Onconova Therapeutics, Inc.
Form S-1/A
February 06, 2018
Table of Contents

As filed with the Securities and Exchange Commission on February 5, 2018

Registration No. 333-222374

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

AMENDMENT NO. 2

TO

FORM S-l
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

Onconova Therapeutics, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**2834**	**22-3627252**
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification No.)

375 Pheasant Run
Newtown, PA 18940
(267) 759-3680
(Address, including zip code, and telephone number, including area code, of registrant s principal executive offices)

Ramesh Kumar, Ph.D.
President and Chief Executive Officer
Onconova Therapeutics, Inc.
375 Pheasant Run
Newtown, PA 18954
(267) 759-3680
(Name, address, including zip code, and telephone number including area code, of agent for service)

Copy to:

Joanne R. Soslow
Morgan, Lewis & Bockius LLP
1701 Market Street
Philadelphia, PA 19103
(215) 963-5000

Steven M. Skolnick
Michael J. Lerner
Lowenstein Sandler LLP
1251 Avenue of the Americas
New York, New York 10022
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Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this registration statement.

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box. o

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, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box. x

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act of 1933, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act of 1933, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box. o

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box. o

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

Large accelerated filer	¨	Accelerated filer	o
Non-accelerated filer	¨ (Do not check if a smaller reporting company)	Smaller reporting company	x
		Emerging growth company	x

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

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities To Be Registered	Proposed Maximum Aggregate Offering Price(1)(2)	Amount of Registration Fee(2)
Units, each Unit consisting of one share of common stock, par value $0.01 per share (Common Stock), and one warrant (Warrant) to purchase 0.1 share of Series A Convertible Preferred Stock, par value $0.01 per share (Series A Preferred Stock)(3)	$15,717,050	$1,956.78
(i) Common Stock included in the Units(4)	Included with the Units above	
(ii) Warrants included in the Units(4)	Included with the Units above	
Pre-Funded Units in lieu of Units, each Pre-Funded Unit consisting of one pre-funded warrant (Pre-Funded Warrant) to purchase one share of Common Stock and one Warrant to purchase 0.1 share of Series A Preferred Stock(3)	Included with the Units above	
(i) Pre-Funded Warrants included in the Pre-Funded Units(4)	Included with the Units above	
(ii) Warrants included in the Pre-Funded Units(4)	Included with the Units above	
Shares of Common Stock underlying Pre-Funded Warrants included in the Pre-Funded Units(3)	Included with the Units above	
Shares of Series A Preferred Stock underlying Warrants included in the Units and the Pre-Funded Units(3)	Included with the Units above	
Total	$15,717,050	$1,956.78(5)

(1) Estimated solely for purposes of computing the amount of the registration fee pursuant to Rule 457(o) under the Securities Act of 1933, as amended (the Securities Act). Includes securities subject to the underwriter s option to purchase additional securities.

(2) Pursuant to Rule 416 under the Securities Act, the shares of Common Stock registered hereby also include an indeterminate number of additional shares of Common Stock as may, from time to time, become issuable by reason of stock splits, stock dividends, recapitalizations or other similar transactions.

(3) The proposed maximum aggregate offering price of the Units and Pre-Funded Units (including the Common Stock issuable upon exercise of the Pre-Funded Warrants included in the Pre-Funded Units), if any, is $15,717,050. Includes offering price of any additional shares of Common Stock and Warrants that the underwriter has an option to purchase.

(4) No additional registration fee is payable pursuant to Rule 457(i) under the Securities Act.

(5) The registrant previously paid a $1,956.78 registration fee in connection with the initial filing of this Registration Statement and the filing of Amendment No. 1.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant files 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.

Table of Contents

The information in this prospectus is not complete and may be changed. We may not sell these securities until the Securities and Exchange Commission declares our registration statement effective. This preliminary prospectus is not an offer to sell these securities and we are not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

Subject to completion, dated February 5, 2018

PRELIMINARY PROSPECTUS

Onconova Therapeutics, Inc.

Up to 8,650,000 Units (each Unit contains one Share of Common Stock and one Warrant to purchase 0.1 Share of Series A Convertible Preferred Stock)

Up to 8,650,000 Pre-Funded Units (each Pre-Funded Unit contains one Pre-Funded Warrant to purchase one Share of Common Stock and one Warrant to purchase 0.1 Share of Series A Preferred Stock)

(Up to 8,650,000 Shares of Common Stock Underlying the Pre-Funded Warrants) and

(Up to 865,000 Shares of Series A Convertible Preferred Stock Underlying the Warrants)

We are offering up to 8,650,000 Units (Units, each Unit consisting of one share of Common Stock, par value $0.01 per share (Common Stock) and one warrant (the Warrant) to purchase a 0.1 share of our Series A Convertible Preferred Stock, par value $0.01 per share (Series A Preferred Stock). Each Warrant contained in a Unit has an exercise price of $ per 0.1 share of Preferred Stock. The Warrants contained in the Units will be exercisable immediately and will expire on the later of (i) the one-year anniversary of the date (the Charter Amendment Date) on which we publicly announce through the filing of a Current Report on Form 8-K that the amendment to our certificate of incorporation to sufficiently increase our authorized shares of Common Stock to cover the conversion of all outstanding shares of Series A Preferred Stock into Common Stock has been filed with the Secretary of State of the State of Delaware and (ii) the earlier of (A) the one-month anniversary of the date on which

we publicly release our top-line data analysis results for our Phase 3 INSPIRE pivotal trial and (B) December 31, 2019.

We are also offering the shares of Series A Preferred Stock that are issuable from time to time upon exercise of the Warrants contained in the Units. We do not currently have a sufficient number of authorized shares of Common Stock to cover the shares issuable upon the conversion of Series A Preferred Stock. As a result, before any shares of Series A Preferred Stock can become convertible, we need to receive stockholder approval of an amendment (the Charter Amendment) to our Tenth Amended and Restated Certificate of Incorporation, as amended, to sufficiently increase our authorized shares of Common Stock to cover the conversion of all outstanding shares of Series A Preferred Stock into Common Stock. We intend to seek such approval at a special meeting of stockholders or our 2018 annual meeting of stockholders. We cannot assure you that we will be able to obtain requisite stockholder approval of the Charter Amendment. The Series A Preferred Stock is not convertible until the next business day after the Charter Amendment Date starting at which time each 0.1 share of the Series A Preferred Stock will be convertible into one share of Common Stock. In the event our stockholders do not approve the Charter Amendment, the Series A Preferred Stock will not be convertible into Common Stock and the value of the Warrants and the Series A Preferred Stock may be negatively affected.

We are also offering to each purchaser whose purchase of Units in this offering would otherwise result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% of our outstanding Common Stock immediately following the consummation of this offering, the opportunity to purchase, if the purchaser so chooses, pre-funded units (Pre-Funded Units, each Pre-Funded Unit consisting of one Pre-Funded Warrant (Pre-Funded Warrant) to purchase one share of Common Stock and one Warrant to purchase a 0.1 share of Series A Preferred Stock) in lieu of Units that would otherwise result in the purchaser s beneficial ownership exceeding 4.99% of our outstanding Common Stock (or at the election of the purchaser, 9.99%). Each Pre-Funded Warrant contained in a Pre-Funded Unit will be exercisable into one share of Common Stock. The purchase price of each Pre-Funded Unit will equal the price per Unit being sold to the public in this offering minus $0.01, and the exercise price of each Pre-Funded Warrant included in the Pre-Funded Unit will be $0.01 per share of Common Stock. This offering also relates to the shares of Common Stock issuable upon exercise of any Pre-Funded Warrants contained in the Pre-Funded Units sold in this offering. Each Warrant contained in a Pre-Funded Unit has an exercise price of $ per 0.1 share of Series A Preferred Stock. The Warrants contained in the Pre-Funded Units will be exercisable immediately and will expire on the later of (i) the one-year anniversary of the Charter Amendment Date and (ii) the earlier of (A) the one-month anniversary of the date on which we publicly release our top-line data analysis results for our Phase 3 INSPIRE pivotal trial and (B) December 31, 2019. We are also offering the shares of Series A Preferred Stock that are issuable from time to time upon exercise of the Warrants contained in the Pre-Funded Units.

Our Common Stock is listed on the Nasdaq Capital Market under the symbol ONTX. On February 2, 2018, the last reported sale price of Common Stock on the Nasdaq Capital Market was $1.36 per share. The actual offering price per Unit and Pre-Funded Unit, and the exercise price of the Warrants, as applicable, will be determined by negotiation between us and the underwriter at the time of pricing, and may be at a discount to the current market price. We do not intend to apply for listing of the Pre-Funded Warrants, Warrants or Series A Preferred Stock on any securities exchange or other nationally recognized trading system. There is no established public trading market for the Pre-Funded Warrants, Warrants or Series A Preferred Stock, and we do not expect a market to develop.

For each Pre-Funded Unit we sell, the number of Units we are offering will be decreased on a one-for-one basis. Units and the Pre-Funded Units will not be issued or certificated. The shares of Common Stock or Pre-Funded Warrants, as the case may be, and the Warrants can only be purchased together in this offering but the securities contained in the Units or Pre-Funded Units will be issued separately.

Table of Contents

One or more of our directors have indicated interests in purchasing approximately 10% of the Units to be sold in this offering at the public offering price and on the same terms as the other purchasers in this offering. However, because indications of interest are not binding agreements or commitments to purchase, the underwriter could determine to sell more, fewer or no Units to our director(s) in this offering, or our director(s) could determine to purchase more, fewer or no Units in this offering.

You should rely only on the information contained herein or incorporated by reference in this prospectus. We have not authorized any other person to provide you with different information.

Investing in our securities involves risks. See Risk Factors beginning on page 11 of this prospectus and in the documents incorporated by reference into this prospectus.

	Per Unit	Per Pre-Funded Unit	Total
Public offering price	$	$	$
Underwriting discounts and commissions (1)	$	$	$
Proceeds, before expenses, to us (2)	$	$	$

(1) In addition, we have agreed to pay the underwriter a management fee in the amount of 1.0% of the aggregate offering price and to reimburse the underwriter for certain expenses. See Underwriting for additional information.

(2) Excludes potential proceeds from the exercise of the Warrants or the Pre-Funded Warrants being offered pursuant to this prospectus.

We have granted the underwriter the option to purchase up to 1,297,500 additional shares of Common Stock at a purchase price of $ per share and/or Warrants to purchase up to an aggregate of 129,750 shares of Series A Preferred Stock at a purchase price of $0.01 per Warrant with an exercise price of $ per 0.1 share of Series A Preferred Stock, less the underwriting discounts and commissions. The underwriter may exercise its option at any time and from time to time within 30 days from the date of this prospectus. If the underwriter exercises the option in full, the total underwriting discounts and commissions payable by us will be $, and the total proceeds to us, before expenses, will be $.

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

The underwriter expects to deliver the securities to purchasers on or about , 2018.

Sole Book-Running Manager

H.C. Wainwright & Co.

The date of this prospectus is , 2018.

Table of Contents

TABLE OF CONTENTS

Table of Contents

ABOUT THIS PROSPECTUS

Unless the context otherwise requires, references in this prospectus to Onconova, Onconova Therapeutics, Company, we, us and our refer Onconova Therapeutics, Inc. and its consolidated subsidiaries. This prospectus is part of a registration statement that we have filed with the Securities and Exchange Commission, which we refer to as the SEC or the Commission, utilizing a registration process. It is important for you to read and consider all of the information contained in this prospectus and any applicable prospectus before making a decision whether to invest in our securities. You should also read and consider the information contained in the exhibits filed with our registration statement, of which this prospectus is a part, as described in Where You Can Find More Information in this prospectus.

You should rely only on the information contained in this prospectus and any applicable prospectus supplement, including the information incorporated by reference. Neither we nor the underwriter have authorized anyone to provide you with different information. We are not offering to sell or soliciting offers to buy, and will not sell, any securities in any jurisdiction where it is unlawful. You should assume that the information contained in this prospectus or any prospectus supplement, as well as information contained in a document that we have previously filed or in the future will file with the SEC is accurate only as of the date of this prospectus, the applicable prospectus supplement or the document containing that information, as the case may be.

Table of Contents

PROSPECTUS SUMMARY

The following summary highlights certain information contained elsewhere in this prospectus and the documents incorporated by reference herein. This summary does not contain all the information you will need in making your investment decision. You should carefully read this entire prospectus and the documents incorporated by reference herein. You should pay special attention to the Risk Factors section of this prospectus and the financial statements and other information incorporated by reference in this prospectus.

Our Business

Overview

We are a clinical-stage biopharmaceutical company focused on discovering and developing novel small molecule product candidates primarily to treat cancer. Using our proprietary chemistry platform, we have created a library of targeted agents designed to work against cellular pathways important to cancer cells. We believe that the product candidates in our pipeline have the potential to be efficacious in a variety of cancers. We have one Phase 3 clinical-stage product candidate and two other clinical-stage product candidates (one of which is being developed for treatment of acute radiation syndromes) and several preclinical programs. Substantially all of our current effort is focused on our lead product candidate, rigosertib. Rigosertib is being tested in an intravenous formulation as a single agent, and an oral formulation in combination with azacitidine, in clinical trials for patients with higher-risk myelodysplastic syndromes (MDS).

Our net losses were $17.9 million and $14.2 million for the nine months ended September 30, 2017 and 2016, respectively. As of September 30, 2017, we had an accumulated deficit of $356.1 million.

Rigosertib

Rigosertib is a small molecule which we believe blocks cellular signaling by targeting RAS effector pathways. This is believed to be mediated by the interaction of rigosertib to the RAS-binding domain (RBD), found in many RAS effector proteins, including the Raf and PI3K kinases. We believe this mechanism of action provides a new approach to block the interactions between RAS and its targets containing RBD sites. Rigosertib is currently being tested in clinical trials as a single agent, and in combination with azacitidine, in patients with MDS. We have enrolled more than 1,300 patients in rigosertib clinical trials for MDS and other conditions. We were a party to a license and development agreement with Baxalta (as defined below), which granted Baxalta certain rights to commercialize rigosertib in Europe. The Baxalta agreement was terminated on August 30, 2016, at which time the European rights reverted to us at no cost. We are party to a collaboration agreement with SymBio, which grants SymBio certain rights to commercialize rigosertib in Japan and Korea. We have retained development and commercialization rights to rigosertib in the rest of the world, including in the United States and Europe, although we could consider licensing commercialization rights to other territories as we continue to seek additional funding.

Rigosertib IV for higher-risk MDS

In early 2014, we announced topline survival results from our ONTIME trial, a multi-center Phase 3 clinical trial of rigosertib IV as a single agent versus best supportive care including low dose Ara-C. The ONTIME trial did not meet its primary endpoint of an improvement in overall survival in the intent-to-treat population, although improvements in median overall survival were observed in various pre-specified and exploratory subgroups of higher-risk MDS patients. As a result, additional clinical work

Table of Contents

is on-going.

During 2014 and 2015, we held meetings with the U.S. Food and Drug Administration (FDA) European Medicines Agency (EMA) and several European national regulatory authorities to discuss and seek guidance on a path for approval of rigosertib IV in higher-risk MDS patients whose disease had failed HMA therapy. After discussions with the FDA and EMA, we refined our patient eligibility criteria by defining what we believe to be a more homogenous patient population. After regulatory feedback, input from key opinion leaders in the U.S. and Europe and based on learnings from the ONTIME study, we designed a new randomized controlled Phase 3 trial, referred to as INSPIRE. The INSPIRE trial is enrolling higher-risk MDS patients under 82 years of age who have progressed on, relapsed, or failed to respond to, previous treatment with HMAs within nine months or nine cycles over the course of one year after initiation of HMA therapy, and had their last dose of HMA within six months prior to enrollment in the trial. The primary endpoint of this study is overall survival of all randomized patients in the intent-to-treat (ITT) population and the International Prognostic Scoring System- Revised (IPSS-R) Very High Risk subgroup. This randomized trial of approximately 225 patients is expected to be conducted at more than 170 sites globally. The first patient in the INSPIRE trial was enrolled at the MD Anderson Cancer Center in December 2015, the first patient in Europe was enrolled in March, 2016, and the first patient in Japan was enrolled in July, 2016.

Enrollment for the INSPIRE Phase 3 trial for second-line higher-risk MDS patients is highly selective and required us to search extensively to identify appropriate candidates meeting the stringent entry criteria. Accordingly, this trial has been opened at more than 175 sites on four continents. Our partner, SymBio Pharmaceuticals, has opened more than 30 sites in Japan for the INSPIRE protocol. As of October 31, 2017, the trial is active at approximately 170 sites in 22 countries. The selection of countries and trial sites is carefully undertaken to ensure availability of appropriate patients meeting eligibility criteria. Since these criteria are purposely designed to be narrow and selective, extensive screening and trial site education is integral to our plan. INSPIRE trial outcome is measured by overall survival and includes a pre-planned interim analysis which is triggered by 88 events (deaths). The timing of interim analysis is difficult to precisely define. Based on our statistical analysis plan, the enrollment rate, and the expected survival in a comparable patient subgroup from the ONTIME trial, we expect the interim analysis to occur late in the fourth quarter of 2017. The interim analysis involves an initial analysis of efficacy by an independent statistical consultant. These results will be submitted to the independent data monitoring committee (DMC). The interim analysis may result in the trial stopping due to futility, trial continuation as planned without any changes, or continuation with changes according to the preset criteria for trial expansion or continued randomization only for the Very High Risk subgroup. The adaptive design element has been reviewed by regulatory agencies in the US and Europe. The actual timing of the interim analysis and its outcome will permit better estimates for complete enrollment and top-line analysis. Since the date of the interim analysis is tied to the unpredictability of reaching a pre-identified number of death events, the precise time of completing the interim analysis, which will be roughly a couple of weeks after reaching the number of events, cannot be forecast precisely, and could occur early next year.

In an attempt to optimize enrollment, we have taken proactive measures to increase enrollment including the addition of trial sites in three new countries, replacement of the principal CRO and addition of another CRO to our trial management group. Due to these changes full enrollment may take longer than initially expected. Since the interim analysis could potentially change the required number of patients to be randomized for the trial, a better estimate of these timelines can be provided after this analysis is completed. Should enrollment not return to desired levels, full enrollment may be delayed even if the adaptive design is not required as per the statistical analysis plan.

As called for in the INSPIRE Charter, the DMC has previously conducted two periodic safety

Table of Contents

reviews, and after each review, the trial continued per plan.

On January 17, 2018, we announced that we are moving forward with our Phase 3 INSPIRE pivotal trial following the interim analysis, consistent with the recommendation of the DMC. The DMC recommended continuation of the trial with a one-time expansion in enrollment, using a pre-planned sample size re-estimation, consistent with the statistical analysis plan. We remain blinded to the interim analysis results.

The statistical analysis plan for the INSPIRE trial featured an adaptive trial design, permitting several options following the interim analysis, which included continuation of the trial as planned, discontinuation of the trial for futility, trial expansion using pre-planned sample size re-estimation, and trial continuation for only the pre-defined treatment subgroup of patients classified as VHR based on the IPSS-R.

The expanded INSPIRE study will continue to enroll eligible patients based on the current trial design of the overall ITT population and will increase enrollment by adding 135 patients to the original target to reach a total enrollment of 360 patients, with the aim of increasing the power of the trial. Due to the adaptive trial design and the DMC s assessment, the INSPIRE trial will continue to analyze both the ITT and the VHR population for the primary endpoint of overall survival. The design of the trial with the expanded study enrollment will be identical to the current study design and will include the analysis of the overall survival endpoint in the ITT and the pre-specified VHR subgroup.

As of January 17, 2018, the INSPIRE study was active at approximately 175 trial sites in 22 countries across four continents, and has enrolled more than 170 patients. In Japan, patients have been enrolled to this study by SymBio Pharmaceuticals, our collaboration partner for Japan and Korea. We believe that this trial is the most advanced study for a new therapeutic agent in this indication, and there are no FDA approved therapies specifically for MDS patients after failure of front-line HMAs.

Safety and Tolerability of rigosertib in MDS and other hematologic malignancies

A comprehensive analysis of IV and oral rigosertib safety in patients with Myelodysplastic Syndromes (MDS) and Acute Myeloid Leukemia (AML) was presented in December 2016 at the American Society of Hematology (ASH) Annual Meeting. The most commonly reported treatment-emergent adverse events (TEAEs) _ in ≥ 10% of patients with MDS/AML receiving rigosertib intravenous (IV) monotherapy were fatigue (33%), nausea (33%), diarrhea (27%), constipation (25%), anaemia (24%) and pyrexia (24%). The most common ≥ Grade 3 AEs were anaemia (21%), febrile neutropenia (13%), pneumonia (12%) and thrombocytopenia (11%). The most common serious AEs were febrile neutropenia (10%), pneumonia (9%), and sepsis (7%). The most common AEs leading to discontinuation of IV rigosertib were sepsis and pneumonia (3% each).

Rigosertib oral in combination with azacitidine for higher-risk MDS

In December 2016, at the American Society of Hematology (ASH) Annual Meeting, we presented Phase 1/2 data from an oral rigosertib and azacitidine combination trial in higher-risk MDS. 33 of 40 MDS patients enrolled were evaluable for response at the time of the analysis. The median age of patients was 66, with 73% being male. The IPSS-R distribution was: 7.5% Low, 12.5% Intermediate, 37.5% High, 32.5% Very High and 10% unknown. 76% of patients responded per 2006 International Working Group (IWG) criteria. Responses were as follows:

Table of Contents

Response per IWG 2006

	Overall Evaluable (N=33)	No prior HMA (N-20)	Prior HMA (N=13)
Complete remission (CR)	8 (24)%	7 (35)%	1 (8)%
Marrow CR + hematologic improvement	10 (30)%	6 (30)%	4 (31)%
Marrow CR alone	6 (18)%	3 (15)%	3 (23)%
Hematologic improvement alone	1 (3)%	1 (5)%	0
Stable disease	8 (24)%	3 (15)%	5 (38)%
Overall IWG response	25 (76)%	17 (85)%	8 (62)%
Clinical benefit response	19 (58)%	14 (70)%	5 (38)%

The median duration of response was 8 months for CR, 12.3 months for marrow CR.

Safety/Tolerability of the Combination:

Oral rigosertib (560 mg qAM, 280 mg qPM) was administered on Day 1-21 of a 28-day cycle. Azacitidine 75 mg/m 2 /day SC or IV was administered for 7 days starting on Day 8. The combination of oral rigosertib and azacitidine was well tolerated. The most common TEAEs in ≥ 10% of patients were nausea (41%), fatigue (39%), diarrhea (37%), constipation (37%) and dysuria (28%). The most common serious AEs were pneumonia (11%) and febrile neutropenia (7%). The most common AEs leading to discontinuation were AML (4%) and pneumonia (4%).

Next steps for rigosertib oral in combination with azacitidine for higher-risk MDS

Following an end of Phase 2 meeting with the Food and Drug Administration (FDA) in September 2016, we began development of a Phase 3 protocol. The Phase 3 trial will be designed as a global 1:1 randomized, placebo-controlled trial of oral rigosertib plus azacitidine compared to azacitidine plus placebo. Based on the results of the Phase 1/2 Study, we plan to use the full dose of azacitidine, as defined in the product insert. The patient population studied in this trial will be first-line (HMA naïve) higher-risk MDS patients. The primary endpoint for assessment of efficacy will be the composite Response Rate of complete remission (CR) + partial remission (PR,) as per the IWG 2006 Response Criteria. Formal FDA review will be sought via the Special Protocol Assessment (SPA) mechanism. We will not commence the Phase 3 trial without additional financing.

While the Phase 3 trial is being designed, we have expanded the Phase 1/2 trial cohort by up to 40 subjects. Under a protocol expansion, we plan to use the expanded cohorts to explore dose optimization by increasing the dose of rigosertib and varying the dose administration scheme of rigosertib oral to identify an optimal dose and schedule. After amendments were filed with the regulatory agencies, we started the expansion phase of this trial in the U.S. sites that participated in the initial trial. The first patient was enrolled in April and since then, more than half of the planned patients have been enrolled in the expansion trial. We plan to add more sites in the U.S. to complete enrollment of the expanded trial.

In June 2017, at the Congress of the European Hematology Association Meeting, we updated the data from the Phase 1/2 trial and highlighted results in AML patients included in this study. Response data was presented on eight evaluable patients with AML who were tested with the rigosertib and azacitidine combination. For the eight evaluable patients with AML, the combination was well tolerated and the safety profile was similar to single-agent azacitidine, based on safety information in the azacitidine FDA approved label. Based on the presented results of the combination studies, the authors concluded that continued study in AML was warranted. We will not commence further development of rigosertib oral in combination with azacitidine for AML without additional financing.

Table of Contents

Rigosertib oral for lower-risk MDS

Higher-risk MDS patients suffer from a shortfall in normal circulating blood cells, or cytopenias, as well as elevated levels of cancer cells, or blasts in their bone marrow and sometimes in their peripheral blood. Lower-risk MDS patients suffer mainly from cytopenias, that is low levels of red blood cells, white blood cells or platelets. Thus, lower-risk MDS patients depend on transfusions and growth factors or other therapies to improve their low blood counts.

We have explored single agent rigosertib oral as a treatment for lower-risk MDS in two Phase 2 clinical trials, 09-05 and 09-07. In December 2013, we presented data at the Annual ASH Meeting from the 09-05 Phase 2 trial. To date, Phase 2 clinical data has indicated that further study of single agent oral rigosertib in transfusion-dependent, lower-risk MDS patients is warranted. Rigosertib has been generally well tolerated, except for urinary side effects at higher dose levels. Future clinical trials will be needed to evaluate dosing and schedule modifications and their impact on efficacy and safety results of oral rigosertib in lower-risk MDS patients.

Data presented from the 09-05 trial also suggested the potential of a genomic methylation assessment of bone marrow cells to prospectively identify lower-risk MDS patients likely to respond to oral rigosertib. We therefore expanded the 09-05 trial by adding an additional cohort of 20 patients to advance the development of this genomic methylation test. To date, a biomarker which would predict response has not been identified. Further testing and development of oral rigosertib for lower-risk MDS will be required. We will not commence further development of rigosertib oral for lower-risk MDS without additional financing.

Safety and Tolerability of rigosertib oral in MDS and other hematologic malignancies

Oral rigosertib as a monotherapy was evaluated in four Phase 1 and 2 studies in MDS and other hematologic malignancies. One study is completed and a clinical study report is available. The most common TEAEs in $\geq$ 10% of patients were pollakiuria (increased urinary frequency) (35%), fatigue (32%), diarrhea (26%), dysuria (29%) and haematuria (24%). The most common $\geq$ Grade 3 AEs were anaemia (17%), thrombocytopenia (5%), haematuria (4%) and urinary tract infection (4%). The most common serious AE was pneumonia (6%). The most common AEs leading to discontinuation of patients receiving oral rigosertib as monotherapy were dysuria (8%), urinary tract pain (7%), haematuria (5%) and urinary frequency (5%).

In addition to the above described clinical trials, we are continuing the preclinical and chemistry, manufacturing, and control work for IV and oral rigosertib.

Other Programs

The vast majority of our efforts are now devoted to the advanced stage development of rigosertib for unmet medical needs of MDS patients. Other programs are either paused, inactive or require only minimal internal resources and efforts.

Briciclib

Briciclib, another of our product candidates, is a small molecule targeting an important intracellular regulatory protein, Cyclin D1, which is often found at elevated levels in cancer cells. Cyclin D1 expression is regulated through a process termed cap-dependent translation, which requires the function of eukaryotic initiation factor 4E protein. In vitro evidence indicates briciclib binds to eukaryotic initiation factor 4E protein, blocking cap-dependent translation of Cyclin D1 and other cancer proteins,

Table of Contents

such as c-MYC, leading to tumor cell death. We have been conducting a Phase 1 multi-site dose-escalation trial of briciclib in patients with advanced solid tumors refractory to current therapies. Safety and efficacy assessments are complete in six of the seven dose-escalation cohorts of patients in this trial. As of December 2015, the Investigational New Drug (IND) for briciclib is on full clinical hold following a drug product lot testing failure. We will be required to undertake appropriate remedial actions prior to re-initiating the clinical trial and completing the final dose-escalation cohort.

Recilisib

Recilisib is a product candidate being developed in collaboration with the U.S. Department of Defense for acute radiation syndromes. We have completed four Phase 1 trials to evaluate the safety and pharmacokinetics of recilisib in healthy human adult subjects using both subcutaneous and oral formulations. We have also conducted animal studies and clinical trials of recilisib under the FDA s Animal Rule, which permits marketing approval for new medical countermeasures for which conventional human efficacy studies are not feasible or ethical, by relying on evidence from adequate and well-controlled studies in appropriate animal models to support efficacy in humans when the results of those studies establish that the drug is reasonably likely to produce a human clinical benefit. Human safety data, however, is still required. Ongoing studies of recilisib, focusing on animal models and biomarker development to assess the efficacy of recilisib are being conducted by third parties with government funding. We anticipate that any future development of recilisib beyond these ongoing studies would be conducted solely with government funding or by collaboration. Use of government funds to finance the research and development in whole or in part means any future effort to commercialize recilisib will be subject to federal laws and regulations on U.S. government rights in intellectual property. Additionally, we are subject to laws and regulations governing any research contracts, grants, or cooperative agreements under which government funding was provided.

Preclinical Product Candidates

In addition to our three clinical-stage product candidates, we have several product candidates that target kinases, cellular metabolism or cell division in preclinical development. We may explore additional collaborations to further the development of these product candidates as we focus internally on our more advanced programs.

Positive preclinical data was announced at the American Association for Cancer Research (AACR) annual meeting, which took place April 1-5 in Washington, DC, for ON 123300, a first-in-class dual inhibitor of CDK4/6 + ARK5, and for ON 150030, a novel Type 1 inhibitor of FLT3 and Src pathways. We believe our CDK inhibitor is differentiated from other agents in the market (Palbociclib, Ribociclib and Abemaciclig) or in development (such as the compounds being developed by G1 Therapeutics) by its dual inhibition of CDK4/6 + ARK5. We continue to carry out research to enhance the pre-clinical data package for this compound in an attempt to seek partners for co-development of this novel compound.

In a preclinical Rb+ve xenograft model for breast cancer, ON 123300 activity was shown to be similar to Palbociclib (Pfizer s Ibrance®). Moreover, based on the same preclinical model, the new molecule may have the potential advantage of reduced neutropenia when compared to Palbociclib. Whereas both compounds resulted in decreased RBC and platelet counts in this preclinical model system, Palbociclib was found to have a more prominent and statistically significant ($P< 0.05$) inhibitory effect on neutrophil counts when compared to ON 123300.

6

Table of Contents

CORPORATE INFORMATION

We were incorporated in Delaware in December 1998 and commenced operations in January 1999. Our principal executive offices are located at 375 Pheasant Run, Newtown, Pennsylvania 18940, and our telephone number is (267) 759-3680. Our website address is www.onconova.com. The information on, or that can be accessed through, our website is not part of this prospectus.

Table of Contents

THE OFFERING

Units offered by us in this offering	Up to 8,650,000 Units, each consisting of one share of Common Stock and one Warrant to purchase a 0.1 share of Series A Preferred Stock.
Pre-Funded Units offered by us in this offering	We are also offering to each purchaser whose purchase of Units in this offering would otherwise result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% of our outstanding Common Stock immediately following the consummation of this offering, the opportunity to purchase, if the purchaser so chooses, Pre-Funded Units (each Pre-Funded Unit consisting of one Pre-Funded Warrant to purchase one share of Common Stock and one Warrant to purchase 0.1 share of Series A Preferred Stock) in lieu of Units that would otherwise result in the purchaser s beneficial ownership exceeding 4.99% of our outstanding Common Stock (or at the election of the purchaser, 9.99%). Each Pre-Funded Warrant contained in a Pre-Funded Unit will be exercisable for one share of Common Stock. The purchase price of each Pre-Funded Unit will equal the price per Unit being sold to the public in this offering minus $0.01, and the exercise price of each Pre-Funded Warrant included in the Pre-Funded Unit will be $0.01 per share of Common Stock. This offering also relates to the shares of Common Stock issuable upon exercise of any Pre-Funded Warrants contained in the Pre-Funded Units sold in this offering. For each Pre-Funded Unit we sell, the number of Units we are offering will be decreased on a one-for-one basis. Because we will issue a Warrant as part of each Unit or Pre-Funded Unit, the number of Warrants sold in this offering will not change as a result of a change in the mix of the Units and Pre-Funded Units sold.
Warrants offered by us in this offering	Warrants to purchase an aggregate of up to 865,000 share of Series A Preferred Stock. Each Unit and each Pre-Funded Unit includes a Warrant to purchase a 0.1 share of Series A Preferred Stock. Each Warrant contained in a Unit has an exercise price of $ per share of Series A Preferred Stock, will be immediately separable from the Common Stock or Pre-Funded Warrant, as the case may be, will be exercisable immediately and will expire on the later of (i) the one-year anniversary of the Charter Amendment Date and (ii) the earlier of (A) the one-month anniversary of the date on which we publicly release our top-line data analysis results for our Phase 3 INSPIRE pivotal trial and (B) December 31, 2019.
Series A Preferred Stock	This prospectus also relates to the offering of the shares of Series A Preferred Stock issuable upon the exercise of the Warrants. The Series A Preferred Stock is not convertible until the next business day after the Charter Amendment Date, starting at which time each 0.1 share of the Series A Preferred Stock is convertible into one share of Common Stock. Notwithstanding the foregoing, we shall

Table of Contents

	not effect any conversion of the Series A Preferred Stock, to the extent that, after giving effect to an attempted conversion, the holder of shares of Series A Preferred Stock (together with such holder s affiliates, and any persons acting as a group together with such holder or any of such holder s affiliates) would beneficially own a number of shares of Common Stock in excess of 4.99% of the shares of Common Stock then outstanding after giving effect to such exercise. In the event our stockholders do not approve the Charter Amendment, the Series A Preferred Stock will not be convertible into Common Stock and the value of the Warrants and the Series A Preferred Stock may be negatively affected. For additional information, see the subsection entitled Description of Securities We Are Offering Series A Convertible Preferred Stock in this prospectus.
Insider Participation	One or more of our directors have indicated interests in purchasing approximately 10% of the Units to be sold in this offering at the public offering price and on the same terms as the other purchasers in this offering. However, because indications of interest are not binding agreements or commitments to purchase, the underwriter could determine to sell more, fewer or no Units to our director(s) in this offering, or our director(s) could determine to purchase more, fewer or no Units in this offering.

Offering Price	$ per Unit
	
	$ per Pre-Funded Unit

Option to purchase additional securities	The underwriter has the option to purchase up to 1,297,500 additional shares of Common Stock at a purchase price of $ per share and/or Warrants to purchase up to an aggregate of 129,750 shares of Series A Preferred Stock at a purchase price of $0.01 per Warrant with an exercise price of $ per 0.1 share of Series A Preferred Stock, less the underwriting discounts and commissions. The underwriter may exercise its option at any time and from time to time within 30 days from the date of this prospectus.
Common stock to be outstanding after this offering	19,421,163 shares of Common Stock (assuming no sale of any Pre-Funded Units), or 20,718,663 shares of Common Stock if the underwriter exercises its option to purchase additional Units in full (assuming no sale of any Pre-Funded Units).
Use of proceeds	We estimate that the net proceeds to us from this offering will be approximately $10.3 million, or $12.0 million if the underwriter s option to purchase additional Units is exercised in full), based on an assumed public offering price per Unit of $1.36, the last reported sale price of Common Stock on the Nasdaq Capital Market on February 2, 2018, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, We intend to use the net proceeds from this offering to fund the development of our clinical and preclinical programs, for other research and development activities and for general corporate purposes, which may include capital expenditures and

Table of Contents

	funding working capital needs. See Use of Proceeds on page 19.
Risk factors	You should read the Risk Factors section of this prospectus and in the documents incorporated by reference into this prospectus for a discussion of factors to consider before deciding to invest in our securities.
Listing	Common Stock is listed on the Nasdaq Capital Market under the symbol ONTX. We do not intend to apply for listing of the Pre-Funded Warrants, Warrants or Series A Preferred Stock on any securities exchange or other nationally recognized trading system. There is no established public trading market for the Pre-Funded Warrants, Warrants or Series A Preferred Stock, and we do not expect a market to develop.

The number of shares of Common Stock outstanding after the offering is based on 10,771,163 shares outstanding as of December 31, 2017, and excludes as of such date:

- 894,996 shares of Common Stock issuable upon the exercise of stock options outstanding at December 31, 2017 with a weighted average exercise price of approximately $40.41 per share;

- 3,294,771 shares of Common Stock issuable upon the exercise of outstanding warrants at December 31, 2017 with a weighted average exercise price of approximately $5.10 per share;

- 57,632 shares of Common Stock reserved for future issuance under our 2013 Equity Compensation Plan at December 31, 2017; and

- any additional shares of Common Stock that we may issue to Lincoln Park Capital Fund, LLC (Lincoln Park), pursuant to a purchase agreement we entered into on October 8, 2015, which provides that, upon the terms and subject to the conditions and limitation set forth therein, Lincoln Park is committed to purchase up to an aggregate of an additional $15 million of shares of Common Stock over the term of the purchase agreement, should we elect to sell shares to Lincoln Park.

As of February 2, 2018, the total number of our outstanding shares of Common Stock was 10,771,163.

Unless otherwise indicated, all information contained in this prospectus assumes (i) no exercises by the underwriter of its option to purchase additional Units and (ii) no sale of any Pre-Funded Warrants.

10

Table of Contents

RISK FACTORS

Our business is influenced by many factors that are difficult to predict, and that involve uncertainties that may materially affect actual operating results, cash flows and financial condition. Before making an investment decision, you should carefully consider these risks, including those set forth below and those described in the Risk Factors section of our Annual Report on Form 10-K, as filed with the SEC on March 29, 2017, and our Quarterly Report on Form 10-Q for the quarter ended September 30, 2017, as filed with the SEC on November 9, 2017, which is incorporated by reference into this prospectus, as well as any amendment or update to our risk factors reflected in subsequent filings with the SEC, and you should also carefully consider any other information we include or incorporate by reference in this prospectus.

Any of the risks we describe below or in the information incorporated herein by reference in this prospectus could cause our business, financial condition or operating results to suffer. The market price of Common Stock could decline if one or more of these risks and uncertainties develop into actual events. You could lose all or part of your investment.

Risks Associated with this Offering

Our management will have broad discretion over the use of any 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 any net proceeds from this offering and could use them for purposes other than those contemplated at the time of this offering. Accordingly, you will be relying on the judgment of our management with regard to the use of any proceeds from the sale of shares of our securities in this offering, 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 the proceeds will be invested in a way that does not yield a favorable, or any, return for you.

We may be required to raise additional financing by issuing new securities with terms or rights superior to those of our existing securityholders, which could adversely affect the market price of shares of Common Stock and our business.

We will require additional financing to fund future operations, including expansion in current and new markets, development and acquisition, capital costs and the costs of any necessary implementation of technological innovations or alternative technologies. We may not be able to obtain financing on favorable terms, if at all. If we raise additional funds by issuing equity securities, the percentage ownership of our current stockholders will be reduced, and the holders of the new equity securities may have rights superior to those of our existing securityholders, which could adversely affect the market price of Common Stock and the voting power of shares of our common stock. If we raise additional funds by issuing debt securities, the holders of these debt securities would similarly have some rights senior to those of our existing securityholders, and the terms of these debt securities could impose restrictions on operations and create a significant interest expense for us which could have a materially adverse effect on our business.

You will experience immediate and substantial dilution in the net tangible book value per share of Common Stock included in the Units or issuable upon exercise of the Pre-Funded Warrants in this offering.

Since the effective price per share of Common Stock included in the Units or issuable upon exercise of the Pre-Funded Warrants being offered is substantially higher than the net tangible book

Table of Contents

deficit per share of Common Stock outstanding prior to this offering, you will suffer immediate and substantial dilution in the net tangible book value of Common Stock included in the Units or issuable upon the exercise of the Pre-Funded Warrants issued in this offering. See the section titled Dilution below for a more detailed discussion of the dilution you will incur if you purchase Units in this offering. To the extent outstanding stock options or warrants are exercised, there will be further dilution to new investors.

Our shareholders may experience significant dilution as a result of future equity offerings or issuances and exercise of outstanding options and warrants.

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

There is no public market for the Warrants, the Pre-Funded Warrants or the Series A Preferred Stock underlying the Warrants.

There is no established public trading market for the Warrants, the Pre-Funded Warrants or the Series A Preferred Stock underlying the Warrants, and we do not expect a market to develop. In addition, we do not intend to apply to list the Warrants, the Pre-Funded Warrants or the Series A Preferred Stock on any national securities exchange or other nationally recognized trading system, including The Nasdaq Capital Market. Without an active market, the liquidity of the Warrants, the Pre-Funded Warrants or the Series A Preferred Stock will be limited.

The Warrants and the Pre-Funded Warrants in this offering are speculative in nature.

Neither the Warrants nor the Pre-Funded Warrants in this offering confer any rights of Common Stock or Series A Preferred Stock ownership on its holders, such as voting rights or the right to receive dividends, but rather merely represent the right to acquire shares of Common Stock or Series A Preferred Stock at a fixed price, as the case maybe, and, with respect to the Warrants, during a fixed period of time. Specifically, commencing on the date of issuance, holders of the Warrants may exercise their right to acquire Series A Preferred Stock and pay an exercise price of $ per 0.1 share of Series A Preferred Stock, subject to certain adjustments, prior to the expiration of the Warrants on the later of (i) the one-year anniversary of the Charter Amendment Date and (ii) the earlier of (A) the one-month anniversary of the date on which we publicly release our top-line data analysis results for our Phase 3 INSPIRE pivotal trial and (B) December 31, 2019.

Moreover, following this offering, the market value of the Warrants and the Pre-Funded Warrants, if any, is uncertain and there can be no assurance that the market value of the Warrants or the Pre-Funded Warrants will equal or exceed their imputed offering price. Neither the Warrants nor the Pre-Funded Warrants will be listed or quoted for trading on any market or exchange.

12

Table of Contents

If we do not obtain shareholder approval to increase the number of our authorized shares of common stock in an amount sufficient to issue shares to those who purchase warrants in this offering, the warrants included in this offering may not have any value and you could lose part or all of your investment.

We do not currently have a sufficient number of authorized shares of Common Stock to cover the shares issuable upon conversion of the Series A Preferred stock being offered by this prospectus. As a result, before the Series A Preferred Stock can become convertible, we need to receive stockholder approval of the Charter Amendment (which is an amendment to our Tenth Amended and Restated Certificate of Incorporation, as amended, to sufficiently increase our authorized shares of Common Stock to cover the conversion of all outstanding shares of Series A Preferred Stock into Common Stock). We intend to seek such approval at a special meeting of stockholders or our 2018 annual meeting of stockholders. We cannot assure you that we will be able to obtain requisite stockholder approval of the Charter Amendment. In the event our stockholders do not approve the Charter Amendment, the Series A Preferred Stock will not be convertible into Common Stock and the value of the Warrants and the Series A Preferred Stock may be negatively affected.

Sales of a significant number of shares of Common Stock in the public markets, or the perception that such sales could occur, could depress the market price of Common Stock.

Sales of a substantial number of shares of Common Stock or securities convertible or exchangeable into Common Stock in the public markets could depress the market price of Common Stock and impair our ability to raise capital through the sale of additional equity securities. We cannot predict the effect that future sales of Common Stock would have on the market price of Common Stock.

Upon completion of this offering, based on our shares outstanding as of December 31, 2017, we will have 19,421,163 shares of Common Stock outstanding based on the issuance and sale of 8,650,000 Units in this offering, assuming no sale of any Pre-Funded Units. Of these shares, only 1,554,207 shares are subject to a contractual lock-up with the underwriter for this offering for a period of 90 days following this offering. These shares can be sold, subject to any applicable volume limitations under federal securities laws, after the earlier of the expiration of, or release from, the 90-day lock-up period. The balance of our outstanding shares of Common Stock, including any shares of Common Stock included in the Units, issuable upon the exercise of the Pre-Funded Warrants, or issuable upon the conversion of the Series A Preferred Stock underlying the Warrants purchased in this offering other than shares acquired by our current stockholders who are also subject to the contractual lock-up, may be resold into the public market immediately without restriction, unless owned or purchased by our affiliates. Moreover, some of the holders of Common Stock have the right, subject to specified conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders.

As of December 31, 2017, there were approximately 894,996 shares subject to outstanding options or that are otherwise issuable under our 2013 Equity Compensation Plan, all of which shares we have registered under the Securities Act of 1933, as amended, or the Securities Act, on a registration statement on Form S-8. These shares can be freely sold in the public market upon issuance, subject to volume limitations applicable to affiliates and the lock-up agreements described above, to the extent applicable.

Table of Contents

We do not intend to pay any cash dividends on Common Stock in the foreseeable future and, therefore, any return on your investment in Common Stock must come from increases in the fair market value and trading price of Common Stock.

We do not intend to pay any cash dividends on Common Stock in the foreseeable future and, therefore, any return on your investment in Common Stock must come from increases in the fair market value and trading price of Common Stock.

If we issue substantially all of our available authorized shares of Common Stock in this offering, we will not be able to issue additional shares for future capital raising transactions or strategic transactions unless we obtain stockholders approval to amend our certificate of incorporation to increase the number of authorized shares of Common Stock.

We have 25,000,000 authorized shares of Common Stock. As of January 26, 2018, we had 10,711,163 shares of Common Stock outstanding, 3,294,771 shares of Common Stock issuable upon the exercise of outstanding warrants, and 894,996 shares of Common Stock issuable upon the exercise of outstanding options. As a result, as of January 26, 2018, we had 9,981,438 authorized shares of Common Stock available for issuance. If we issue substantially all of our available authorized shares of Common Stock in this offering, we will not be able to issue additional shares for future capital raising transactions or strategic transactions unless we obtain stockholders approval to amend our certificate of incorporation to increase the number of authorized shares of Common Stock. This may cause a delay in our future capital raising, collaboration, partnership or other strategic transactions, and may have a material adverse effect on our business and financial condition.

We may issue additional series of preferred stock that rank senior or equally to the Series A Preferred Stock as to dividend payments and liquidation preference.

Neither our certificate of incorporation nor the Certificate of Designation for the Series A Preferred Stock prohibits us from issuing additional series of preferred stock that would rank senior or equally to the Series A Preferred Stock as to dividend payments and liquidation preference. Our certificate of incorporation provides that we have the authority to issue up to 5,000,000 shares of preferred stock. The issuances of other series of preferred stock could have the effect of reducing the amounts available to the Series A Preferred Stock in the event of our liquidation, winding-up or dissolution. It may also reduce cash dividend payments on the Series A Preferred Stock if we do not have sufficient funds to pay dividends on all Series A Preferred Stock outstanding and outstanding parity preferred stock.

The Series A Preferred Stock will rank junior to all our liabilities to third party creditors in the event of a bankruptcy, liquidation or winding up of our assets.

In the event of bankruptcy, liquidation or winding up, our assets will be available to pay obligations on the Series A Preferred Stock only after all our liabilities have been paid. The Series A Preferred Stock will effectively rank junior to all existing and future liabilities held by third party creditors. The terms of the Series A Preferred Stock do not restrict our ability to raise additional capital in the future through the issuance of debt. In the event of bankruptcy, liquidation or winding up, there may not be sufficient assets remaining, after paying our liabilities, to pay amounts due on any or all of the Series A Preferred Stock then outstanding.

Future issuances of preferred stock may adversely affect the market price for Common Stock.

Additional issuances and sales of preferred stock, or the perception that such issuances and sales could occur, may cause prevailing market prices for Common Stock to decline and may adversely affect our ability to raise additional capital in the financial markets at times and prices favorable to us.

Table of Contents

We are not in compliance with the Nasdaq continued listing requirements. If we are unable to comply with the continued listing requirements of the Nasdaq Capital Market, Common Stock could be delisted, which could affect Common Sock s market price and liquidity and reduce our ability to raise capital.

We are required to meet certain qualitative and financial tests to maintain the listing of our securities on The Nasdaq Capital Market. As previously disclosed, as of March 31, 2017, June 30, 2017 and September 30, 2017, our total stockholders equity was $(2.7) million, $0.4 million and $(6.1) million, respectively. As a result, we did not comply with the Nasdaq s $2.5 million minimum stockholders equity requirement, nor the alternative compliance standards under Nasdaq Listing Rule 5550(b) for the continued listing of our securities on The Nasdaq Capital Market. In addition, as previously disclosed, the Nasdaq Staff notified us of the noncompliance and, after granting certain grace period and reviewing our proposed plan to regain compliance, the Nasdaq Staff had determined to seek to delist our securities from Nasdaq unless we requested a hearing before a Nasdaq Hearings Panel (the Panel). Accordingly, we requested and had a hearing on January 18, 2018 before the Panel, which has the authority to grant us an additional extension of time to regain compliance.

On February 2, 2018, we received a letter from the Panel stating that the Panel has granted the Company an extension to April 13, 2018 to regain compliance with the continuing listing requirements of the Nasdaq Capital Market, which may be accomplished by demonstrating minimum stockholders equity of $2.5 million or having the market value of listed securities of at least $35 million for ten consecutive trading days, as defined in Nasdaq Listing Rule 5550(b).

We will not regain compliance after applying the net proceeds of this offering and we are looking at other alternatives including licensing and other capital raising arrangements.There is no assurance that we will regain compliance on or before April 13, 2018, and even if we do, that we will be able to maintain compliance. If we are unable to regain compliance by April 13, 2018 or maintain compliance and our securities are delisted, it could be more difficult to buy or sell our securities and to obtain accurate quotations, and the price of our securities could suffer a material decline. Delisting could also impair our ability to raise capital.

Table of Contents

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein and therein contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. All statements, other than statements of historical facts, contained in this prospectus and the documents incorporated by reference herein regarding our strategy, future operations, financial position, future revenues, projected costs, prospects, plans and objectives of management are forward-looking statements. We may, in some cases, use terms such as believes, estimates, anticipates, expects, plans, intends, may, could, might, will, should, approximately or other words that convey uncertainty of future events o identify these forward-looking statements. Forward-looking statements appear in a number of places throughout this prospectus and the documents incorporated by reference herein, and include statements regarding our intentions, beliefs, projections, outlook, analyses or current expectations concerning, among other things, our ongoing and planned preclinical development and clinical trials, the timing of and our ability to make regulatory filings and obtain and maintain regulatory approvals for our product candidates, protection of our intellectual property portfolio, the degree of clinical utility of our products, particularly in specific patient populations, our ability to develop commercial and manufacturing functions, expectations regarding clinical trial data, our results of operations, cash needs, financial condition, liquidity, prospects, growth and strategies, the industry in which we operate and the trends that may affect the industry or us.

By their nature, forward-looking statements involve risks and uncertainties because they relate to events, competitive dynamics and industry change, and depend on the economic circumstances that may or may not occur in the future or may occur on longer or shorter timelines than anticipated. Although we believe that we have a reasonable basis for each forward-looking statement contained in this prospectus and in documents incorporated by reference herein, we caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate may differ materially from the forward-looking statements contained in this prospectus.

Actual results could differ materially and adversely from our forward-looking statements due to a number of factors, including, without limitation, risks related to:

- our need for additional financing for our INSPIRE trial and other operations, and our ability to obtain sufficient funds on acceptable terms when needed, and our plans and future needs to scale back operations if adequate financing is not obtained;

- our ability to continue as a going concern;

- our estimates regarding expenses, future revenues, capital requirements and needs for additional financing;

- the success and timing of our preclinical studies and clinical trials, including site initiation and patient enrollment, and regulatory approval of protocols for future clinical trials;

- our ability to enter into, maintain and perform collaboration agreements with other pharmaceutical companies, for funding and commercialization of our clinical product candidates or preclinical compounds, and our ability to achieve certain milestones under those agreements;

Table of Contents

- the difficulties in obtaining and maintaining regulatory approval of our product candidates, and the labeling under any approval we may obtain;

- our plans and ability to develop, manufacture and commercialize our product candidates;

- our failure to recruit or retain key scientific or management personnel or to retain our executive officers;

- the size and growth of the potential markets for our product candidates and our ability to serve those markets;

- regulatory developments in the United States and foreign countries;

- the rate and degree of market acceptance of any of our product candidates;

- obtaining and maintaining intellectual property protection for our product candidates and our proprietary technology;

- the successful development of our commercialization capabilities, including sales and marketing capabilities;

- recently enacted and future legislation and regulation regarding the healthcare system;

- the success of competing therapies and products that are or become available;

- our ability to maintain the listing of our securities on a national securities exchange;

- the potential for third party disputes and litigation;

- the performance of third parties, including contract research organizations (CROs) and third-party manufacturers; and

- our expectations regarding CRO transition.

Any forward-looking statements that we make in this prospectus and the documents incorporated by reference herein speak only as of the date of such statement, and we undertake no obligation to update such statements whether as a result of any new information, future events, changed circumstances or otherwise. Comparisons of results for current and any prior periods are not intended to express any future trends or indications of future performance, unless expressed as such, and should only be viewed as historical data.

You should also read carefully the factors described in the Risk Factors section of this prospectus and in documents incorporated by reference herein, to better understand the risks and uncertainties inherent in our business and underlying any forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this prospectus and in documents incorporated by reference herein will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or

Table of Contents

warranty by us or any other person that we will achieve our objectives and plans in any specified timeframe, or at all.

We obtained the industry, market and competitive position data in this prospectus and in documents incorporated by reference herein from our own internal estimates and research as well as from industry and general publications and research surveys and studies conducted by third parties. Industry publications and surveys generally state that the information contained therein has been obtained from sources believed to be reliable. We believe this data is accurate in all material respects as of the date of this prospectus.

Table of Contents

USE OF PROCEEDS

We estimate that the net proceeds to us from this offering will be approximately $10.3 million, based on an assumed public offering price per Unit of $1.36, the last reported sale price of Common Stock on the Nasdaq Capital Market on February 2, 2018, assuming the sale of 8,650,000 Units and no sale of any Pre-Funded Units in this offering, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of Warrants issued pursuant to this offering. If the underwriter exercises its option to purchase the additional Units in full, we estimate that the net proceeds will be approximately $12.0 million, based on an assumed public offering price per Unit of $1.36, the last reported sale price of Common Stock on the Nasdaq Capital Market on February 2, 2018, assuming the sale of 9,947,500 Units and no sale of any Pre-Funded Units in this offering, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of Warrants issued pursuant to this offering.

We intend to use the net proceeds from this offering to fund the development of our clinical and preclinical programs, for other research and development activities and for general corporate purposes, which may include capital expenditures and funding our working capital needs. We expect from time to time to evaluate the acquisition of businesses, products and technologies for which a portion of the net proceeds may be used, although we currently are not planning or negotiating any such transactions.

The amounts actually expended for each purpose may vary significantly depending upon numerous factors, including the amount and timing of the proceeds from this offering and progress with the clinical development of our product candidates. Expenditures will also depend upon the establishment of collaborative arrangements with other companies, the availability of additional financing and other factors. Investors will be relying on the judgment of our management regarding the application of the proceeds of any sale of shares of our securities.

As of the date of this prospectus, we cannot specify with certainty all of the particular uses of the proceeds from this offering. Accordingly, we will retain broad discretion over the use of such proceeds. Pending the use of the net proceeds from this offering as described above, we intend to invest the net proceeds in investment-grade, interest-bearing securities.

The actual offering price per Unit and Pre-Funded Unit, and the exercise price of the Warrants, as applicable, will be as determined by negotiation between us and the underwriter at the time of pricing, and may be at a discount to the current market price of Common Stock. These estimates exclude the proceeds, if any, from the exercise of the Warrants in this offering. If all of the Warrants sold in this offering were to be exercised in cash at an assumed exercise price of $1.36 per 0.1 share of Series A Preferred Stock, we would receive additional net proceeds of approximately $11.8 million. However, the Warrants contain a cashless exercise provision that permit exercise of the Warrants on a cashless basis (i) at any time where there is no effective registration statement under the Securities Act of 1933, as amended, covering the issuance of the underlying shares of Series A Preferred Stock or (ii) on the expiration date of the Warrant. We cannot predict when or if the Warrants will be exercised or whether they will be exercised for cash. It is possible that the Warrants may be exercised solely on a cashless basis.

A $0.50 increase or decrease in the assumed public offering price per Unit of $1.36, the last reported sale price of Common Stock on the Nasdaq Capital Market on February 2, 2018, would increase or decrease the net proceeds to us from this offering by $4.0 million, assuming that the number of Units offered by us, as set forth on the cover page of this prospectus, remains the same, assuming no sale of any Pre-Funded Units, after deducting the estimated underwriter discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the Warrants

19

Table of Contents

issued pursuant to this offering.

Similarly, each increase or decrease of 1,000,000 Units offered by us would increase or decrease the net proceeds to us by approximately $1.3 million, assuming the assumed public offering price per Unit of $1.36 remains the same, assuming no sale of any Pre-Funded Units, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the Warrants issued pursuant to this offering.

Table of Contents

CAPITALIZATION

The following table presents our cash, cash equivalents and capitalization, as of September 30, 2017:

- on an actual basis; and

- on an as adjusted basis to give further effect to the sale of 8,650,000 Units in this offering at an assumed public offering price per Unit of $1.36, the last reported sale price of Common Stock on the Nasdaq Capital Market, assuming no sale of any Pre-Funded Warrants, after deducting estimated underwriting discounts and commissions and estimate offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the Warrants issued pursuant to this offering.

You should read this information in conjunction with our consolidated financial statements and notes thereto incorporated by reference into this prospectus.

	September 30, 2017 (unaudited)	
	Actual	as Adjusted
Cash and cash equivalents	$ 7,600,000	$ 17,927,000
Long-term liabilities	14,880,000	14,880,000
Stockholders equity*:		
Preferred stock, $0.01 par value, 5,000,000 authorized, none issued and outstanding on actual and as adjusted basis		
Common stock, $0.01 par value, 25,000,000 authorized, 9,851,164 shares issued and outstanding on an actual basis, 18,501,164 shares issued and outstanding on an as adjusted basis	99,000	186,000
Additional paid-in capital	349,103,000	359,343,000
Accumulated other comprehensive loss	(1,000)	(1,000)
Accumulated deficit	(356,109,000)	(356,109,000)
Total Onconova Therapeutics, Inc. stockholders equity	(6,908,000)	3,419,000
Non-controlling interest	830,000	830,000
Total stockholders equity	(6,078,000)	4,249,000

*

The above table is based on 9,851,164 shares of Common Stock outstanding as of September 30, 2017 and exclude:

- 907,373 shares of Common Stock issuable upon the exercise of stock options outstanding at September 30, 2017 with a weighted average exercise price of approximately $41.09 per share;

Table of Contents

- 3,294,771 shares of Common Stock issuable upon the exercise of outstanding warrants at September 30, 2017 with a weighted average exercise price of approximately $5.10 per share;

- 42,355 shares of Common Stock reserved for future issuance under our 2013 Equity Compensation Plan at September 30, 2017; and

- any additional shares of Common Stock that we may issue to Lincoln Park, pursuant to a purchase agreement we entered into on October 8, 2015, which provides that, upon the terms and subject to the conditions and limitation set forth therein, Lincoln Park is committed to purchase up to an aggregate of an additional $15 million of shares of Common Stock over the term of the purchase agreement, should we elect to sell shares to Lincoln Park.

Each $0.50 increase or decrease in the assumed public offering price per Unit of $1.36, the last reported sale price of our Common Stock on the Nasdaq Capital Market on February 2, 2018, would increase or decrease the net proceeds to us from this offering by $4.0 million, assuming that the number of Units offered by us, as set forth on the cover page of this prospectus, remains the same, assuming no sale of any Pre-Funded Units, after deducting the estimated underwriter discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the Warrants issued pursuant to this offering. We may also increase or decrease the number of Units offered in this offering. Each increase or decrease of 1,000,000 Units offered by us would increase or decrease the net proceeds to us by approximately $1.3 million, assuming the assumed public offering price per Unit of $1.36 remains the same, assuming no sale of any Pre-Funded Units, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the Warrants issued pursuant to this offering. The as adjusted information discussed above is illustrative only and will be adjusted based on the actual public offering price and other terms of this offering as determined between us and the underwriter at pricing.

Table of Contents

DILUTION

If you invest in Common Stock in this offering, your interest will be diluted to the extent of the difference between the effective public offering price per share of Common Stock included in the Units or issuable upon the exercise of the Pre-Funded Warrants and the as adjusted net tangible book value per share of Common Stock after this offering. As of September 30, 2017, our historical net tangible book value was $(6.08) million, or $(0.62) per share, based on 9,851,164 shares of Common Stock outstanding as of September 30, 2017. Our historical net tangible book value per share represents the amount of our total tangible assets reduced by the amount of our total liabilities, divided by the total number of shares of Common Stock outstanding as of September 30, 2017. After giving effect to our sale in this offering of 8,650,000 Units at an assumed public offering price per Unit of $1.36, the last reported sale price of Common Stock on the Nasdaq Capital Market on February 2, 2018, assuming no sale of any Pre-Funded Units in this offering, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the Warrants issued in this offering, our net tangible book value as of September 30, 2017 would have been $4.2 million, or $0.23 per share. This represents an immediate increase of net tangible book value of $0.85 per share to our existing stockholders and an immediate dilution of $1.13 per share to investors purchasing Units in this offering. The following table illustrates this per share dilution.

Assumed public offering price per Unit			$	1.36
Historical net tangible book value per share at September 30, 2017	$	(0.62)		
Increase in net tangible book value per share attributable to investors purchasing Units in this offering		0.85		
As adjusted net tangible book value per share as of September 30, 2017 after giving effect to this offering				0.23
Dilution per share to investors purchasing Units in this offering			$	1.13

Each $0.50 increase or decrease in the assumed public offering price per Unit of $1.36, the last reported sale price of our Common Stock on the Nasdaq Capital Market on February 2, 2018, would increase or decrease the net proceeds to us from this offering by $4.0 million, assuming that the number of Units offered by us, as set forth on the cover page of this prospectus, remains the same, assuming no sale of any Pre-Funded Units, after deducting the estimated underwriter discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the Warrants issued pursuant to this offering. We may also increase or decrease the number of Units offered in this offering. Each increase or decrease of 1,000,000 Units offered by us would increase or decrease the net proceeds to us by approximately $1.3 million, assuming the assumed public offering price per Unit of $1.36 remains the same, assuming no sale of any Pre-Funded Units, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the Warrants issued pursuant to this offering. The as adjusted information discussed above is illustrative only and will be adjusted based on the actual public offering price and other terms of this offering as determined between us and the underwriter at pricing.

If the underwriter exercises its option to purchase additional Units in full, and assuming no sale of any Pre-Funded Units in this offering, the as adjusted net tangible book value per share after this offering would be $0.30 per share, the increase in net tangible book value per share to existing stockholders would

Table of Contents

be $0.91 per share and the dilution to new investors purchasing Units in this offering would be $1.06 per share.

The above discussion and table are based on 9,851,164 shares of Common Stock outstanding as of September 30, 2017 and exclude:

- 907,373 shares of Common Stock issuable upon the exercise of stock options outstanding at September 30, 2017 with a weighted average exercise price of approximately $41.09 per share;

- 3,294,771 shares of Common Stock issuable upon the exercise of outstanding warrants at September 30, 2017 with a weighted average exercise price of approximately $5.10 per share;

- 42,355 shares of Common Stock reserved for future issuance under our 2013 Equity Compensation Plan at September 30, 2017; and

- any additional shares of Common Stock that we may issue to Lincoln Park, pursuant to a purchase agreement we entered into on October 8, 2015, which provides that, upon the terms and subject to the conditions and limitation set forth therein, Lincoln Park is committed to purchase up to an aggregate of an additional $15 million of shares of Common Stock over the term of the purchase agreement, should we elect to sell shares to Lincoln Park.

To the extent that outstanding options or warrants are exercised, you will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

Table of Contents

EXECUTIVE COMPENSATION

Overview of Executive Compensation

The compensation committee of our board of directors is responsible for overseeing the compensation of all of our executive officers. In this capacity, our compensation committee annually reviews and approves the compensation of our chief executive officer and other executive officers, including such goals and objectives relevant to the executive officers compensation that the committee, in its discretion, determines are appropriate, evaluates their performance in light of those goals and objectives, and sets their compensation based on this evaluation.

2017 Summary Compensation Table

The following table sets forth information for the fiscal years ended December 31, 2017 and 2016 concerning compensation of our principal executive officer and the two most highly compensated executive officers during 2017. We refer to these three executive officers as our named executive officers.

Name and Principal Position	Year	Salary ($)	Bonus ($)(1)	Option Awards ($)(2)	All Other Compensation ($)(3)	Total ($)
Ramesh Kumar, Ph.D. President and Chief Executive Officer	2017 2016	538,150 413,172	 254,028	81,890 177,729	23,581 19,707	643,621 864,636
Steven M. Fruchtman, M.D. Chief Medical Officer and Senior Vice President, Research and Development	2017 2016	436,154 421,784	 142,800	49,105 119,283	19,315 7,179	504,574 691,046
Manoj Maniar, Ph.D. Senior Vice President, Product Development	2017 2016	388,977 371,453	 126,186	36,108 89,703	14,410 11,930	439,495 599,272

(1) Represents discretionary annual bonus amounts paid.

(2) The entries in the option awards column reflect the grant date fair value of the awards, as calculated for financial statement reporting purposes in accordance with Accounting Standards Codification (ASC) No. 718, *Compensation Stock Compensation.* The option values were calculated using the Black-Scholes option pricing model. These amounts do not represent the actual value realized by the named executive officers. See Note 10 of the Notes to Consolidated Financial Statements for the fiscal year ended December 31, 2016 for a discussion of the

relevant assumptions used to determine the valuation of our stock options for accounting purposes.

(3) Includes amounts paid for insurance premiums on behalf of the named executive officer and matching funds paid pursuant to our 401(k) Plan.

Employment Agreements

We have entered into employment agreements with each of our named executive officers, and the compensation of our named executive officers is determined, in large part, by the terms of those employment agreements. Following are descriptions of the material terms of each named executive

Table of Contents

officer s employment agreement.

Ramesh Kumar, Ph.D.

We entered into an employment agreement with Dr. Kumar on July 1, 2015, which supersedes any prior employment agreements. The employment agreement continues indefinitely, unless terminated in accordance with the terms of the agreement.

The employment agreement provided for an initial base salary of $543,375, subject to adjustment upon annual review by our board of directors, and an annual bonus of up to 55% of such base salary, payable upon our achievement of revenue or profit objectives, specific business plan goals or other performance milestones mutually agreed to by Dr. Kumar and our board of directors, provided that Dr. Kumar remain employed by us throughout the performance year. The bonus may be paid in the form of cash, stock options, shares of Common Stock, or a combination thereof, at our compensation committee s discretion. Dr. Kumar may also be entitled to additional compensation in recognition of extraordinary contributions, at the sole discretion of our compensation committee. On February 12, 2016, we entered into a letter agreement with Dr. Kumar pursuant to which Dr. Kumar agreed to a voluntary reduction in his base salary from $543,375 to $407,531, effective as of January 1, 2016. For purposes of severance and other benefits calculated based upon base salary, however, Dr. Kumar s base salary was deemed to remain at $543,375. On December 9, 2016, our board of directors approved the termination of the voluntary salary reduction effective January 1, 2017. Pursuant to this approval, on March 27, 2017, we entered into a letter agreement with Dr. Kumar under which the voluntary salary reduction was terminated effective January 1, 2017.

Dr. Kumar is entitled to participate in all of our employee benefit plans and programs that are made generally available from time to time to our executive officers and is entitled to vacation benefits. Pursuant to his employment agreement, Dr. Kumar is entitled to term life insurance coverage in a face amount that is not less than his base salary, a reasonable transportation allowance if we relocate our research facility more than 40 miles from its present location, and up to $10,000 annually for educational programs related to the performance of his duties. If Dr. Kumar dies during his employment, we will be entitled to a $1 million death benefit under a key man life insurance policy. Dr. Kumar s employment agreement contains non-solicitation, non-competition, confidentiality and inventions assignment provisions that, among other things, prevent him from competing with us during the term of his employment and for a specified time thereafter.

If Dr. Kumar s employment is terminated due to his death, disability, by us for cause or by Dr. Kumar without good reason during the term of his employment agreement, we will pay to Dr. Kumar or his spouse or estate the balance of his accrued and unpaid salary, unreimbursed expenses, and unused accrued vacation time through the termination date.

If Dr. Kumar s employment is terminated by us without cause or by Dr. Kumar for good reason, other than during a change in control protection period, Dr. Kumar will be entitled to receive severance equal to his current base salary and target bonus for the fiscal year during which his employment ceases. If the termination is during a change in control protection period, Dr. Kumar will be entitled to receive severance equal to two times the sum of his current base salary and target bonus for the fiscal year during which his employment ceases, less any severance previously paid. A change in control protection period commences three months prior to and ends twelve months following a change in control. The Company will also reimburse Dr. Kumar for a portion of his medical insurance costs and all of Dr. Kumar s incentive stock options that are unvested as of the date of such termination would fully vest as of the date of termination.

26

Table of Contents

Steven Fruchtman, M.D.

We entered into an employment agreement with Dr. Fruchtman on July 1, 2015, which supersedes any prior employment agreements. The employment agreement continues indefinitely, unless terminated in accordance with the terms of the agreement.

The employment agreement provides for an initial base salary of $420,000, subject to adjustment upon annual review, and subject to the compensation committee s sole discretion, an annual bonus, based on the performance of Dr. Fruchtman and the Company, of up to 40% of such base salary. The bonus may be paid in the form of cash, stock options, shares of Common Stock, or a combination thereof, at our compensation committee s discretion.

Dr. Fruchtman is entitled to participate in all of our employee benefit plans and programs that are made generally available from time to time to our executive officers and is entitled to vacation benefits. Dr. Fruchtman s employment agreement contains non-solicitation, non-competition, confidentiality and inventions assignment provisions that, among other things, prevent him from competing with us during the term of his employment and for a specified time thereafter. The Company will reimburse Dr. Fruchtman for reasonable expenses including certain commuting costs to the Company s offices.

If Dr. Fruchtman s employment is terminated due to his death, disability, by us for cause or by Dr. Fruchtman without good reason during the term of his employment agreement, we will pay to Dr. Fruchtman or his spouse or estate the balance of his accrued and unpaid salary, unreimbursed expenses, and unused accrued vacation time through the termination date.

If Dr. Fruchtman s employment is terminated by us without cause or by Dr. Fruchtman for good reason, other than during a change in control protection period, Dr. Fruchtman will be entitled to receive severance equal to the sum of his current base salary and target bonus for the fiscal year during which his employment ceases. If the termination is during a change in control protection period, Dr. Fruchtman will be entitled to receive severance equal to the sum of his current base salary and target bonus for the fiscal year during which his employment ceases. A change in control protection period is the twelve months following a change in control. The Company will also reimburse Dr. Fruchtman for a portion of his medical insurance costs and all of Dr. Fruchtman s incentive stock options that are unvested as of the date of such termination would fully vest as of the date of termination.

Manoj Maniar, Ph.D.

We entered into an employment agreement with Dr. Maniar on July 1, 2015, which supersedes any prior employment agreements. The employment agreement continues indefinitely, unless terminated in accordance with the terms of the agreement.

The employment agreement provides for an initial base salary of $371,135, subject to adjustment upon annual review by our board of directors, and subject to the compensation committee s sole discretion, an annual bonus, based on the performance of Dr. Maniar and the Company, of up to 40% of such base salary. The bonus may be paid in the form of cash, stock options, shares of Common Stock, or a combination thereof, at our compensation committee s discretion.

Dr. Maniar is entitled to participate in all of our employee benefit plans and programs that are made generally available from time to time to our executive officers and is entitled to vacation benefits. Dr. Maniar s employment agreement contains non-solicitation, non-competition, confidentiality and inventions assignment provisions that, among other things, prevent him from competing with us during the term of his employment and for a specified time thereafter.

Table of Contents

If Dr. Maniar s employment is terminated due to his death, disability, by us for cause or by Dr. Maniar without good reason during the term of his employment agreement, we will pay to Dr. Maniar or his spouse or estate the balance of his accrued and unpaid salary, unreimbursed expenses, and unused accrued vacation time through the termination date.

If Dr. Maniar s employment is terminated by us without cause or by Dr. Maniar for good reason, other than during a change in control protection period, Dr. Maniar will be entitled to receive severance equal to nine-twelfths of the sum of his current base salary and target bonus for the fiscal year during which his employment ceases. If the termination is during a change in control protection period, Dr. Maniar will be entitled to receive severance equal to the sum of his current base salary and target bonus for the fiscal year during which his employment ceases. A change in control protection period is the twelve months following a change in control. The Company will also reimburse Dr. Maniar for a portion of his medical insurance costs and all of Dr. Maniar s incentive stock options that are unvested as of the date of such termination would fully vest as of the date of termination.

Stock Option and Other Compensation Plans

We maintain our 2013 Equity Compensation Plan for the purpose of attracting key employees, directors and consultants, inducing them to remain with us and encouraging them to increase their efforts to make our business more successful. The plan provides for awards of stock options, stock appreciation rights, restricted stock, restricted stock Units, deferred shares and other equity-based awards.

The following table contains certain information regarding equity awards held by the named executive officers as of December 31, 2017:

Outstanding Equity Awards at 2017 Fiscal Year-End

Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date
Ramesh Kumar	9,376		57.60	3/16/2020
	5,251		61.30	12/9/2020
	1,033		61.30	12/4/2021
	18,754		132.80	12/18/2022
	10,500		150.00	7/25/2023
	13,500(1)		134.80	12/20/2023
	13,125(1)	4,375	39.80	12/17/2024
	5,833(1)	2,917	23.20	4/15/2025
	4,921(1)	3,829	14.80	9/24/2025
	14,644		6.50	1/25/2026
	18,333(2)	25,667	3.24	9/1/2026
	4,224(2)	8,449	2.65	