dividends being effectively connected with that trade or business. To claim such a reduction in or exemption from withholding, the non-U.S. holder must provide the applicable withholding agent with a properly executed (a) IRS Form W-8BEN or W-8BEN-E (or other applicable documentation) claiming an exemption from or reduction of the withholding tax under the benefit of an income tax treaty between the United States and the country in which the non-U.S. holder resides or is established, or (b) IRS Form W-8ECI stating that the dividends are not subject to withholding tax because they are effectively connected with the conduct by the non-U.S. holder of a trade or business within the United States, as may be applicable. These certifications must be provided to the applicable withholding agent prior to the payment of dividends and must be updated periodically. Non-U.S. holders that do not timely provide the applicable withholding agent with the required certification, but that qualify for a reduced rate under an applicable income tax treaty, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS.

If dividends paid to a non-U.S. holder are effectively connected with the non-U.S. holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the non-U.S. holder maintains a permanent establishment in the United States to which such dividends are attributable), then, although exempt from U.S. federal withholding tax (provided the non-U.S. holder provides appropriate certification, as described above, and subject to the discussion below on backup withholding and foreign accounts), the non-U.S. holder will be subject to U.S. federal income tax on such dividends on a net income basis at the regular graduated U.S. federal income tax rates. In addition, a non-U.S. holder that is a corporation may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on its effectively connected earnings and profits for the taxable year that are attributable to such dividends, as adjusted for certain items. Non-U.S. holders should consult their tax advisors regarding their entitlement to benefits under any applicable income tax treaty.

Sale or Other Disposition of Series C Convertible Preferred Stock, Common Stock or Warrants

Subject to the discussions below on backup withholding and foreign accounts, a non-U.S. holder will not be subject to U.S. federal income tax on any gain realized upon the sale or other taxable disposition of our Series C Convertible Preferred Stock, warrants or our common stock unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the non-U.S. holder maintains a permanent establishment in the United States to which such gain is attributable);
- the non-U.S. holder is a nonresident alien individual present in the United States for 183 days or more during the taxable year of the disposition and certain other requirements are met; or

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- our Series C Convertible Preferred Stock, warrants or our common stock constitutes a U.S. real property interest, or USRPI, by reason of our status as a U.S. real property holding corporation, or USRPHC, for U.S. federal income tax purposes.

Gain described in the first bullet point above generally will be subject to U.S. federal income tax on a net income basis at the regular graduated rates. A Non-U.S. holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items.

Gain described in the second bullet point above will be subject to U.S. federal income tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on any gain derived from the disposition, which may be offset by U.S. source capital losses of the non-U.S. holder (even though the individual is not considered a resident of the United States), provided the non-U.S. holder has timely filed U.S. federal income tax returns with respect to such losses.

With respect to the third bullet point above, we believe we are not currently and do not anticipate becoming a USRPHC. Because the determination of whether we are a USRPHC depends on the fair market value of our USRPIs relative to the fair market value of our other business assets and our non-U.S. real property interests, however, there can be no assurance we are not a USRPHC or will not become one in the future.

Non-U.S. holders should consult their tax advisors regarding potentially applicable income tax treaties that may provide for different rules.

Conversion of Our Series C Convertible Preferred Stock into Our Common Stock

A non-U.S. holder will not recognize any gain or loss in respect of the receipt of our common stock upon the conversion of our Series C Convertible Preferred Stock (except to the extent the non-U.S. holder receives a cash payment for any fractional share that would otherwise have been issuable upon conversion of the Series C Convertible Preferred Stock).

Constructive Dividends on Series C Convertible Preferred Stock

As described above under "*Tax Consequences Applicable to U.S. Holders—Constructive Dividends on Series C Convertible Preferred Stock*," in certain circumstances, a non-U.S. holder will be deemed to receive a constructive distribution from us. Adjustments in the conversion rate (or failures to adjust the conversion rate) that increase the proportionate interest of a non-U.S. holder in our earnings and profits could result in deemed distributions to the non-U.S. holder that are treated as dividends for U.S. federal income tax purposes. Any constructive dividend deemed paid to a non-U.S. holder will be subject to U.S. federal income tax or withholding tax in the manner described above under "*Tax Consequences Applicable to Non-U.S. Holders—Distributions on Series C Convertible Preferred Stock and Common Stock*." It is possible that U.S. federal tax on the constructive dividend would be withheld, if applicable, from subsequent payments on the Series C Convertible Preferred Stock or our common stock.

Information Reporting and Backup Withholding

A non-U.S. holder will not be subject to backup withholding with respect to distributions on our Series C Convertible Preferred Stock, warrants or common stock we make to the non-U.S. holder, provided the applicable withholding agent does not have actual knowledge or reason to know such holder is a United States person and the holder timely certifies its non-U.S. status, such as by providing a valid IRS Form W-8BEN, W-8BEN-E or W-8ECI, or other applicable certification. However, information returns generally will be filed with the IRS in connection with any distributions (including deemed distributions) made on our Series C Convertible Preferred Stock, warrants and our common

stock to the non-U.S. holder, regardless of whether any tax was actually withheld. Copies of these information returns may also be made available under the provisions of a specific treaty or agreement to the tax authorities of the country in which the non-U.S. holder resides or is established.

Information reporting and backup withholding may apply to the proceeds of a sale or other taxable disposition of our Series C Convertible Preferred Stock, warrants or our common stock within the United States, and information reporting may (although backup withholding generally will not) apply to the proceeds of a sale or other taxable disposition of our Series C Convertible Preferred Stock, warrants or our common stock outside the United States conducted through certain U.S.-related financial intermediaries, in each case, unless the beneficial owner timely certifies under penalty of perjury that it is a non-U.S. holder on IRS Form W-8BEN or W-8BEN-E, or other applicable form (and the payor does not have actual knowledge or reason to know that the beneficial owner is a U.S. person) or such owner otherwise timely establishes an exemption. Proceeds of a disposition of our Series C Convertible Preferred Stock, warrants or our common stock conducted through a non-U.S. office of a non-U.S. broker generally will not be subject to backup withholding or information reporting.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a non-U.S. holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

Additional Withholding Tax on Payments Made to Foreign Accounts

Withholding taxes may be imposed under the Foreign Account Tax Compliance Act, or FATCA, on certain types of payments made to non-U.S. financial institutions and certain other non-U.S. entities. Specifically, a 30% withholding tax may be imposed on dividends (including deemed dividends) paid on our Series C Convertible Preferred Stock, common stock or warrants, or gross proceeds from the sale or other disposition of our Series C Convertible Preferred Stock, warrants or our common stock paid to a "foreign financial institution" or a "non-financial foreign entity" (each as defined in the Code), unless (1) the foreign financial institution undertakes certain diligence and reporting obligations, (2) the non-financial foreign entity either certifies it does not have any "substantial United States owners" (as defined in the Code) or furnishes identifying information regarding each substantial United States owner, or (3) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence and reporting requirements in (1) above, it must enter into an agreement with the U.S. Department of the Treasury requiring, among other things, that it undertake to identify accounts held by certain "specified United States persons" or "United States-owned foreign entities" (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on certain payments to non-compliant foreign financial institutions and certain other account holders. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules.

Under the applicable Treasury Regulations and administrative guidance, withholding under FATCA generally applies to payments of dividends (including deemed dividends), and will apply to payments of gross proceeds from the sale or other disposition of our Series C Convertible Preferred Stock, warrants or our common stock on or after January 1, 2019. Because we may not know the extent to which a distribution is a dividend for U.S. federal income tax purposes at the time it is made, for purposes of these withholding rules we or the applicable withholding agent may treat the entire distribution as a dividend. Prospective investors should consult their tax advisors regarding the potential application of these withholding provisions.

DESCRIPTION OF SECURITIES

Preferred Stock

We may issue shares of our preferred stock from time to time, in one or more series. Under our certificate of incorporation, our board of directors has the authority, without further action by stockholders, to designate up to 20,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges, qualifications and restrictions granted to or imposed upon the preferred stock, including dividend rights, conversion rights, voting rights, rights and terms of redemption, liquidation preference and sinking fund terms, any or all of which may be greater than the rights of the common stock.

If we issue preferred stock, we will fix the rights, preferences, privileges, qualifications and restrictions of the preferred stock of each series that we sell under this prospectus and applicable prospectus supplements in the certificate of designations relating to that series. If we issue preferred stock, we will incorporate by reference into the registration statement of which this prospectus is a part the form of any certificate of designations that describes the terms of the series of preferred stock we are offering before the issuance of the related series of preferred stock. We urge you to read the prospectus supplement related to any series of preferred stock we may offer, as well as the complete certificate of designations that contains the terms of the applicable series of preferred stock.

Series C Convertible Preferred Stock

We will authorize the Series C Convertible Preferred Stock by filing a certificate of designation with the Secretary of State of Delaware. The certificate of designation may be authorized by our Board without approval by our stockholders.

Conversion. Each share of Series C Convertible Preferred Stock will be convertible, at our option at any time on or after the first anniversary of the closing of the rights offering, subject to certain conditions, or at the option of the holder at any time, into the number of shares of our common stock determined by dividing the \$1,000 stated value per share of the Series C Convertible Preferred Stock by a conversion price of \$1.55 per share. In addition, the conversion price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations or reclassifications. Subject to limited exceptions, a holder of the Series C Convertible Preferred Stock will not have the right to convert any portion of the Series C Convertible Preferred Stock to the extent that, after giving effect to the conversion, the holder, together with its affiliates, would beneficially own in excess of 9.99% of the number of shares of our common stock outstanding immediately after giving effect to its conversion.

Fundamental Transactions. In the event we effect certain mergers, consolidations, sales of substantially all of our assets, tender or exchange offers, reclassifications or share exchanges in which our common stock is effectively converted into or exchanged for other securities, cash or property, we consummate a business combination in which another person acquires 50% of the outstanding shares of our common stock, or any person or group becomes the beneficial owner of 50% of the aggregate ordinary voting power represented by our issued and outstanding common stock, then, upon any subsequent conversion of the Series C Convertible Preferred Stock, the holders of the Series C Convertible Preferred Stock will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon conversion in full of the Series C Convertible Preferred Stock.

Dividends. Holders of Series C Convertible Preferred Stock shall be entitled to receive dividends (on an as-if-converted-to-common-stock basis) in the same form as dividends actually paid on shares of the common stock when, as and if such dividends are paid on shares of common stock.

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Voting Rights. Except as otherwise provided in the certificate of designation or as otherwise required by law, the Series C Convertible Preferred Stock has no voting rights.

Liquidation Preference. Upon our liquidation, dissolution or winding-up, whether voluntary or involuntary, holders of Series C Convertible Preferred Stock will be entitled to receive out of our assets, whether capital or surplus, an amount equal to the \$1,000 stated value per share for each share of Series C Convertible Preferred Stock before any distribution or payment shall be made to the holders of any junior securities.

Redemption Rights. We are not obligated to redeem or repurchase any shares of Series C Convertible Preferred Stock. Shares of Series C Convertible Preferred Stock are not otherwise entitled to any redemption rights, or mandatory sinking fund or analogous provisions.

Warrants

Warrants Included in Units Issuable in the Rights Offering

The warrants to be issued as a part of this rights offering will be designated as our "Series " warrants. These warrants will be separately transferable following their issuance and through their expiration five (5) years from the date of issuance. Each warrant will entitle the holder to purchase one share of common stock at an exercise price of \$1.55 per share from the date of issuance through its expiration.

All warrants that are purchased in the rights offering as part of the units will be issued in book-entry, or uncertificated, form meaning that you will receive a DRS account statement from our transfer agent reflecting ownership of warrants if you are a holder of record of shares or warrants. The subscription agent will arrange for the issuance of the warrants as soon as practicable after the closing, which will occur as soon as practicable after the rights offering has expired but which may occur up to five business days thereafter. At closing, all prorating calculations and reductions contemplated by the terms of the rights offering will have been effected and payment to us for the subscribed-for units will have cleared. If you hold your shares of common stock in the name of a bank, broker, dealer, or other nominee, DTC will credit your account with your nominee with the warrants you purchased in the rights offering.

Exercisability. Each warrant will be exercisable at any time and will expire five (5) years from the date of issuance. The warrants will be exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice and 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 below.

The number of shares of common stock issuable upon exercise of the warrants is subject to adjustment in certain circumstances, including a stock split of, stock dividend on, or a subdivision, combination or recapitalization of the common stock.

Cashless Exercise. If at any time there is no effective registration statement registering, or the prospectus contained therein is not available for issuance of, the shares issuable upon exercise of the warrant, the holder may exercise the warrant only on a cashless basis. When exercised on a cashless basis, a portion of the warrant is cancelled in payment of the purchase price payable in respect of the number of shares of our common stock purchasable upon such exercise.

Exercise Price. Each warrant represents the right to purchase one share of common stock at an exercise price of \$1.55 per share. In addition, the exercise price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations, or reclassifications. Subject to limited exceptions, a holder of warrants will not have the right to exercise any portion of the warrant to the extent that, after giving effect to the exercise, the holder, together with its affiliates, and any other

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person acting as a group together with the holder or any of its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to its exercise. The holder, upon notice to the Company, may increase or decrease the beneficial ownership limitation provisions of the warrant, provided that in no event shall the limitation exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise of the warrant.

Transferability. Subject to applicable laws and restrictions, a holder may transfer a warrant upon surrender of the warrant to us with a completed and signed assignment in the form attached to the warrant. The transferring holder will be responsible for any tax that liability that may arise as a result of the transfer.

Rights as Stockholder. Except as set forth in the warrant, the holder of a warrant, solely in such holder's capacity as a holder of a warrant, will not be entitled to vote, to receive dividends, or to any of the other rights of our stockholders.

Fundamental Transactions. In the event we effect certain mergers, consolidations, sales of substantially all of our assets, tender or exchange offers, reclassifications or share exchanges in which our common stock is effectively converted into or exchanged for other securities, cash or property, we consummate a business combination in which another person acquires 50% of the outstanding shares of our common stock, or any person or group becomes the beneficial owner of 50% of the aggregate ordinary voting power represented by our issued and outstanding common stock, then, upon any subsequent exercise of the warrants, the holders of the warrants will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon exercise of the warrants.

Redemption Rights. We may redeem the warrants for \$0.01 per warrant if our common stock closes above \$6.20 per share for ten consecutive trading days, provided that we may not do so prior to the first anniversary of closing of the rights offering, and provided further that we may not do so if the redemption would cause the warrant holder to exceed its beneficial ownership limitation among other conditions.

Amendments and Waivers. The provisions of each warrant may be modified or amended or the provisions thereof waived with the written consent of us and the holder.

The warrants will be issued pursuant to a warrant agent agreement by and between us and Philadelphia Stock Transfer, Inc., the warrant agent.

Series A Preferred Stock

On October 14, 2014, we filed a Certificate of Designation, Preference and Rights of Series A Convertible Preferred Stock (the "Series A Preferred Stock") with the Secretary of State of the State of Delaware. The number of shares of Series A Preferred Stock designated is 1,250,000 and each share of Series A Preferred Stock has a stated value equal to \$10.00 (the "Series A Stated Value").

Voting Rights. Except as otherwise provided therein and as otherwise prohibited by law, the Series A Preferred Stock shall have voting rights on an as converted basis. So long as any shares of Series A Preferred Stock are outstanding, the Company shall not, without the affirmative vote of the Holders of the shares of the Series A Preferred Stock then outstanding, (a) alter or change adversely the powers, preferences or rights given to the Series A Preferred Stock or alter or amend the Certificate of Designation, (b) authorize or create any class of stock ranking as to dividends, redemption or distribution of assets upon a Series A Liquidation (as defined herein) senior to or

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otherwise pari passu with the Series A Preferred Stock, or (c) enter into any agreement with respect to the foregoing.

Liquidation. Upon any liquidation, dissolution or winding-up of the Company, whether voluntary or involuntary (a "Series A Liquidation"), the holders shall be entitled to receive out of the assets of the Company, whether such assets are capital or surplus, for each share of Series A Preferred Stock an amount equal to 100% of the Series A Stated Value per share plus any other fees or liquidated damages owing thereon before any distribution or payment shall be made to the holders of any junior securities, and if the assets of the Company shall be insufficient to pay in full such amounts, then the entire assets to be distributed to the holders shall be distributed among the holders ratably in accordance with the respective amounts that would be payable on such shares if all amounts payable thereon were paid in full.

Conversions at Option of Holder. Each share of Series A Preferred Stock shall be convertible into that number of shares of Common Stock determined by dividing the Series A Stated Value of such share of Series A Preferred Stock by \$3.84 (the "Series A Conversion Price"), at the option of the holder, at any time and from time to time from and after October 14, 2014.

Subsequent Equity Sales. If, at any time while this Series A Preferred Stock is outstanding, the Company sells or grants any option to purchase or sells or grants any right to reprice its securities, or otherwise disposes of or issues (or announces any sale, grant or any option to purchase or other disposition) any common stock or common stock equivalents entitling any person to acquire shares of common stock (a "Series A Subsequent Financing") at an effective price per share that is lower than the then Series A Conversion Price (such lower price, the "Series A Base Conversion Price" and such issuances collectively, a "Series A Dilutive Issuance") (if the holder of the common stock or common stock equivalents so issued shall at any time, whether by operation of purchase price adjustments, reset provisions, floating conversion, exercise or exchange prices or otherwise, or due to warrants, options or rights per share which are issued in connection with such issuance, be entitled to receive shares of common stock at an effective price per share that is lower than the Series A Conversion Price, such issuance shall be deemed to have occurred for less than the Series A Conversion Price on such date of the Series A Dilutive Issuance), the Series A Conversion Price then in effect shall be reduced to the Series A Base Conversion Price. The holder's rights under this section shall terminate upon the Company completing a Series A Subsequent Financing at an effective price per share equal to or greater than the Series A Conversion Price then in effect which results in minimum gross proceeds to the Company of \$20 million.

Lock-Up. The shares of Series A Preferred Stock and the shares of common stock underlying the shares of Series A Preferred Stock were subject to a lock-up agreement until July 31, 2016.

Registration Rights. In the event we close a Series A Subsequent Financing of common or preferred stock, which does not include any warrants or convertible securities, at an effective price per share that is lower than 160% ("Series A Premium Price") of the then Series A Conversion Price (the "Series A Registration Price") and the purchasers of the securities in the Series A Subsequent Financing are given registration rights for such securities or such securities are issued on a registered basis, the holders shall receive at such time (i) equivalent registration rights for the Series A Preferred Stock and the shares issuable upon conversion of the Series A Preferred Stock in the event purchasers of the securities in the Series A Subsequent Financing receive registration rights or (ii) demand registration rights in the event purchasers of the securities in the Series A Subsequent Financing receive registered shares. In the event, the Series A Subsequent Financing includes warrants or other convertible securities, the Series A Premium Price shall increase by 1% for every 1% of warrant or other convertible security coverage in the Subsequent Financing. The holder's rights under this section shall terminate upon us completing a Series A Subsequent Financing at an effective price per share

equal to or greater than the Series A Registration Price which results in minimum gross proceeds to us of \$20 million.

Series B Preferred Stock

On December 18, 2014, we filed a Certificate of Designation, Preference and Rights of Series B Convertible Preferred Stock (the "Series B Preferred Stock") with the Secretary of State of the State of Delaware. The number of shares of Series B Preferred Stock designated is 120,000 and each share of Series B Preferred Stock has a stated value equal to \$10.00 (the "Series B Stated Value").

Voting Rights. Except as otherwise provided therein and as otherwise prohibited by law, the Series B Preferred Stock shall have voting rights on an as converted basis. So long as any shares of Series B Preferred Stock are outstanding, we shall not, without the affirmative vote of the holders of the shares of the Series B Preferred Stock then outstanding, (a) alter or change adversely the powers, preferences or rights given to the Series B Preferred Stock or alter or amend the Certificate of Designation, (b) authorize or create any class of stock ranking as to dividends, redemption or distribution of assets upon a Series B Liquidation (as defined herein) senior to or otherwise *pari passu* with the Series B Preferred Stock, or (c) enter into any agreement with respect to the foregoing.

Liquidation. Upon any liquidation, dissolution or winding-up of us, whether voluntary or involuntary (a "Series B Liquidation"), the holders shall be entitled to receive out of our assets, whether such assets are capital or surplus, for each share of Series B Preferred Stock an amount equal to 100% of the Series B Stated Value per share plus any other fees or liquidated damages owing thereon on a *pari passu* basis with the holders of Series A Preferred Stock and before any distribution or payment shall be made to the holders of any junior securities, and if our assets shall be insufficient to pay in full such amounts, then the entire assets to be distributed to the holders shall be distributed among the holders, and the holders of Series A Preferred Stock, ratably in accordance with the respective amounts that would be payable on such shares if all amounts payable thereon were paid in full.

Conversions at Option of Holder. Each share of Series B Preferred Stock shall be convertible into that number of shares of common stock determined by dividing the Series B Stated Value of such share of Series B Preferred Stock by \$8.96 (the "Series B Conversion Price"), at the option of the holder.

Subsequent Equity Sales. If, at any time while this Series B Preferred Stock is outstanding, we sell or grant any option to purchase or sells or grants any right to reprice its securities, or otherwise disposes of or issues (or announces any sale, grant or any option to purchase or other disposition) any common stock or common stock equivalents entitling any person to acquire shares of Common Stock (a "Series B Subsequent Financing") at an effective price per share that is lower than the then Series B Conversion Price (such lower price, the "Series B Base Conversion Price" and such issuances collectively, a "Series B Dilutive Issuance") (if the holder of the common stock or common stock equivalents so issued shall at any time, whether by operation of purchase price adjustments, reset provisions, floating conversion, exercise or exchange prices or otherwise, or due to warrants, options or rights per share which are issued in connection with such issuance, be entitled to receive shares of common stock at an effective price per share that is lower than the Series B Conversion Price, such issuance shall be deemed to have occurred for less than the Series B Conversion Price on such date of the Series B Dilutive Issuance), the Series B Conversion Price then in effect shall be reduced to the Series B Base Conversion Price. The Holder's rights under this Section shall terminate upon the Company completing a Series B Subsequent Financing at an effective price per share equal to or greater than the Series B Conversion Price then in effect which results in minimum gross proceeds to us of \$20 million.

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Registration Rights. In the event we close a Series B Subsequent Financing of common or preferred stock, which does not include any warrants or convertible securities, at an effective price per share that is lower than 160% ("Series B Premium Price") of the then Series B Conversion Price (the "Series B Registration Price") and the purchasers of the securities in the Series B Subsequent Financing are given registration rights for such securities or such securities are issued on a registered basis, the holders shall receive at such time (i) equivalent registration rights for the Series B Preferred Stock and the shares of common stock issuable upon conversion of the Series B Preferred Stock in the event purchasers of the securities in the Series B Subsequent Financing receive registration rights or (ii) demand registration rights in the event purchasers of the securities in the Series B Subsequent Financing receive registered shares. In the event, the Series B Subsequent Financing includes warrants or other convertible securities, the Series B Premium Price shall increase by 1% for every 1% of warrant or other convertible security coverage in the Series B Subsequent Financing. The holder's rights under this Section shall terminate upon the Company completing a Series B Subsequent Financing at an effective price per share equal to or greater than the Series B Registration Price which results in minimum gross proceeds to us of \$20 million.

Common Stock

Holders of common stock are entitled to receive ratably dividends out of funds legally available, if and when declared from time to time by our Board. We have never paid any cash dividends on our common stock and our Board does not anticipate that we will pay cash dividends in the foreseeable future. The future payment of dividends, if any, on our common stock is within the discretion of the Board and will depend upon earnings, capital requirements, financial condition and other relevant factors. Holders of common stock are entitled to one vote for each share held on each matter to be voted on by stockholders. There is no cumulative voting in the election of directors. In the event of liquidation, dissolution or winding up of the affairs of us, holders of common stock are to share in all assets remaining after the payment of liabilities and any preferential distributions payable to preferred stockholders, if any. The holders of common stock have no preemptive or conversion rights and are not subject to further calls or assessments. There are no redemption or sinking fund provisions applicable to the common stock. The rights of the holders of the common stock are subject to any rights that may be fixed for holders of preferred stock, if any. All of the outstanding shares of common stock are fully paid and non-assessable.

Anti-Takeover Devices

Certain provisions of our Certificate of Incorporation and Bylaws, which are summarized in the following paragraphs, may have the effect of discouraging potential acquisition proposals or making a tender offer or delaying or preventing a change in control, including changes a stockholder might consider favorable. Such provisions may also prevent or frustrate attempts by our stockholders to replace or remove our management. In particular, the Certificate of Incorporation and Bylaws and Delaware law, as applicable, among other things:

- provide the board of directors with the ability to alter the bylaws without stockholder approval;
- place limitations on the removal of directors; and
- provide that vacancies on the board of directors may be filled by a majority of directors in office, although less than a quorum.

These provisions are expected to discourage certain types of coercive takeover practices and inadequate takeover bids and to encourage persons seeking to acquire control of us to first negotiate with its board. These provisions may delay or prevent someone from acquiring or merging with us, which may cause our market price of our common stock to decline.

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Blank Check Preferred. Our Board of Directors is authorized to create and issue from time to time, without stockholder approval, up to an aggregate of 20,000,000 shares of preferred stock in one or more series and to establish the number of shares of any series of preferred stock and to fix the designations, powers, preferences and rights of the shares of each series and any qualifications, limitations or restrictions of the shares of each series.

The authority to designate preferred stock may be used to issue series of preferred stock, or rights to acquire preferred stock, that could dilute the interest of, or impair the voting power of, holders of the common stock or could also be used as a method of determining, delaying or preventing a change of control.

Advance Notice Bylaws. The Bylaws contain an advance notice procedure for stockholder proposals to be brought before any meeting of stockholders, including proposed nominations of persons for election to our Board of Directors. Stockholders at any meeting will only be able to consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our Board of Directors or by a stockholder who was a stockholder of record on the record date for the meeting, who is entitled to vote at the meeting and who has given our corporate secretary timely written notice, in proper form, of the stockholder's intention to bring that business before the meeting. Although the Bylaws do not give our Board of Directors the power to approve or disapprove stockholder nominations of candidates or proposals regarding other business to be conducted at a special or annual meeting, the Bylaws may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed or may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect its own slate of directors or otherwise attempting to obtain control of us.

Interested Stockholder Transactions. We are subject to Section 203 of the DGCL which, subject to certain exceptions, prohibits "business combinations" between a publicly-held Delaware corporation and an "interested stockholder," which is generally defined as a stockholder who becomes a beneficial owner of 15% or more of a Delaware corporation's voting stock for a three-year period following the date that such stockholder became an interested stockholder.

Transfer Agent and Registrar

The Transfer Agent and Registrar for our common stock is Philadelphia Stock Transfer, Inc.

Quotation

Our common stock is currently quoted on the NASDAQ Capital Market under the symbol "CTRV".

PLAN OF DISTRIBUTION

We will distribute rights certificates and copies of this prospectus to those persons who were holders of our common stock or who were holders of certain outstanding warrants on June 14, 2018, the record date for the rights offering, promptly following the effective date of the registration statement of which this prospectus forms a part. We are offering the rights and the shares of common stock underlying the rights directly to you. Those directors and officers of the Company who may assist in the rights offering will not register with the SEC as brokers in reliance on certain safe harbor provisions contained in Rule 3a4-1 under the Exchange Act. Philadelphia Stock Transfer is acting as our subscription agent to effect the exercise of the rights and the issuance of the underlying common stock. Therefore, while certain of our director, officers or employees may solicit responses from you, they will not receive any commissions or compensation for those services.

Delivery of Series C Convertible Preferred Stock and Warrants

If your shares are held in the name of a broker, dealer, custodian bank or other nominee, then you should send your subscription documents and subscription payment to that record holder. If you are the record holder, then you should send your subscription documents, rights certificate, notice of guaranteed delivery and subscription payment to the address provided below. If sent by mail, we recommend that you send documents and payments by registered mail, properly insured, with return receipt requested, and that a sufficient number of days be allowed to ensure delivery to the subscription agent. Do not send or deliver these materials to the Company.

By Registered Certified or Express Mail

Overnight Courier

PHILADELPHIA STOCK TRANSFER, INC.
2320 HAVERFORD RD.
SUITE 230
ARDMORE, PA 19003

PHILADELPHIA STOCK TRANSFER, INC.
2320 HAVERFORD RD.
SUITE 230
ARDMORE, PA 19003

See "*The Rights Offering—Method of Exercising Subscription Rights.*" If you have any questions regarding the Company or the rights offering, or you have any questions regarding completing a rights certificate or submitting payment in the rights offering, please contact the subscription agent, Philadelphia Stock Transfer, toll free at 484-416-3124, or by email at bwinterle@philadelphiastocktransfer.com or the information agent, Kingsdale Advisors, toll free at 646-651-1640, or by email at contactus@kingsdaleadvisors.com.

Other than as described in this prospectus, we do not know of any existing agreements between any stockholder, broker, dealer, underwriter or agent relating to the sale or distribution of the underlying securities.

Maxim Group LLC is the dealer-manager of this rights offering. In such capacity, such dealer-manager will provide marketing assistance and financial advice (including determining the subscription price and the structure of the rights offering) to us in connection with this offering and will solicit the exercise of basic subscription rights and participation in the over-subscription privilege. The dealer-manager will provide us with updated investor feedback and recommendations on pricing and structure through to the end of the subscription period. The dealer-manager is not underwriting or placing any of the basic subscription rights and does not make any recommendation with respect to such basic subscription rights (including with respect to the exercise or expiration of such basic subscription rights).

In connection with this rights offering, we have agreed to pay fees to Maxim Group LLC as dealer-manager a cash fee equal to 6.0% of the gross proceeds received by us directly from exercises of the subscription rights. We advanced \$20,000 to Maxim Group LLC for its anticipated out-of-pocket expenses related to the offering (the "Advance"). Any portion of the Advance not offset by actual

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expenses will be returned to us. In addition, we have agreed to pay to the dealer-manager a non-accountable expense allowance equal to \$30,000.

Subject to completion of this offering, we have agreed to grant to the dealer-manager a warrant (the "Dealer-Manager Warrant") to purchase a number of shares of common stock equal to four percent (4%) of the total number of shares issuable upon conversion of the Series C Convertible Preferred Stock sold in this rights offering at the initial conversion price of \$1.55 per share. The Dealer-Manager Warrant shall not be exercisable for six (6) months from the effective date of the registration statement and shall expire five (5) years after such effective date. The Dealer-Manager Warrant shall be exercisable at a price per share equal to 110% of conversion price of the Series C Convertible Preferred Stock. The Dealer-Manager Warrant shall not be redeemable. The Dealer-Manager Warrant shall not be sold, transferred, assigned or hypothecated for a period of six (6) months from the effective date of registration statement, except that it may be assigned, in whole or in part, to any successor, officer, or partner of the Dealer-Manager (or to officers or partners of any such successor) and shall contain unlimited piggy-back registration rights for 5 years from the effective date.

We have also agreed to indemnify the dealer-manager and its respective affiliates against certain liabilities arising under the Securities Act. The dealer-manager's participation in this offering is subject to customary conditions contained in the dealer-manager agreement, including the receipt by the dealer-manager of an opinion of our counsel. The dealer-manager and its affiliates may provide to us from time to time in the future in the ordinary course of their business certain financial advisory, investment banking and other services for which they will be entitled to receive fees.

Maxim Group LLC is a broker-dealer registered with the U.S. Securities and Exchange Commission and a member of the Financial Industry Regulatory Authority, Inc. The principal business address of Maxim Group LLC is 405 Lexington Avenue, New York, New York 10174.

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITIES

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 Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable.

EXPERTS

The consolidated financial statements as of December 31, 2017 and for the six month transition period ended December 31, 2017 and as of June 30, 2017 and 2016 and the years then ended incorporated by reference in this Prospectus have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm (the report on the consolidated financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern), incorporated by reference herein, given on the authority of said firm as experts in auditing and accounting.

LEGAL MATTERS

Certain legal matters relating to the validity of the securities offered by this prospectus will be passed upon for us by Sheppard, Mullin, Richter & Hampton LLP New York, New York.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

The Company files annual, quarterly and special reports, proxy statements and other information with the SEC. You may read and copy any document filed by the Company at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room. The Company's filings with the SEC are also available to the public at the SEC's Internet web site at <http://www.sec.gov>.

Statements contained in this prospectus as to the contents of any contract or other document are not necessarily complete, and in each instance we refer you to the copy of the contract or document filed as an exhibit to the registration statement, each such statement being qualified in all respects by such reference.

INFORMATION INCORPORATED BY REFERENCE

The SEC allows the Company to "incorporate by reference" the information that is filed by the Company with the SEC, which means that the Company can disclose important information to you by referring you to those documents. The documents incorporated by reference are:

1. The Company's Annual Report on Form 10-K for the year ended June 30, 2017, filed with the SEC on September 28, 2017;
2. The Company's Transition Report on Form 10-KT for the transition period from July 1, 2017 to December 31, 2017, filed with the SEC on March 26, 2018;
3. The Company's Quarterly Reports on Form 10-Q for the quarters ended September 30, 2017 and March 31, 2018;
4. The Company's Definitive Proxy Statements filed on October 27, 2017 and January 24, 2018;
5. The Company's Current Reports on Form 8-K filed on August 3, 2017, September 11, 2017, October 3, 2017, October 17, 2017, October 19, 2017, October 24, 2017, November 6, 2017, December 8, 2017, December 13, 2017, December 18, 2017, December 21, 2017, January 2, 2018, January 3, 2018, February 5, 2018, February 6, 2018, February 9, 2018, February 12, 2018, February 21, 2018, February 22, 2018, March 9, 2018, April 13, 2018, May 24, 2018, May 29, 2018, May 30, 2018 and May 31, 2018, June 6, 2018 and June 13, 2018;
6. The description of the Company's common stock contained in the registration statement on Form 8-A filed with the Commission on February 24, 2015 pursuant to Section 12 of the Exchange Act of 1934, as amended (the "Exchange Act"), including any amendment or report filed for the purpose of updating that description; and
7. All documents filed by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, after the date of the original Registration Statement and prior to effectiveness of the registration statement of which this prospectus is a part, provided that all documents "furnished" by the Company to the SEC and not "filed" are not deemed incorporated by reference herein.

Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this registration statement to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this registration statement. Under no circumstances will any information filed under

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items 2.02 or 7.01 of Form 8-K be deemed to be incorporated by reference unless such Form 8-K expressly provides to the contrary.

The Company will provide, without charge, to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, upon such person's written or oral request, a copy of any and all of the information incorporated by reference in this prospectus, other than exhibits to such documents, unless such exhibits are specifically incorporated by reference into the information that this prospectus incorporates. Requests should be directed to the Secretary at ContraVir Pharmaceuticals, Inc., 399 Thornall Street, First Floor, Edison, New Jersey, 08837, phone (732) 902-4000. You may also find these documents in the "Investors" section of our website, www.contravir.com. The information on our website is not incorporated into this prospectus.

PROSPECTUS

**Subscription Rights to Purchase Up to 20,000 Units
Consisting of an Aggregate of Up to 20,000 Shares of Series C Convertible Preferred Stock and Warrants to
Purchase Up to 6,460,000 Shares of Common Stock at a Subscription Price of \$1,000 Per Unit**



Dealer-Manager

Maxim Group LLC

, 2018

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

ITEM 13. Other Expenses of Issuance and Distribution

The following are the estimated expenses of the distribution of the Shares registered hereunder on Form S-1 (the amounts set forth above are estimate, except the SEC Registration Fee:

Registration Fee—Securities and Exchange Commission	\$ 3,735
FINRA filing fee	\$ 3,500
Accountants Fees and Expenses	\$ 50,000
Legal Fees and Expenses	\$ 150,000
Miscellaneous	\$ 9,010
Total	\$ 216,245

ITEM 14. Indemnification of Directors and Officers.

The DGCL authorizes corporations to limit or eliminate the personal liability of directors to corporations and their stockholders for monetary damages for breaches of directors' fiduciary duties as directors and our amended and restated certificate of incorporation includes such an exculpation provision. Our certificate of incorporation and by-laws include provisions that indemnify, to the fullest extent allowable under the DGCL, the personal liability of directors or officers for monetary damages for actions taken as a director or officer of us, or for serving at our request as a director or officer or another position at another corporation or enterprise, as the case may be. Our certificate of incorporation and by-laws also provide that we must indemnify and advance reasonable expenses to our directors and officers, subject to our receipt of an undertaking from the indemnified party as may be required under the DGCL. Our certificate of incorporation expressly authorizes us to carry directors' and officers' insurance to protect us, our directors, officers and certain employees for some liabilities. The limitation of liability and indemnification provisions in our amended and restated certificate of incorporation and by-laws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duty. These provisions may also have the effect of reducing the likelihood of derivative litigation against our directors and officers, even though such an action, if successful, might otherwise benefit us and our stockholders. However, these provisions do not limit or eliminate our rights, or those of any stockholder, to seek non-monetary relief such as injunction or rescission in the event of a breach of a director's duty of care. The provisions do not alter the liability of directors under the federal securities laws. In addition, your investment may be adversely affected to the extent that, in a class action or direct suit, we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions. There is currently no pending material litigation or proceeding against any of our directors, officers or employees for which indemnification is sought.

ITEM 16. Exhibit Index.

See Exhibit Index set forth on page II-4 to this Registration Statement.

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 of 1933;

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(ii) To reflect in the prospectus any facts or events arising after the effective date of the 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 end of the estimated maximum offering range may be reflected in the form of prospectus filed with 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.

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

provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) of this section 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 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 of 1933, 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 of 1933 to any purchaser:

(A) 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 this Registration Statement; and

(B) 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 of 1933 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 the date of the first contract of 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 that prospectus relates, 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 the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of this

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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 of 1933 to any purchaser in the initial distribution of the securities: The undersigned registrant undertakes that 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, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered herein, 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, as amended, 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 to file an application for the purpose of determining the eligibility of the trustee to act under subsection (a) of Section 310 of the Trust Indenture Act ("Act") in accordance with the rules and regulations prescribed by the Commission under Section 305(b)(2) of the Act.

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Exhibit Description</u>
1.1*	Form of Dealer-Manager Agreement
1.2	Controlled Equity Offering Sales Agreement dated March 9, 2015 between ContraVir Pharmaceuticals, Inc. and Cantor Fitzgerald & Co. (filed as Exhibit 1.2 to the Company's registration statement on Form S-3 which was filed with the Securities and Exchange Commission on March 9, 2015 and incorporated herein by reference).
3.1(a)	Certificate of Incorporation of ContraVir Pharmaceuticals, Inc. (filed as Exhibit 3.1 to the Company's registration statement on Form 10-12G which was filed with the Securities and Exchange Commission on August 8, 2013 and incorporated herein by reference).
3.1(b)	Certificate of Designation, Preferences and Rights of the Series A Convertible Preferred Stock of ContraVir Pharmaceuticals, Inc. filed with the Secretary of State of the State of Delaware on October 14, 2014 (filed as Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on October 14, 2014 and incorporated herein by reference).
3.1(c)	Certificate of Designation, Preferences and Rights of the Series B Convertible Preferred Stock of ContraVir Pharmaceuticals, Inc. filed with the Secretary of State of the State of Delaware on December 18, 2014 (filed as Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on December 18, 2014 and incorporated herein by reference).
3.1(d)***	Form of Certificate of Designation of Preference, Rights and Limitations of Series C Convertible Preferred Stock
3.2	By-Laws of ContraVir Pharmaceuticals, Inc. (filed as Exhibit 3.2 to the Company's registration statement on Form 10-12G which was filed with the Securities and Exchange Commission on August 8, 2013 and incorporated herein by reference).
4.1***	Form of Non-Transferable Subscription Rights Certificate
4.2***	Form of Warrant Agreement
4.3***	Form of Warrant Certificate
4.4	Secured Convertible Promissory Note, dated May 8, 2018, by and between ContraVir Pharmaceuticals, Inc. and Iliad Research and Trading, L.P. (filed as Exhibit 4.1 to the Company's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 15, 2018 and incorporated herein by reference).
5.1***	Opinion of Sheppard, Mullin, Richter & Hampton LLP
8.1*	Tax Opinion of Sheppard, Mullin, Richter & Hampton LLP
10.1	Amended and Restated Contribution Agreement, dated June 10, 2013, as amended and restated August 5, 2013, by and between Synergy Pharmaceuticals Inc. and ContraVir Pharmaceuticals, Inc. (filed as Exhibit 10.1 to the Company's registration statement on Form 10-12G which was filed with the Securities and Exchange Commission on August 8, 2013 and incorporated herein by reference).

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<u>Exhibit Number</u>	<u>Exhibit Description</u>
10.2	<u>Asset Purchase Agreement dated August 17, 2012 between Synergy Pharmaceuticals Inc. and Bristol-Myers Squibb Company (filed as Exhibit 10.4 to the Company's registration statement on Form 10-12G/A which was filed with the Securities and Exchange Commission on November 21, 2013 and incorporated herein by reference).†</u>
10.3	<u>Patent and Technology License Agreement, dated as of February 2, 2005, between University College Cardiff Consultant Limited and ContraVir Research Incorporated, an entity with no prior relationship with the Company, as amended March 27, 2007 (filed as Exhibit 10.5 to the Company's registration statement on Form 10-12G/A which was filed with the Securities and Exchange Commission on November 21, 2013 and incorporated herein by reference)†</u>
10.4	<u>First Amendment to Patent and Technology License Agreement, effective as of March 27, 2007, by and between University College Cardiff Consultant Limited and ContraVir Research Incorporated (filed as Exhibit 10.7 to the Company's registration statement on Form 10-12G/A which was filed with the Securities and Exchange Commission on December 24, 2013 and incorporated herein by reference).</u>
10.5	<u>Amended and Restated Executive Agreement, dated May 25, 2017, between ContraVir Pharmaceuticals, Inc. and James Sapirstein (filed as Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on April 25, 2017 and incorporated herein by reference.)</u>
10.6	<u>Executive Agreement, dated April 1, 2016, between ContraVir Pharmaceuticals, Inc. and John Cavan (filed as Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on March 31, 2016 and incorporated herein by reference.)</u>
10.7	<u>License Agreement effective as of December 2014 by and between Chimerix, Inc. and ContraVir Pharmaceuticals, Inc. (filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on February 12, 2015 and incorporated herein by reference).†</u>
10.8	<u>2013 Equity Incentive Plan (filed as Exhibit 10.1 to the Company's Form S-8 filed with the Securities and Exchange Commission on May 4, 2015 and incorporated herein by reference).</u>
10.9	<u>Executive Agreement, dated June 10, 2016, between ContraVir Pharmaceuticals, Inc. and Dr. Robert Foster (filed as Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on June 13, 2016 and incorporated herein by reference.)</u>
10.10	<u>Securities Purchase Agreement, dated May 8, 2018, by and between ContraVir Pharmaceuticals, Inc. and Iliad Research and Trading, L.P. (filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 15, 2018 and incorporated herein by reference.)</u>
10.11	<u>Security Agreement, dated May 8, 2018, by and between ContraVir Pharmaceuticals, Inc. and Iliad Research and Trading, L.P. (filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 15, 2018 and incorporated herein by reference.)</u>
23.1*	<u>Consent of BDO USA, LLP, Independent Registered Public Accounting Firm</u>

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<u>Exhibit Number</u>	<u>Exhibit Description</u>
23.2***	<u>Consent of Sheppard, Mullin, Richter & Hampton, LLP (Filed as part of Exhibit 5.1 to this Registration Statement on Form S-1)</u>
24***	<u>Power of Attorney (included on signature page hereto)</u>
99.1***	<u>Form of Instructions as to Use of Subscription Rights Certificates</u>
99.2***	<u>Form of Letter to Shareholders Who Are Record Holders</u>
99.3***	<u>Form of Letter to Brokers, Dealers, Banks and Other Nominees</u>
99.4***	<u>Form of Broker Letter to Clients Who Are Beneficial Holders</u>
99.5***	<u>Form of Beneficial Owner Election Form</u>
99.6***	<u>Form of Nominee Holder Certification</u>
99.7***	<u>Form of Notice of Important Tax Information</u>
<hr/>	
*	Filed herewith.
***	Previously filed.
†	Confidential treatment is requested for certain confidential portions of this exhibit pursuant to Rule 24b-2 under the Exchange Act. In accordance with Rule 24b-2, these confidential portions have been omitted from this exhibit and filed separately with the Commission.

CONTRAVIR PHARMACEUTICALS, INC.

DEALER-MANAGER AGREEMENT

Maxim Group LLC
405 Lexington Avenue
New York, NY 10174
As Dealer-Manager

Ladies and Gentlemen:

The following will confirm our agreement relating to the proposed rights offering (the “**Rights Offering**”) to be undertaken by ContraVir Pharmaceuticals, Inc., a Delaware corporation (the “**Company**”), pursuant to which the Company will distribute to holders of record of its common stock, par value \$0.0001 per share (the “**Common Stock**”) and to holders of warrants issued in October 2015, April 2016 and April 2017, subscription rights (the “**Rights**”) to subscribe for up to an aggregate of 20,000 units (the “**Units**”), each Unit consisting of one share of Preferred Stock (the “**Rights Shares**”) and 323 warrants, with each warrant representing the right to purchase one share of Common Stock (the “**Rights Warrants**”) and the Rights Shares, the Rights Warrants and the shares of Common Stock issuable upon conversion of the Rights Shares and exercise of the Rights Warrants, the “**Securities**”), at a subscription price of \$1,000 per Unit in cash (the “**Subscription Price**”).

1. The Rights Offering.

(a) The Company proposes to undertake the Rights Offering pursuant to which each holder of Common Stock shall receive one Right for each share of Common Stock held of record at the close of business on June 14, 2018 (the “**Record Date**”). Holders of Rights will be entitled to subscribe for and purchase, at the Subscription Price, one (1) Rights Share and 323 Rights Warrants for each Right held (the “**Basic Subscription Right**”). Rights may only be exercised for whole Right Shares and Rights Warrants; no fractional securities will be issued in the Rights Offering.

(b) The Rights will not trade or be listed for quotation on any exchange or service, and shall be non-transferable.

(c) Any holder of Rights who fully exercises all Basic Subscription Rights issued to such holder is entitled to subscribe for Units which were not otherwise subscribed for by others pursuant to their Basic Subscription Rights (the “**Over-Subscription Right**”). The Over-Subscription Right shall allow a holder of a Right to subscribe for an additional amount of Units above the amount which such holder was otherwise entitled to subscribe. Units acquired pursuant to the Over-Subscription Right are subject to allotment, as more fully discussed in the Prospectus (as defined herein).

(d) The Rights will expire at 5:00 p.m., New York City time, on June 28, 2018 (the “**Expiration Date**”). The Company shall have the right to extend the Expiration Date in its

sole discretion. Any Rights not exercised on or before the Expiration Date will expire worthless without any payment to the holders of unexercised Rights.

(e) All funds from the exercise of Basic Subscription Rights and Over-Subscription Rights will be deposited with Philadelphia Stock Transfer, Inc. (“**PST**”), as subscription agent (in this context, the “**Subscription Agent**”), and held in a segregated account with the Subscription Agent pending a final determination of the number of Rights Shares and Rights Warrants to be issued pursuant to the exercise of Basic Subscription Rights and Over-Subscription Rights. The Company may conduct a closing of the Rights Offering (a “**Closing**”) at its sole discretion at any time following the Expiration Date.

2. Appointment as Dealer-Manager; Role of Dealer-Manager.

(a) On the terms and conditions set forth herein, the Company hereby appoints Maxim Group LLC (“**Maxim**”) as the sole dealer-manager (the “**Dealer-Manager**”) for the Rights Offering and authorizes the Dealer-Manager to act as such in connection with the Rights Offering.

(b) The services previously provided by the Dealer-Manager under that certain engagement letter, dated March 22, 2018, between the Company and the Dealer-Manager (as amended, the “**Engagement Letter**,” which such Engagement Letter shall continue to be effective and the terms therein shall continue to survive and be enforceable by the Dealer-Manager in accordance with its terms, provided that, in the event of a conflict between the terms of the Engagement Letter and this Agreement, the terms of this Agreement shall prevail), or to be provided by the Dealer-Manager through the Closing, consist of the following:

(i) providing market assistance in connection with the conduct of the Rights Offering (which shall include assisting the Company in drafting a presentation that may be used to market the Rights Offering to investors and assistance in the coordination of the Rights Offering together with PST);

(ii) providing financial advice to the Company in connection with the Rights Offering (including advice regarding the structure, pricing, timing and other terms and conditions of the Rights Offering);

(iii) responding to requests for information and materials in connection with the Rights Offering (it being agreed that Kingsdale Advisors (the “**Information Agent**”) will be the Company’s primary third party source of information regarding the Rights Offering and will be identified by the Company as such in the Registration Statement) (the services described in clauses (i), (ii) and (iii) being collectively referred to as the “**Advisory Services**”); and

(iv) in accordance with customary practice, using best efforts to solicit the exercise of the Rights and subscriptions for the Units pursuant to the Offer Documents (as defined herein) (the services described in this clause (iv) being referred to as the “**Solicitation Services**”);

(c) The services of the Dealer-Manager described in clauses (b)(iii) and (iv) above shall commence on the date that the Registration Statement is declared effective by the U.S. Securities and Exchange Commission (the “**Commission**”). The Company hereby authorizes the Dealer-Manager, or one or more registered broker-dealers chosen exclusively by the Dealer-Manager, to act as the Company’s agent in making the Rights Offering to residents of such states as to which such agent designation may be necessary to comply with applicable law.

(d) The Company hereby acknowledges that Maxim is acting only as a dealer-manager in connection with the Rights Offering. The Dealer-Manager shall not (and shall not be obligated to) underwrite or place any Rights or any Rights Shares or Rights Warrants, and the Company acknowledges and agrees that Maxim’s participation as Dealer-Manager does not ensure or guarantee that the Company will raise any funds through the Rights Offering.

(e) The Company further acknowledges that Maxim is acting as an independent contractor pursuant to a contractual relationship created solely by this Agreement entered into on an arm’s length basis and in no event do the parties intend that Maxim act or be responsible as a fiduciary to the Company, its management, shareholders, creditors or any other natural person, partnership, limited liability partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture, or other entity or organization (each, a “**Person**”) in connection with any activity that Maxim may undertake or has undertaken in furtherance of the Rights Offering, either before or after the date hereof. Maxim hereby expressly disclaims any fiduciary or similar obligations to the Company, either in connection with the transactions contemplated by this Agreement or any matters leading up to such transactions, and the Company hereby confirms its understanding and agreement to that effect. The Company and Maxim agree that they are each responsible for making their own independent judgments with respect to any such transactions, and that any opinions or views expressed by Maxim to the Company regarding such transactions, including but not limited to any opinions or views with respect to the price or market for the Company’s securities, do not constitute advice or recommendations to the Company. The Company hereby waives and releases, to the fullest extent permitted by law, any claims that the Company may have against Maxim with respect to any breach or alleged breach of any fiduciary or similar duty to the Company in connection with the transactions contemplated by this Agreement or any matters leading up to such transactions.

3. No Liability for Acts of Brokers, Dealers, Banks and Trust Companies. The Dealer-Manager shall not be subject to any liability to the Company (or any of the Company’s Subsidiaries (as defined below) or “Affiliates,” as such term is defined in Rule 144 under the Securities Act of 1933, as amended (the “**Securities Act**”), for any act or omission on the part of any broker or dealer in securities (other than the Dealer-Manager) or any bank or trust company or any other Person, and the Dealer-Manager shall not be liable for its own acts or omissions in performing its obligations as advisor or Dealer-Manager hereunder or otherwise in connection with the Rights Offering or the related transactions, except for any losses, claims, damages, liabilities and expenses determined in a final judgment by a court of competent jurisdiction to have resulted directly from any such acts or omissions undertaken or omitted to be taken by the Dealer-Manager through its gross negligence, intentional omission or willful misconduct. In

soliciting or obtaining exercises of Rights, the Dealer-Manager shall not be deemed to be acting as the agent of the Company or as the agent of any broker, dealer, bank or trust company, and no broker, dealer, bank or trust company shall be deemed to be acting as the Dealer-Manager's agent or as the agent of the Company. As used herein, the term "Subsidiary" means a significant subsidiary of the Company as defined as defined in Rule 1-02 (w) of Regulation S-X of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"). Unless the context specifically requires otherwise, the term "Company" as used in this Agreement means the Company and its Subsidiaries collectively on a consolidated basis.

4. The Offer Documents.

(a) There will be used in connection with the Rights Offering certain materials in addition to the Registration Statement, any Preliminary Prospectus or the Prospectus (each as defined herein), including: (i) all exhibits to the Registration Statement which pertain to the conduct of the Rights Offering; and (ii) any soliciting materials relating to the Rights Offering approved by the Company (collectively with the Registration Statement, any Preliminary Prospectus and the Prospectus, the "**Offer Documents**"). The Dealer-Manager shall be given such opportunity to review and comment upon the Offer Documents.

(b) The Company agrees to furnish the Dealer-Manager with as many copies as it may reasonably request of the final forms of the Offer Documents and the Dealer-Manager is authorized to use copies of the Offer Documents in connection with its acting as Dealer-Manager. The Dealer-Manager hereby agrees that it will not disseminate any written material for or in connection with the solicitation of exercises of Rights pursuant to the Rights Offering other than the Offer Documents.

(c) The Company represents and agrees that no solicitation material, other than the Offer Documents and the documents to be filed therewith as exhibits thereto (each in the form of which has been approved by the Dealer-Manager), will be used in connection with the Rights Offering by or on behalf of the Company without the prior approval of the Dealer-Manager, which approval will not be unreasonably withheld. In the event that the Company uses or permits the use of any such solicitation material in connection with the Rights Offering, then the Dealer-Manager shall be entitled to withdraw as Dealer-Manager in connection with the Rights Offering and the related transactions without any liability or penalty to the Dealer-Manager or any other Person identified in Section 11 hereof as an "indemnified party," and the Dealer-Manager shall be entitled to receive the payment of all fees and expenses payable under this Agreement or the Engagement Letter which have accrued to the date of such withdrawal.

5. Representations and Warranties. The Company represents and warrants to the Dealer-Manager that:

(a) The Registration Statement on Form S-1 (Registration No. 333- 225041) with respect to the Rights, the Units, the Rights Shares and the Rights Warrants has: (i) been prepared by the Company in conformity with, in all material respects, the requirements of the Securities Act and the rules and regulations of the Commission (the "**Rules and Regulations**") promulgated under the Securities Act; (ii) been filed with the Commission under the Securities

Act; and (iii) become effective under the Securities Act. Copies of such Registration Statement as amended to date have been delivered or made available by the Company to the Dealer-Manager. For purposes of this Agreement, “**Effective Time**” means the date and the time as of which such registration statement, or the most recent post-effective amendment thereto, if any, was declared effective by the Commission; “**Effective Date**” means the date of the Effective Time; “**Preliminary Prospectus**” means each prospectus included in such registration statement, or amendments thereof, before it becomes effective under the Securities Act and any prospectus filed with the Commission by the Company with the consent of the Dealer-Manager pursuant to Rule 424(a) of the Rules and Regulations; “**Registration Statement**” means such Registration Statement, as amended at the Effective Time, including any documents which are exhibits thereto; and “**Prospectus**” means such final prospectus, as first filed with the Commission pursuant to paragraph (1) or (4) of Rule 424(b) of the Rules and Regulations, as amended by any prospectus supplement thereto. The Commission has not issued any order preventing or suspending the use of any Preliminary Prospectus or the Prospectus. All references in this Agreement to the Registration Statement, a Preliminary Prospectus, and the Prospectus, or any amendments or supplements to any of the foregoing shall be deemed to include any copy thereof filed with the Commission pursuant to its Electronic Data Gathering, Analysis and Retrieval System (“**EDGAR**”). Additionally, any reference in this Agreement to the Registration Statement, any Preliminary Prospectus or the Prospectus shall be deemed to refer to and include the documents incorporated by reference therein pursuant to Item 12 of Form S-1 under the Securities Act, as of the effective date of the Registration Statement or the date of such Preliminary Prospectus or the Prospectus, as the case may be. The Prospectus delivered to the Dealer-Manager for use in connection with the Rights Offering will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T promulgated by the Commission.

(b) The Registration Statement (together with all exhibits filed as part of the Registration Statement) conforms, and any Preliminary Prospectus and the Prospectus and any further amendments or supplements to the Registration Statement conforms or will conform, when they are filed with or become effective by the Commission, as the case may be, in each case, in all material respects, to the requirements of the Securities Act and the Rules and Regulations and collectively do not and will not, as of the applicable Effective Date (as to the Registration Statement and any amendment thereto) and as of the applicable filing date (as to the Prospectus and any amendment or supplement thereto) contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein (with respect to the Prospectus, in the light of the circumstances under which they were made) not misleading; provided that no representation or warranty is made by the Company as to information contained in or omitted from the Registration Statement or the Prospectus in reliance upon and in conformity with written information furnished to the Company by or on behalf of the Dealer-Manager specifically for inclusion therein, it being acknowledged and agreed that such information provided by or on behalf of the Dealer-Manager consists solely and exclusively of the following disclosure contained in the Prospectus (collectively, the “**Dealer-Manager Information**”): (i) the name of Maxim acting in its capacity as dealer-manager for the Rights Offering and (ii) “The Rights Offering — Distribution Arrangements.”

(c) Neither: (i) any Issuer-Represented General Free Writing Prospectus(es) (as defined below) issued at or prior to the Closing and the Prospectus, all considered together (collectively, the “**General Disclosure Package**”), nor (ii) any individual Issuer-Represented Limited-Use Free Writing Prospectus(es) (as defined below), when considered together with the General Disclosure Package, includes or will include as of the Closing any untrue statement of a material fact or omits or will omit as of the Closing to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The preceding sentence does not apply to statements in or omissions from any Prospectus included in the Registration Statement, the General Disclosure Package or any Issuer-Represented Limited-Use Free Writing Prospectus (as defined below) in conformity with written the Dealer-Manager Information. For purposes of this Agreement, (x) “**Issuer-Represented Free Writing Prospectus**” means any “issuer free writing prospectus,” as defined in Rule 433 under the Securities Act, relating to the Rights that (A) is required to be filed with the Commission by the Company, or (B) is exempt from filing pursuant to Rule 433(d)(5)(i) under the Securities Act because it contains a description of the Rights or of the Rights Offering that does not reflect the final terms or pursuant to Rule 433(d)(8)(ii) because it is a “bona fide electronic road show,” as defined in Rule 433 under the Securities Act, in each case in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company’s records pursuant to Rule 433(g) under the Securities Act; (y) “**Issuer-Represented General Free Writing Prospectus**” means any Issuer-Represented Free Writing Prospectus that is intended for general distribution to prospective investors, as evidenced by its being specified in Schedule I to this Agreement; and (z) “**Issuer-Represented Limited-Use Free Writing Prospectus**” means any Issuer-Represented Free Writing Prospectus that is not an Issuer-Represented General Free Writing Prospectus. The term Issuer-Represented Limited-Use Free Writing Prospectus also includes any “bona fide electronic road show,” as defined in Rule 433 under the Securities Act, that is made available without restriction pursuant to Rule 433(d)(8)(ii), even though not required to be filed with the Commission.

(d) Each Issuer-Represented Free Writing Prospectus, if any, as of its issue date and at all subsequent times until the Closing or until any earlier date that the Company notified or notifies the Dealer-Manager as described in the next sentence, did not, does not and will not include any information that conflicted, conflicts or will conflict with the information contained in the then-current Registration Statement or Prospectus. If at any time following issuance of an Issuer-Represented Free Writing Prospectus there occurred or occurs an event or development as a result of which such Issuer-Represented Free Writing Prospectus conflicted or would conflict with the information contained in the then-current Registration Statement or Prospectus relating to the Rights or included or would include an untrue statement of a material fact or omitted or would omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances prevailing at that subsequent time, not misleading, the Company has notified or will notify promptly the Dealer-Manager so that any use of such Issuer-Represented Free Writing Prospectus may cease until it is promptly amended or supplemented by the Company, at its own expense, to eliminate or correct such conflict, untrue statement or omission.

(e) The Company has not distributed and will not distribute any prospectus or other offering material in connection with the offering and sale of the Securities other than the

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General Disclosure Package, any Issuer-Represented Limited-Use Free Writing Prospectus or the Prospectus or other materials permitted by the Securities Act to be distributed by the Company. Unless the Company obtains the prior consent of the Dealer-Manager, the Company has not made and will not make any offer relating to the Securities that would constitute an “issuer free writing prospectus,” as defined in Rule 433 under the Securities Act, or that would otherwise constitute a “free writing prospectus,” as defined in Rule 405 under the Securities Act, required to be filed with the Commission; provided that the prior written consent of the Dealer-Manager shall be deemed to have been given in respect of any free writing prospectus referenced on Schedule I attached hereto. The Company has complied and will comply with the requirements of Rules 164 and 433 under the Securities Act applicable to any Issuer-Represented Free Writing Prospectus as of its issue date and at all subsequent times through the Closing, including timely filing with the Commission where required, legending and record keeping. To the extent an electronic road show is used, the Company has satisfied and will satisfy the conditions in Rule 433 under the Securities Act to avoid a requirement to file with the Commission any electronic road show.

(f) There are no contracts, agreements, plans or other documents which are required to be described in the Prospectus or filed as exhibits to the Registration Statement by the Securities Act or by the Rules and Regulations which have not been described in the Prospectus or filed as exhibits to the Registration Statement or referred to in, or incorporated by reference into, the exhibit table of the Registration Statement as permitted by the Rules and Regulations.

(g) The Company and each of its Subsidiaries have been duly incorporated and are validly existing as corporations in good standing under the laws of their respective jurisdictions of incorporation, are duly qualified to do business and are in good standing as foreign corporations in each jurisdiction in which their respective ownership or lease of property or the conduct of their respective businesses requires such qualification, and have all power and authority necessary to own or hold their respective properties and to conduct the businesses in which they are engaged, except where the absence of such power or authority (either individually and in the aggregate) could not reasonably be expected to have a material adverse effect on: (i) the business, condition (financial or otherwise), results of operations, shareholders’ equity, properties or prospects (as such prospects are disclosed or described in the Prospectus) of the Company or its Subsidiaries; (ii) the long-term debt or capital stock of the Company or its Subsidiaries; or (iii) the Offering or consummation of any of the other transactions contemplated by this Agreement, the Registration Statement or the Prospectus (any such effect being a “**Material Adverse Effect**”).

(h) This Agreement has been duly authorized, executed and delivered by the Company and, assuming the due authorization, execution and delivery by the Dealer-Manager, constitutes the valid and legally binding agreement of the Company, enforceable against the Company in accordance with its terms, except as the enforceability thereof may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws relating to or affecting creditors’ rights generally and by general principles of equity.

(i) Neither the Company nor any of its Subsidiaries: (i) is in violation of its charter or by-laws, (ii) in default under or in breach of, and no event has occurred which, with

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notice or lapse of time or both, would constitute a default or breach under or result in the creation or imposition of any lien, charge, mortgage, pledge, security interest, claim, equity, trust or other encumbrance, preferential arrangement, defect or restriction of any kind whatsoever (each, a “**Lien**”) upon any of their property or assets pursuant to, any material contract, agreement, indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which it is a party or by which it is bound or to which any of its properties or assets is subject or (iii) is in violation in any respect of any law, rule, regulation, ordinance, directive, judgment, decree or order, foreign and domestic, to which it or its properties or assets may be subject or has failed to obtain any material license, permit, certificate, franchise or other governmental authorization or permit necessary to the ownership of its properties or assets or to the conduct of its business, except, in the case of clauses (ii) and (iii) above, any violation, default or failure to possess the same that would not have a Material Adverse Effect.

(j) Prior to or on the date hereof the Company and PST have or will have entered into a subscription and information agent agreement (the “**Agent Agreement**”). When executed by the Company, the Agent Agreement will have been duly authorized, executed and delivered by the Company and, assuming due authorization, execution and delivery by PST will constitute a valid and legally binding agreement of the Company enforceable in accordance with its terms, except as the enforceability thereof may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws relating to or affecting creditors’ rights generally and by general principles of equity.

(k) The Rights to be issued and distributed by the Company have been duly and validly authorized and, when issued and delivered in accordance with the terms of the Offer Documents, will be duly and validly issued, and will constitute valid and legally binding obligations of the Company enforceable against the Company in accordance with their terms, no holder of the Rights is or will be subject to personal liability by reason of being such a holder, and the Rights conform to the description thereof contained in the Prospectus.

(l) The Rights Warrants conform to the description thereof in the Registration Statement and in the Prospectus and, when issued and delivered by the Company in accordance with the terms of the Offer Documents, will be duly and validly issued, and will constitute valid and legally binding obligations of the Company enforceable against the Company in accordance with their terms. The shares of Common Stock issuable upon exercise of the Rights Warrants have been duly authorized and reserved for issuance upon exercise of the Rights Warrants by all necessary corporate action on the part of the Company and, when issued and delivered and paid for upon such exercise in accordance with the terms of the Rights Warrants, will be validly issued, fully paid, nonassessable and free of preemptive rights and will conform to the description thereof in the Prospectus.

(m) The Rights Shares have been duly and validly authorized and reserved for issuance upon exercise of the Rights and are free of statutory and contractual preemptive rights and are sufficient in number to meet the exercise requirements of the Rights Offering; and Rights Shares, when so issued and delivered against payment therefor in accordance with the terms of the Rights Offering, will be duly and validly issued, fully paid and non-assessable, with no personal liability attaching to the ownership thereof, and will conform to the description thereof

contained in the Prospectus. The shares of Common Stock issuable upon conversion of the Rights Shares have been duly authorized and reserved for issuance upon conversion of the Rights Shares by all necessary corporate action on the part of the Company and, when issued and delivered and paid for, if applicable, upon such conversion in accordance with the terms of the Rights Shares, will be validly issued, fully paid, nonassessable and free of preemptive rights and will conform to the description thereof in the Prospectus.

(n) The Common Stock is listed for trading on the NASDAQ Capital Market (“**NASDAQ**”). Except as set forth in the Registration Statement, the Company has not received an oral or written notification from NASDAQ or any court or any other Governmental Authority of any inquiry or investigation or other action that would cause the Common Stock, including the Common Stock underlying the Rights Shares or the Rights Warrants, to not be listed for trading on NASDAQ. “**Governmental Authority**” means any federal, state, local, foreign or other governmental, quasi-governmental or administrative body, instrumentality, department or agency or any court, tribunal, administrative hearing body, arbitration panel, commission, or other similar dispute resolving panel or body and shall include any Person acting on behalf of a such Governmental Authority. “**Law**” means any federal, state, local, municipal, foreign or other law, statute, legislation, principle of common law, ordinance, code, edict, decree, proclamation, treaty, convention, rule, regulation, directive, requirement, writ, injunction, settlement, Permit or Order that is or has been issued, enacted, adopted, passed, approved, promulgated, made, implemented or otherwise put into effect by or under the authority of any Governmental Authority.

(o) The Company has an authorized capitalization as set forth under the caption “Description of Securities” in the Prospectus and all of the issued shares of capital stock of the Company have been duly and validly authorized and issued, are fully paid and non-assessable and have been issued in compliance with federal and state securities laws. None of the outstanding shares of the Company capital stock were issued in violation of any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase securities of the Company. There are no authorized or outstanding options, warrants, preemptive rights, rights of first refusal or other rights to purchase, or equity or debt securities convertible into or exchangeable or exercisable for, any capital stock of the Company or any of its subsidiaries other than those accurately described in the Registration Statement. The description of the Company’s stock option, stock bonus and other stock plans or arrangements, and the options or other rights granted thereunder, set forth in the Registration Statement accurately and fairly presents in all material respects the information required to be shown with respect to such plans, arrangements, options and rights.

(p) The Company and its Subsidiaries own or lease all such assets or properties as are necessary to the conduct of its business as presently operated and as proposed to be operated as described in the Registration and the Prospectus. The Company or its Subsidiaries have good and marketable title in fee simple to all assets or real property and good and marketable title to all personal property owned by them, in each case free and clear of any Lien, except for such (i) Liens as are described in the Registration Statement and the Prospectus, (ii) Liens as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company and the Subsidiaries

and (iii) Liens for the payment of federal, state or other taxes, for which appropriate reserves have been made in accordance with GAAP, and the payment of which is neither delinquent nor subject to penalties. Any assets or real property and buildings held under lease or sublease by the Company or any Subsidiary is held under valid, subsisting and enforceable leases with such exceptions as are not material to, and do not interfere with, the use made and proposed to be made of such property and buildings by the Company or such Subsidiary. Neither the Company nor any Subsidiary has received any notice of any material claim adverse to its ownership of any real or personal property or of any material claim against the continued possession of any real property, whether owned or held under lease or sublease by the Company or any Subsidiary.

(q) The Company and each of its Subsidiaries have all material consents, approvals, authorizations, orders, registrations, qualifications, licenses, filings and permits of, with and from all judicial, regulatory and other Governmental Authorities and all third parties, foreign and domestic, including, without limitation, those administered by the U.S. Food and Drug Administration of the U.S. Department of Health and Human Services (“FDA”), the European Medicines Agency (“EMA”), or by any foreign, federal, state or local governmental or regulatory authority performing functions similar to those performed by the FDA or EMA (collectively, with the Licensing Requirements described below, the “Consents”), to own, lease and operate their properties and conduct their businesses as presently being conducted and as disclosed in the Registration Statement and the Prospectus, and, to the Company’s knowledge, each such Consent is valid and in full force and effect. The Company has not received notice of any investigation or proceedings which results in or, if decided adversely to the Company, would reasonably be expected to result in the revocation of any Consent or would reasonably be expected to have a Material Adverse Effect. No Consent contains a materially burdensome restriction not adequately disclosed in the Registration Statement and the Prospectus. To the Company’s knowledge, the Company and its Subsidiaries are in compliance with all such Consents, and all such Consents are valid and in full force and effect. Neither the Company nor any Subsidiary has received notification of any revocation, suspension, termination or invalidation (or proceedings related thereto) of any such Consent and, to the Company’s knowledge after reasonable investigation, no event has occurred that allows or results in, or after notice or lapse of time or both would allow or result in, revocation, suspension, termination or invalidation (or proceedings related thereto) of any such Consent and the Company has no reason to believe that any such Consent will not be renewed (if renewal is required).

(r) The execution, delivery and performance of this Agreement by the Company, the issuance of the Rights in accordance with the terms of the Offer Documents, the issuance of Rights Shares and the Rights Warrants in accordance with the terms of the Rights Offering, and the consummation by the Company of the transactions contemplated hereby will not conflict with or result in a breach or violation of any of the terms or provisions of, or constitute a default under, any material indenture, mortgage, deed of trust, loan agreement or other material agreement (including any agreement with any broker dealer, placement agent, financial advisor or similar person or entity) or instrument to which the Company or any of its Subsidiaries or any of its Affiliates is a party or by which the Company or any of its Subsidiaries or its Affiliates is bound or to which any of the properties or assets of the Company or any of its Subsidiaries or its Affiliates is subject, nor will such actions result in any violation of the provisions of the charter or by-laws of the Company or any of its Subsidiaries or any statute or

any order, rule or regulation of any Governmental Authority, except where such violation would not reasonably be expected to have a Material Adverse Effect; and except for the registration of the Rights, Rights Shares and the Rights Warrants under the Securities Act and such consents, approvals, authorizations, registrations or qualifications as may be required under the Exchange Act and applicable state securities laws in connection with the distribution of the Rights and the sale of the Rights Shares and Rights Warrants by the Company, no consent, approval, authorization or order of, or filing or registration with, any such court or Governmental Authority is required for the execution, delivery and performance of this Agreement by the Company and the consummation by it of the transactions contemplated hereby.

(s) Except as otherwise set forth in the Registration Statement and the Prospectus, there are no contracts, agreements or understandings between the Company and any Person granting such Person the right to require the Company to file a registration statement under the Securities Act with respect to any securities of the Company owned or to be owned by such Person or to require the Company to include such securities in the securities registered pursuant to the Registration Statement or in any securities being registered pursuant to any other registration statement filed by the Company under the Securities Act. No holder of any security of the Company has any rights of rescission of similar rights with respect to such securities held by them.

(t) Neither the Company nor any of its Subsidiaries has sustained, since the date of the latest balance sheet included in the Prospectus or after such date and as disclosed in the Prospectus, any material loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree; and, since such date or after such date and as disclosed in the Prospectus, there has not been any change in the capital stock or long-term debt of the Company or any of its Subsidiaries or any material adverse change, or any development involving a prospective material adverse change, in or affecting the general affairs, management, financial position, stockholders' equity, results of operations or prospects (as such prospects are disclosed or described in the Prospectus) of the Company and its Subsidiaries (a "**Material Adverse Change**"). Since the date of the latest balance sheet presented in the Prospectus, the Company has not incurred or undertaken any liabilities or obligations, whether direct or indirect, liquidated or contingent, matured or unmatured, or entered into any transactions, including any acquisition or disposition of any business or asset, which are material to the Company, except for liabilities, obligations and transactions which are disclosed in the Registration Statement, any Preliminary Prospectus and the Prospectus.

(u) BDO USA LLP ("**BDO**"), whose reports relating to the Company are included in the Registration Statement, are independent public accountants as required by the Securities Act, the Exchange Act, the Rules and Regulations and the rules and regulations promulgated by the Public Company Accounting Oversight Board (the "**PCAOB**"). BDO is duly registered and in good standing with the PCAOB. BDO has not, during the periods covered by the financial statements included in the Registration Statement, the Preliminary Prospectus and the Prospectus, provided to the Company any non-audit services, as such term is used in Section 10A(g) of the Exchange Act.

(v) The financial statements, including the notes thereto, and any supporting schedules included in the Registration Statement, any Preliminary Prospectus and the Prospectus present fairly, in all material respects, the financial position as of the dates indicated and the cash flows and results of operations for the periods specified of the Company. Except as otherwise stated in the Registration Statement, any Preliminary Prospectus and the Prospectus, said financial statements have been prepared in conformity with United States generally accepted accounting principles applied on a consistent basis throughout the periods involved. Any supporting schedules included in the Registration Statement, any Preliminary Prospectus and the Prospectus present fairly, in all material respects, the information required to be stated therein. No other financial statements or supporting schedules are required to be included or incorporated by reference in the Registration Statement. The other financial and statistical information included in the Registration Statement, any Preliminary Prospectus and the Prospectus present fairly, in all material respects, the information included therein and have been prepared on a basis consistent with that of the financial statements that are included in the Registration Statement, such Preliminary Prospectus and the Prospectus and the books and records of the respective entities presented therein.

(w) There are no pro forma or as adjusted financial statements which are required to be included in the Registration Statement, any Preliminary Prospectus and the Prospectus in accordance with Regulation S-X under the Securities Act which have not been included as so required. The pro forma and/or as adjusted financial information included in the Registration Statement, any Preliminary Prospectus and the Prospectus has been properly compiled and prepared in accordance with the applicable requirements of the Securities Act and the Rules and Regulations and include all adjustments necessary to present fairly, in all material respects, in accordance with generally accepted accounting principles the pro forma and as adjusted financial position of the respective entity or entities presented therein at the respective dates indicated and their cash flows and the results of operations for the respective periods specified. The assumptions used in preparing the pro forma and as adjusted financial information included in the Registration Statement, any Preliminary Prospectus and the Prospectus provide a reasonable basis for presenting the significant effects directly attributable to the transactions or events described therein. The related pro forma and pro forma as adjusted adjustments give appropriate effect to those assumptions; and the pro forma and pro forma as adjusted financial information reflect the proper application of those adjustments to the corresponding historical financial statement amounts.

(x) The statistical, industry-related and market-related data included in the Registration Statement, any Preliminary Prospectus and the Prospectus are based on or derived from sources which the Company reasonably believes are reliable and accurate, and such data agree with the sources from which they are derived. All required third party consents have been obtained in order for such data to be included in the Registration Statement, any Preliminary Prospectus and the Prospectus.

(y) Except as disclosed in the Registration Statement and the Prospectus, the Company maintains a system of internal accounting and other controls sufficient to provide reasonable assurances that: (i) transactions are executed in accordance with management's general or specific authorizations, (ii) transactions are recorded as necessary to permit

preparation of financial statements in conformity with United States generally accepted accounting principles and to maintain accountability for assets, (iii) access to assets is permitted only in accordance with management's general or specific authorization, and (iv) the recorded accounting for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

(z) The Company's Board of Directors has validly appointed an audit committee and compensation committee whose composition satisfies the requirements of the rules and regulations of the Commission and NASDAQ and the Company's Board of Directors and/or audit committee and the compensation committee has each adopted a charter and such charters are in full force and effect as of the date hereof. Neither the Company's Board of Directors nor the audit committee thereof has been informed, nor is any director of the Company aware, of: (i) except as disclosed in the Registration Statement and the Prospectus, any significant deficiencies or material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; or (ii) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

(aa) The Company is in material compliance with the provisions of the Sarbanes-Oxley Act of 2002, as amended ("**Sarb-Ox**") applicable to the Company, and the rules and regulations promulgated thereunder and related or similar rules and regulations promulgated by any other Governmental Authority or self-regulatory entity or agency, except for violations which, singly or in the aggregate, are disclosed in the Prospectus or would not have a Material Adverse Effect.

(bb) No relationship, direct or indirect, exists between or among any of the Company or any Affiliate of the Company, on the one hand, and any director, officer, shareholder, customer or supplier of the Company or any Affiliate of the Company, on the other hand, which is required by the Securities Act, the Exchange Act or the Rules and Regulations to be described in the Registration Statement or the Prospectus which is not so described as required. Except as disclosed in the Registration Statement and the Prospectus, there are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees of indebtedness by the Company to or for the benefit of any of the officers or directors of the Company or any of their respective family members. The Company has not, in violation of Sarb-Ox, directly or indirectly, including through any Affiliate of the Company (other than as permitted under the Sarb-Ox for depositary institutions), extended or maintained credit, arranged for the extension of credit, or renewed an extension of credit, in the form of a personal loan to or for any director or executive officer of the Company.

(cc) Except as described in the Prospectus, there are no legal or governmental proceedings pending to which the Company or any of its Subsidiaries is a party or of which any property or asset of the Company or any of its Subsidiaries is the subject, including without limitation any proceeding before the FDA, the EMEA or comparable federal, state, local or foreign governmental bodies (it being understood that the interaction between the Company and the FDA, the EMEA and such comparable governmental bodies relating to the clinical

development and product approval process shall not be deemed proceedings for purposes of this representation), which, if determined adversely to the Company or any of its Subsidiaries, are reasonably likely to have a Material Adverse Effect; and to the Company's knowledge, except as disclosed in the Prospectus, no such proceedings are threatened or contemplated by Governmental Authorities or threatened by others. The Company has not received any written cure notice or show cause notice regarding performance of a contract or agreement or any written or oral notice of, any claim, action, litigation, inquiry, proceeding (arbitral, administrative, legal or otherwise, including any informal proceeding), cause of action, audit, suit, settlement, stipulation, hearing, investigation, charge, complaint, demand or similar matter, for, or assertion of, a condition of default, breach of contract, or material violation of applicable Law, in connection with a contract or agreement.

(dd) The Company and its Subsidiaries have filed all necessary federal, state and foreign income and franchise tax returns and have paid all taxes required to be paid by any of them and, if due and payable, any related or similar assessment, fine or penalty levied against any of them, except where the failure to make such filings or make such payments, either individually or in the aggregate, could not reasonably be expected to have, a Material Adverse Effect. The Company has made adequate charges, accruals and reserves in its financial statements above in respect of all federal, state and foreign income and franchise taxes for all periods as to which the tax liability of the Company or any of its Subsidiaries has not been finally determined.

(ee) Each of the Company and its Subsidiaries maintains insurance of the types and in the amounts which the Company believes to be reasonable and sufficient for a company of its size operating in the Company's industry, including, but not limited to: (i) directors' and officers' insurance (including insurance covering the Company, its directors and officers for liabilities or losses arising in connection with the Rights Offering, including, without limitation, liabilities or losses arising under the Securities Act, the Exchange Act, the Rules and Regulations and applicable foreign securities laws), (ii) insurance covering real and personal property owned or leased against theft, damage, destruction, acts of vandalism and all other risks customarily insured against, (iii) business interruption insurance and (iv) product-related or clinical trial-related insurance. There are no material claims by the Company or any of its Subsidiaries under any policy or instrument described in this paragraph as to which any insurance company is denying liability or defending under a reservation of rights clause. All of the insurance policies described in this paragraph are in full force and effect. Neither the Company nor any of its Subsidiaries has been refused any insurance coverage sought or applied for, and the Company has no reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not have a Material Adverse Effect.

(ff) Intellectual Property.

(i) The Company owns, licenses or possess the right to use sufficient trademarks, trade names, patents, patent rights, copyrights, domain names, licenses, approvals, trade secrets, inventions, technology, know-how and other similar rights (collectively, "**Intellectual Property Rights**") as are reasonably necessary or material to conduct its business

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as now conducted and contemplated to be conducted, each as described in the Registration Statement, any Preliminary Prospectus and the Prospectus. To the Company's knowledge, all Intellectual Property Rights are valid and enforceable.

(ii) Except as set forth in the Registration Statement, any Preliminary Prospectus and the Prospectus: (A) there is no actual, pending or, to the Company's knowledge, threatened action, suit, proceeding, or claim by others challenging the rights of the Company and its Subsidiaries and Affiliates in or to any Intellectual Property Rights, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (B) there is no actual, pending or, to the Company's knowledge, threatened action, suit, proceeding, or claim by others that the Company or its Subsidiaries or Affiliates infringes, misappropriates, or otherwise violates any Intellectual Property Rights of others, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (C) there is no actual, pending or, to the Company's knowledge, threatened action, suit, proceeding, or claim by others challenging the validity or scope of any such Intellectual Property Rights owned by the Company or its Subsidiaries or Affiliates and the Company is unaware of any facts which would form a reasonable basis for any such claim; (D) to the Company's knowledge, the operation of the business of the Company, its Subsidiaries and its Affiliates as now conducted and in connection with the development and commercialization of its technology described in the Registration Statement, any Preliminary Prospectus and the Prospectus does not infringe any claim of any patent or published patent application nor would such infringement, misappropriation or violation arise upon the commercialization of any product or service described in the Registration Statement, any Preliminary Prospectus and the Prospectus as under development; (E) to the Company's knowledge, there is no "prior art" of which the Company is aware that may render any patent owned or licensed by the Company invalid or any patent application owned or licensed by the Company or its Subsidiaries or Affiliates unpatentable which has not been disclosed to the applicable government patent office; and (F) the patents, trademarks, and copyrights maintained by the Company or its Subsidiaries or Affiliates are in full force and in effect, and none of such patents, trademarks and copyrights have been adjudged invalid or unenforceable in whole or in part. Neither the Company nor its Subsidiaries or Affiliates is a party to or bound by any options, licenses or agreements with respect to the Intellectual Property Rights of any other Person that are required to be set forth in the Registration Statement, any Preliminary Prospectus and Prospectus and are not described therein in all material respects.

(iii) The Company has duly and properly filed or caused to be filed with the U. S. Patent and Trademark Office (the "**PTO**") and applicable foreign and international patent authorities all patent applications owned by the Company, its Subsidiaries or Affiliates (the "**Company Patent Applications**"). The product candidates described in the Registration Statement, any Preliminary Prospectus and the Prospectus as under development by the Company fall within the scope of the claims of one or more patents or patent applications owned by, or exclusively licensed to, the Company. The Company has complied in all material respects with the PTO's duty of candor and disclosure for the Company Patent Applications and has made no material misrepresentation in the Company Patent Applications. The Company Patent Applications disclose patentable subject matters, and the Company has not been notified of any inventorship challenges nor has any interference been declared or provoked nor is any material fact known by the Company that would preclude the issuance of patents with respect to the

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Company Patent Applications or would render such patents invalid or unenforceable. No third party possesses rights to the Company's Intellectual Property Rights that, if exercised, could enable such party to develop products competitive to those the Company intends to develop as described in the Prospectus.

(iv) Other than as disclosed in the Registration Statement, any Preliminary Prospectus and Prospectus, to the Company's knowledge, there are no rulemaking or similar proceedings before the FDA, PTO or applicable foreign and international patent authorities, which affect or involve the Company or any of the processes or technologies that the Company has developed, is developing or proposes to develop or uses or proposes to use which, if the subject of an action unfavorable to the Company, would result in a Material Adverse Change.

(v) From and after January 1, 2015, the Company has obtained legally binding written agreements from all officers, employees and third parties with whom the Company has shared confidential proprietary information: (A) of the Company, or (B) received from others which the Company is obligated to treat as confidential, which agreements require such employees and third parties to keep such information confidential. The Company has taken all necessary actions to obtain ownership of all works of authorship and inventions made by its employees, consultants and contractors during the time they were employed by or under contract with the Company and which relate to the Company's business as currently conducted. All founders and current key employees have signed confidentiality and invention assignment agreements with the Company.

(vi) The Company possesses valid and current licenses, registrations, certificates, permits and other authorizations issued by the appropriate foreign, federal, state or local regulatory authorities as necessary to conduct its respective businesses (collectively, the "**Licensing Requirements**") and are enforceable by or against the parties thereto in accordance to its terms, except where the failure of a Licensing Requirement would not have a Material Adverse Effect. The Company has not received any notice of proceedings relating to the revocation or modification of, or noncompliance with, any such license, certificate, permit or authorization, which could result in a Material Adverse Effect. No action, suit or proceeding, other than routine audits, by or before any court or Governmental Authority or any arbitrator involving the Company with respect to the removal, revocation, suspension or other termination of the authority to operate under the Licensing Requirements is pending or, to the Company's knowledge, threatened. The Company does not believe that any pending audit is reasonably likely to result in the removal, revocation, suspension or other termination of the Company's authority to operate under the Licensing Requirements.

(vii) The consummation of the transactions contemplated by this Agreement will not result in the loss or impairment of or payment of any additional amounts with respect to, nor require the consent of any other person in respect of, the Company's right to own, use, or hold for use any of the Intellectual Property Rights as owned, used or held for use in the conduct of the business as currently conducted.

(viii) To the Company's knowledge, the Company has at all times complied with all applicable laws relating to privacy, data protection, and the collection and use of personal information collected, used, or held for use by the Company in the conduct of the Company's business. No claims have been asserted or threatened against the Company alleging a violation of any person's privacy or personal information or data rights and the consummation of the transactions contemplated hereby will not breach or otherwise cause any violation of any law related to privacy, data protection, or the collection and use of personal information collected, used, or held for use by the Company in the conduct of the Company's business, except such claims as would not reasonably be likely to result in a Material Adverse Effect. The Company takes reasonable measures to ensure that such information is protected against unauthorized access, use, modification, or other misuse.

(gg) Except as described in any Preliminary Prospectus, the Prospectus and the Registration Statement, the Company: (i) is and at all times has been in compliance with all statutes, rules, regulations or guidance applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product manufactured, distributed or sold by the Company or any component thereof (such statutes, rules, regulations or guidance, collectively, "**Applicable Laws**"); (ii) is, and to the Company's knowledge, the Company's manufacturing facility, after reasonable investigation, and operations of its suppliers are in compliance with all applicable federal, state, local and foreign laws, regulations, orders and decrees governing its business as prescribed by the FDA, the EMEA or any other applicable federal, state or foreign governmental authority agencies or bodies engaged in the regulation of pharmaceuticals or biohazardous substances or materials, (iii) has not received any notice of adverse finding, warning letter, untitled letter or other correspondence or notice from the FDA, the EMEA or any other Governmental Authority alleging or asserting noncompliance with any Applicable Laws or any licenses, certificates, approvals, clearances, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws ("**Authorizations**"); (iv) possesses all Authorizations and such Authorizations are valid and in full force and effect and are not in violation of any term of any such Authorizations; (v) has not received notice of any claim, suit, proceeding, hearing, enforcement, audit, investigation, arbitration or other action from any Governmental Authority or third party alleging that any product operation or activity is in violation of any Applicable Laws or Authorizations and has no knowledge that any such Governmental Authority or third party is considering any such claim, suit, proceeding, hearing, enforcement, audit, investigation, arbitration or other action; (vi) has not received notice that any Governmental Authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any Authorizations and has no knowledge that any such Governmental Authority is considering such action; and (vii) has filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and correct in all material respects on the date filed (or were corrected or supplemented by a subsequent submission), except, in the case of each of clauses (i), (ii), (iii) (iv), (vi) and (vii) for any default, violation or event that would not, individually or in the aggregate, have or reasonably be expected to have a Material Adverse Effect.

(hh) The studies and tests conducted or sponsored by or on behalf of the Company (the “Studies and Tests”) that are described or referred to in any Preliminary Prospectus, the Prospectus and the Registration Statement were and, if still pending, are being conducted in accordance with experimental protocols, procedures and controls pursuant to accepted professional scientific standards and all Applicable Laws and Authorizations; the descriptions of the results of such studies, tests and trials contained in any Preliminary Prospectus, the Prospectus and the Registration Statement are accurate and complete in all material respects and fairly present the data derived from such studies, tests and trials. The Company is not aware of any studies or tests, the results of which the Company believes reasonably call into question the study or test described or referred to in any Preliminary Prospectus, the Prospectus and the Registration Statement when viewed in the context in which such results are described. The Company has not received any notices or correspondence with the FDA, the EMEA or any foreign, state or local governmental body exercising comparable authority suggesting or requiring a clinical hold, termination, suspension or material modification of the Studies and Tests and that such clinical hold, termination, suspension or material modification would reasonably be expected to have a Material Adverse Effect, and, to the Company’s knowledge after reasonable investigation, there are no reasonable grounds for the same. The Company has obtained (or caused to be obtained) informed consent by or on behalf of each human subject who participated in Studies and Tests. In using or disclosing patient information received by the Company in connection with the Studies and Tests, the Company has complied in all material respects with all applicable laws and regulatory rules, including, without limitation, the Health Insurance Portability and Accountability Act of 1996 and the rules and regulations thereunder. To the Company’s knowledge after reasonable investigation, none of the Studies and Tests involved any investigator who has been disqualified as a clinical investigator or has been found by the FDA to have engaged in scientific misconduct or debarred or excluded from participation in any governmental health care payment program.

(ii) Neither the Company nor, to the Company’s knowledge, any of the Company’s directors, officers or employees has violated: (i) the Bank Secrecy Act, as amended, (ii) the Money Laundering Control Act of 1986, as amended, (iii) the Foreign Corrupt Practices Act, or (iv) the Uniting and Strengthening of America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT ACT) Act of 2001, and/or the rules and regulations promulgated under any such law, or any successor law, except for such violations which, singly or in the aggregate, would not have a Material Adverse Effect.

(jj) Neither the Company nor any of its Affiliates has, prior to the date hereof, made any offer or sale of any securities which are required to be “integrated” pursuant to the Securities Act or the Rules and Regulations with the issuance or exercise of the Rights or the sale of the Rights Shares or Rights Warrants pursuant to the Registration Statement.

(kk) Transactions Affecting Disclosure to FINRA.

(i) Except as described in the Registration Statement and the Prospectus, there are no claims, payments, arrangements, agreements or understandings relating to the payment of a finder’s, consulting or origination fee or other compensation by the Company with respect to the issuance or exercise of the Rights or the sale of the Rights Shares or Rights

Warrants or any other arrangements, agreements or understandings of the Company or, to the Company's knowledge, the Company's officers, directors and employees or Affiliates that may affect the Dealer-Manager's compensation, as determined by the Financial Industry Regulatory Authority, Inc. ("FINRA").

(ii) Except as previously disclosed by the Company to the Dealer-Manager in writing, no officer, director, or beneficial owner of 5% or more of any class of the Company's securities (whether debt or equity, registered or unregistered, regardless of the time acquired or the source from which derived) or any other Affiliate is a member or a Person associated, or affiliated with a member of FINRA.

(iii) No proceeds from the exercise of the Rights will be paid to any FINRA member, or any Persons associated or affiliated with a member of FINRA, except as specifically contemplated herein.

(iv) Except as previously disclosed by the Company to the Dealer-Manager, no Person to whom securities of the Company have been privately issued within the 180-day period prior to the initial filing date of the Registration Statement has any relationship or affiliation or association with any member of FINRA.

(ll) There are no contracts, agreements or understandings between the Company and any Person that would give rise to a valid claim against the Company or the Dealer-Manager for a brokerage commission, finder's fee or other like payment in connection with the transactions contemplated by this Agreement. Other than the Dealer-Manager, the Company has not employed any brokers, dealers or underwriters in connection with solicitation of exercise of Rights in the Rights Offering, and except provided for in Sections 6 and 7 hereof, no other commissions, fees or discounts will be paid by the Company or otherwise in connection with the Rights Offering.

(mm) The Company and its Subsidiaries have at all times operated their businesses in material compliance with all Environmental Laws, and no material expenditures are or will be required in order to comply therewith. The Company has not received any notice or communication that relates to or alleges any actual or potential violation or failure to comply with any Environmental Laws that will result in a Material Adverse Effect. As used herein, the term "**Environmental Laws**" means all applicable laws and regulations, including any licensing, permits or reporting requirements, and any action by a Governmental Authority pertaining to the protection of the environment, protection of public health, protection of worker health and safety, or the handling of hazardous materials, including without limitation, the Clean Air Act, 42 U.S.C. § 7401, et seq., the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, et seq., the Federal Water Pollution Control Act, 33 U.S.C. § 1321, et seq., the Hazardous Materials Transportation Act, 49 U.S.C. § 1801, et seq., the Resource Conservation and Recovery Act, 42 U.S.C. § 690-1, et seq., and the Toxic Substances Control Act, 15 U.S.C. § 2601, et seq.

(nn) Except as set forth in the Registration Statement, any Preliminary Prospectus or the Prospectus, the Company is not a party to an "employee benefit plan," as

defined in Section 3(3) of the Employee Retirement Income Security Act of 1974 (“**ERISA**”) which: (i) is subject to any provision of ERISA and (ii) is or was at any time maintained, administered or contributed to by the Company and covers any employee or former employee of the Company or any ERISA Affiliate (as defined hereafter). These plans are referred to collectively herein as the “**Employee Plans**.” For purposes of this paragraph, “**ERISA Affiliate**” of any Person means any other person or entity which, together with that person or entity, could be treated as a single employer under Section 414(m) of the Internal Revenue Code of 1986, as amended (the “**Code**”), or is an “affiliate,” whether or not incorporated, as defined in Section 407(d)(7) of ERISA, of the Person.

(oo) Each employment, severance or other similar arrangement or policy and each material plan or arrangement providing for insurance coverage (including any self-insured arrangements), workers’ compensation, disability benefits, severance benefits, supplemental unemployment benefits, vacation benefits, retirement benefits or for deferred compensation, profit-sharing, bonuses, stock options, stock appreciation or other forms of incentive compensation, or post-retirement insurance, compensation or benefits to which the Company or any Subsidiary is a party and which : (i) is not an Employee Plan, (ii) is entered into, maintained or contributed to, as the case may be, by the Company or any of their respective ERISA Affiliates, and (iii) covers any employee or former employee of the Company or any of their respective ERISA Affiliates (such contracts, plans and arrangements being referred to collectively in this Agreement as the “**Benefit Arrangements**”) is fully and accurately disclosed in the Registration Statement to the extent it is material and required to be disclosed by the Securities Act and the Rules and Regulations and has been maintained in substantial compliance with its terms and with requirements prescribed by any and all statutes, orders, rules and regulations that are applicable to that Benefit Arrangement.

(pp) Except as set forth in the Registration Statement, any Preliminary Prospectus or the Prospectus, there is no material liability in respect of post-retirement health and medical benefits for retired employees of the Company or any of their respective ERISA Affiliates other than medical benefits required to be continued under applicable law, determined using assumptions that are reasonable in the aggregate, over the fair market value of any fund, reserve or other assets segregated for the purpose of satisfying such liability (including for such purposes any fund established pursuant to Section 401(h) of the Code). With respect to any of the Company’s Employee Plans which are “group health plans” under Section 4980B of the Code and Section 607(1) of ERISA, there has been material compliance with all requirements imposed there under such that the Company or their respective ERISA Affiliates have no (and will not incur any) loss, assessment, tax penalty, or other sanction with respect to any such plan.

(qq) The execution of this Agreement and consummation of the Rights Offering does not constitute a triggering event under any Employee Plan or any other employment contract, whether or not legally enforceable, which (either alone or upon the occurrence of any additional or subsequent event) will or may result in any payment (of severance pay or otherwise), acceleration, increase in vesting, or increase in benefits to any current or former participant, employee or director of the Company.

(rr) No “prohibited transaction” (as defined in either Section 406 of the ERISA or Section 4975 of Code), “accumulated funding deficiency” (as defined in Section 302 of ERISA) or other event of the kind described in Section 4043(b) of ERISA (other than events with respect to which the 30-day notice requirement under Section 4043 of ERISA has been waived) has occurred with respect to any employee benefit plan for which the Company would have any liability; each employee benefit plan of the Company is in compliance in all material respects with applicable law, including (without limitation) ERISA and the Code; the Company has not incurred and does not expect to incur liability under Title IV of ERISA with respect to the termination of, or withdrawal from any “pension plan”; and each employee benefit plan of the Company that is intended to be qualified under Section 401(a) of the Code is so qualified and nothing has occurred, whether by action or by failure to act, which could cause the loss of such qualification.

(ss) Neither the Company nor, to the Company’s knowledge, any of the Company’s officers, directors, employees or agents has at any time during the last five (5) years: (i) made any unlawful contribution to any candidate for foreign office, or failed to disclose fully any contribution in violation of law; or (ii) made any payment to any federal or state governmental officer or official, or other Person charged with similar public or quasi-public duties, other than payments that are not prohibited by the laws of the United States of any jurisdiction thereof.

(tt) The Company has not and will not, directly or indirectly through any officer, director or Affiliate of the Company or through any other Person: (i) taken any action designed to cause or to result in, or that has constituted or which might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the issuance of the Rights or the sale or resale of the Rights Shares, Rights Warrants or shares of Common Stock issuable upon conversion or exercise, as applicable, thereof, (ii) since the filing of the Registration Statement sold, bid for or purchased, or paid any Person (other than the Dealer-Manager) any compensation for soliciting exercises or purchases of, the Rights or the Rights Shares or Rights Warrants; and (iii) until the later of the expiration of the Rights or the completion of the distribution (within the meaning of Regulation M under the Exchange Act) of the Rights Shares and Rights Warrants, sell, bid for or purchase, apply or agree to pay to any Person (other than the Dealer-Manager) any compensation for soliciting another to purchase any other securities of the Company (except for the solicitation of the exercises of Rights pursuant to this Agreement). The foregoing shall not apply to the offer, sale, agreement to sell or delivery with respect to: (i) Rights Shares and Rights Warrants offered and sold upon exercise of the Rights, as described in the Prospectus; or (ii) any shares of Common Stock sold pursuant to the Company’s employee benefit plans.

(uu) As used in this Agreement, references to matters being “material” with respect to the Company or any matter relating to the Company shall mean a material item, event, change, condition, status or effect related to the condition (financial or otherwise), properties, assets (including intangible assets), liabilities, business, prospects (as such prospects are disclosed or described in any Preliminary Prospectus or the Prospectus), operations or results of operations of the Company and its Subsidiaries, taken as a whole.

(vv) As used in this Agreement, the term “Company’s knowledge” (or similar language) shall mean the knowledge of the officers of the Company who are named in the Prospectus, with the assumption that such officers shall have made reasonable and diligent inquiry of the matters presented (with reference to what is customary and prudent for the applicable individuals in connection with the discharge by the applicable individuals of their duties as officers or directors of the Company).

(ww) Any certificate signed by or on behalf of the Company and delivered to the Dealer-Manager or to Ellenoff Grossman & Schole LLP, counsel for the Dealer-Manager, shall be deemed to be a representation and warranty by the Company to the Dealer-Manager as to the matters covered thereby.

6. Compensation of the Dealer-Manager. In consideration of the services rendered and to be rendered by the Dealer-Manager to the Company in connection with the Rights Offering, the Company agrees to pay the Dealer-Manager the following:

- (a) to the Dealer-Manager, a cash fee equal to 6.0% of the total gross proceeds generated from the Rights Offering;
- (b) the Dealer-Manager shall receive an accountable expense allowance equal to \$20,000 (such accountable expense allowance to be in the form of the advance in the amount of \$20,000 previously paid to Maxim, the “**Advance**”). Any portion of the Advance not offset by actual expenses will be returned to the Company.
- (c) The Company further agrees that, in addition to the expenses payable pursuant to Section 6(b), on the Closing Date it will pay to the Dealer-Manager a non-accountable expense allowance equal to \$30,000.
- (d) a warrant (the “**Dealer-Manager Warrant**”) to purchase a number of shares of Common Stock equal to four percent (4%) of the total number of shares of Common Stock issuable upon exercise of the Rights Shares sold in the Rights Offering. The Dealer-Manager Warrant shall not be exercisable for six (6) months from the Effective Date and shall expire five (5) years after such Effective Date. The Dealer-Manager Warrant shall be exercisable at a price per share of \$[] which is equal to 110% of the conversion price of the Rights Shares. The Dealer-Manager Warrant shall not be redeemable. The Dealer-Manager Warrant shall not be sold, transferred, assigned or hypothecated for a period of six (6) months from the Effective Date, except that it may be assigned, in whole or in part, to any successor, officer, or partner of the Dealer-Manager (or to officers or partners of any such successor or member). The Dealer-Manager Warrant may be exercised as to all or a lesser number of shares of Common Stock and shall contain unlimited “piggyback” registration rights for a period of five (5) years after the Effective Date at the Company’s expense.

The compensation set forth in this Section 6 of this Agreement shall be paid to the Dealer-Manager within two days of the Closing. Except as provided in Section 6(b) or Section 11, the Dealer-Manager shall be responsible for its own expenses.

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7. Expenses. The Company shall pay or cause to be paid:

- (a) all of its expenses (including any taxes) incurred in connection with the Rights Offering (including “road show” expenses) and the preparation, issuance, execution, authentication and delivery of the Rights and the Rights Shares and Rights Warrants;
- (b) all fees, expenses and disbursements of the Company’s accountants, legal counsel and other third party advisors (including any public relations or solicitation firms hired by the Company);
- (c) all fees and expenses of the Subscription Agent and the Information Agent set forth in the Agent Agreement;
- (d) all fees, expenses and disbursements (including, without limitation, fees and expenses of the Company’s accountants and counsel) in connection with the preparation, printing, filing, delivery and shipping of the Registration Statement (including the financial statements therein and all amendments and exhibits thereto), each Preliminary Prospectus, the Prospectus, the other Offer Documents and any amendments or supplements of the foregoing;
- (e) all fees, expenses and disbursements relating to the registration or qualification of the Rights and the Rights Shares under the “blue sky” securities laws of any states or other jurisdictions and all fees and expenses associated with the preparation of the preliminary and final forms of Blue Sky Memoranda;
- (f) all filing fees of the Commission;
- (g) all filing fees relating to the review of the Rights Offering by FINRA;
- (h) any applicable listing or other fees;
- (i) the cost of printing certificates representing the Rights and the Rights Shares and Rights Warrants;
- (j) all advertising charges pertaining to the Rights Offering agreed to by the Company;
- (k) the cost and charges of the Company’s transfer agent(s) or registrar(s) agreed to by the Company; and
- (l) all other costs and expenses incident to the performance of its obligations hereunder for which provision is not otherwise made in this Section.

The Company shall perform its obligations set forth in this Section 7 whether or not the Rights Offering commences or any Rights are exercised pursuant to the Rights Offering.

8. Shareholder Lists; Subscription Agent.

(a) The Company will cause the Dealer-Manager to be provided with any cards or lists showing the names and addresses of, and the number of shares of Common Stock held by, the holders of shares of Common Stock as of a recent date and will use its best efforts to cause the Dealer-Manager to be advised from time to time during the period, as the Dealer-Manager shall request, of the Rights Offering as to any transfers of record of shares of Common Stock.

(b) The Company will arrange for the Subscription Agent to advise the Dealer-Manager daily as to such matters as they may reasonably request, including the number of Rights which have been exercised pursuant to the Rights Offering.

9. Covenants. The Company covenants and agrees with the Dealer-Manager:

(a) To use its best efforts to cause the Registration Statement and any amendments thereto to become effective, provided that the Company shall have the right to discontinue the Rights Offering and withdraw the Registration Statement if the Company's Board of Directors determines in good faith that it is no longer in the best interests of the Company and its stockholders; to advise the Dealer-Manager, promptly after it receives notice thereof, of the time when the Registration Statement, or any amendment thereto, becomes effective or any supplement to the Prospectus or any amended Prospectus has been filed and to furnish the Dealer-Manager with copies thereof; to prepare a Prospectus in a form approved by the Dealer-Manager (such approval not to be unreasonably withheld or delayed) and to file such Prospectus pursuant to Rule 424(b) under the Securities Act within the time prescribed by such rule; to advise the Dealer-Manager, promptly after it receives notice thereof, of the issuance by the Commission of any stop order or of any order preventing or suspending the use of any Preliminary Prospectus or the Prospectus, of the suspension of the qualification of the Rights for offering or sale in any jurisdiction, of the initiation or threatening of any proceeding for any such purpose, or of any request by the Commission for the amending or supplementing of the Registration Statement or the Prospectus or for additional information; and, in the event of the issuance of any stop order or of any order preventing or suspending the use of any Preliminary Prospectus or the Prospectus or suspending any such qualification, to use promptly its reasonable best efforts to obtain its withdrawal;

(b) To deliver promptly to the Dealer-Manager in New York City such number of the following documents as the Dealer-Manager shall reasonably request: (i) conformed copies of the Registration Statement as originally filed with the Commission and each amendment thereto (in each case excluding exhibits other than this Agreement, any other Offer Documents filed as exhibits, the computation of the ratio of earnings to fixed charges and the computation of per share earnings); (ii) each Preliminary Prospectus, the Prospectus and any amended or supplemented Prospectus; and (iii) any document incorporated by reference in the Prospectus (excluding exhibits thereto); and, if the delivery of a prospectus is required at any time during which the Prospectus relating to the Rights or the Rights Shares or Rights Warrants is required to be delivered under the Securities Act and if at such time any events shall have occurred as a result of which the Prospectus as then amended or supplemented would include any untrue statement of a material fact or omit to state any material fact necessary in order to

make the statements therein, in the light of the circumstances under which they were made when such Prospectus is delivered, not misleading, or, if for any other reason it shall be necessary during such period to amend or supplement the Prospectus or to file under the Exchange Act any document incorporated by reference in the Prospectus in order to comply with the Securities Act or the Exchange Act, to notify the Dealer-Manager and, upon its request, to file such document and to prepare and furnish without charge to the Dealer-Manager as many copies as the Dealer-Manager may from time to time reasonably request of an amended or supplemented Prospectus which will correct such statement or omission or effect such compliance;

(c) To file promptly with the Commission any amendment to the Registration Statement or the Prospectus or any supplement to the Prospectus that may, in the judgment of the Company or the Dealer-Manager, be necessary or advisable in connection with the distribution of the Rights or the sale of the Underlying Shares or be requested by the Commission;

(d) Prior to filing with the Commission any: (i) Preliminary Prospectus, (ii) amendment to the Registration Statement, any document incorporated by reference in the Prospectus or (iii) any Prospectus pursuant to Rule 424 of the Rules and Regulations, to furnish a copy thereof to the Dealer-Manager and counsel for the Dealer-Manager and obtain the consent of the Dealer-Manager to the filing (which consent shall not be unreasonably withheld);

(e) Until the completion of the Rights Offering, following the effective date of the Registration Statement, to furnish to the Dealer-Manager copies of all materials not available via EDGAR furnished by the Company to its shareholders and all public reports and all reports and financial statements furnished by the Company to the principal national securities exchange upon which any of the Company's securities may be listed pursuant to requirements of or agreements with such exchange or to the Commission pursuant to the Exchange Act or any rule or regulation of the Commission thereunder;

(f) To qualify or register the Rights and the Rights Shares and Rights Warrants for sale under (or obtain exemptions from the application of) the state securities or blue sky laws of those jurisdictions designated by the Dealer-Manager, to comply with such laws and to continue such qualifications, registrations and exemptions in effect so long as required for the distribution of the Rights and the Rights Shares and Rights Warrants; provided, however, that the Company shall not be required to qualify as a foreign corporation or to take any action that would subject it to general service of process in any such jurisdiction where it is not presently qualified or where it would be subject to taxation as a foreign corporation. The Company will advise the Dealer-Manager promptly of the suspension of the qualification or registration of (or any such exemption relating to) the Rights and the Rights Shares and Rights Warrants for offering, sale or trading in any jurisdiction or any initiation or threat of any proceeding for any such purpose, and in the event of the issuance of any order suspending such qualification, registration or exemption, the Company shall use its best efforts to obtain the withdrawal thereof at the earliest possible moment.

(g) To apply the net proceeds from the exercise of the Rights in the manner described under the caption "Use of Proceeds" in the Prospectus.

(h) Prior to the effective date of the Registration Statement, to apply for the listing of the shares of Common Stock issuable upon conversion of the Rights Shares and exercise of the Rights Warrants on NASDAQ and to use its best efforts to complete that listing, subject only to official notice of issuance (if applicable), prior to the expiration of the Rights Offering.

(i) To take such steps as shall be necessary to ensure that neither the Company nor any Subsidiary shall become an “investment company” within the meaning of such term under the Investment Company Act of 1940 and the rules and regulations of the Commission thereunder.

(j) To advise the Dealer-Manager, directly or through the Subscription Agent, from time to time, as the Dealer-Manager shall request, of the number of Rights Shares and Rights Warrants subscribed for, and arrange for the Subscription Agent to furnish the Dealer-Manager with copies of written reports it furnishes to the Company concerning the Rights Offering;

(k) To commence mailing the Offer Documents to record holders of the Common Stock not later than the second business day following the record date for the Rights Offering, and complete such mailing as soon as practicable;

(l) To reserve and keep available for issue upon the exercise of the Rights such number of authorized but unissued shares of Common Stock as will be sufficient to permit the conversion in full of all Rights Shares and exercise in full of all Rights Warrants issued upon such exercise in full of the Rights, except as otherwise contemplated by the Prospectus; and

(m) To not take, directly or indirectly, any action designed to cause or to result in, or that has constituted or which might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the issuance of the Rights or the sale or resale of the Rights Shares or Rights Warrants.

10. Conditions of Dealer-Manager’s Obligations. The obligations of the Dealer-Manager hereunder are subject to (and the occurrence of any Closing shall be conditioned upon) the accuracy, as of the date hereof and at all times during the Rights Offering, of the representations and warranties of the Company contained herein, to the performance by the Company of its obligations hereunder (in each case in the reasonable opinion of the Dealer-Manager) and to the following additional conditions:

(a) (i) The Registration Statement shall have become effective and the Prospectus shall have been timely filed with the Commission in accordance with the Rules and Regulations; (ii) all post-effective amendments to the Registration Statement shall have become effective; and (iii) no stop order suspending the effectiveness of the Registration Statement or any amendment or supplement thereto shall have been issued and no proceedings for the issuance of any such order shall have been initiated or threatened, and any request of the Commission for additional information (to be included in the Registration Statement or the

Prospectus or otherwise) shall have been disclosed to the Dealer-Manager and complied with to the Dealer-Manager's reasonable satisfaction.

(b) The Dealer-Manager shall not have been advised by the Company or shall have discovered and disclosed to the Company that the Registration Statement or the Prospectus or any amendment or supplement thereto, contains an untrue statement of fact which in the Dealer-Manager's opinion, or in the opinion of counsel to the Dealer-Manager, is material, or omits to state a fact which, in the Dealer-Manager's opinion, or in the opinion of counsel to the Dealer-Manager, is material and is required to be stated therein or is necessary to make the statements therein not misleading.

(c) All corporate proceedings and other legal matters incident to the authorization, form and validity of this Agreement, the Rights, the Rights Shares, the Rights Warrants, the Registration Statement and the Prospectus, and all other legal matters relating to this Agreement and the transactions contemplated hereby shall be reasonably satisfactory in all material respects to counsel for the Dealer-Manager, and the Company shall have furnished to such counsel all documents and information that they may reasonably request to enable them to pass upon such matters.

(d) Concurrently with the execution of this Agreement and at Closing, there shall have been furnished to the Dealer-Manager (i) the signed opinion (addressed to the Dealer-Manager) of Sheppard Mullin Richter & Hampton LLP, counsel for the Company, dated the date hereof and as of such Closing, and (ii) the signed opinion (addressed to the Dealer-Manager) of Cooley, LLP, intellectual property counsel for the Company, dated the date hereof and as of such Closing, each of (i) and (ii) in form and substance satisfactory to counsel for the Dealer-Manager.

(e) Concurrently with the execution of this Agreement and at Closing, there shall have been furnished to the Dealer-Manager the certificate of the Company's Chief Executive Officer with respect to certain regulatory matters dated the date hereof and as of such Closing, and in form and substance satisfactory to counsel for the Dealer-Manager.

(f) Concurrently with the execution of this Agreement and at Closing, the Company shall have furnished to the Dealer-Manager a letter of BDO, addressed to the Dealer-Manager and dated the date hereof and as of such Closing: (i) confirming that they are independent registered public accountants of the Company within the meaning of the Securities Act and are in compliance with the applicable requirements relating to the qualification of accountants under the PCAOB and applicable rules of the Commission, and (ii) stating, as of the date of the letter (or, with respect to matters involving changes or developments since the respective dates as of which specified financial information is given in the Prospectus, as of a date not more than one day prior to the date of the letter), the conclusions and findings of such firm with respect to the financial information and other matters specified by the Dealer-Manager.

(g) The Company shall have furnished to the Dealer-Manager a certificate, dated the date hereof and of such Closing, of its Chief Executive Officer or President and its Chief Financial Officer stating that:

(i) To the best of their knowledge after reasonable investigation, the representations, warranties, covenants and agreements of the Company in Section 5 hereof are true and correct in all material respects;

(ii) The conditions set forth in this Section 10 have been fulfilled;

(iii) Neither the Company nor any of its Subsidiaries has sustained any material loss or interference with its business, whether or not covered by insurance, or from any labor dispute or any legal or governmental proceeding;

(iv) Subsequent to the respective dates as of which information is given in the Registration Statement and the Prospectus, there has not been any Material Adverse Change or any development involving a prospective Material Adverse Change; and

(v) They have carefully examined the Registration Statement and the Prospectus and, in their opinion (A) the Registration Statement and the Prospectus, as of the Effective Date, did not include any untrue statement of a material fact and did not omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading, and (B) since the Effective Date no event has occurred which should have been set forth in a supplement or amendment to the Registration Statement or the Prospectus and has not been.

(h) Neither the Company nor any of its Subsidiaries shall have sustained since the date of the latest audited financial statements included in the Prospectus any Material Adverse Change, the effect of which is, in the judgment of the Dealer-Manager, so material and adverse as to make it impracticable or inadvisable to proceed with the Rights Offering.

(i) The Common Stock shall then be listed and trading on NASDAQ and NASDAQ shall have approved the shares of Common Stock issuable upon conversion of the Rights Shares and exercise of the Rights Warrants for listing, subject only to official notice of issuance.

(j) All opinions, letters, evidence and certificates mentioned above or elsewhere in this Agreement shall be deemed to be in compliance with the provisions hereof only if they are in form and substance reasonably satisfactory to counsel for the Dealer-Manager. If any of the conditions specified in this Section 10 shall not have been fulfilled when and as required by this Agreement, this Agreement and all obligations of the Dealer-Manager hereunder may be canceled at, or at any time during the Rights Offering, by the Dealer-Manager. Any such cancellation shall be without liability of the Dealer-Manager to the Company. Notice of such cancellation shall be given to the Company in writing, or by telephone and confirmed in writing.

11. Indemnification and Contribution.

(a) The Company agrees to hold harmless and indemnify Maxim and its affiliates and any officer, director, employee or agent of Maxim or any such affiliates and any

Person controlling (within the meaning of Section 20(a) of the Exchange Act) Maxim or any of such affiliates from and against any and all (A) losses, claims, damages and liabilities whatsoever, under the Securities Act or otherwise (as incurred or suffered), arising out of or based upon: (i) any untrue statement or alleged untrue statement of a material fact contained in the Offer Documents or any amendment or supplement thereto, in any other solicitation material used by the Company or authorized by it for use in connection with the Rights Offering, or in any blue sky application or other document prepared or executed by the Company (or based on any written information furnished by the Company) specifically for the purpose of qualifying any or all of the Rights or the Rights Shares or Rights Warrants under the securities laws of any state or other jurisdiction (any such application, document or information being hereinafter called a "Blue Sky Application") or arising out of or based upon the omission or alleged omission to state in any such document a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading (other than statements or omissions made in reliance upon and in conformity with the Dealer-Manager Information); (ii) any withdrawal or termination by the Company of, or failure by the Company to make or consummate, the Rights Offering, (iii) actions taken or omitted to be taken by an indemnified party with the consent of the Company or in conformity with actions taken or omitted to be taken by the Company; (iv) any failure by the Company to comply with any agreement or covenant contained in this Agreement; or (v) arising out of, relating to or in connection with or alleged to arise out of, relate to or be in connection with, the Rights Offering, any of the other transactions contemplated thereby or the performance of Maxim's services to the Company with respect to the Rights Offering, and (B) all reasonable expenses (including, but not limited to, any and all reasonable legal expenses) incurred in connection with investigating, preparing to defend or defending any lawsuit, claim or other proceeding, commenced or threatened, whether or not resulting in any liability, which legal or other expenses shall be reimbursed by the Company promptly after receipt of any invoices therefore from Maxim. However, the Company will not be obligated to indemnify an indemnified party for any loss, claim, damage, liability or expense pursuant to the preceding sentence which has been determined in a final judgment by a court of competent jurisdiction to have resulted directly from willful misconduct or gross negligence on the part of any indemnified party.

(b) The Dealer-Manager shall indemnify and hold harmless the Company, its officers, directors and employees, each of its directors and each Person, if any, who controls the Company within the meaning of the Securities Act, from and against any loss, claim, damage or liability, joint or several, or any action in respect thereof, to which the Company or any such director, officer or controlling Person may become subject, under the Securities Act or otherwise, insofar as such loss, claim, damage, liability or action arises out of, or is based upon: (i) any untrue statement or alleged untrue statement of a material fact contained (A) in any Offer Documents, or in any such amendment or supplement, in any other solicitation material used by the Company or authorized by it for use in connection with the Rights Offering or (B) in any Blue Sky Application; or (ii) the omission or alleged omission to state in any Offer Documents, or in any such amendment or supplement, in any other solicitation material used by the Company or authorized by it for use in connection with the Rights Offering, or in any Blue Sky Application, any material fact required to be stated therein or necessary to make the statements therein not misleading, but in each case solely and exclusively to the extent that the untrue

statement or alleged untrue statement or omission or alleged omission was made in reliance upon and in conformity with the Dealer-Manager Information, and shall reimburse the Company and any such director, officer or controlling Person for any legal or other expenses reasonably incurred by the Company or any such director, officer or controlling Person in connection with investigating or defending or preparing to defend against any such loss, claim, damage, liability or action as such expenses are incurred.

(c) If any lawsuit, claim or proceeding is brought against any indemnified party in respect of which indemnification may be sought against the indemnifying party pursuant to this Section 11, such indemnified party shall promptly notify the indemnifying party of the commencement of such lawsuit, claim or proceeding; provided, however, that the failure so to notify the indemnifying party shall not relieve the indemnifying party from any obligation or liability which it may have under this Section 11 except to the extent that it has been prejudiced in any material respect by such failure and in any event shall not relieve the indemnifying party from any other obligation or liability which it may have to such indemnified party otherwise than under this Section 11. In case any such lawsuit, claim or proceeding shall be brought against any indemnified party and such indemnified party shall notify the indemnifying party of the commencement of such lawsuit, claim or proceeding, the indemnifying party shall be entitled to participate in such lawsuit, claim or proceeding, and, after written notice from the indemnifying party to such indemnified party, to assume the defense of such lawsuit, claim or proceeding with counsel of its choice at its expense; provided, however, that such counsel shall be satisfactory to the indemnified party in the exercise of its reasonable judgment. Notwithstanding the election of the indemnifying party to assume the defense of such lawsuit, claim or proceeding, such indemnified party shall have the right to employ separate counsel and to participate in the defense of such lawsuit, claim or proceeding, and the indemnifying party shall bear the reasonable fees, costs and expenses of such separate counsel (and shall pay such reasonable fees, costs and expenses promptly after receipt of any invoice therefor) if: (i) the use of counsel chosen by the indemnifying party to represent such indemnified party would present such counsel with a conflict of interest; (ii) the defendants in, or targets of, any such lawsuit, claim or proceeding include both an indemnified party and the indemnifying party, and such indemnified party shall have reasonably concluded that there may be legal defenses available to it or to other indemnified parties which are different from or in addition to those available to the indemnifying party (in which case the indemnifying party shall not have the right to direct the defense of such action on behalf of the indemnified party); (iii) the indemnifying party shall not have employed counsel satisfactory to such indemnified party, in the exercise of such indemnified party's reasonable judgment, to represent such indemnified party within a reasonable time after notice of the institution of any such lawsuit, claim or proceeding; or (iv) the indemnifying party shall authorize such indemnified party to employ separate counsel at the expense of the indemnifying party. The foregoing indemnification commitments shall apply whether or not the indemnified party is a formal party to any such lawsuit, claim or proceeding. The indemnifying party shall not be liable for any settlement of any lawsuit, claim or proceeding effected without its consent (which consent will not be unreasonably withheld), but if settled with such consent, the indemnifying party agrees, subject to the provisions of this Section 11, to indemnify the indemnified party from and against any loss, damage or liability by reason of such settlement. The Company agrees to notify Maxim promptly, or cause Maxim to be notified promptly, of the assertion of any lawsuit, claim or proceeding against the Company, any of its officers or

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directors or any Person who controls any of the foregoing within the meaning of Section 20(a) of the Exchange Act, arising out of or relating to the Rights Offering. The Company further agrees that any settlement of a lawsuit, claim or proceeding against it arising out of Rights Offering shall include an explicit and unconditional release from the parties bringing such lawsuit, claim or proceeding of Maxim, its respective affiliates, and any officer, director, employee or agent of Maxim, and any Person controlling (within the meaning of Section 20(a) of the Exchange Act) Maxim.

(d) The amount paid or payable by an indemnified party as a result of the losses, claims, damages, liabilities or expenses referred to in the immediately preceding paragraph shall be deemed to include, subject to the limitations set forth above, any legal or other expenses reasonably incurred by such indemnified party in connection with investigating, preparing to defend or defending any such action or claim.

(e) The foregoing rights to indemnification and contribution shall be in addition to any other rights which any indemnified parties may have under common law or otherwise including the rights to indemnification, reimbursement and contribution provided for under the Engagement Letter.

(f) In order to provide for contribution in circumstances in which the indemnification provided for in this Section 11 for any reason held to be unavailable from any indemnifying party or is insufficient to hold harmless a party indemnified thereunder, the Company, on the one hand, and Maxim, on the other hand, shall contribute to the aggregate losses, claims, damages, liabilities and expenses of the nature contemplated by such indemnification provision (including any investigation, legal and other expenses incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claims asserted, but after deducting in the case of losses, claims, damages, liabilities and expenses suffered by the Company, any contribution received by the Company from Persons, other than Maxim, who may also be liable for contribution, including Persons who control the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, officers of the Company who signed the Registration Statement and directors of the Company) as incurred to which the Company and Maxim may be subject, in such proportions as is appropriate to reflect the relative benefits received by the Company, on the one hand, and Maxim, on the other hand, from the Rights Offering or, if such allocation is not permitted by applicable law, in such proportions as are appropriate to reflect not only the relative benefits referred to above but also the relative fault of the Company, on the one hand, and Maxim, on the other hand, in connection with the statements or omissions which resulted in such losses, claims, damages, liabilities or expenses, as well as any other relevant equitable considerations. The relative benefits received by the Company, on the one hand, and Maxim, on the other hand, shall be deemed to be in the same proportion as: (x) the total proceeds from the Rights Offering (net of the fees of the Dealer-Manager set forth in Section 6 hereof, but before deducting expenses) received by the Company bears to (y) the fees of the Dealer-Manager set forth in Section 6 hereof actually received by the Dealer-Manager. The relative fault of each of the Company, on the one hand, and Maxim, on the other hand, shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company or

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Maxim (which consists solely and exclusively of the Dealer-Manager Information) and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and the Dealer-Manager agree that it would not be just and equitable if contribution pursuant to this Section 11(f) were determined by pro rata allocation or by any other method of allocation which does not take account of the equitable considerations referred to above in this Section. The aggregate amount of losses, liabilities, claims, damages and expenses incurred by an indemnified party and referred to above in this Section 11 shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in investigating, preparing or defending against any litigation, or any investigation or proceeding by any judicial, regulatory or other legal or governmental agency or body, commenced or threatened, or any claim whatsoever based upon any such untrue or alleged untrue statement or omission or alleged omission. Notwithstanding the provisions of this Section 11: (i) the Dealer-Manager shall be required to contribute any amount in excess of the fees actually received by the Dealer-Manager from the Company in connection with the Rights Offering and (ii) no Person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 11, each Person controlling a Dealer-Manager within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act shall have the same rights to contribution as such Dealer-Manager, and each Person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, each officer of the Company who shall have signed the Registration Statement and each director of the Company shall have the same rights to contribution as the Company, subject in each case to clauses (i) and (ii) of the immediately preceding sentence. Any party entitled to contribution will, promptly after receipt of notice of commencement of any action, suit or proceeding against such party in respect of which a claim for contribution may be made against another party or parties, notify each party or parties from whom contribution may be sought, but the omission to so notify such party or parties shall not relieve the party or parties from whom contribution may be sought from any obligation it or they may have under this Section 11(f) or otherwise.

12. Effective Date of Agreement; Exclusivity; Termination; Standstill.

(a) This Agreement shall become effective upon the later of the time on which the Dealer-Manager shall have received notification of the effectiveness of the Registration Statement and the time which this Agreement shall have been executed by all of the parties hereto.

(b) Upon effectiveness of this Agreement through June 30, 2018 (unless extended by the parties hereto, the "**Engagement Period**"), Maxim shall be the Company's sole financial advisor and dealer manager in connection with the Rights Offering. Until the later of the end of the Engagement Period and Closing, and as long as Maxim is proceeding in good faith with activities in connection with the Rights Offering, the Company agrees not to solicit, negotiate with or enter into any agreement with any other source of financing (whether equity, debt or otherwise other than bank financings or financings in connection with strategic alliances), any placement agent, financial advisor or any other Person.

(c) At any time during the Rights Offering, this Agreement may be terminated by the Dealer-Manager by giving notice as hereinafter provided to the Company if:

(i) the Company shall have failed, refused or been unable, at any applicable time during the Rights Offering, to perform any material agreement on its part to be performed hereunder,

(ii) any other material condition of the Dealer-Manager's obligations as set forth in Section 10 or elsewhere hereunder is not fulfilled,

(iii) trading in securities generally on the New York Stock Exchange, the Nasdaq Stock Market or the NYSE Alternext U.S. or in the OTCQB, or trading in any securities of the Company on any exchange or in the over-the-counter market, shall have been suspended or minimum prices shall have been established on any such exchanges or such market by the Commission, by such exchange or by any other regulatory body or Governmental Authority,

(iv) a banking moratorium shall have been declared by Federal or state authorities,

(v) there shall have occurred any outbreak or escalation of hostilities or acts of terrorism involving the United States or there is a declaration of a national emergency or war by the United States or there shall have been any other calamity or crisis or any change in political, financial or economic conditions of the United States, or

(vi) there shall have occurred such a material adverse change in general economic, political or financial conditions (or the effect of international conditions on the financial markets in the United States shall be such) as to make it, in the judgment of the Dealer-Manager, inadvisable or impracticable to solicit exercises of the Rights or perform any other of its obligations hereunder.

(d) At any time during the Rights Offering, this Agreement may be terminated by the Company by giving notice as hereinafter provided to the Dealer-Manager if the Company's Board of Directors determines in good faith that the Rights Offering is no longer in the best interests of the Company and its stockholders.

(e) Any termination of this Agreement pursuant to this Section 12 shall be without liability on the part of the Company or the Dealer-Manager, except as otherwise provided in Section 11 hereof. Any notice referred to above may be given at the address specified in Section 14 hereof in writing or by facsimile or telephone, and if by telephone, shall be immediately confirmed in writing.

(f) If the Company elects to terminate this Agreement for any reason other than for cause even though the Dealer-Manager was prepared to proceed with the Rights Offering reasonably within the intent of the Engagement Letter, if within six (6) months following such termination, the Company completes any financing of equity, equity-linked or

debt or other capital raising activity of the Company (other than the exercise by any person or entity of any options, warrants, or other convertible securities or issuances by the Company in connection with the restricting of existing debt) with any of the investors introduced to the Company by the Dealer-Manager through an in-person meeting or via telephone conference call, then the Company will pay to the Dealer-Manager the compensation set forth in Section 6(a) and (d).

(g) From the date hereof until 90 days after the Closing, neither the Company nor any Subsidiary shall issue, enter into any agreement to issue or announce the issuance or proposed issuance of any shares of Common Stock or Common Stock Equivalents other than an Exempt Issuance. For purposes of this Section 12(g), “Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock and “Exempt Issuance” means the issuance of (a) shares of Common Stock or options to employees, officers or directors of the Company pursuant to any stock or option plan duly adopted for such purpose, by a majority of the non-employee members of the Board of Directors or a majority of the members of a committee of non-employee directors established for such purpose for services rendered to the Company, (b) securities upon the exercise or exchange of or conversion of any Rights Shares or Rights Warrants issued hereunder and/or other securities exercisable or exchangeable for or convertible into shares of Common Stock issued and outstanding on the date of this Agreement, provided that such securities have not been amended since the date of this Agreement to increase the number of such securities or to decrease the exercise price, exchange price or conversion price of such securities (other than in connection with stock splits or combinations) or to extend the term of such securities, (c) securities issued pursuant to acquisitions or strategic transactions approved by a majority of the disinterested directors of the Company, provided that such securities are issued as “restricted securities” (as defined in Rule 144) and carry no registration rights that require or permit the filing of any registration statement in connection therewith, and provided that any such issuance shall only be to a Person (or to the equityholders of a Person) which is, itself or through its subsidiaries, an operating company or an owner of an asset in a business synergistic with the business of the Company and shall provide to the Company additional benefits in addition to the investment of funds, but shall not include a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities and (d) securities issued pursuant to the securities purchase agreement, dated May 8, 2018, between Iliad Research and Trading, L.P. and the Company.

13. Survival of Certain Provisions. The agreements contained in Sections 11 and 12(b) hereof and the representations, warranties and agreements of the Company contained in Sections 5, 6 and 7 hereof shall survive the consummation of or failure to commence the Rights Offering and shall remain in full force and effect, regardless of any termination or cancellation of this Agreement or any investigation made by or on behalf of any indemnified party; *provided* however than in the event of any failure to commence or consummate the Rights Offering, the agreements contained in Section 6 shall terminate and be of no further force or effect.

14. Notices. All notices or other communications hereunder shall be in writing, and (a) if sent to the Dealer-Manager, shall be mailed, delivered, or faxed and confirmed in writing, to Maxim Group LLC, 405 Lexington, New York, New York 10174, Fax Number: (212) 895-3783, Attention: Clifford A. Teller, Executive Managing Director — Investment Banking, in each case, with a copy to Ellenoff Grossman & Schole LLP, 1345 Avenue of the Americas, 11th Floor, New York, New York, 10105 Fax Number: (212) 370-7889, Attention: Sarah Williams, Esq.; and (b) if sent to the Company shall be mailed, delivered, or faxed and confirmed in writing to the Company and its counsel at the address set forth in the Registration Statement, with a copy to Sheppard Mullin Richter & Hampton LLP, 30 Rockefeller Plaza, New York, NY 10112-0015, Fax Number: (917) 438-6133, Attention: Jeffrey Fessler, Esq. Any such notices and other communications shall take effect at the time of receipt thereof.

15. Parties. This Agreement shall inure to the benefit of and be binding upon the Dealer-Manager, the Company and their respective successors. This Agreement and the terms and provisions hereof are for the sole benefit of only those Persons, except that the representations, warranties, indemnities and agreements of the Company contained in this Agreement shall also be deemed to be for the benefit of the Person or Persons, if any, who control the Dealer-Manager within the meaning of Section 15 of the Act. Nothing in this Agreement shall be construed to give any Person, other than the Persons referred to in this Section, any legal or equitable right, remedy or claim under or in respect of this Agreement or any provision contained herein.

16. Amendment. This Agreement may not be amended or modified except in writing signed by each of the parties hereto.

17. Governing Law; Venue. This Agreement shall be deemed to have been executed and delivered in New York and both this Agreement and the transactions contemplated hereby shall be governed as to validity, interpretation, construction, effect, and in all other respects by the laws of the State of New York, without regard to the conflicts of laws principals thereof (other than Section 5-1401 of The New York General Obligations Law). Each of the Dealer-Manager and the Company: (a) agrees that any legal suit, action or proceeding arising out of or relating to this Agreement and/or the transactions contemplated hereby shall be instituted exclusively in the Supreme Court of the State of New York, New York County, or in the United States District Court for the Southern District of New York; (b) waives any objection which it may have or hereafter to the venue of any such suit, action or proceeding; and (c) irrevocably consents to the jurisdiction of Supreme Court of the State of New York, New York County, or in the United States District Court for the Southern District of New York in any such suit, action or proceeding. Each of the Dealer-Manager and the Company further agrees to accept and acknowledge service of any and all process which may be served in any such suit, action or proceeding in the Supreme Court of the State of New York, New York County, or in the United States District Court for the Southern District of New York and agrees that service of process upon the Company mailed by certified mail to the Company's address or delivered by Federal Express via overnight delivery shall be deemed in every respect effective service of process upon the Company, in any such suit, action or proceeding, and service of process upon the Dealer-Manager mailed by certified mail to the Dealer-Manager's address or delivered by Federal Express via overnight delivery shall be deemed in every respect effective service process upon

the Dealer-Manager, in any such suit, action or proceeding. THE COMPANY (ON BEHALF OF ITSELF AND, TO THE FULLEST EXTENT PERMITTED BY LAW, ON BEHALF OF ITS RESPECTIVE EQUITY HOLDERS AND CREDITORS) HEREBY WAIVES ANY RIGHT THEY MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY CLAIM BASED UPON, ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT AND THE TRANSACTIONS CONTEMPLATED BY THIS AGREEMENT, THE REGISTRATION STATEMENT, ANY PRELIMINARY PROSPECTUS AND THE PROSPECTUS.

18. Entire Agreement. This Agreement, together with the exhibit attached hereto and as the same may be amended from time to time in accordance with the terms hereof, and the Engagement Letter contain the entire agreement among the parties hereto relating to the subject matter hereof and there are no other or further agreements outstanding not specifically mentioned herein.

19. Severability. If any term or provision of this Agreement or the performance thereof shall be invalid or unenforceable to any extent, such invalidity or unenforceability shall not affect or render invalid or unenforceable any other provision of this Agreement and this Agreement shall be valid and enforced to the fullest extent permitted by law.

20. Headings. The headings herein are inserted for convenience of reference only and are not intended to be part of, or to affect the meaning or interpretation of, this Agreement.

21. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all such counterparts shall together constitute one and the same instrument. Delivery of a signed counterpart of this Agreement by facsimile or other electronic transmission shall constitute valid and sufficient delivery thereof.

[Signature Page Follows]

If the foregoing correctly sets forth your understanding, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement among us as of [], 2018.

Very truly yours,

CONTRAVIR PHARMACEUTICALS, INC.

By:

Name:

Title:

Accepted by the Dealer-Manager as of the date first written above:

MAXIM GROUP LLC

By:

Name:

Title:

[Signature Page to Dealer-Manager Agreement]



Sheppard, Mullin, Richter & Hampton LLP
30 Rockefeller Plaza
New York, New York 10112-0015
212.653.8700 main
212.653.8701 fax
www.sheppardmullin.com

June 13, 2018

ContraVir Pharmaceuticals Inc.
399 Thomall Street, First Floor
Edison, New Jersey 08837

Ladies and Gentlemen:

We have examined the Registration Statement on Form S-1, File No. 333-225041, as amended (the "Registration Statement") of ContraVir Pharmaceuticals, a Delaware corporation (the "Company"), filed with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), in connection with the offering by the Company of: (i) 20,000 non-transferable subscription rights (the "Rights") to be distributed by the Company without consideration in connection with a rights offering (the "Rights Offering") to holders of record of Common Stock, par value \$0.0001 per share, of the Company (the "Common Stock") and holders of record of warrants issued in October 2015, April 2016, and April 2017, (ii) up to 20,000 units (the "Units") issuable upon exercise of the Rights, each Unit consisting of one share of Series C Convertible Preferred Stock, par value \$0.0001 per share (the "Preferred Stock"), and 323 warrants, with each warrant exercisable for one share of Common Stock (the "Warrants"), (iii) the Preferred Stock, (iv) the Warrants, (v) up to 12,903,226 shares of Common Stock issuable upon conversion of the Preferred Stock; and (vi) up to 6,460,000 shares of Common Stock issuable upon exercise of the Warrants.

For purposes of this opinion, we have reviewed originals, or copies certified or otherwise identified to our satisfaction, of the Registration Statement and the exhibit thereto and such other documents and matters of law and fact as we have considered necessary or appropriate. In addition, we have not made an independent investigation or audit of the facts set forth in the above referenced documents or otherwise provided to us. We have assumed (i) the authenticity of all documents submitted to us as originals and the conformity to original documents of all documents submitted to us as copies, (ii) that the Rights Offering will be consummated as described in the Registration Statement; (iii) that the statements concerning the terms of the Rights Offering set forth in the Registration Statement are true, complete and correct and will remain true, complete and correct at all relevant times; and (iv) that any such statements made in the Registration Statement qualified by knowledge, intention, belief or any other similar qualification are true, complete and correct, and will remain true, complete and correct at all relevant times, in each case as if made without such qualification. If any of the above described assumptions are untrue for any reason or if the Rights Offering is consummated in a manner that is different from the manner described in the Registration Statement, our opinion as expressed below may be adversely affected.

Based upon and subject to the foregoing, and our consideration of such other matters of fact and law as we have considered necessary or appropriate, we hereby confirm to you that the statements set forth under the caption "Material U.S. Federal Income Tax Consequences" in the Registration Statement, to the extent such statements summarize U.S. federal income tax law, and subject to the limitations, qualifications, exceptions, and assumptions set forth herein and therein, constitute our opinion as to the material United States federal income tax consequences of the Rights Offering to holders of Common Stock and to holders of warrants to purchase Common Stock issued in October 2015, April 2016, and April 2017.

We express no opinion on any issue relating to the tax consequences of the transactions contemplated by the Registration Statement other than the opinion set forth above. Our opinion set forth above is based on the Internal Revenue Code of 1986, as amended, Treasury Regulations promulgated thereunder, administrative pronouncements and judicial precedents, all as of the date hereof. The foregoing authorities may be repealed, revoked or modified, and any such change may have retroactive effect. Any change in applicable laws or facts and circumstances surrounding the Rights Offering, or any inaccuracy in the statements, facts, assumptions and representations on which we have relied may affect the validity of the opinion set forth herein. We assume no responsibility to inform the Company of any such change or inaccuracy that may occur or come to our attention.

Our opinion is not binding on the Internal Revenue Service or a court. There can be no assurance that the Internal Revenue Service will not take a contrary position or that a court would agree with our opinion if litigated.

We are furnishing this opinion in connection with the filing of the Registration Statement and this opinion is not to be relied upon for any other purpose without our prior written consent. We hereby consent to the filing of this opinion as an exhibit to the Registration Statement. In giving this consent, we do not hereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act of 1933, as amended, or the rules and regulations of the Securities and Exchange Commission thereunder.

Very truly yours,

/s/ Sheppard, Mullin, Richter & Hampton, LLP

SHEPPARD, MULLIN, RICHTER & HAMPTON LLP

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Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

ContraVir Pharmaceuticals, Inc.
Edison, New Jersey

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement of our report dated March 23, 2018 and our report dated September 28, 2017, relating to the consolidated financial statements of ContraVir Pharmaceuticals, Inc., which are incorporated by reference in that Prospectus. Our reports on the consolidated financial statements contain an explanatory paragraph regarding the Company's ability to continue as a going concern.

We also consent to the reference to us under the caption "Experts" in the Prospectus.

/s/ BDO USA, LLP

Woodbridge, New Jersey
June 12, 2018

QuickLinks

[Exhibit 23.1](#)