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

FORM 10-Q

(Mark One)

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the quarterly period ended June 30, 2016

Or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

Commission file number: 001-36020

Onconova Therapeutics, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

375 Pheasant Run, Newtown, PA
(Address of principal executive offices)

22-3627252

(I.R.S. Employer
Identification No.)

18940
(Zip Code)

Registrant's telephone number, including area code: **(267) 759-3680**

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

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

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

(Do not check if a smaller reporting company)

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

The number of outstanding shares of the registrant's common stock, par value \$0.01 per share, as of August 10, 2016 was 6,340,401.

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ONCONOVA THERAPEUTICS, INC.

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PART I — FINANCIAL INFORMATION**Item 1. Financial Statements****Onconova Therapeutics, Inc.
Condensed Consolidated Balance Sheets**

	June 30, 2016	December 31, 2015
	(unaudited)	
Assets		
Current assets:		
Cash and cash equivalents	\$ 12,818,000	\$ 19,799,000
Receivables	2,147,000	1,504,000
Prepaid expenses and other current assets	975,000	1,832,000
Restricted cash	50,000	50,000
Total current assets	15,990,000	23,185,000
Property and equipment, net	200,000	248,000
Other non-current assets	12,000	12,000
Total assets	<u>\$ 16,202,000</u>	<u>\$ 23,445,000</u>
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	\$ 2,801,000	\$ 3,421,000
Accrued expenses and other current liabilities	5,839,000	3,729,000
Deferred revenue	455,000	455,000
Total current liabilities	9,095,000	7,605,000
Warrant liability	287,000	—
Deferred revenue, non-current	4,773,000	5,000,000
Total liabilities	<u>14,155,000</u>	<u>12,605,000</u>
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, \$0.01 par value, 5,000,000 authorized at June 30, 2016 and December 31, 2015, none issued and outstanding at June 30, 2016 and December 31, 2015	—	—
Common stock, \$0.01 par value, 25,000,000 and 75,000,000 authorized at June 30, 2016 and December 31, 2015, 2,740,615 and 2,546,419 shares issued and outstanding at June 30, 2016 and December 31, 2015	27,000	25,000
Additional paid-in capital	332,387,000	328,564,000
Accumulated other comprehensive loss	(19,000)	(22,000)
Accumulated deficit	(331,178,000)	(318,557,000)
Total Onconova Therapeutics, Inc. stockholders' equity	1,217,000	10,010,000
Non-controlling interest	830,000	830,000
Total stockholders' equity	<u>2,047,000</u>	<u>10,840,000</u>
Total liabilities and stockholders' equity	<u>\$ 16,202,000</u>	<u>\$ 23,445,000</u>

See accompanying notes to condensed consolidated financial statements.

Onconova Therapeutics, Inc.
Condensed Consolidated Statements of Operations (unaudited)

	<u>Three Months Ended June 30,</u>		<u>Six Months Ended June 30,</u>	
	<u>2016</u>	<u>2015</u>	<u>2016</u>	<u>2015</u>
Revenue	\$ 2,248,000	\$ 123,000	\$ 3,722,000	\$ 237,000
Operating expenses:				
General and administrative	2,083,000	2,568,000	5,254,000	5,533,000
Research and development	5,564,000	6,512,000	11,386,000	16,010,000
Total operating expenses	<u>7,647,000</u>	<u>9,080,000</u>	<u>16,640,000</u>	<u>21,543,000</u>
Loss from operations	(5,399,000)	(8,957,000)	(12,918,000)	(21,306,000)
Change in fair value of warrant liability	8,000	—	279,000	—
Other income (expense), net	10,000	(18,000)	18,000	(36,000)
Net loss	(5,381,000)	(8,975,000)	(12,621,000)	(21,342,000)
Net loss attributable to non-controlling interest	—	20,000	—	44,000
Net loss attributable to Onconova Therapeutics, Inc.	<u>\$ (5,381,000)</u>	<u>\$ (8,955,000)</u>	<u>\$ (12,621,000)</u>	<u>\$ (21,298,000)</u>
Net loss per share, basic and diluted	<u>\$ (1.96)</u>	<u>\$ (4.13)</u>	<u>\$ (4.61)</u>	<u>\$ (9.81)</u>
Basic and diluted weighted average shares outstanding	<u>2,740,211</u>	<u>2,170,905</u>	<u>2,735,901</u>	<u>2,170,613</u>

See accompanying notes to condensed consolidated financial statements.

Onconova Therapeutics, Inc.
Condensed Consolidated Statements of Comprehensive Loss (unaudited)

	<u>Three Months Ended June 30,</u>		<u>Six Months Ended June 30,</u>	
	<u>2016</u>	<u>2015</u>	<u>2016</u>	<u>2015</u>
Net loss	\$ (5,381,000)	\$ (8,975,000)	\$ (12,621,000)	\$ (21,342,000)
Other comprehensive income (loss), before tax:				
Foreign currency translation adjustments, net	(3,000)	29,000	3,000	(1,000)
Other comprehensive income (loss), net of tax	(3,000)	29,000	3,000	(1,000)
Comprehensive loss	(5,384,000)	(8,946,000)	(12,618,000)	(21,343,000)
Comprehensive loss attributable to non-controlling interest	—	20,000	—	44,000
Comprehensive loss attributable to Onconova Therapeutics, Inc.	\$ (5,384,000)	\$ (8,926,000)	\$ (12,618,000)	\$ (21,299,000)

See accompanying notes to condensed consolidated financial statements.

Onconova Therapeutics, Inc.
Consolidated Statement of Stockholders' Equity (unaudited)

	Stockholders' Equity						
	Common Stock		Additional Paid in Capital	Accumulated deficit	Accumulated other comprehensive (loss) income	Non-controlling interest	Total
	Shares	Amount					
Balance at December 31, 2015	2,546,419	\$ 25,000	\$ 328,564,000	\$ (318,557,000)	\$ (22,000)	\$ 830,000	\$ 10,840,000
Net loss	—	—	—	(12,621,000)	—	—	(12,621,000)
Other comprehensive income	—	—	—	—	3,000	—	3,000
Exercise of stock options	402	—	3,000	—	—	—	3,000
Stock-based compensation	—	—	2,781,000	—	—	—	2,781,000
Shares issued in connection with reverse stock split	110	—	—	—	—	—	—
Issuance of common stock, net	193,684	2,000	1,039,000	—	—	—	1,041,000
Balance at June 30, 2016	<u>2,740,615</u>	<u>\$ 27,000</u>	<u>\$ 332,387,000</u>	<u>\$ (331,178,000)</u>	<u>\$ (19,000)</u>	<u>\$ 830,000</u>	<u>\$ 2,047,000</u>

See accompanying notes to condensed consolidated financial statements.

Onconova Therapeutics, Inc.
Condensed Consolidated Statements of Cash Flows (unaudited)

	<u>Six Months Ended June 30,</u>	
	<u>2016</u>	<u>2015</u>
Operating activities:		
Net loss	\$ (12,621,000)	\$ (21,342,000)
Adjustment to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	48,000	98,000
Loss on asset disposal	—	22,000
Change in fair value of warrant liabilities	(279,000)	—
Stock compensation expense	2,781,000	2,186,000
Changes in assets and liabilities:		
Receivables	(643,000)	(135,000)
Prepaid expenses and other current assets	857,000	1,322,000
Restricted cash	—	75,000
Accounts payable	(620,000)	158,000
Accrued expenses	2,110,000	(482,000)
Other liabilities	—	(1,000)
Deferred revenue	(227,000)	(228,000)
Net cash used in operating activities	<u>(8,594,000)</u>	<u>(18,327,000)</u>
Investing activities:		
Net cash provided by investing activities	<u>—</u>	<u>—</u>
Financing activities:		
Proceeds from the sale of common stock and warrants, net of costs	1,607,000	104,000
Proceeds from the exercise of stock options	3,000	—
Net cash provided by financing activities	<u>1,610,000</u>	<u>104,000</u>
Effect of foreign currency translation on cash	3,000	(1,000)
Net decrease in cash and cash equivalents	(6,981,000)	(18,224,000)
Cash and cash equivalents at beginning of period	19,799,000	43,582,000
Cash and cash equivalents at end of period	<u>\$ 12,818,000</u>	<u>\$ 25,358,000</u>

See accompanying notes to condensed consolidated financial statements.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements
(Unaudited)

1. Nature of Business

Reverse Stock Split

All common stock, equity, share and per share amounts in the financial statements and notes have been retroactively adjusted to reflect a one-for-ten reverse stock split which was effective May 31, 2016.

The Company

Onconova Therapeutics, Inc. (the “Company”) was incorporated in the State of Delaware on December 22, 1998 and commenced operations on January 1, 1999. The Company’s headquarters are located in Newtown, Pennsylvania. The Company is a clinical-stage biopharmaceutical company focused on discovering and developing novel small molecule drug candidates to treat cancer. Using its proprietary chemistry platform, the Company has created an extensive library of targeted anti-cancer agents designed to work against specific cellular pathways that are important to cancer cells. The Company believes that the drug candidates in its pipeline have the potential to be efficacious in a variety of cancers. The Company has three clinical-stage product candidates and several preclinical programs. In 2011, the Company entered into a license agreement, as subsequently amended, with SymBio Pharmaceuticals Limited (“SymBio”), which grants SymBio certain rights to commercialize rigosertib in Japan and Korea. In 2012, the Company entered into a development and license agreement with Baxter Healthcare SA, the predecessor in interest to Baxalta GmbH (together with its affiliates, “Baxalta”), pursuant to which the Company granted an exclusive, royalty-bearing license for the research, development, commercialization and manufacture (in specified instances) of rigosertib in all therapeutic indications in Europe. In March 2016, Baxalta elected to terminate the agreement, effective August 30, 2016, at which time the rights the Company licensed to Baxalta will revert to the Company at no cost. The Company has retained development and commercialization rights to rigosertib in the rest of the world, including the United States. During 2012, Onconova Europe GmbH was established as a wholly owned subsidiary of the Company for the purpose of further developing business in Europe. In April 2013, GBO, LLC, a Delaware limited liability company, (“GBO”) was formed pursuant to an agreement with GVK Biosciences Private Limited, a private limited company located in India, (“GVK”) to collaborate and develop two programs using the Company’s technology platform. The two preclinical programs sublicensed to GBO have not been developed to clinical stage as initially hoped, and the Company is in discussions with GVK regarding the future of GBO.

On May 31, 2016, the Company amended its certificate of incorporation to effect a 1 for 10 reverse stock split of its common stock and to decrease the number of authorized shares of common stock from 75,000,000 to 25,000,000.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements
(Unaudited)

Liquidity

The Company has incurred recurring operating losses since inception. For the six months ended June 30, 2016, the Company incurred a net loss of \$12,621,000 and as of June 30, 2016 the Company had generated an accumulated deficit of \$331,178,000. The Company anticipates operating losses to continue for the foreseeable future due to, among other things, costs related to research, development of its product candidates and its preclinical programs, strategic alliances and its administrative organization. At June 30, 2016, the Company had cash and cash equivalents of \$12,818,000. The Company will require substantial additional financing to fund its ongoing clinical trials and operations, and to continue to execute its strategy.

From its inception through July 2013, the Company raised significant capital through the issuance of ten series of preferred stock. On July 30, 2013, the Company completed its initial public offering (the "IPO") of 594,167 shares of the Company's common stock, par value \$0.01 per share ("Common Stock"), at a price of \$150.00 per share. The Company received net proceeds of \$79,811,000 from the sale, net of underwriting discounts and commissions and other estimated offering expenses. Immediately prior to the consummation of the IPO, all outstanding shares of preferred stock automatically converted into shares of Common Stock at the applicable conversion ratio then in effect.

In October 2014, the Company entered into a sales agreement with Cantor Fitzgerald & Co. ("Cantor") to create an at-the-market equity program under which the Company had the ability to offer and sell shares of its Common Stock having an aggregate offering price of up to \$20,000,000 through Cantor (see Note 12). Net proceeds from sales of Common Stock under this program were \$6,018,000 during the year ended December 31, 2015. The sales agreement with Cantor was terminated on January 5, 2016, and there were no sales of Common Stock under this program during the six months ended June 30, 2016.

In October 2015 the Company entered into a purchase agreement with Lincoln Park Capital Fund, LLC ("Lincoln Park"). Upon execution of this purchase agreement, Lincoln Park purchased 84,676 shares of the Company's Common Stock for \$1,500,000. Subject to the terms and conditions of the purchase agreement, including the effectiveness of a registration statement covering the resale of the shares, the Company may sell additional shares of its Common Stock, having an aggregate offering price of up to \$15,000,000 to Lincoln Park from time to time until December 1, 2018.

On January 5, 2016, the Company entered into a securities purchase agreement with an institutional investor providing for the issuance and sale by the Company of 193,684 shares of the Company's Common Stock and warrants to purchase 96,842 shares of the Company's Common Stock for aggregate net proceeds of \$1,609,000. (See Note 12)

On July 29, 2016 the Company closed on a rights offering of units of common stock and warrants. The Company issued 3,599,786 shares of common stock, 3,192,139 tradable warrants and 656,400 pre-funded warrants in connection with the rights offering. Net proceeds were approximately \$15.8 million. (See Note 13)

The Company has and may continue to delay, scale-back, or eliminate certain of its research and development activities and other aspects of its operations until such time as the Company is successful in securing additional funding. The Company is exploring various dilutive and non-dilutive sources of funding, including equity financings, strategic alliances, business development and other sources. The future success of the Company is dependent upon its ability to obtain additional funding. There can be no assurance, however, that the Company will be successful in obtaining such funding in sufficient amounts, on terms acceptable to the Company, or at all. These factors raise substantial doubt about the Company's ability to continue as a going concern.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

2. Summary of Significant Accounting Policies

Basis of Presentation

The condensed consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States (“GAAP”) for interim financial information. Certain information and footnotes normally included in financial statements prepared in accordance with GAAP have been condensed or omitted pursuant to the rules and regulations of the Securities and Exchange Commission (the “SEC”). The financial statements include the consolidated accounts of the Company, its wholly-owned subsidiary, Onconova Europe GmbH, and GBO. All significant intercompany transactions have been eliminated.

Unaudited Interim Financial Information

The accompanying condensed consolidated balance sheet as of June 30, 2016, the condensed consolidated statements of operations and comprehensive loss for the three and six months ended June 30, 2016 and 2015, the consolidated statement of stockholders’ equity for the six months ended June 30, 2016 and the condensed consolidated statements of cash flows for the six months ended June 30, 2016 and 2015 are unaudited. The interim unaudited condensed consolidated financial statements have been prepared on the same basis as the annual audited consolidated financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for the fair statement of the Company’s financial position as of June 30, 2016, the results of its operations for the three and six months ended June 30, 2016 and 2015, and its cash flows for the six months ended June 30, 2016 and 2015. The financial data and other information disclosed in these notes related to the three and six months ended June 30, 2016 and 2015 are unaudited. The results for the three and six months ended June 30, 2016 are not necessarily indicative of results to be expected for the year ending December 31, 2016, any other interim periods, or any future year or period. These unaudited condensed consolidated financial statements should be read in conjunction with the audited consolidated financial statements and the notes thereto for the year ended December 31, 2015 included in the Company’s annual report on Form 10-K filed with the SEC on March 28, 2016.

Certain prior year amounts have been reclassified to conform to current period presentation. All common stock, equity, share and per share amounts in the financial statements and notes have been retroactively adjusted to reflect a one-for-ten reverse stock split which was effective May 31, 2016.

Segment Information

Operating segments are defined as components of an enterprise about which separate discrete information is available for evaluation by the chief operating decision maker, or decision-making group, in deciding how to allocate resources and in assessing performance. The Company views its operations and manages its business in one segment, which is the identification and development of oncology therapeutics.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

2. Summary of Significant Accounting Policies (Continued)

Significant Accounting Policies

The Company's significant accounting policies are disclosed in the audited consolidated financial statements for the year ended December 31, 2015 included in the Company's annual report on Form 10-K filed with the SEC on March 28, 2016. Since the date of such financial statements, there have been no changes to the Company's significant accounting policies.

Fair Value Measurements

The carrying amounts reported in the accompanying consolidated financial statements for cash and cash equivalents, marketable securities, accounts payable, and accrued liabilities approximate their respective fair values because of the short-term nature of these accounts. The fair value of the warrant liability is discussed in Note 6, "Fair Value Measurements."

Warrant Accounting

Common stock warrants are accounted for in accordance with applicable accounting guidance provided in ASC Topic 815, *Derivatives and Hedging — Contracts in Entity's Own Equity* (ASC Topic 815), as either derivative liabilities or as equity instruments depending on the specific terms of the warrant agreement. The Company's warrants (see Note 12) are considered to be derivative warrants and are classified as liabilities and recorded at fair value. The warrants are subject to re-measurement at each balance sheet date and any change in fair value is recognized as a component of change in fair value of warrant liability in the consolidated statements of operations. The Company uses the Black-Scholes pricing model to estimate the fair value of the related derivative warrant liability. The warrants are classified as Level 3 liabilities (see Note 6 for a discussion of the fair value hierarchy).

Recent Accounting Pronouncements

In May 2014, the FASB issued guidance on revenue from contracts with customers that will supersede most current revenue recognition guidance. The underlying principle is that an entity will recognize revenue to depict the transfer of goods or services to customers at an amount that the entity expects to be entitled to in exchange for those goods or services. The guidance permits the use of either a retrospective or cumulative effect transition method. In July 2015, the FASB approved a one-year deferral of the effective date of the guidance to interim and annual periods beginning on or after December 15, 2017. Early adoption is permitted but not before the original effective date of December 15, 2016. The Company has not yet selected a transition method and is currently evaluating the impact of the amended guidance on the Company's consolidated financial position, results of operations and related disclosures.

In August 2014, the FASB issued guidance on determining when and how to disclose going-concern uncertainties in the financial statements. The new standard requires management to perform interim and annual assessments of an entity's ability to continue as a going concern within one year of the date the financial statements are issued. An entity must provide certain disclosures if conditions or events raise substantial doubt about the entity's ability to continue as a going concern. The guidance applies to all entities and is effective for annual periods ending after December 15, 2016, and interim periods thereafter, with early adoption permitted. The Company is evaluating the potential impact of the new guidance on its consolidated financial statements.

In March 2016, the FASB issued guidance which clarifies the implementation guidance on principal versus agent considerations in the revenue recognition standard issued in May 2014. The new standard clarifies how an entity should identify the unit of accounting (i.e. the specified good or service) for the principal versus agent evaluation and how it should apply the control principle to certain types of arrangements. The effective date and transition requirements are the same as the effective date and transition requirements in the May 2014 revenue standard (Accounting Standards Codification 606). The Company is currently assessing the adoption methodology and the impact the adoption of these ASUs will have on its consolidated financial position, results of operations and related disclosures.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

3. Revenue

The Company recognized revenue under its license and collaboration agreements with Baxalta and Symbio as follows:

	<u>Three Months Ended June 30,</u>		<u>Six Months Ended June 30,</u>	
	<u>2016</u>	<u>2015</u>	<u>2016</u>	<u>2015</u>
Baxalta	\$ 2,098,000	\$ —	\$ 3,319,000	\$ —
Symbio	150,000	123,000	403,000	237,000
	<u>\$ 2,248,000</u>	<u>\$ 123,000</u>	<u>\$ 3,722,000</u>	<u>\$ 237,000</u>

See Note 8, "License and Collaboration Agreements," for a further discussion of the agreements with Baxalta and Symbio.

4. Net Loss Per Share of Common Stock

The following potentially dilutive securities outstanding at June 30, 2016 and 2015 have been excluded from the computation of diluted weighted average shares outstanding, as they would be antidilutive:

	<u>June 30,</u>	
	<u>2016</u>	<u>2015</u>
Warrants	96,842	460
Stock options	570,500	476,660
	<u>667,342</u>	<u>477,120</u>

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

5. Balance Sheet Detail

Receivables:

	<u>June 30, 2016</u>	<u>December 31, 2015</u>
Amounts due from Baxalta	\$ 2,098,000	\$ 1,384,000
Other	49,000	120,000
	<u>\$ 2,147,000</u>	<u>\$ 1,504,000</u>

Prepaid expenses and other current assets:

	<u>June 30, 2016</u>	<u>December 31, 2015</u>
Research and development	\$ 557,000	\$ 1,018,000
Manufacturing	38,000	168,000
Insurance	111,000	451,000
Other	269,000	195,000
	<u>\$ 975,000</u>	<u>\$ 1,832,000</u>

Property and equipment:

	<u>June 30, 2016</u>	<u>December 31, 2015</u>
Property and equipment	\$ 2,228,000	\$ 2,228,000
Accumulated depreciation	(2,028,000)	(1,980,000)
	<u>\$ 200,000</u>	<u>\$ 248,000</u>

Accrued expenses and other current liabilities:

	<u>June 30, 2016</u>	<u>December 31, 2015</u>
Research and development	\$ 3,881,000	\$ 2,979,000
Employee compensation	1,544,000	438,000
Professional fees	259,000	306,000
Other	155,000	6,000
	<u>\$ 5,839,000</u>	<u>\$ 3,729,000</u>

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

6. Fair Value Measurements

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date.

During the year ended December 31, 2015 the Company had no assets or liabilities requiring fair value measurements. On January 5, 2016, the Company entered into a securities purchase agreement ("Securities Purchase Agreement") with an institutional investor providing for the issuance and sale by the Company of 193,684 shares of the Company's Common Stock, at a purchase price of \$9.50 per share and warrants to purchase up to 96,842 shares of the Company's Common Stock (the "Warrants") for aggregate gross proceeds of \$1,840,000 (see Note 12).

The Company utilizes a valuation hierarchy for disclosure of the inputs to the valuations used to measure fair value. This hierarchy prioritizes the inputs into three broad levels as follows. Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities. Level 2 inputs are quoted prices for similar assets and liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the financial instrument. Level 3 inputs are unobservable inputs based on the Company's own assumptions used to measure assets and liabilities at fair value. A financial asset or liability's classification within the hierarchy is determined based on the lowest level input that is significant to the fair value measurement.

The Company had no assets or liabilities classified as Level 1 or Level 2. The warrant liability (see Note 12) is classified as Level 3.

The Company has classified the warrants as a liability and has re-measured the liability to estimated fair value at June 30, 2016, using the Black-Scholes option pricing model with the following assumptions:

	June 30, 2016
Risk-free interest rate	1.17%
Expected volatility	80.52%
Expected term	5.03 years
Expected dividend yield	0%

Expected volatility is based on the historical volatility of the Company's common stock since its IPO in July 2013.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

6. Fair Value Measurements (Continued)

The following fair value hierarchy table presents information about the Company's financial assets and liabilities measured at fair value on a recurring basis as of June 30, 2016:

	Fair Value Measurement as of June 30, 2016			Balance
	Level 1	Level 2	Level 3	
Warrant liability	\$ —	\$ —	\$ 287,000	\$ 287,000
Total	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 287,000</u>	<u>\$ 287,000</u>

The following table presents a reconciliation of the Company's liabilities measured at fair value on a recurring basis using significant unobservable inputs (Level 3) for the six months ended June 30, 2016:

	Warrant Liability
Balance at December 31, 2015	\$ —
Issuance of warrants	566,000
Change in fair value upon re-measurement	(279,000)
Balance at June 30, 2016	<u>\$ 287,000</u>

There were no transfers between Level 1 and Level 2 in any of the periods reported.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

7. Stock-Based Compensation

In January 2008, the board of directors approved the 2007 Equity Compensation Plan (the “2007 Plan”), which amended, restated and renamed the Company’s 1999 Stock Based Compensation Plan (the “1999 Plan”), which provided for the granting of incentive and nonqualified stock options and restricted stock to its employees, directors and consultants at the discretion of the board of directors.

Further, in July 2013, the Company’s board of directors and stockholders approved the 2013 Equity Compensation Plan (the “2013 Plan”), which amended, restated and renamed the 2007 Plan. Under the 2013 Plan, the Company may grant incentive stock options, non-statutory stock options, stock appreciation rights, restricted stock, restricted stock units, deferred share awards, performance awards and other equity-based awards to employees, directors and consultants. The Company initially reserved 610,783 shares of Common Stock for issuance, subject to adjustment as set forth in the 2013 Plan. The 2013 Plan includes an evergreen provision, pursuant to which the maximum aggregate number of shares that may be issued under the 2013 Plan is increased on the first day of each fiscal year by the lesser of (a) a number of shares equal to four percent (4%) of the issued and outstanding Common Stock of the Company, without duplication, (b) 200,000 shares and (c) such lesser number as determined by the Company’s board of directors, subject to specified limitations. At June 30, 2016, there were 182,129 shares available for future issuance.

Stock-based compensation expense includes stock options granted to employees and non-employees and has been reported in the Company’s statements of operations and comprehensive loss in either research and development expenses or general and administrative expenses depending on the function performed by the optionee. No net tax benefits related to the stock-based compensation costs have been recognized since the Company’s inception. The Company recognized stock-based compensation expense as follows for the three and six months ended June 30, 2016 and 2015:

	Three Months ended June 30,		Six Months ended June 30,	
	2016	2015	2016	2015
General and administrative	\$ 311,000	\$ 383,000	\$ 1,281,000	\$ 1,142,000
Research and development	300,000	421,000	1,500,000	1,044,000
	<u>\$ 611,000</u>	<u>\$ 804,000</u>	<u>\$ 2,781,000</u>	<u>\$ 2,186,000</u>

A summary of stock option activity for the six months ended June 30, 2016 is as follows:

	Options Outstanding				
	Shares Available for Grant	Number of Shares	Weighted- Average Exercise Price	Weighted- Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Balance, December 31, 2015	135,484	515,690	85.60	7.46	—
Authorized	101,857	—			
Granted	(102,221)	102,221	6.38		
Exercised	—	(402)	6.44		
Forfeited	47,009	(47,009)	85.94		
Balance, June 30, 2016	182,129	570,500	71.43	6.19	—
Vested or expected to vest, June 30, 2016		563,442	71.91	6.16	—
Exercisable, June 30, 2016		393,127	87.25	4.99	—

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

7. Stock-Based Compensation (Continued)

Information with respect to stock options outstanding and exercisable at June 30, 2016 is as follows:

<u>Exercise Price</u>	<u>Shares</u>	<u>Exercisable</u>
\$5.20 - \$14.80	138,213	49,815
\$14.90- \$23.20	34,740	16,878
\$23.70 - \$39.80	80,225	44,000
\$43.00 - \$75.10	109,295	97,877
\$75.30 - \$132.80	87,675	83,500
\$133.20 - \$217.90	115,002	96,800
\$277.10 - \$291.4	5,350	4,257
	<u>570,500</u>	<u>393,146</u>

Options granted after April 23, 2013

The Company accounts for all stock-based payments made after April 23, 2013 to employees and directors using an option pricing model for estimating fair value. Accordingly, stock-based compensation expense is measured based on the estimated fair value of the awards on the date of grant, net of forfeitures. Compensation expense is recognized for the portion that is ultimately expected to vest over the period during which the recipient renders the required services to the Company using the straight-line single option method. In accordance with authoritative guidance, the fair value of non-employee stock based awards is re-measured as the awards vest, and the resulting increase in fair value, if any, is recognized as expense in the period the related services are rendered.

The Company uses the Black-Scholes option-pricing model to estimate the fair value of stock options at the grant date. The Black-Scholes model requires the Company to make certain estimates and assumptions, including estimating the fair value of the Company's common stock, assumptions related to the expected price volatility of the Company's stock, the period during which the options will be outstanding, the rate of return on risk-free investments and the expected dividend yield for the Company's stock.

As of June 30, 2016, there was \$3,555,000 of unrecognized compensation expense related to the unvested stock options issued from April 24, 2013 through June 30, 2016, which is expected to be recognized over a weighted-average period of approximately 1.74 years.

The weighted-average assumptions underlying the Black-Scholes calculation of grant date fair value include the following:

	<u>Six months ended</u> <u>June 30, 2016</u>
Risk-free interest rate	1.48%
Expected volatility	74.18%
Expected term	5.33 years
Expected dividend yield	0%
Weighted average grant date fair value	\$4.00

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

7. Stock-Based Compensation (Continued)

The weighted-average valuation assumptions were determined as follows:

- Risk-free interest rate: The Company based the risk-free interest rate on the interest rate payable on U.S. Treasury securities in effect at the time of grant for a period that is commensurate with the assumed expected option term.
- Expected term of options: Due to its lack of sufficient historical data, the Company estimates the expected life of its employee stock options using the “simplified” method, as prescribed in Staff Accounting Bulletin (SAB) No. 107, whereby the expected life equals the arithmetic average of the vesting term and the original contractual term of the option.
- Expected stock price volatility: Expected volatility is based on the historical volatility of the Company’s common stock since its IPO in July 2013.
- Expected annual dividend yield: The Company has never paid, and does not expect to pay in the foreseeable future, dividends. Accordingly, the Company assumed an expected dividend yield of 0.0%.
- Estimated forfeiture rate: The Company’s estimated annual forfeiture rate on stock option grants was 4.14% in 2016, 2015 and 2014, based on the historical forfeiture experience.

Options granted through April 23, 2013

At certain times throughout the Company’s history, the chairman of the Company’s board of directors, who is also a significant stockholder of the Company (the “Significant Holder”), afforded option holders the opportunity for liquidity in transactions in which options were exercised and the shares of Common Stock issued in connection therewith were simultaneously purchased by the Significant Holder (each, a “Purchase Transaction”). Because the Company had established a pattern of providing cash settlement alternatives for option holders, the Company accounted for its stock-based compensation awards as liability awards, the fair value of which were then re-measured at each balance sheet date.

On April 23, 2013, the Company distributed a notification letter to all equity award holders under the Company’s 2007 Equity Compensation Plan (the “2007 Plan”) advising them that Purchase Transactions would no longer occur, unless, at the time of a Purchase Transaction, the option holder has held the Common Stock issued upon exercise of options for a period of greater than six months prior to selling such Common Stock to the Significant Holder and that any such sale to the Significant Holder would be at the fair value of the Common Stock on the date of such sale. Based on these new criteria for Purchase Transactions, the Company remeasured options outstanding under the 2007 Plan as of April 23, 2013 to their intrinsic value and reclassified such options from liabilities to stockholders’ deficit within the Company’s consolidated balance sheets, which amounted to \$14,482,000. As of June 30, 2016, there was \$57,000 of unrecognized compensation expense related to these unvested awards, which is expected to be recognized over a weighted-average period of approximately 0.45 years.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

8. Research Agreements

The Company has entered into various licensing and right-to-sublicense agreements with educational institutions for the exclusive use of patents and patent applications, as well as any patents that may develop from research being conducted by such educational institutions in the field of anticancer therapy, genes and proteins. Results from this research have been licensed to the Company pursuant to these agreements. Under one of these agreements with Temple University (“Temple”), the Company is required to make annual maintenance payments to Temple and royalty payments based upon a percentage of sales generated from any products covered by the licensed patents, with minimum specified royalty payments. As no sales had been generated through June 30, 2016 under the licensed patents, the Company has not incurred any royalty expenses related to this agreement. In addition, the Company is required to pay Temple a percentage of any sublicensing fees received by the Company.

The Company signed a funding agreement with the Leukemia and Lymphoma Society (“LLS”) in May 2010, which was amended in January 2013, to fund the development of rigosertib (the “LLS-funded Research Program”). Under the LLS-funded Research Program, the Company was entitled to receive milestone payments of up to \$8,000,000 through 2013 in connection with the proposed clinical trial to be conducted, ONTIME, after which LLS was not obligated to fund any further amounts. Under the terms of the funding agreement, if the LLS-funded Research Program lead to approval of rigosertib by the regulatory authorities, the Company would have been required to proceed with commercialization of the licensed product or repay the amount funded. LLS was entitled to receive regulatory and commercial milestone payments and royalties from the Company based on the Company’s net sales of the licensed product after regulatory approval, with the amount of such milestone payments and royalties not to exceed three times the amount funded. During the year ended December 31, 2012, in connection with the execution of the Baxter agreement, the Company paid \$1,000,000 to LLS. This payment reduced the maximum potential milestone and royalty payment obligation under this agreement to \$23,000,000. No further payments would be due to LLS if the LLS-funded Research Program did not meet its clinical endpoints for safety and efficacy. As a result of the potential obligation to repay the funds under this arrangement, the \$8,000,000 of milestone payments received was initially recorded as deferred revenue. The Company received guidance from regulatory authorities during 2015 that the LLS-funded Research Program was not sufficient to support a regulatory submission. Based on the guidance and the commencement of the INSPIRE trial during the fourth quarter of 2015, the company determined that the research program covered by the LLS funding agreement was unsuccessful and, as a result, the funding received non-repayable. Accordingly, the Company recognized the \$8.0 million of deferred revenue during the quarter ended December 31, 2015.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

9. License and Collaboration Agreements

Baxalta Agreement

In September 2012, the Company entered into a development and license agreement with Baxter Healthcare SA, the predecessor in interest to Baxalta GmbH (together with its affiliates, "Baxalta"), pursuant to which the Company granted an exclusive, royalty-bearing license for the research, development, commercialization and manufacture (in specified instances) of rigosertib in all therapeutic indications in Europe. In accordance with this agreement, the Company received an upfront cash payment of \$50,000,000 in 2012. On March 3, 2016, the Company received a notification of Baxalta's election to terminate the development and license agreement based on a strategic reprioritization review, effective August 30, 2016. The agreement with Baxalta remains in effect pending the effectiveness of such termination. In accordance with the terms of the Baxalta agreement, upon termination, the rights licensed to Baxalta will revert to the Company at no cost. Additionally, any rights the Company had to funding, pre-commercial milestone payments and royalties from Baxalta will terminate in accordance with the agreement.

Among other things, the Baxalta agreement contemplated development of rigosertib IV in higher-risk MDS patients, through the Company's ONTIME trial and, potentially, additional Phase 3 clinical trials. The ONTIME trial did not achieve its primary endpoint and the Company is continuing the development of rigosertib IV in higher-risk MDS patients through its INSPIRE trial. In accordance with the agreement, the Company elected to have Baxalta fund fifty percent of the costs of the INSPIRE trial, up to \$15.0 million. The Company recorded revenue of \$2,098,000 during the three months ended June 30, 2016 and \$3,319,000 during the six months ended June 30, 2016 related to Baxalta's funding of the INSPIRE trial. The Company has overall responsibility for the trial, including determination of the trial specifications, selection of third party service providers and payment for all services and materials. Baxalta terminated the development and license agreement after commencement of the INSPIRE trial and after the Company elected to have Baxalta reimburse the Company for costs incurred in running this trial, per contract.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

9. License and Collaboration Agreements (Continued)

SymBio Agreement

In July 2011, the Company entered into a license agreement with SymBio, as subsequently amended, granting SymBio an exclusive, royalty-bearing license for the development and commercialization of rigosertib in Japan and Korea. Under the SymBio license agreement, SymBio is obligated to use commercially reasonable efforts to develop and obtain market approval for rigosertib inside the licensed territory and the Company has similar obligations outside of the licensed territory. The Company has also entered into an agreement with SymBio providing for it to supply SymBio with development-stage product. Under the SymBio license agreement, the Company also agreed to supply commercial product to SymBio under specified terms that will be included in a commercial supply agreement to be negotiated prior to the first commercial sale of rigosertib. The supply of development-stage product and the supply of commercial product will be at the Company's cost plus a defined profit margin. Sales of development-stage product have been de minimis. The Company has additionally granted SymBio a right of first negotiation to license or obtain the rights to develop and commercialize compounds having a chemical structure similar to rigosertib in the licensed territory.

Under the terms of the SymBio license agreement, the Company received an upfront payment of \$7,500,000. The Company is eligible to receive milestone payments of up to an aggregate of \$22,000,000 from SymBio upon the achievement of specified development and regulatory milestones for specified indications. Of the regulatory milestones, \$5,000,000 is due upon receipt of marketing approval in the United States for rigosertib IV in higher-risk MDS patients, \$3,000,000 is due upon receipt of marketing approval in Japan for rigosertib IV in higher-risk MDS patients, \$5,000,000 is due upon receipt of marketing approval in the United States for rigosertib oral in lower-risk MDS patients, and \$5,000,000 is due upon receipt of marketing approval in Japan for rigosertib oral in lower-risk MDS patients. Furthermore, upon receipt of marketing approval in the United States and Japan for an additional specified indication of rigosertib, which the Company is currently not pursuing, an aggregate of \$4,000,000 would be due. In addition to these pre-commercial milestones, the Company is eligible to receive tiered milestone payments based upon annual net sales of rigosertib by SymBio of up to an aggregate of \$30,000,000.

Further, under the terms of the SymBio license agreement, SymBio will make royalty payments to the Company at percentage rates ranging from the mid-teens to 20% based on net sales of rigosertib by SymBio.

Royalties will be payable under the SymBio agreement on a country-by-country basis in the licensed territory, until the later of the expiration of marketing exclusivity in those countries, a specified period of time after first commercial sale of rigosertib in such country, or the expiration of all valid claims of the licensed patents covering rigosertib or the manufacture or use of rigosertib in such country. If no valid claim exists covering the composition of matter of rigosertib or the use of or treatment with rigosertib in a particular country before the expiration of the royalty term, and specified competing products achieve a specified market share percentage in such country, SymBio's obligation to pay the Company royalties will continue at a reduced royalty rate until the end of the royalty term. In addition, the applicable royalties payable to the Company may be reduced if SymBio is required to pay royalties to third-parties for licenses to intellectual property rights necessary to develop, use, manufacture or commercialize rigosertib in the licensed territory. The license agreement with SymBio will remain in effect until the expiration of the royalty term. However, the SymBio license agreement may be terminated earlier due to the uncured material breach or bankruptcy of a party, or force majeure. If SymBio terminates the license agreement in these circumstances, its licenses to rigosertib will survive, subject to SymBio's milestone and royalty obligations, which SymBio may elect to defer and offset against any damages that may be determined to be due from the Company. In addition, the Company may terminate the license agreement in the event that SymBio brings a challenge against it in relation to the licensed patents, and SymBio may terminate the license agreement without cause by providing the Company with written notice within a specified period of time in advance of termination.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

9. License and Collaboration Agreements (Continued)

The Company determined that the deliverables under the SymBio agreement include the exclusive, royalty-bearing, sublicensable license to rigosertib, the research and development services to be provided by the Company and its obligation to serve on a joint committee. The Company concluded that the license did not have standalone value to SymBio and was not separable from the research and development services, because of the uncertainty of SymBio's ability to develop rigosertib in the SymBio territory on its own and the uncertainty of SymBio's ability to sublicense rigosertib and recover a substantial portion of the original upfront payment of \$7,500,000 paid by SymBio to the Company.

The supply of rigosertib for SymBio's commercial requirements is contingent upon the receipt of regulatory approvals to commercialize rigosertib in Japan and Korea. Because the Company's commercial supply obligation was contingent upon the receipt of future regulatory approvals, and there were no binding commitments or firm purchase orders pending for commercial supply at or near the execution of the agreement, the commercial supply obligation is deemed to be contingent and is not valued as a deliverable under the SymBio agreement. If SymBio orders the supplies from the Company, the Company expects the pricing for this supply to equal its third-party manufacturing cost plus a pre-negotiated percentage, which will not result in a significant incremental discount to market rates.

Due to the lack of standalone value for the license, research and development services, and joint committee obligation, the upfront payment is being recognized ratably using the straight line method through December 2027, the expected term of the agreement.

10. Preclinical Collaboration

In December 2012, the Company agreed to form GBO, an entity owned by the Company and GVK. The purpose of GBO is to collaborate on and develop two programs through filing of an investigational new drug application and/or conducting proof of concept studies using the Company's technology platform. If a program failure occurs for one or both programs, the Company may contribute additional assets to GBO to establish a replacement program or programs.

During 2013, GVK made an initial capital contribution of \$500,000 in exchange for a 10% interest in GBO, and the Company made an initial capital contribution of a sublicense to all the intellectual property controlled by the Company related to the two specified programs in exchange for a 90% interest. Under the terms of the agreement, GVK may make additional capital contributions. The GVK percentage interest in GBO may change from the initial 10% to up to 50%, depending on the amount of its total capital contributions. During November 2014, GVK made an additional capital contribution of \$500,000 which increased its interest in GBO to 17.5%. The Company evaluates its variable interests in GBO on a quarterly basis and has determined that it is the primary beneficiary.

For thirty days following the 15-month anniversary of the commencement of either of the two programs, the Company will have an option to (i) cancel the license and (ii) purchase all rights in and to that program. There are three of these buy-back scenarios depending on the stage of development of the underlying assets. In addition, upon the occurrence of certain events, namely termination of the Company's participation in the programs either with or without a change in control, GVK will be entitled to purchase or obtain the Company's interest in GBO. GVK will have operational control of GBO and the Company will have strategic and scientific control.

The two preclinical programs sublicensed to GBO have not been developed to clinical stage as initially hoped, and the Company is in discussions with GVK regarding the future of GBO.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

11. Related-Party Transactions

The Company is party to a research agreement, as amended, with Mount Sinai School of Medicine (“Mount Sinai”), with which a member of the Company’s board of directors and a significant stockholder is associated. Mount Sinai is undertaking research on behalf of the Company on the terms set forth in the agreements. Mount Sinai, in connection with the Company, will prepare applications for patents generated from the research. Results from all projects will belong exclusively to Mount Sinai, but the Company will have an exclusive option to license any inventions. Payments to Mount Sinai under this research agreement for the three months ended June 30, 2016 and 2015 were \$187,000 and \$358,000, respectively and for the six months June 30, 2016 and 2015 were \$187,000 and \$715,000, respectively. At June 30, 2016 and December 31, 2015, the Company had \$187,000 and \$0 payable to Mount Sinai under this agreement.

The Company has entered into a consulting agreement with a member of its board of directors, who is also a significant stockholder. The board member provides consulting services to the Company on the terms set forth in the agreement. Payments to this board member for the three months ended June 30, 2016 and 2015 were \$33,000 and \$50,000, respectively and for the six months ended June 30, 2016 and 2015 were \$66,000 and \$99,000, respectively. At June 30, 2016 and December 31, 2015, the Company had no outstanding amounts payable under this agreement.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

12. Securities Registrations and Sales Agreements

In October 2014, the Company entered into a sales agreement with Cantor Fitzgerald & Co. (“Cantor”) to create an at-the-market equity program under which the Company from time to time was able to offer and sell shares of its Common Stock through Cantor. A registration statement (Form S-3 No. 333-199219) covering the shares offered through the Cantor program and other securities was filed with the SEC on October 8, 2014 and became effective on November 20, 2014. During the year ended December 31, 2015, 271,517 shares were sold under the Cantor sales agreement for net proceeds of \$6,018,000. The Cantor sales agreement was terminated on January 5, 2016, and there were no sales of Common Stock under this program during the six months ended June 30, 2016.

On October 8, 2015, the Company entered into a purchase agreement and a registration rights agreement with Lincoln Park. A registration statement (Form S-1 No. 333-207533) covering the offer and resale by Lincoln Park of shares of Common Stock sold by the Company to Lincoln Park was filed with the SEC on October 20, 2015 and became effective on November 3, 2015.

Subject to the terms and conditions of the purchase agreement, including the effectiveness of a registration statement covering the resale of the shares, the Company may sell additional shares of its Common Stock, having an aggregate offering price of up to \$15,000,000 to Lincoln Park from time to time until December 1, 2018.

Upon execution of the Lincoln Park purchase agreement, Lincoln Park made an initial purchase of 84,676 shares of the Company’s Common Stock for \$1,500,000. Subject to the terms and conditions of the purchase agreement, including the effectiveness of a registration statement covering the resale of the shares, the Company has the right to sell to and Lincoln Park is obligated to purchase up to an additional \$15,000,000 of shares of Common Stock, subject to certain limitations, from time to time until December 1, 2018. The Company may direct Lincoln Park, at its sole discretion and subject to certain conditions, to purchase up to 10,000 shares of Common Stock on any business day, increasing to up to 25,000 shares depending upon the closing sale price of the Common Stock (such purchases, “Regular Purchases”). However, in no event shall a Regular Purchase be more than \$1,000,000. The purchase price of shares of Common Stock related to the future funding will be based on the prevailing market prices of such shares at the time of sales. In addition, the Company may direct Lincoln Park to purchase additional amounts as accelerated purchases if on the date of a Regular Purchase the closing sale price of the Common Stock is not below the threshold price as set forth in the Purchase Agreement. The Company’s sales of shares of Common Stock to Lincoln Park under the Purchase Agreement were limited to no more than the number of shares that would result in the beneficial ownership by Lincoln Park and its affiliates, at any single point in time, of more than 4.99% of the then-outstanding shares of the Common Stock, which limit increased to 9.99% on May 1, 2016.

Pursuant to the terms of the Lincoln Park purchase agreement and to comply with the listing rules of the NASDAQ Stock Market, the number of shares issued to Lincoln Park thereunder shall not exceed 19.99% of the Company’s shares outstanding on October 8, 2015 unless the approval of the Company’s stockholders is obtained. This limitation shall not apply if the average price paid for all shares issued and sold under the purchase agreement is equal to or greater than \$15.56. The Company is not required or permitted to issue any shares of Common Stock under the Lincoln Park purchase agreement if such issuance would breach the Company’s obligations under the listing rules of the NASDAQ Stock Market.

As consideration for entering into the purchase agreement, the Company issued to Lincoln Park 20,000 shares of Common Stock. Lincoln Park represented to the Company, among other things, that it was an “accredited investor” (as such term is defined in Rule 501(a) of Regulation D under the Securities Act of 1933, as amended (the “Securities Act”), and the Company sold the securities in reliance upon an exemption from registration contained in Section 4(2) under the Securities Act. The securities sold may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements.

The net proceeds to the Company under the Lincoln Park purchase agreement will depend on the frequency and prices at which the Company may sell shares of Common Stock to Lincoln Park. The Company expects that the proceeds received from the initial purchase and any additional proceeds from future sales to Lincoln Park will be used to fund the development of the Company’s clinical and preclinical programs, for other research and development activities and for general corporate purposes.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

On January 5, 2016, the Company entered into a securities purchase agreement (“Securities Purchase Agreement”) with an institutional investor providing for the issuance and sale by the Company of 193,684 shares of the Company’s Common Stock, at a purchase price of \$9.50 per share and warrants to purchase up to 96,842 shares of the Company’s Common Stock (the “Warrants”) for aggregate gross proceeds of \$1,840,000. The Warrants will be exercisable from July 11, 2016 through July 11, 2021 at an exercise price of \$11.50 per share of Common Stock, subject to customary adjustments. Net proceeds from the sale of the Common Stock and Warrants (not including any future proceeds from the exercise of the Warrants) were approximately \$1,609,000 after deducting certain fees due to the placement agent and the Company’s estimated transaction expenses. The net proceeds received by the Company from the transactions will be used to fund the development of the Company’s clinical and preclinical programs, for other research and development activities and for general corporate purposes.

The shares of Common Stock sold by the Company pursuant to the Securities Purchase Agreement were sold pursuant to an effective shelf registration statement on Form S-3, which was initially filed with the SEC on October 8, 2014 and subsequently declared effective on November 20, 2014 (File No. 333-199219).

The Warrants were issued and sold without registration under the Securities Act in reliance on the exemptions provided by Section 4(a)(2) of the Securities Act and/or Regulation D promulgated thereunder and in reliance on similar exemptions under applicable state laws. Accordingly, the Warrants and the shares of Common Stock underlying the Warrants may not be offered or sold except pursuant to an effective registration statement under the Securities Act or pursuant to an available exemption from, or in a transaction not subject to, the registration requirements of the Securities Act and in accordance with applicable state securities laws.

Onconova Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements (Continued)
(Unaudited)

13. Subsequent Event

On July 8, 2016, the Company distributed to holders of its Common Stock and to holders of certain of outstanding warrants, at no charge, non-transferable subscription rights to purchase units. Each unit consisted of one share of Common Stock and 0.75 of a tradable warrant representing the right to purchase one share of Common Stock ("Tradeable Warrants"). The offering of units pursuant to the subscription rights is referred to as the "Rights Offering." On July 7, 2016, the Company entered into a dealer-manager agreement (the "Dealer-Manager Agreement") with Maxim Group LLC ("Maxim"), to engage Maxim as dealer-manager for the Rights Offering.

In the Rights Offering, holders received 1.5 subscription rights for each share of Common Stock, or each share of Common Stock underlying our participating warrants owned on the record date, July 7, 2016. Subscribers whose subscriptions otherwise would have resulted in their beneficial ownership of more than 4.99% of the Company's Common Stock could elect to receive, in lieu of shares of Common Stock in excess of that threshold, pre-funded warrants to purchase the same number of shares of Common Stock for \$0.01 ("Pre-Funded Warrants"), and the subscription price per unit consisting of a Pre-Funded Warrant in lieu of a share of Common Stock was reduced by the \$0.01 exercise price.

The Rights Offering commenced on July 8, 2016 and the subscription rights expired on July 26, 2016. The units were initially priced at \$4.90 per unit. On July 22, 2016, the Company reduced the subscription price to \$4.10 per unit.

The Rights Offering closed on July 29, 2016. Gross proceeds from the offering were \$17,443,000, which represents the sale of all 4,256,186 units at approximately \$4.10 per unit. Net proceeds were approximately \$15.8 million. Including the net proceeds from the rights offering, Onconova had cash and cash equivalents of approximately \$27.6 million at July 31, 2016. The Company issued 3,599,786 shares of Common Stock, 3,192,139 Tradable Warrants and 656,400 Pre-Funded Warrants in the Rights Offering. The Tradable Warrants are exercisable for a period of five years for one share of Common Stock at an exercise price of \$4.92 per share. After the one-year anniversary of issuance, we may redeem the Tradable Warrants for \$0.001 per Tradable Warrant if the volume weighted average price of our Common Stock is above \$12.30 for each of 10 consecutive trading days. On August 3, 2016, the Tradable Warrants were listed for trading on the NASDAQ Capital Market under the symbol "ONTXW."

The Pre-Funded Warrants are exercisable for one share of Common Stock at an exercise price of \$0.01. The exercise period for the Pre-Funded Warrants is seven years, which may be extended if an exercise would result in the holder's beneficial ownership of our Common Stock exceeding 4.99%.

In connection with the Rights Offering, the Company paid to Maxim a cash fee equal to (a) 4.5% of the dollar amount of the units sold to any holders of subscription rights who were beneficial owners of shares of the Company's common stock prior to July 30, 2013, and (b) 8.0% of the dollar amount of the units sold to any other holders of subscription rights, plus a non-accountable expense allowance of \$100,000 for expenses incurred in connection with the Rights Offering.

Under the terms and subject to the conditions contained in the Dealer-Manager Agreement, the Company has agreed not to issue, agree to issue or announce the issuance of any shares of Common Stock or Common Stock equivalents until 90 days after the closing date of the Rights Offering, without the consent of Maxim, subject to certain exceptions including a pre-existing agreement, equity awards, conversion of derivative securities and in connection with any acquisitions, partnerships or strategic transactions.

A registration statement on Form S-1, as amended (File No. 333-211769), relating to the securities being offered and sold in connection with the Rights Offering was declared effective by the U.S. Securities and Exchange Commission ("SEC") on July 7, 2016. A prospectus and prospectus supplement relating to and describing the terms of the Rights Offering has been filed with the SEC as a part of the registration statement and is available on the SEC's web site at <http://www.sec.gov>.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following Management's Discussion and Analysis of Financial Condition and Results of Operations should be read in conjunction with interim unaudited condensed consolidated financial statements contained in Part I, Item 1 of this quarterly report, and the audited consolidated financial statements and notes thereto for the year ended December 31, 2015 and the related Management's Discussion and Analysis of Financial Condition and Results of Operations, both of which are contained in our annual report on Form 10-K filed with the SEC on March 28, 2016. As used in this report, unless the context suggests otherwise, "we," "us," "our," "the Company" or "Onconova" refer to Onconova Therapeutics, Inc. and its consolidated subsidiaries.

Cautionary Note Regarding Forward-Looking Statements

This quarterly report on Form 10-Q includes 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 or outcomes to identify these forward-looking statements. Forward-looking statements appear in a number of places throughout this report 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 report, 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 report. In addition, even if our results of operations, financial condition and liquidity, and events in the industry in which we operate are consistent with the forward-looking statements contained in this report, they may not be predictive of results or developments in future periods.

Actual results could differ materially from our forward-looking statements due to a number of factors, including 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 drug candidates or preclinical compounds, and our ability to achieve certain milestones under those agreements;
- 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;

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- our ability to maintain the listing of our common stock on a national securities exchange;
- the potential for third party disputes and litigation; and
- the performance of third parties, including contract research organizations, or CROs and third-party manufacturers.

Any forward-looking statements that we make in this report speak only as of the date of such statement, and we undertake no obligation to update such statements to reflect events or circumstances after the date of this report or to reflect the occurrence of unanticipated events. 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” in our most recent annual report on Form 10-K and quarterly reports on Form 10-Q, to better understand significant risks and uncertainties inherent in our business and underlying any forward-looking statements. As a result of these factors, actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements in this report and you should not place undue reliance on any forward-looking statements.

All common stock, equity, share and per share amounts have been retroactively adjusted to reflect a one-for-ten reverse stock split which was effective May 31, 2016.

Overview

Onconova Therapeutics, Inc., sometimes referred to as “we” or the “Company,” is a clinical-stage biopharmaceutical company focused on discovering and developing novel small molecule drug candidates to treat cancer. Using our proprietary chemistry platform, we have created an extensive library of targeted anti-cancer agents designed to work against cellular pathways important to cancer cells. We believe that the drug 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 both intravenous and oral formulations as a single agent, and the oral formulation is also being tested in combination with azacitidine, in clinical trials for patients with myelodysplastic syndromes, or MDS, and related cancers.

In December 2015, we enrolled the first patient in a randomized controlled Phase 3 clinical trial of rigosertib IV in a population of patients with higher-risk MDS after failure of hypomethylating agent, or HMA, therapy. The trial, which we refer to as INSPIRE, is expected to enroll approximately 225 patients at more than 100 sites globally. The primary endpoint of INSPIRE is overall survival, and an interim analysis is anticipated. We anticipate reporting topline data from the INSPIRE trial in 2018.

In January 2016, we completed a sale of common stock and warrants for net proceeds of approximately \$1.6 million. In July 2016, we completed a rights offering of units of common stock and warrants for net proceeds of \$15.8 million. In the first half of 2016, we took significant actions to conserve cash, including reduction in personnel and expenditures. While we will continue to take cash conservation actions where appropriate, our costs will increase in subsequent quarters as more INSPIRE sites open and more patients enroll in the INSPIRE trial. We believe that our cash and cash equivalents, together with anticipated contractual cost-sharing payments from Baxalta for a portion of the INSPIRE trial costs, will be sufficient to fund our ongoing trials and operations into the fourth quarter of 2017, although there is substantial doubt about our ability to continue as a going concern.

We are exploring various sources of funding for continued development of rigosertib in MDS and acute myelogenous leukemia, or AML, as well as our ongoing operations. If we raise additional funds through strategic collaborations and alliances or licensing arrangements with third parties, which may include existing collaboration partners, we may have to relinquish valuable rights to our technologies or product candidates, including rigosertib, or grant licenses on terms that are not favorable to us. There can be no assurance, however, that we will be successful in obtaining such financing in sufficient amounts, on terms acceptable to us, or at all. In addition, there can be no assurance that we will obtain approvals necessary to market our products or achieve profitability or sustainable, positive cash flow. If we are unable to successfully raise sufficient additional capital, through future financings or through strategic and collaborative arrangements, we will not have sufficient cash to fund our ongoing trials and operations. Due to our ongoing losses and our accumulated deficit in combination with these factors, the opinion of our independent registered public accounting firm on our audited consolidated financial statements for our fiscal year ended December 31, 2015 contains an explanatory paragraph regarding substantial doubt about our ability to continue as a going concern.

Rigosertib

Rigosertib is a small molecule that inhibits cellular signaling by acting as a Ras mimetic. This is believed to be mediated by the binding of rigosertib to the Ras-binding domain, or RBD, found in many Ras effector proteins, including the Raf and PI3K kinases. This mechanism of action provides a new approach to block the interactions between Ras and its targets containing RBD sites. Rigosertib is being tested as a single agent and in combination with azacitidine, in clinical trials of patients with MDS and related cancers. We have enrolled more than 1,200 patients in rigosertib clinical trials. We are a party to a license and development agreement with Baxalta, which granted Baxalta certain rights to commercialize rigosertib in Europe. The Baxalta agreement is scheduled to terminate August 30, 2016, at which time the European rights will revert to us at no cost. We are also 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, 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. The ONTIME trial did not meet its primary endpoint 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.

During 2014 and 2015, we held meetings with the U.S. Food and Drug Administration, or FDA, European Medicines Agency, or 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 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, with overall survival as a primary endpoint. The INSPIRE trial will enroll higher-risk MDS patients under 82 years of age who have progressed on, or failed to respond to, previous treatment with HMAs within the first nine months 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, and an interim analysis is anticipated. This randomized trial of approximately 225 patients is expected to be conducted at more than 100 sites globally. In August 2015, we submitted an updated investigational new drug application, or IND, to the FDA, and in August 2015 we submitted Clinical Trial Applications, or CTAs, with the United Kingdom, German and Austrian regulatory authorities for IV rigosertib as a treatment for higher-risk MDS after failure of HMA therapy. The first CTA has been cleared by the Medicines and Healthcare products Regulatory Agency. The first patient in the INSPIRE trial was enrolled at the MD Anderson Cancer Center in December 2015 and, as of July 14, 2016, 92 clinical sites are open (58 in the U.S. and Europe and 26 in Japan) and can recruit patients. The first patient in Europe was enrolled on March 18, 2016.

Rigosertib oral in combination with azacitidine for MDS and AML

We have completed enrollment in the Phase 2 portion of an open label Phase 1/2 clinical trial testing rigosertib oral in combination with the approved dose of injectable azacitidine for patients with higher-risk MDS and AML. This study is based on our published preclinical data demonstrating synergistic activity of this combination. The Phase 2 portion of the trial was designed to assess whether treatment with rigosertib, in combination with the approved dose of injectable azacitidine, reduces the number of bone marrow blasts, improves peripheral blood counts and can resensitize the marrow blast cells to azacitidine for patients who were previously exposed to azacitidine. Patient enrollment in the Phase 2 portion of this trial was completed in the fourth quarter of 2015 and interim data were summarized by way of an oral presentation at the ASH Annual Meeting in December 2015 and updated at the European Hematology Association Congress in June 2016.

The Phase 2 trial included both patients with first-line MDS (that is, patients not previously treated with HMAs) and patients with second-line MDS (i.e. patients whose disease had failed prior HMA therapy). The presentation at ASH included results from a total of 37 MDS patients treated with the recommended Phase 2 dose of oral rigosertib (560 mg AM/280 mg PM) plus the full standard dose of injectable azacitidine. The combination of oral rigosertib and azacitidine was generally well tolerated, with a median duration of treatment of four months (range 1 to 27 months).

At the time of the ASH presentation, 30 MDS patients were evaluable for efficacy assessment per 2006 IWG criteria. Twenty-three of 30 patients (77%) responded to the combination therapy, including six patients who had complete remissions. Hematologic improvement was observed in 13 of 26 patients that were evaluable for this part of the analysis. Notably, 16 of 19 (84%) HMA-naïve patients had a response to the combination therapy and 7 of 11 (64%) patients whose disease had previously failed HMAs responded. Additional data collection on efficacy and safety continues for the patients remaining on study and may impact the final results of the trial. In July 2016, we submitted a request to the FDA for an End-

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of-Phase 2 meeting on the use of oral rigosertib in combination with azacitidine for the treatment of patients with MDS.

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 peripheral blood, whereas 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 have shown encouraging signs of efficacy of single agent oral rigosertib in transfusion-dependent, lower-risk MDS patients. 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 toxicity 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. Enrollment in this expansion cohort has been completed. We are working with academic collaborators to refine this genomic methylation test.

Other Programs

The vast majority of the Company's 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, or eIF4E. In vitro evidence indicates briciclib binds to eIF4E, blocking cap-dependent translation of cyclin D1 and other cancer proteins, such as c-MYC, leading to tumor cell death. We have been conducting a Phase 1 multisite 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 briciclib IND 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 Efficacy 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 studies in appropriate animal models to support efficacy in humans. 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.

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. We presented data related to ON 0123300, our novel inhibitor of ARK5 and CDK4/6 at the American Association of Cancer Research (AACR) conference in April.

Critical Accounting Policies and Significant Judgments and Estimates

This management's discussion and analysis of our financial condition and results of operations is based on our interim unaudited consolidated financial statements, which have been prepared in accordance with GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities in our consolidated financial statements. On an ongoing basis, we evaluate our estimates and judgments, including those related to accrued expenses, revenue recognition, deferred revenue and stock-based compensation. We base our estimates on historical experience, known trends and events and various other factors that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. We believe there have been no significant changes in our critical accounting policies as discussed in our annual report on Form 10-K filed with the SEC on March 28, 2016.

Results of Operations

Comparison of the Three Months Ended June 30, 2016 and 2015

	Three Months Ended June 30,		Change
	2016	2015	
Revenue	\$ 2,248,000	\$ 123,000	\$ 2,125,000
Operating expenses:			
General and administrative	2,083,000	2,568,000	485,000
Research and development	5,564,000	6,512,000	948,000
Total operating expenses	7,647,000	9,080,000	1,433,000
Loss from operations	(5,399,000)	(8,957,000)	3,558,000
Change in fair value of warrant liability	8,000	—	8,000
Other income (expense), net	10,000	(18,000)	28,000
Net loss	\$ (5,381,000)	\$ (8,975,000)	\$ 3,594,000

Revenues

Revenues increased by \$2.1 million for the three months ended June 30, 2016 when compared to the same period in 2015 primarily as a result of contractual cost-sharing revenue from Baxalta for a portion of the costs of the INSPIRE trial in the 2016 period.

General and administrative expenses

General and administrative expenses decreased by \$0.5 million, or 19%, to \$2.1 million for the three months ended June 30, 2016 from \$2.6 million for the three months ended June 30, 2015. The decrease was attributable primarily to a \$0.3 million decrease in personnel and related costs related to a reduction in general and administrative headcount down to 10 at June 30, 2016 from 12 at June 30, 2015, and a \$0.2 million reduction in professional fees as the company continued to focus on reducing non-core costs. The decrease was also caused by a reduction in stock-based compensation expense of \$0.1 million lower in the 2016 period as a result of fewer outstanding options following the reductions in workforce. These decreases were partially offset by an increase of \$0.1 million in other general and administrative expenses.

Research and development expenses

Research and development expenses decreased by \$0.9 million, or 15%, to \$5.6 million for the three months ended June 30, 2016 from \$6.5 million for the three months ended June 30, 2015. This decrease was caused primarily by a \$0.6 million reduction in personnel and related costs as research and development headcount was down to 18 at June 30, 2016 from 23 at June 30, 2015. The decrease was also caused by a \$0.5 million decrease in sponsored research offset by a \$0.3 million increase in clinical research related to the INSPIRE study, which is enrolling patients in the 2016 period. Stock-based compensation expense was \$0.1 million lower in the 2016 period as a result of fewer outstanding options following the

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reductions in workforce.

Change in fair value of warrant liability

The change in fair value of the warrant liability was \$8,000 for the three months ended June 30, 2016 compared to \$0 for the three months ended June 30, 2015. The change in the fair value of the warrant liability in 2016 was related to the revaluation of the outstanding warrants issued in January 2016 to fair value.

Other income (expense), net

Other income (expense), net, increased by \$27,000 for the three months ended June 30, 2016 compared to the three months ended June 30, 2015, due primarily to the loss on disposal of office furniture of \$15,000 related to closing of one office location during the 2015 period. The increase was also caused by \$3,000 higher interest income and \$9,000 less foreign exchange loss in the 2016 period.

Comparison of the Six Months Ended June 30, 2016 and 2015

	Six Months Ended June 30,		Change
	2016	2015	
Revenue	\$ 3,722,000	\$ 237,000	\$ 3,485,000
Operating expenses:			
General and administrative	5,254,000	5,533,000	279,000
Research and development	11,386,000	16,010,000	4,624,000
Total operating expenses	16,640,000	21,543,000	4,903,000
Loss from operations	(12,918,000)	(21,306,000)	8,388,000
Change in fair value of warrant liability	279,000	—	279,000
Other income (expense), net	18,000	(36,000)	54,000
Net loss	\$ (12,621,000)	\$ (21,342,000)	\$ 8,721,000

Revenues

Revenues increased by \$3.5 million for the six months ended June 30, 2016 when compared to the same period in 2014 primarily as a result of contractual cost-sharing revenue from Baxalta for a portion of the costs of the INSPIRE trial in the 2016 period.

General and administrative expenses

General and administrative expenses decreased by \$0.3 million, or 5%, to \$5.3 million for the six months ended June 30, 2016 from \$5.5 million for the six months ended June 30, 2015. The decrease was primarily caused by a decrease in professional fees and consulting fees of \$0.3 million as a result of the company's focus on reducing non-core costs. The decrease was also caused by a \$0.6 million decrease in personnel and related costs related to a reduction in general and administrative headcount down to 10 at June 30, 2016 from 12 at June 30, 2015, partially offset by \$0.4 million of severance costs during the first quarter of 2016. These decreases were partially offset by an increase of \$0.1 million in other general and administrative expenses. Stock-based compensation expense was \$0.1 million higher in the 2016 period as a result of the accelerated stock compensation expense related to the reduction in workforce during the 2016.

Research and development expenses

Research and development expenses decreased by \$4.6 million, or 29%, to \$11.4 million for the six months ended June 30, 2016 from \$16.0 million for the six months ended June 30, 2015. This decrease was caused primarily by a \$1.5 million decrease in pre-clinical and clinical development costs and a \$1.0 million decrease in institutional research in the 2016 period, as our development efforts were focused on the INSPIRE trial and we worked to reduce expenses related to other programs and legacy studies. The decrease in research and development expenses in 2016 was also caused by a reduction of \$1.3 million in API manufacturing costs and a reduction of \$0.3 million in consulting expenses related to analyzing clinical trial results and preparing for meetings with regulatory authorities in the 2015 period. Personnel and related costs were \$1.8 million lower as research and development headcount was down to 18 at June 30, 2016 from 23 at June 30, 2015, partially offset by \$0.8 million of severance costs resulting from the reduction in workforce in the first quarter of 2016. Stock-based compensation expense was \$0.5 million higher in the 2016 period as a result of acceleration of vesting

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and expense recognition in connection with our reduction in workforce in the first quarter of 2016.

Change in fair value of warrant liability

The change in fair value of the warrant liability was \$279,000 for the six months ended June 30, 2016 compared to \$0 for the six months ended June 30, 2015. The change in the fair value of the warrant liability in 2016 was related to the revaluation of the outstanding warrants issued in January 2016 to fair value.

Other income (expense), net

Other income (expense), net, increased by \$54,000 for the six months ended June 30, 2016 compared to the six months ended June 30, 2015, primarily to the loss on disposal of office furniture of \$15,000 related to closing of one office location in 2015, as well as \$26,000 less foreign exchange loss and \$13,000 higher interest income in the 2016 period.

Financial Condition

Total assets decreased \$7.2 million, or approximately 31%, from \$23.4 million at December 31, 2015 to \$16.2 million at June 30, 2016. The decrease in total assets was due primarily to decreases in cash and cash equivalents, partially offset by a decrease in prepaid expenses. Total liabilities increased from \$12.6 million at December 31, 2015 to \$14.2 million at June 30, 2016, an increase of \$1.6 million, primarily as a result of the timing of invoices from and payments to vendors. Total stockholders' equity decreased from \$10.8 million at December 31, 2015 to \$2.0 million at June 30, 2016, a decrease of \$8.8 million, or approximately 81%, primarily due to a net loss of \$12.6 million for the six months ended June 30, 2016, partially offset by stock compensation of \$2.8 million and the issuance of common stock of \$1.0 million.

Liquidity and Capital Resources

Since our inception, we have incurred net losses and experienced negative cash flows from our operations. We incurred net losses of \$12.6 million and \$21.3 million for the six months ended June 30, 2016 and 2015, respectively. Our operating activities used \$8.6 million and \$18.3 million of net cash during the six months ended June 30, 2016 and 2015, respectively. At June 30, 2016, we had an accumulated deficit of \$331.2 million, working capital of \$6.9 million, and cash and cash equivalents of \$12.8 million. Subsequent to the close of the quarter ended June 30, 2016, we completed a rights offering of units of common stock and warrants, in which we raised net proceeds of approximately \$15.8 million. We believe that our cash and cash equivalents, together with anticipated contractual cost-sharing payments from Baxalta for a portion of the INSPIRE trial costs, and the proceeds from our July 2016 rights offering will be sufficient to fund our ongoing trials and operations into the fourth quarter of 2017.

Cash Flows

The following table summarizes our cash flows for the three months ended June 30, 2016 and 2015:

	Six Months Ended June 30,	
	2016	2015
Net cash (used in) provided by:		
Operating activities	\$ (8,594,000)	\$ (18,327,000)
Investing activities	—	—
Financing activities	1,610,000	104,000
Effect of foreign currency translation	3,000	(1,000)
Net (decrease) increase in cash and cash equivalents	<u>\$ (6,981,000)</u>	<u>\$ (18,224,000)</u>

Net cash used in operating activities

Net cash used in operating activities was \$8.6 million for the six months ended June 30, 2016 and consisted primarily of a net loss of \$12.6 million and change in fair value of warrant liability of \$0.3 million, partially offset by \$2.8 million of noncash stock-based compensation and depreciation expense. Changes in operating assets and liabilities resulted in a net increase in cash of \$1.5 million. Significant changes in operating assets and liabilities included a decrease in prepaid

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expenses and other current assets of \$0.8 million as a result of the recognition of expense for clinical and manufacturing activities and insurance expense, partially offset by an increase in receivables of \$0.6 million. Accounts payable and accrued liabilities increased by \$1.5 million as a result of the timing of receipt and payment of vendor invoices, primarily related to our INSPIRE trial. Deferred revenue decreased \$0.2 million due to recognition of the unamortized portion of the upfront payment under our collaboration agreement with Symbio.

Net cash provided by investing activities

There was no net cash provided by or used in investing activities for the six months ended June 30, 2016 or 2015.

Net cash provided by financing activities

Net cash provided by financing activities for the six months ended June 30, 2016 was \$1.6 million, which resulted from the proceeds received from the sale of common stock. Net cash provided by financing activities for the six months ended June 30, 2015 was \$0.1 million resulting from the issuance of common stock.

Operating and Capital Expenditure Requirements

We have not achieved profitability since our inception and we expect to continue to incur net losses for the foreseeable future. We expect our net cash expenditures in 2016 to decrease from 2015 due to a reduction in cash expenses related to administrative expenses and non-core clinical trials, which will be partially offset by an increase in cash expenditures related to our INSPIRE trial. In February 2016, we eliminated a number of employee positions as part of our ongoing commitment to reduce costs and conserve cash. The net reduction was 6 employees, which represented approximately 17 percent of our workforce. Affected employees have been offered severance pay in accordance with our policy or, if applicable, their employment agreements. As a result of the workforce reduction, we recorded in the first quarter of 2016, a one-time severance-related charge totaling \$2.8 million, which includes a non-cash charge of \$1.6 million related to the accelerated vesting of the outstanding stock options for certain of the affected employees. We may also incur other charges or cash expenditures not currently contemplated due to events that may occur as a result of, or associated with, the workforce reduction.

We do not have the funding resources necessary to carry out all of our proposed operating activities. We will need to obtain additional financing in the future in order to fully fund our INSPIRE trial and to further develop rigosertib or any other product candidates through the regulatory approval process. Accordingly, we may delay or pause our planned clinical trials, including the INSPIRE trial, until we secure adequate additional funding. If we seek to proceed with a clinical trial without additional funding, we may receive questions or comments from the FDA, fail to obtain IRB approval, or find it more difficult to enroll patients in the trial. Additionally, we plan to scale down our operations in order to reduce spending on general and administrative functions, research and development, and other clinical trials.

We are continuing to explore various dilutive and non-dilutive sources of funding, including equity and debt financings, strategic alliances, business development and other sources. However, we may not be able to obtain additional funding on favorable terms, if at all. If we are unable to secure adequate additional funding, we will continue to delay, scale-back or eliminate certain of our planned research, drug discovery and development activities and certain other aspects of our operations and our business until such time as we are successful in securing adequate additional funding. As a result, our business, operating results, financial condition and cash flows may be materially and adversely affected. We will incur substantial costs beyond the present and planned clinical trials in order to file a New Drug Application (NDA) for rigosertib. The nature, design, size and cost of further studies will depend in large part on the outcome of preceding studies and discussions with regulators.

Our future capital requirements will depend on many factors, including:

- timing and success of our clinical trials for rigosertib;
- continued progress of and increased spending related to our research and development activities;
- conditions in the capital markets and the biopharmaceutical industry, particularly with respect to raising capital or entering into strategic arrangements;
- progress with preclinical experiments and clinical trials, including regulatory approvals necessary for advancement and continuation of our development programs;
- changes in regulatory requirements and guidance of the FDA and other regulatory authorities, which may require additional clinical trials to evaluate safety and/or efficacy, and thus have significant impacts on our timelines, cost

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- projections, and financial requirements;
- ongoing general and administrative expenses related to our reporting obligations under the Exchange Act;
- cost, timing, and results of regulatory reviews and approvals;
- costs of any legal proceedings, claims, lawsuits and investigations;
- success, timing, and financial consequences of any existing or future collaborative, licensing and other arrangements that we may establish, including potential granting of licenses to one or more of our programs in various territories, or otherwise monetizing one or more of our programs;
- cost of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- costs of commercializing any of our other product candidates;
- technological and market developments;
- cost of manufacturing development; and
- timing and volume of sales of products for which we obtain marketing approval.

If we are unable to successfully raise sufficient additional capital, through future debt or equity financings, product sales, or through strategic and collaborative ventures with third parties, we will not have sufficient cash flows and liquidity to fund our planned business operations. In that event, we may be forced to limit many, if not all, of our programs and consider other means of creating value for our stockholders, such as licensing to others the development and commercialization of products that we consider valuable and would otherwise likely develop ourselves. If we are unable to raise the necessary capital, we may be forced to curtail all of our activities and, ultimately, potentially cease operations. Even if we are able to raise additional capital, such financings may only be available on unattractive terms, or could result in significant dilution of stockholders' interests. The consolidated financial statements do not include any adjustments relating to recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might be necessary should we be unable to continue in existence.

For additional risks associated with our substantial capital requirements, please see "Risk Factors" previously disclosed in our annual report on Form 10-K filed with the SEC on March 28, 2016.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

As a smaller reporting company, the Company is not required to provide the information otherwise required by this Item.

Item 4. Controls and Procedures

Managements' Evaluation of our Disclosure Controls and Procedures

Our management, with the participation of our principal executive and principal financial officers, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2016. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) promulgated under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Based on the evaluation of our disclosure controls and procedures as of June 30, 2016, our principal executive and principal financial officers concluded that, as of such date, our disclosure controls and procedures were effective.

Changes in Internal Control Over Financial Reporting

Our management, with the participation of our principal executive and principal financial officers, evaluated any changes in our internal control over financial reporting (as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during our most recently completed fiscal quarter. Based on that evaluation, our principal executive and principal financial officers concluded that no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) occurred during the fiscal quarter ended June 30, 2016 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

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PART II — OTHER INFORMATION

Item 1. Legal Proceedings

We are not party to any pending material legal proceedings and are not aware of any such proceedings contemplated by governmental authorities.

Item 1A. Risk Factors

There have been no material changes from our risk factors as previously disclosed in our annual report on Form 10-K filed with the SEC on March 28, 2016.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

None.

Item 3. Defaults Upon Senior Securities

Not applicable.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

A list of the exhibits filed as part of this Quarterly Report on Form 10-Q is set forth on the Exhibit Index, which is incorporated herein by reference.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ONCONOVA THERAPEUTICS, INC.

Dated: August 15, 2016

/s/ RAMESH KUMAR, Ph.D.

Ramesh Kumar, Ph.D.

President and Chief Executive Officer

(Principal Executive and Principal Operating Officer)

Dated: August 15, 2016

/s/ MARK GUERIN

Mark Guerin

Vice President, Financial Planning & Accounting and Chief Accounting Officer

(Principal Financial and Principal Accounting Officer)

EXHIBIT INDEX

Exhibit Number	Description
3.1	Certificate of Amendment to Tenth Amended and Restated Certificate of Incorporation of Onconova Therapeutics, Inc. (Incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed on May 31, 2016).
4.1	Form of Warrant Certificate issued pursuant to Warrant Agreement, dated as of July 27, 2016, by and between Onconova Therapeutics, Inc. and Wells Fargo Bank, N.A., as Warrant Agent
4.2	Warrant Agreement, dated as of July 27, 2016, by and between Onconova Therapeutics, Inc. and Wells Fargo Bank, N.A., as Warrant Agent
4.3	Form of Pre-Funded Warrants issued as of July 27, 2016
31.1	Rule 13a-14(a)/15d-14(a) Certifications of Principal Executive Officer
31.2	Rule 13a-14(a)/15d-14(a) Certifications of Principal Financial Officer
32.1	Section 1350 Certifications of Principal Executive Officer
32.2	Section 1350 Certifications of Principal Financial Officer
101.INS	XBRL Instance
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

[FORM OF WARRANT CERTIFICATE]

Number

Warrants

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

**ONCONOVA THERAPEUTICS, INC.
Incorporated Under the Laws of the State of Delaware**

CUSIP: 68232V 116

Warrant Certificate

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

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

The initial Exercise Price per share of Common Stock for any Warrant is equal to \$4.92 per share. The Exercise Price is subject to adjustment upon the occurrence of certain events set forth in the Warrant Agreement.

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

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

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

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

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

ONCONOVA THERAPEUTICS, INC.

By: _____
Name:
Title:

WELLS FARGO BANK, N.A.,
as Warrant Agent

By: _____
Name:
Title:

[Signature Page to Warrant Certificate]

[Form of Warrant Certificate]

[Reverse]

The Warrants evidenced by this Warrant Certificate are part of a duly authorized issue of Warrants entitling the holder on exercise to receive shares of Common Stock and are issued or to be issued pursuant to a Warrant Agreement dated as of July , 2016 (the "**Warrant Agreement**"), duly executed and delivered by the Company to Wells Fargo Bank, N.A., as warrant agent (the "**Warrant Agent**"), which Warrant Agreement is hereby incorporated by reference in and made a part of this instrument and is hereby referred to for a description of the rights, limitation of rights, obligations, duties and immunities thereunder of the Warrant Agent, the Company and the holders (the words "**holders**" or "**holder**" meaning the Holders or Holder) of the Warrants. A copy of the Warrant Agreement may be obtained by the holder hereof upon written request to the Company. Defined terms used in this Warrant Certificate but not defined herein shall have the meanings given to them in the Warrant Agreement.

Warrants may be exercised at any time during the Exercise Period set forth in Section 3.2 of the Warrant Agreement.

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

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

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

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

Election to Purchase

(To Be Executed Upon Exercise of Warrant)

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

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

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

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

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

Date: _____, 20____

(Signature)

(Address)

(Tax Identification Number)

WARRANT AGREEMENT

THIS WARRANT AGREEMENT (this “*Agreement*”), dated as of July 27, 2016, is by and between Onconova Therapeutics, Inc., a Delaware corporation (the “*Company*”), and Wells Fargo Bank, N.A., as the Warrant Agent (the “*Warrant Agent*”).

WHEREAS, the Company is engaged in an offering (the “*Offering*”) of shares of common stock of the Company, par value \$0.01 per share (“*Common Stock*”), and warrants to purchase shares of Common Stock of the Company and, in connection therewith, has determined to issue and deliver up to 3,192,140 warrants to investors in the Offering, each such warrant evidencing the right of the holder thereof to purchase one share of Common Stock for \$4.92 per share, subject to adjustment as described herein (the “*Warrants*”);

WHEREAS, the Company has filed with the Securities and Exchange Commission (the “*Commission*”) a Registration Statement on Form S-1 (File No. 333-211769) (as the same may be amended from time to time, the “*Registration Statement*”) for the registration, under the Securities Act of 1933, as amended (the “*Securities Act*”), of the shares of Common Stock and the Warrants to be sold to investors in the Offering and the shares of Common Stock underlying the Warrants;

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

WHEREAS, the Company desires to provide for the form and provisions of the Warrants, the terms upon which they shall be issued and exercised, and the respective rights, limitation of rights, and immunities of the Company, the Warrant Agent, and the holders of the Warrants, or if the Warrants are held in “street name”, a Participant (as defined below) or a designee appointed by such Participant (each, a “*Holder*” or “*Registered Holder*”); and

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

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

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

2. Warrants.

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

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

2.3. Registration.

2.3.1. Warrant Register. The Warrant Agent shall maintain books (the "**Warrant Register**") for the registration of the original issuance and the registration of transfer of the Warrants. Upon the initial issuance of the Warrants, the Warrant Agent shall issue and register the Warrants in the names of the respective holders thereof in such denominations and otherwise in accordance with instructions delivered to the Warrant Agent by the Company. In addition, the Warrants are eligible for the book entry and depository services of The Depository Trust Company ("**DTC Eligible**") as of the date of issuance (the "**Issuance Date**") and some or all of the Warrants shall be represented by one or more global Warrant Certificates in the form attached hereto as Exhibit B (the "**Global Warrant Certificate**") deposited with The Depository Trust Company (the "**Depository**") and registered in the name of Cede & Co., a nominee of the Depository. Ownership of beneficial interests in the Global Warrant Certificate shall be shown on, and the transfer of such ownership shall be effected through, records maintained (i) by the Depository or its nominee for each Global Warrant Certificate or (ii) by institutions that have accounts with the Depository (such institution, with respect to a Warrant in its account, a "**Participant**"). For purposes of this Agreement, the delivery of a notice from the Depository or a Participant of the transfer or exercise of Warrants in the form of a Global Warrant Certificate shall be deemed to constitute the delivery of a Warrant Certificate with respect to such transfer or exercise. If the Depository subsequently ceases to make its book-entry settlement system available for the Warrants, the Company may instruct the Warrant Agent regarding making other arrangements for book-entry settlement within ten (10) days after the Depository ceases to make its book-entry settlement available. In the event that the Company does not make alternative arrangements for book-entry settlement within ten (10) days or the Warrants are not eligible for, or it is no longer necessary to have the Warrants available in, book-entry form, the Warrant Agent shall prepare and deliver physical certificates evidencing the Warrants based on directions received by the Depository from the Participants with respect to the beneficial interests in the Global Warrant Certificate. In such event, any physical certificates evidencing the Warrants shall be issued in registered form only, shall be dated the date of issuance thereof (whether upon initial issuance, register of transfer, exchange or replacement) ("**Warrant Certificates**").

2.3.2. Beneficial Owner; Registered Holder. The term "beneficial owner" shall mean any person in whose name ownership of a beneficial interest in the Warrants evidenced by a Book-Entry Warrant is recorded in the records maintained by the Depository or its nominee, provided that all such beneficial interests may be held through a Participant. Prior to due presentment to the Warrant Agent for registration of transfer of any Warrant, the Company and the Warrant Agent may deem and treat the person in whose name such Warrant is registered in the Warrant Register as the absolute owner of such Warrant and of each Warrant represented thereby (notwithstanding any notation of ownership or other writing on the Warrant Certificate (as defined below) made by anyone other than the Company or the Warrant Agent), for the purpose of any exercise thereof, and for all other purposes, and neither the Company nor the Warrant Agent shall be affected by any notice to the contrary.

2.4. Uncertificated Warrants. Notwithstanding the foregoing and anything else herein to the contrary, the Warrants may be issued in uncertificated form.

3. Terms and Exercise of Warrants.

3.1. Exercise Price. Each Warrant shall, when countersigned by the Warrant Agent, entitle the Registered Holder thereof, subject to the provisions of such Warrant and of this Agreement, to purchase from the Company the number of shares of Common Stock stated therein, at the price of \$4.92 per share, subject to the adjustments provided herein. The term "**Exercise Price**" as used in this Agreement shall mean the price per share at which shares of Common Stock may be purchased at the time a Warrant is exercised.

3.2. Duration of Warrants. A Warrant may be exercised only during the period (the "**Exercise Period**") commencing on the Date of Issuance and ending on July 27, 2021 (the "**Expiration Date**"). Each Warrant not exercised on or before the Expiration Date shall become void, and all rights thereunder and all rights in respect thereof under this Agreement shall cease at 5:00 PM Eastern Time on the Expiration Date.

3.3. Exercise of Warrants.

3.3.1. Payment. Subject to the provisions of the Warrant and this Agreement, a Warrant, when countersigned by the Warrant Agent, may be exercised by the Registered Holder thereof by submitting a duly executed Election to Purchase attached to the applicable Warrant, at the office of the Warrant Agent or at the office of its successor as Warrant Agent (or, in the case of a Global Warrant Certificate, properly delivered by the Participant in accordance with the Depository's procedures), which may be done by fax or email delivery, and by paying, within two trading days of the date of exercise, in full the Exercise Price for each full share of Common Stock as to which the Warrant is exercised (the "**Aggregate Exercise Price**"), in lawful money of the United States, by cashier's check payable to the order of the Company or wire transfer to the account as directed by the Company or by Cashless Exercise, if permitted under, and in accordance with, Section 3.3.2. The Election to Purchase shall be required, along with a medallion guarantee of any Election to Purchase form that may be required; *provided, however*, that if the Company's transfer agent is not participating in the Depository's Fast Automated Securities Transfer Program and the Registered Holder requests that the shares of Common Stock be issued or registered to a holder other than the Registered Holder, then an ink-original Election to Purchase and a medallion guarantee shall be required; *provided further, however*, that the exercise of Warrants that are held in "street name" by a Participant or a designee appointed by such Participant shall not require the delivery of any medallion guarantee (or other type of guarantee) or ink-original Election to Purchase and shall not require the delivery of the original Warrant in connection with such exercise. Warrants delivered directly to the Warrant Agent by a Participant or a designee appointed by such Participant through the DTC DWAC process will require a medallion guarantee. Except as set forth in the preceding sentence, the Registered Holder may be required to deliver the original Warrant in order to effect an exercise hereunder.

3.3.2. Cashless Exercise. Notwithstanding anything contained herein to the contrary, if and only if an effective registration statement covering the issuance of the shares of Common Stock that are subject to the Election to Purchase is not available for the issuance of such shares of Common Stock, the Registered Holder may exercise a Warrant in whole or in part and, in lieu of making the cash payment otherwise contemplated to be made to the Company upon such exercise in payment of the aggregate Exercise Price, elect instead to receive upon such exercise the "**Net Number**" of shares of Common Stock determined according to the following formula (a "**Cashless Exercise**"):

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

For purposes of the foregoing formula:

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

B = the arithmetic average of the Closing Sale Prices (as defined below) of the Common Stock for the five (5) consecutive trading days ending on the date immediately preceding the date the Warrant Agent receives the duly executed Election to Purchase.

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

The term "**Closing Sale Price**" means, for any security as of any date, the last closing bid price and last closing trade price, respectively, for such security on the Nasdaq Capital Market, as reported by Bloomberg, or, if the Nasdaq Capital Market begins to operate on an extended hours basis and does not designate the closing bid price or the closing trade price, as the case may be, then the last bid price or the last trade price, respectively, of such security prior to 4:00:00 PM Eastern Time, as reported by Bloomberg, or, if the Nasdaq Capital Market is not the principal securities exchange or trading market for such security, the last closing bid price or last trade price, respectively, of such security on the principal securities exchange or trading market where such security is listed or traded as reported by Bloomberg, or if the foregoing do not apply, the last closing bid price or last trade price, respectively, of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg, or, if no closing bid price or last trade price, respectively, is reported for such security by Bloomberg, the average of the bid prices, or the ask prices, respectively, of any market makers for such security as reported in the OTC Link or "pink sheets" by OTC Markets Group Inc. (formerly Pink OTC Markets Inc.). If the Closing Sale

Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Sale Price of such security on such date shall be the fair market value as mutually determined by the Company and the Registered Holder. If the Company and the Registered Holder are unable to agree upon the fair market value of such security, then such dispute shall be resolved pursuant to Section 8.3. All such determinations to be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during the applicable calculation period.

In connection with any Cashless Exercise pursuant to this Section 3.3.2, the Warrant Agent will promptly deliver a copy of the Election to Purchase to the Company to confirm the Net Number of shares of Common Stock issuable in connection with the Cashless Exercise. The Company shall calculate and transmit to the Warrant Agent, and the Warrant Agent shall have no obligation under this Section 3.3.2 to calculate, the Net Number of shares of Common Stock.

If Warrant Shares are issued in such a Cashless Exercise, the Company acknowledges and agrees that, in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised and the Company agrees not to take any position contrary to this subsection 3.3.2. For purposes of Rule 144(d) promulgated under the Securities Act, as in effect on the date hereof, assuming the Registered Holder is not an affiliate of the Company, the shares of Common Stock issued in a Cashless Exercise shall be deemed to have been acquired by the Registered Holder, and the holding period for the shares of Common Stock shall be deemed to have commenced, on the date the Warrant was originally issued. Also, the shares of Common Stock issued in a Cashless Exercise shall take on the registered characteristics of the Warrant being exercised.

3.3.3. Issuance of Common Stock on Exercise. Assuming funds for exercise are paid on or before the second trading day following the date of receipt by the Company of an Election to Purchase, then on or before the third trading day following the date upon which the Company has received a duly executed Election to Purchase for a Warrant, the Company shall cause its transfer agent to (i) *provided* that the transfer agent is participating in the Depository's Fast Automated Securities Transfer Program, credit such aggregate number of shares of Common Stock to which the Holder is entitled pursuant to such exercise to the Holder's or its designee's balance account with the Depository through its Deposit/Withdrawal at Custodian System, or (ii) if the transfer agent is not participating in the Depository's Fast Automated Securities Transfer Program, issue and deliver to the Holder, or at the Holder's instruction pursuant to the delivered Election to Purchase, the Holder's agent or designee, in each case pursuant to this clause (ii), sent by reputable overnight courier to the address specified in the applicable Election to Purchase, a certificate, registered in the Company's share register in the name of the Holder or its designee (as indicated in the applicable Election to Purchase), for the number of shares of Common Stock to which the Holder is entitled pursuant to such exercise. While any Warrants remain outstanding, the Company shall maintain a transfer agent that participates in the Depository's Fast Automated Securities Transfer Program.

3.3.4. Valid Issuance. All Common Stock issued or issuable upon the proper exercise of a Warrant in conformity with this Agreement shall be validly issued, fully paid and nonassessable.

3.3.5. Date of Issuance. Each person in whose name any certificate for the Common Stock is issued or to whom shares of Common Stock are credited to such person's account at the Depository shall for all purposes be deemed to have become the holder of record of such Common Stock as of the time that a duly executed Election to Purchase is delivered in accordance with Section 3.3.1, assuming, in the case of a Cash Exercise, payment of the Aggregate Exercise Price is made within two (2) trading days after the delivery of the Election to Purchase, and if the payment of the Aggregate Exercise Price is not made within two (2) trading days after the delivery of the Election to Purchase, the Holder shall be deemed to have become the holder of record of such Common Stock on the first trading day after the date on which the Aggregate Exercise Price has been paid, irrespective of the date of delivery of such certificate or the date the shares of Common Stock are credited to such person's account at the Depository, except that, if the date of such delivery and/or payment is a date when the stock transfer books of the Company are closed, such person shall be deemed to have become the holder of such shares at the close of business on the next succeeding date on which the stock transfer books are open.

3.3.6. Share Delivery Failure. If the Company shall fail, for any reason or for no reason, to issue to the Holder within three (3) trading days after receipt of the applicable Election to Purchase (the "**Share Delivery**"),

Deadline”), a certificate for the number of shares of Common Stock to which the Holder is entitled upon the Holder’s exercise of a Warrant or credit the Holder’s balance account with the Depository for such number of shares of Common Stock to which the Holder is entitled upon the Holder’s exercise of the Warrants (as the case may be, but in each case without a restrictive legend) (a **“Delivery Failure”**), and if on or after such Share Delivery Deadline the Holder purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of all or any portion of the number of shares of Common Stock issuable upon such exercise that the Holder so anticipated receiving from the Company, then, in addition to all other remedies available to it, the Company shall, within three (3) Business Days (as defined below) after the Holder’s request and in the Holder’s discretion, either (i) pay cash to the Holder in an amount equal to 100% of the Holder’s total purchase price (including brokerage commissions and other out-of-pocket expenses, if any) for the shares of Common Stock so purchased (including, without limitation, by any other person in respect, or on behalf, of the Holder) (the **“Buy-In Price”**), at which point the Company’s obligation to so issue and deliver such certificate or credit the Holder’s balance account with the Depository for the number of shares of Common Stock to which the Holder is entitled upon the Holder’s exercise hereunder (as the case may be) (and to issue such shares of Common Stock) shall terminate, or (ii) promptly honor its obligation to so issue and deliver to the Holder a certificate or certificates representing such shares of Common Stock or credit the Holder’s balance account with the Depository for the number of shares of Common Stock to which the Holder is entitled upon the Holder’s exercise hereunder (as the case may be) and pay cash to the Holder in an amount equal to the excess (if any) of the Buy-In Price over the product of (A) such number of shares of Common Stock multiplied by (B) the lowest Closing Sale Price of the shares of Common Stock on any trading day during the period commencing on the date of the applicable Election to Purchase and ending on the date immediately preceding the date of such issuance and payment under this clause (ii). The term **“Business Day”** as used in this Agreement shall mean any day except a Saturday, a Sunday or any other day on which commercial banks are required or authorized to close in the City of New York, State of New York. If the Company fails for any reason to deliver to the Holder the Common Stock subject to an Election to Purchase by the Share Delivery Deadline, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Common Stock subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Election to Purchase), \$10 per trading day (increasing to \$20 per trading day on the fifth trading day after such liquidated damages begin to accrue) for each trading day after such Share Delivery Deadline until such shares of Common Stock are delivered or Holder rescinds such exercise. For the purposes of this provision “VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on the Nasdaq Capital Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Nasdaq Capital Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a trading day from 9:30 AM (Eastern Time) to 4:00 PM (Eastern Time)), (b) if the Common Stock is listed or quoted on the OTCQB or OTCQX, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in the “Pink Sheets” published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

3.4. **Beneficial Ownership Limitation on Exercises.** The Company shall not affect the exercise of any portion of a Warrant, and the Registered Holder of such Warrant shall not have the right to exercise any portion of such Warrant, to the extent that after giving effect to such exercise, the Registered Holder (together with the Registered Holder’s affiliates, and any persons acting as a group together with the Registered Holder or any Registered Holder’s affiliates) would beneficially own in excess of 4.99% (the **“Maximum Percentage”**) of the Common Stock outstanding immediately after giving effect to such exercise, *provided, however*, that the foregoing limitation on exercise shall not apply to any Registered Holder who, together with such Registered Holder’s affiliates, and any persons acting as a group together with such Registered Holder and such Registered Holder’s affiliates, owns in excess of the Maximum Percentage immediately prior to the closing of the Offering. For purposes of the foregoing sentence, the aggregate number of shares of Common Stock beneficially owned by such Registered Holder and its affiliates, and any persons acting as a group together with such Registered Holder and such Registered Holder’s affiliates, shall include the number of shares of Common Stock issuable upon exercise of the Warrant with respect to which the determination of such sentence is being made, but shall exclude shares of

Common Stock which would be issuable upon (i) exercise of the remaining, unexercised portion of the Warrant beneficially owned by the Registered Holder and its affiliates, and any persons acting as a group together with such Registered Holder and such Registered Holder's affiliates, and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company beneficially owned by the Registered Holder and its affiliates, and any persons acting as a group together with such Registered Holder and such Registered Holder's affiliates (including, without limitation, any convertible notes or convertible preferred stock or warrants) subject to a limitation on conversion or exercise analogous to the limitation contained herein. Except as set forth in the preceding sentence, for purposes of this paragraph, beneficial ownership shall be calculated in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended (the "*Exchange Act*"). The Warrant Agent shall not be responsible for calculating beneficial ownership in accordance with the provisions of this Section 3.4. To the extent that the limitation contained in this Section 3.4 applies, the Registered Holder's submission of an Election to Purchase shall be deemed to be the Registered Holder's determination of whether a Warrant is exercisable (in relation to any other securities owned by the Registered Holder together with any affiliates, and any persons acting as a group together with such Registered Holder and such Registered Holder's affiliates) and of which portion of a Warrant is exercisable, in each case subject to the Maximum Percentage, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of the Warrants, in determining the number of outstanding shares of Common Stock, the Registered Holder may rely on the number of outstanding shares of Common Stock as reflected in the most recent of (1) the Company's most recent Form 10-K, Form 10-Q, Current Report on Form 8-K or other public filing with the Commission, as the case may be, (2) a more recent written public announcement by the Company, or (3) any other notice by the Company or its transfer agent setting forth the number of shares of Common Stock outstanding. For any reason at any time, upon the written or oral request of the Registered Holder, the Company shall within one (1) trading day confirm to the Registered Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including any Warrant, by the Registered Holder and its affiliates, and any persons acting as a group together with such Registered Holder and such Registered Holder's affiliates, since the date as of which such number of outstanding shares of Common Stock was reported. By written notice to the Company, the Registered Holder may from time to time increase or decrease the Maximum Percentage to 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of a Warrant and the provisions of this Section 3.4 shall continue to apply; *provided* that (y) any such increase will not be effective until the sixty-first (61st) day after such notice is delivered to the Company, and (z) any such increase or decrease will apply only to that Registered Holder. For purposes of clarity, the Common Stock underlying any Warrant in excess of the Maximum Percentage for a Registered Holder shall not be deemed to be beneficially owned by that Registered Holder for any purpose including for purposes of Section 13(d) or Rule 16a-1(a)(1) of the Exchange Act. The provisions set forth herein shall be construed and implemented in a manner otherwise than in strict conformity with the other terms of this Section 3.4 to the extent necessary to correct any such provision which may be defective or inconsistent with the intended beneficial ownership limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation.

3.5. Call Provision. Subject to the provisions of Section 3.5, if, after the Date of Issuance, the VWAP (as defined in Section 3.3.6) for each of 10 consecutive trading days (the "*Measurement Period*") exceeds \$12.30 (subject to adjustment for forward and reverse stock splits, recapitalizations, stock dividends and the like after the Issuance Date), then the Company may, within one trading day of the end of such Measurement Period, call for cancellation of all or any portion of the Warrants for which an Election to Purchase has not yet been delivered (such right, a "*Call*") for consideration equal to \$0.001 per share of Common Stock issuable on exercise of each Warrant. To exercise this right, the Company must deliver to the Holder an irrevocable written notice (a "*Call Notice*"), indicating therein the portion of unexercised portion of the Warrants to which such notice applies. If the conditions set forth below for such Call are satisfied from the period from the date of the Call Notice through and including the Call Date (as defined below), then any portion of the Warrants subject to such Call Notice for which an Election to Purchase shall not have been received by the Call Date will be cancelled at 6:30 PM (Eastern Time) on the tenth trading day after the date the Call Notice is received by the Registered Holder (such date and time, the "*Call Date*") for consideration equal to \$0.001 per share of Common Stock issuable upon exercise of such Warrants. Any unexercised portion of the Warrants to which the Call Notice does not pertain will be unaffected by such Call Notice. In furtherance thereof, the Company covenants and agrees that it will honor all Elections to Purchase with

respect to Warrants subject to a Call Notice that are tendered through 6:30 PM (Eastern Time) on the Call Date. The parties agree that any Election to Purchase delivered following a Call Notice which calls less than all the Warrants shall first reduce to zero the number of shares of Common Stock issuable on exercise of the Warrants subject to such Call Notice prior to reducing the remaining shares of Common Stock available for purchase under the Warrants. For example, if (A) certain Warrants then permit the Registered Holder to purchase 100 shares of Common Stock, (B) a Call Notice pertains to 75 shares of Common Stock issuable on exercise of the Warrants, and (C) prior to 6:30 PM (Eastern Time) on the Call Date the Registered Holder tenders an Election to Purchase in respect of 50 shares of Common Stock, then (x) on the Call Date the right under the Warrants to purchase 25 shares of Common Stock will be automatically cancelled, (y) the Company, in the time and manner required under this Warrant Agreement, will have issued and delivered to the Registered Holder 50 shares of Common Stock in respect of the exercises following receipt of the Call Notice, and (z) the Holder may, until the Termination Date, exercise the Warrants for 25 shares of Common Stock (subject to adjustment as herein provided and subject to subsequent Call Notices). Subject again to the provisions of this Section 3.5, the Company may deliver subsequent Call Notices for any portion of the Warrants for which the Holder shall not have delivered an Election to Purchase. Notwithstanding anything to the contrary set forth in the Warrants, the Company may not deliver a Call Notice or require the cancellation of the Warrants (and any such Call Notice shall be void), unless, from the beginning of the Measurement Period through the Call Date, (1) the Company shall have honored in accordance with the terms of the Warrants all Elections to Purchase delivered by 6:30 PM (Eastern Time) on the Call Date, (2) the Common Stock shall be listed or quoted for trading on a principal securities exchange or trading market, and (3) there is a sufficient number of authorized shares of Common Stock for issuance of all shares of Common Stock issuable on exercise of the Warrants. The Company's right to call the Warrants under this Section 3.5 shall be exercised ratably among the Registered Holders.

4. Adjustments.

4.1. Stock Dividends.

4.1.1. Split Ups. If after the date hereof, and subject to the provisions of Section 4.4, the number of outstanding shares of Common Stock is increased by a stock dividend payable in Common Stock, or by a split-up of Common Stock or other similar event, then, on the effective date of such stock dividend, split-up or similar event, the number of shares of Common Stock issuable on exercise of each Warrant shall be increased in proportion to such increase in the outstanding shares of Common Stock and the Exercise Price shall be proportionally decreased such that the aggregate Exercise Price, after such adjustments, remains the same for each Warrant.

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

4.2. Aggregation of Shares. If after the date hereof, and subject to the provisions of Section 4.5, the number of outstanding shares of Common Stock is decreased by a consolidation, combination, reverse stock split or reclassification of Common Stock or other similar event, then, on the effective date of such consolidation, combination, reverse stock split, reclassification or similar event, the number of shares of Common Stock issuable on exercise of each Warrant shall be decreased in proportion to such decrease in outstanding shares of Common Stock and the Exercise Price shall be proportionally increased such that the aggregate Exercise Price, after such adjustments, remains the same for each Warrant.

4.3. Subsequent Rights Offerings. In addition to any adjustments stated herein, if at any time the Company grants, issues or sells any Common Stock equivalents or rights to purchase stock, warrants, securities or other property pro rata to all the record holders of any class of shares of Common Stock (the "Purchase Rights"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation on the Maximum Percentage immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (*provided, however*, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Maximum Percentage, at which time or times the Holder shall be granted such right (and any Purchase Right granted, issued or sold on such initial Purchase Right or on any subsequent Purchase Right to be held similarly in abeyance) to the same extent as if there had been no such limitation).

4.4. Fundamental Transactions. If, at any time while the Warrants are outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another person, (ii) the Company, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another person or group of persons whereby such other person or group acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other person or other persons making or party to, or associated or affiliated with the other persons making or party to, such stock or share purchase agreement or other business combination) (each a "Fundamental Transaction"), then, upon any subsequent exercise of a Warrant, the Holder of each Warrant shall have the right to receive, for each share of Common Stock that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the Holder (without regard to any limitation in Section 3.4 on the exercise of the Warrants), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "Alternate Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which a Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 3.4 on the exercise of the Warrants). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "Successor Entity") and for which stockholders of the Company received any equity securities of the Successor Entity to assume in

writing all obligations of the Company under each Warrant in accordance with the provisions of this Section 4.3 pursuant to agreements in form and substance reasonably satisfactory to the Holders and approved by the Holders holding Warrants to purchase at least a majority of the shares of Common Stock underlying the then outstanding Warrants (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of each Holder, deliver to such Holder in exchange for such Holder's Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to such Holder's Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of such Warrant (without regard to the limitations on exercise set forth in Section 3.4) prior to such Fundamental Transaction, and with an exercise price which applies the Exercise Price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of such Warrant immediately prior to the consummation of such Fundamental Transaction). Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Agreement and each Warrant referring to the "**Company**" shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Agreement and each Warrant with the same effect as if such Successor Entity had been named as the Company herein.

4.5. Calculations. All calculations under this Section 4 shall be made to the nearest cent or the nearest whole share, as the case may be. For purposes of this Section 4, any calculation of the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall not include treasury shares, if any. Notwithstanding anything to the contrary in this Section 4, no adjustment in the Exercise Price shall be required unless such adjustment would require an increase or decrease of at least 1% in such price; *provided, however*, that any adjustments which by reason of the immediately preceding sentence are not required to be made shall be carried forward and taken into account in any subsequent adjustment. In any case in which this Section 4 shall require that an adjustment in the Exercise Price be made effective as of a record date for a specified event, if the Registered Holder exercises a Warrant after such record date, the Company may elect to defer, until the occurrence of such event, the issuance of the shares of Common Stock and other capital stock of the Company in excess of the shares of Common Stock and other capital stock of the Company, if any, issuable upon such exercise on the basis of the Exercise Price in effect prior to such adjustment; *provided, however*, that in such case the Company or the Warrant Agent shall deliver to the Registered Holder a due bill or other appropriate instrument evidencing the Registered Holder's right to receive such additional shares and/or other capital securities upon the occurrence of the event requiring such adjustment.

4.6. Notices of Changes in Warrant. Upon every adjustment of the Exercise Price or the number of shares issuable upon exercise of a Warrant, the Company shall give written notice thereof to the Warrant Agent, which notice shall state the Exercise Price resulting from such adjustment and the increase or decrease, if any, in the number of shares purchasable at such price upon the exercise of a Warrant, setting forth in reasonable detail the method of calculation and the facts upon which such calculation is based. Upon the occurrence of any event specified in Sections 4.1, 4.2 or 4.3, the Company shall give written notice of the occurrence of such event to each Warrant holder, at the last address set forth for such holder in the Warrant Register, of the record date or the effective date of the event. Failure to give such notice, or any defect therein, shall not affect the legality or validity of such event. To the extent that any notice provided to the Holders under this Agreement constitutes, or contains, material, non-public information regarding the Company or any of the Company's subsidiaries, the Company shall simultaneously file such notice with the Commission on a Current Report on Form 8-K.

4.7. No Fractional Shares. Notwithstanding any provision contained in this Agreement to the contrary, the Company shall not issue fractional shares upon exercise of Warrants. If, by reason of any adjustment made pursuant to this Section 4, the holder of any Warrant would be entitled, upon the exercise of such Warrant, to receive a fractional interest in a share, the Company shall, upon such exercise, round down to the nearest whole number the number of shares of Common Stock to be issued to such Holder. If fewer than all the Warrants evidenced by a Book-Entry Warrant are exercised, a notation shall be made to the records maintained by the Depository, its nominee for each Book-Entry Warrant, or a Participant, as appropriate, evidencing the balance of the Warrants remaining after such exercise.

4.8. Form of Warrant. The form of Warrant need not be changed because of any adjustment pursuant to this Section 4, and Warrants issued after such adjustment may state the same Exercise Price and the same number of shares as is stated in the Warrants initially issued pursuant to this Agreement.

5. Transfer and Exchange of Warrants.

5.1. Registration of Transfer. The Warrant Agent shall register the transfer, from time to time, of any outstanding Warrant upon the Warrant Register, upon surrender of such Warrant for transfer, properly endorsed with signatures properly guaranteed and accompanied by appropriate instructions for transfer. Upon any such transfer, a new Warrant representing an equal aggregate number of Warrants shall be issued and the old Warrant shall be cancelled by the Warrant Agent. The Warrants so cancelled shall be delivered by the Warrant Agent to the Company from time to time upon request.

5.2. Procedure for Surrender of Warrants. Warrants may be surrendered to the Warrant Agent, together with a written request for exchange or transfer, duly executed by the Registered Holder thereof, or by a duly authorized attorney, and thereupon the Warrant Agent shall issue in exchange therefor one or more new Warrants as requested by the Registered Holder of the Warrants so surrendered, representing an equal aggregate number of Warrants; *provided, however*, that except as otherwise provided herein or in any Book-Entry Warrant, each Book-Entry Warrant may be transferred only in whole and only to the Depository, to another nominee of the Depository, to a successor depository, or to a nominee of a successor depository.

5.3. Fractional Warrants. The Warrant Agent shall not be required to effect any registration of transfer or exchange which shall result in the issuance of a Book-Entry Warrant or Warrant Certificate for a fraction of a Warrant.

5.4. Warrant Execution and Countersignature. The Warrant Agent is hereby authorized to countersign and to deliver, in accordance with the terms of this Agreement, the Warrants required to be issued pursuant to the provisions of this Section 5.

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

6.1. No Rights as Stockholder. Except as otherwise specifically provided herein, a Registered Holder, solely in its capacity as a holder of a Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Agreement be construed to confer upon a Registered Holder, solely in its capacity as the Registered Holder of a Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Registered Holder of the shares of Common Stock which it is then entitled to receive upon the due exercise of a Warrant. A Warrant does not entitle the Registered Holder thereof to any of the rights of a stockholder.

6.2. Lost, Stolen, Mutilated, or Destroyed Warrants. If any Warrant is lost, stolen, mutilated, or destroyed, the Company or the Warrant Agent will require the Holder to furnish a bond of indemnity and/or an affidavit of loss in form satisfactory to the Warrant Agent and the Company before issuing a new Warrant to the Holder. Subject to the preceding sentence, and any other condition which the Warrant Agent or the Company may otherwise impose at their discretion (which shall, in the case of a mutilated Warrant, include the surrender thereof), the Company and the Warrant Agent may issue a new Warrant of like denomination, tenor, and date as the Warrant so lost, stolen, mutilated, or destroyed. Any such new Warrant shall constitute a substitute contractual obligation of the Company, whether or not the allegedly lost, stolen, mutilated, or destroyed Warrant shall be at any time enforceable by anyone.

6.3. Reservation of Common Stock. The Company shall at all times reserve and keep available a number of its authorized but unissued shares of Common Stock that shall be sufficient to permit the exercise in full of all outstanding Warrants issued pursuant to this Agreement.

7. Concerning the Warrant Agent and Other Matters.

7.1. Payment of Taxes; Payment of Fees. The Company shall from time to time promptly pay all taxes and charges that may be imposed upon the Company or the Warrant Agent in respect of the issuance or delivery of shares of Common Stock upon the exercise of the Warrants, but the Company shall not be obligated to pay any income taxes of the Holder in respect of the Warrants or such shares. The Company shall pay all Warrant Agent fees required for timely processing of any Election to Purchase and all fees to the Depository (or another established clearing corporation performing similar functions) required for timely electronic delivery of the Warrant Shares.

7.2. Resignation, Consolidation, or Merger of Warrant Agent.

7.2.1. Appointment of Successor Warrant Agent. The Warrant Agent, or any successor hereafter appointed, may resign its duties and be discharged from all further duties and liabilities hereunder after giving thirty (30) days' notice in writing to the Company. If the office of the Warrant Agent becomes vacant by resignation or incapacity to act or otherwise, the Company shall appoint in writing a successor Warrant Agent in place of the Warrant Agent. If the Company shall fail to make such appointment within a period of thirty (30) days after it has been notified in writing of such resignation or incapacity by the Warrant Agent or by the holder of a Warrant (who shall, with such notice, submit his Warrant for inspection by the Company), then the holder of any Warrant may apply to the Supreme Court of the State of New York for the County of New York for the appointment of a successor Warrant Agent at the Company's cost, provided that, for purposes of this Agreement, the Company shall be deemed to be the Warrant Agent until a new warrant agent is appointed. Any successor Warrant Agent, whether appointed by the Company or by such court, shall be a corporation in good standing in the State of New York and having its principal office in the City and State of New York, and authorized under such laws to exercise corporate trust powers and subject to supervision or examination by federal or state authority. After appointment, any successor Warrant Agent shall be vested with all the authority, powers, rights, immunities, duties, and obligations of its predecessor Warrant Agent with like effect as if originally named as the Warrant Agent hereunder, without any further act or deed; but if for any reason it becomes necessary or appropriate, the predecessor Warrant Agent shall execute and deliver, at the expense of the Company, an instrument transferring to such successor Warrant Agent all the authority, powers, and rights of such predecessor Warrant Agent hereunder; and upon request of any successor Warrant Agent the Company shall make, execute, acknowledge, and deliver any and all instruments in writing for more fully and effectually vesting in and confirming to such successor Warrant Agent all such authority, powers, rights, immunities, duties, and obligations.

7.2.2. Notice of Successor Warrant Agent. In the event a successor Warrant Agent shall be appointed, the Company shall give notice thereof to the predecessor Warrant Agent and the transfer agent for the Common Stock not later than the effective date of any such appointment.

7.2.3. Merger or Consolidation of Warrant Agent. Any company into which the Warrant Agent may be merged or with which it may be consolidated or any corporation resulting from any merger or consolidation to which the Warrant Agent shall be a party shall be the successor Warrant Agent under this Agreement without any further act.

7.3. Fees and Expenses of Warrant Agent. The Company will pay or cause to be paid to the Warrant Agent fees for the Warrant Agent's services hereunder as set forth in Exhibit C attached hereto, in each case payable upon the Warrant Agent's invoice to the Company. The Company agrees to pay the Warrant Agent any transfer agent fees which are in addition to the Warrant Agent fees and shall, pursuant to its obligations under this Agreement, reimburse the Warrant Agent upon demand for all expenditures that the Warrant Agent may reasonably incur in the execution of its duties hereunder.

7.3.1. Further Assurances. The Company agrees to perform, execute, acknowledge, and deliver or cause to be performed, executed, acknowledged, and delivered all such further and other acts, instruments, and assurances as may reasonably be required by the Warrant Agent for the carrying out or performing of the provisions of this Agreement.

7.4. Liability of Warrant Agent.

7.4.1. Reliance on Company Statement. Whenever in the performance of its duties under this Agreement, the Warrant Agent shall deem it necessary or desirable that any fact or matter be proved or established by the Company prior to taking or suffering any action hereunder, such fact or matter (unless other evidence in respect thereof be herein specifically prescribed) may be deemed to be conclusively proved and established by a statement signed by the President, Chief Executive Officer, Chief Financial Officer, Secretary or other principal officer of the Company and delivered to the Warrant Agent. The Warrant Agent may rely upon such statement for any action taken or suffered in good faith by it pursuant to the provisions of this Agreement.

7.4.2. Indemnity. The Company will indemnify, defend, protect and hold harmless the Warrant Agent from and against any and all losses, liabilities, costs, damages or expenses, including, without limitation, reasonable attorneys' fees and expenses, incurred or made, arising out of or in connection with the performance of the Warrant Agent's obligations under the provisions of this Agreement, including but not limited to, acting, or refusing to act, in reliance upon any signature, endorsement, assignment, certificate, order, request, notice, report, record, instructions or other instrument or document believed by the Warrant Agent in good faith to be valid, genuine and sufficient; provided, however, such indemnification shall not apply to any losses, liabilities, costs, damages or expenses finally adjudicated to have been directly caused by the willful misconduct or gross negligence of the Warrant Agent. The Warrant Agent shall be under no obligation to institute or defend any action, suit, or legal proceeding in connection herewith or to incur any expense related to any such action, suit or legal proceeding, unless first indemnified to the Warrant Agent's satisfaction. The indemnities provided by this paragraph shall survive the resignation or discharge of the Warrant Agent or the termination of this Agreement. Anything in this Agreement to the contrary notwithstanding, in no event shall the Warrant Agent or the Company be liable under or in connection with this Agreement for indirect, special, incidental, punitive or consequential losses or damages of any kind whatsoever, including but not limited to lost profits, whether or not foreseeable, even if the Warrant Agent or the Company have been advised of the possibility thereof and regardless of the form of action in which such damages are sought. The Warrant Agent's aggregate liability to the Company, or any of the Company's representatives or agents, under this Section 7.4.2 or under any other term or provision of this Agreement, whether in contract, tort, or otherwise, is expressly limited to, and shall not exceed in any circumstances, the fees received by the Warrant Agent as fees and charges under this Agreement, but not including reimbursable expenses previously reimbursed to the Warrant Agent by the Company hereunder.

7.4.3. Exclusions. The Warrant Agent shall have no responsibility with respect to the validity of this Agreement or with respect to the validity or execution of any Warrant (except its countersignature thereof). The Warrant Agent shall not be responsible for any breach by the Company of any covenant or condition contained in this Agreement or in any Warrant. The Warrant Agent shall not be responsible to make any adjustments required under the provisions of Section 4 or responsible for the manner, method, or amount of any such adjustment or the ascertaining of the existence of facts that would require any such adjustment; nor shall it by any act hereunder be deemed to make any representation or warranty as to the authorization or reservation of any shares of Common Stock to be issued pursuant to this Agreement or any Warrant or as to whether any shares of Common Stock shall, when issued, be valid and fully paid and nonassessable.

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

8. Miscellaneous Provisions.

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

8.2. Notices. Any notice, statement or demand authorized by this Agreement to be given or made by the Warrant Agent or by the holder of any Warrant to or on the Company shall be sufficiently given (i) when so delivered if by hand or overnight delivery, (ii) when sent, if delivered by facsimile (provided that confirmation of

transmission is mechanically or electronically generated and kept on file by the sending party) or by electronic mail, or (iii) if sent by certified mail or private courier service, within five (5) days after deposit of such notice, postage prepaid, addressed (until another address is filed in writing by the Company with the Warrant Agent), as follows:

Onconova Therapeutics, Inc.
375 Pheasant Run
Newtown, PA 18954
Attention: Mark Guerin
By Telefax (which constitutes notice): (267) 759-3681
By Email (which constitutes notice): MGuerin@onconova.us

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

Wells Fargo Shareowner Services
Attention: Relationship Management Team S
1110 Center Pointe Curve, Suite 101

Mendota Heights, MN 55120
By Email (which constitutes notice): wfsrelationshipmanagement@wellsfargo.com

8.3. Applicable Law. The validity, interpretation, and performance of this Agreement and of the Warrants shall be governed in all respects by the laws of the State of New York, without giving effect to conflicts of law principles that would result in the application of the substantive laws of another jurisdiction.

8.4. Persons Having Rights under this Agreement. Nothing in this Agreement shall be construed to confer upon, or give to, any person or corporation other than the parties hereto and the Registered Holders of the Warrants any right, remedy, or claim under or by reason of this Agreement or of any covenant, condition, stipulation, promise, or agreement hereof. All covenants, conditions, stipulations, promises, and agreements contained in this Agreement shall be for the sole and exclusive benefit of the parties hereto and their successors and assigns and of the Registered Holders of the Warrants.

8.5. Examination of the Warrant Agreement. A copy of this Agreement shall be available at all reasonable times at the office of the Warrant Agent in the City of New York and State of New York, for inspection by the Registered Holder of any Warrant. The Warrant Agent may require any such Registered Holder to submit his Warrant for inspection by it.

8.6. Counterparts. This Agreement may be executed in any number of original or facsimile counterparts and each of such counterparts shall for all purposes be deemed to be an original, and all such counterparts shall together constitute but one and the same instrument. A signature to this Agreement transmitted electronically shall have the same authority, effect and enforceability as an original signature.

8.7. Effect of Headings. The section headings herein are for convenience only and are not part of this Agreement and shall not affect the interpretation thereof.

8.8. Amendments. This Agreement may be amended by the parties hereto with the written consent of the Company, the Warrant Agent and the Registered Holders holding Warrants to purchase at least a majority of the shares of Common Stock underlying the then outstanding Warrants. No consideration shall be offered by the Company to any Registered Holder in connection with a modification, amendment or waiver of this Agreement or any Warrant without also offering the same consideration to all Registered Holders.

8.9. Severability. This Agreement shall be deemed severable, and the invalidity or unenforceability of any term or provision hereof shall not affect the validity or enforceability of this Agreement or of any other term or provision hereof. Furthermore, in lieu of any such invalid or unenforceable term or provision, the parties hereto intend that there shall be added as a part of this Agreement a provision as similar in terms to such invalid or unenforceable provision as may be possible and be valid and enforceable.

[Signature Page Follows]

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

ONCONOVA THERAPEUTICS, INC.

By: _____

Name: Ramesh Kumar, Ph.D.

Title: President and CEO

WELLS FARGO BANK, N.A.,

as Warrant Agent

By: _____

Name:

Title:

EXHIBIT A

[FORM OF WARRANT CERTIFICATE]

Number

Warrants

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

**ONCONOVA THERAPEUTICS, INC.
Incorporated Under the Laws of the State of Delaware**

CUSIP: 68232V 116

Warrant Certificate

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

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

The initial Exercise Price per share of Common Stock for any Warrant is equal to \$4.92 per share. The Exercise Price is subject to adjustment upon the occurrence of certain events set forth in the Warrant Agreement.

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

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

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

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

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

ONCONOVA THERAPEUTICS, INC.

By: _____
Name:
Title:

WELLS FARGO BANK, N.A.,
as Warrant Agent

By: _____
Name:
Title:

[Signature Page to Warrant Certificate]

[Form of Warrant Certificate]

[Reverse]

The Warrants evidenced by this Warrant Certificate are part of a duly authorized issue of Warrants entitling the holder on exercise to receive shares of Common Stock and are issued or to be issued pursuant to a Warrant Agreement dated as of July 27, 2016 (the "**Warrant Agreement**"), duly executed and delivered by the Company to Wells Fargo Bank, N.A., as warrant agent (the "**Warrant Agent**"), which Warrant Agreement is hereby incorporated by reference in and made a part of this instrument and is hereby referred to for a description of the rights, limitation of rights, obligations, duties and immunities thereunder of the Warrant Agent, the Company and the holders (the words "**holders**" or "**holder**" meaning the Holders or Holder) of the Warrants. A copy of the Warrant Agreement may be obtained by the holder hereof upon written request to the Company. Defined terms used in this Warrant Certificate but not defined herein shall have the meanings given to them in the Warrant Agreement.

Warrants may be exercised at any time during the Exercise Period set forth in Section 3.2 of the Warrant Agreement.

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

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

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

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

Election to Purchase

(To Be Executed Upon Exercise of Warrant)

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

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

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

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

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

Date: _____, 20____

(Signature)

(Address)

(Tax Identification Number)

**EXHIBIT B
FORM OF GLOBAL WARRANT CERTIFICATE**

UNLESS THIS GLOBAL WARRANT CERTIFICATE IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY, A NEW YORK CORPORATION (“DTC”) TO THE COMPANY OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, AND ANY CERTIFICATE ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR SUCH OTHER NAME AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC (AND ANY PAYMENT IS MADE TO CEDE & CO., OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL INASMUCH AS THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN.

TRANSFERS OF THIS GLOBAL SECURITY SHALL BE LIMITED TO TRANSFERS IN WHOLE, BUT NOT IN PART, TO NOMINEES OF DTC OR TO A SUCCESSOR THEREOF OR SUCH SUCCESSOR’S NOMINEE AND TRANSFERS OF PORTIONS OF THIS GLOBAL SECURITY SHALL BE LIMITED TO TRANSFERS MADE IN ACCORDANCE WITH THE RESTRICTIONS SET FORTH IN THE WARRANT AGREEMENT.

ANY TRANSFER OF THE SECURITIES REPRESENTED BY THIS GLOBAL WARRANT CERTIFICATE IS SUBJECT TO THE CONDITIONS SPECIFIED IN THE WARRANT AGREEMENT (THE “WARRANT AGREEMENT”) DATED AS OF JULY 27, 2016, BETWEEN ONCONOVA THERAPEUTICS, INC., A DELAWARE CORPORATION (THE “COMPANY”), AND WELLS FARGO BANK, N.A., SOLELY IN ITS CAPACITY AS WARRANT AGENT. BY ACCEPTING DELIVERY OF THE SECURITIES REPRESENTED BY THIS GLOBAL WARRANT CERTIFICATE, ANY TRANSFEREE SHALL BE DEEMED TO HAVE AGREED TO BE BOUND BY THE WARRANT AGREEMENT AS IF THE TRANSFEREE HAD EXECUTED AND DELIVERED THE WARRANT AGREEMENT.

Number

Warrants

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

**ONCONOVA THERAPEUTICS, INC.
Incorporated Under the Laws of the State of Delaware**

CUSIP: 68232V 116

Warrant Certificate

This Warrant Certificate certifies that Cede & Co., or its registered assigns, is the registered holder of warrant(s) (the “*Warrants*” and each, a “*Warrant*”) to purchase shares of Common Stock, \$0.01 par value per share (“*Common Stock*”), of Onconova Therapeutics, Inc., a Delaware corporation (the “*Company*”). Each Warrant entitles the holder, upon exercise during the period set forth in the Warrant Agreement referred to below, to receive from the Company that number of fully paid and nonassessable shares of Common Stock as set forth below, at the exercise price (the “*Exercise Price*”) as determined pursuant to the Warrant Agreement, payable in lawful money of the United States of America (or through “*cashless exercise*” as provided for in the Warrant Agreement), subject to

the conditions set forth herein and in the Warrant Agreement. Defined terms used in this Warrant Certificate but not defined herein shall have the meanings given to them in the Warrant Agreement (as defined on the reverse hereof).

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

The initial Exercise Price per share of Common Stock for any Warrant is equal to \$4.92 per share. The Exercise Price is subject to adjustment upon the occurrence of certain events set forth in the Warrant Agreement.

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

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

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

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

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

ONCONOVA THERAPEUTICS, INC.

By: _____
Name:
Title:

WELLS FARGO BANK, N.A.,
as Warrant Agent

By: _____
Name:
Title:

[Signature Page to Warrant Certificate]

[Form of Global Warrant Certificate]

[Reverse]

The Warrants evidenced by this Warrant Certificate are part of a duly authorized issue of Warrants entitling the holder on exercise to receive shares of Common Stock and are issued or to be issued pursuant to a Warrant Agreement dated as of July 27, 2016 (the "**Warrant Agreement**"), duly executed and delivered by the Company to Wells Fargo Bank, N.A., as warrant agent (the "**Warrant Agent**"), which Warrant Agreement is hereby incorporated by reference in and made a part of this instrument and is hereby referred to for a description of the rights, limitation of rights, obligations, duties and immunities thereunder of the Warrant Agent, the Company and the holders (the words "**holders**" or "**holder**" meaning the Holders or Holder) of the Warrants. A copy of the Warrant Agreement may be obtained by the holder hereof upon written request to the Company. Defined terms used in this Warrant Certificate but not defined herein shall have the meanings given to them in the Warrant Agreement.

Warrants may be exercised at any time during the Exercise Period set forth in Section 3.2 of the Warrant Agreement.

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

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

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

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

Election to Purchase

(To Be Executed Upon Exercise of Warrant)

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

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

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

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

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

Date: _____, 20

(Signature)

(Address)

(Tax Identification Number)

ONCONOVA THERAPEUTICS, INC.

WARRANT TO PURCHASE COMMON STOCK

Number of Shares:
(subject to adjustment)

Warrant No.

Original Issue Date: July 27, 2016

Onconova Therapeutics, Inc., a Delaware corporation (the “Company”), hereby certifies that, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, _____ or its permitted registered assigns (the “Holder”), is entitled, subject to the terms set forth below, to purchase from the Company up to a total of _____ shares of common stock, \$0.01 par value per share (the “Common Stock”), of the Company (each such share, a “Warrant Share” and all such shares, the “Warrant Shares”) at an exercise price per share equal to \$0.01 per share (as adjusted from time to time as provided in Section 9 herein, the “Exercise Price”), upon surrender of this warrant to purchase Common Stock (including any warrants to purchase Common Stock issued in exchange, transfer or replacement hereof, the “Warrant”) at any time and from time to time on or after the date hereof (the “Original Issue Date”) and through and including 5:00 PM Eastern Time on the date that is seven (7) years following the Original Issue Date (the “Expiration Date”), and subject to the following terms and conditions:

1. Definitions. For purposes of this Warrant, the following terms shall have the following meanings:

(a) “Affiliate” of any Person means any other Person directly or indirectly controlling, controlled by or under common control with such Person.

(b) “Commission” means the United States Securities and Exchange Commission and any successor entity thereto.

(c) “Closing Sale Price” means, for any security as of any date, the last trade price for such security on the Principal Trading Market for such security, as reported by Bloomberg Financial Markets, or, if such Principal Trading Market begins to operate on an extended hours basis and does not designate the last trade price, then the last trade price of such security immediately prior to 4:00 P.M., New York City time, as reported by Bloomberg Financial Markets, or if the foregoing do not apply, the last trade price of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg Financial Markets, or, if no last trade price is reported for such security by Bloomberg Financial Markets, the average of the bid and ask prices, of any market makers for such security as reported in the “pink sheets” by Pink Sheets LLC. If the Closing Sale Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Sale Price of such security on such date shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then the Board of Directors of the Company shall use its good faith judgment to determine the fair market value of such security on such date. The Board of Directors’ determination shall be binding upon all parties absent demonstrable error. All such determinations shall be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during the applicable calculation period.

(d) “Person” means any natural person, corporation, firm, joint venture, partnership, limited liability company, association, enterprise, trust or other entity or organization, or any government or political subdivision or any agency, department or instrumentality thereof.

(e) “Principal Trading Market” means the trading market on which the Common Stock is primarily listed on and quoted for trading, and which, as of the Original Issue Date shall be The NASDAQ Capital Market.

(f) “Securities Act” means the Securities Act of 1933, as amended.

(g) “*Trading Day*” means a day on which the Principal Trading Market is open for trading.

2. Registration of Warrants. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the “*Warrant Register*”), in the name of the record Holder (which shall include the initial Holder or, as the case may be, any registered assignee to which this Warrant is permissibly assigned hereunder) from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. Registration of Transfers. Subject to compliance with all applicable securities laws, the Company shall register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, and payment of all applicable transfer taxes. Upon any such registration of transfer, a new warrant to purchase Common Stock in substantially the form of this Warrant (any such new warrant, a “*New Warrant*”) evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder had in respect of this Warrant. The Company shall prepare, issue and deliver at the Company’s own expense any New Warrant under this Section 3. Until due presentment for registration of transfer, the Company may treat the registered Holder hereof as the owner and holder of this Warrant for all purposes, and the Company shall not be affected by any notice to the contrary.

4. Exercise and Duration of Warrants.

(a) All or any part of this Warrant shall be exercisable by the registered Holder in any manner permitted by this Warrant at any time and from time to time on or after the Original Issue Date and through and including 5:00 PM Eastern Time on the Expiration Date; provided, however, that, if upon the Expiration Date, the Holder’s exercise in full of this Warrant would cause the Holder’s beneficial ownership of the Common Stock to exceed the Maximum Percentage, the term of this Warrant shall be automatically extended until, and this Warrant shall be automatically exercised on, the date that is the 90th day following the date on which this Warrant may be exercised in full without the Holder exceeding the Maximum Percentage. Subject to the foregoing sentence, at 5:00 PM Eastern Time on the Expiration Date, the portion of this Warrant not exercised prior thereto shall be void and of no value and this Warrant shall terminate and no longer be outstanding.

(b) The Holder may exercise this Warrant by delivering to the Company an exercise notice, in the form attached as Schedule 1 hereto (the “*Exercise Notice*”), completed and duly signed and the date on which the Exercise Notice is delivered to the Company (as determined in accordance with the notice provisions hereof) is an “*Exercise Date*” and, within three (3) Trading Days, the Holder shall deliver payment of the aggregate Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a “net share exercise” if so indicated in the Exercise Notice pursuant to Section 10 below). Upon delivery of the Exercise Notice, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares, provided that payment of the aggregate Exercise Price (other than in the cash of a “net share exercise” is received within three (3) Trading Days of delivery of the Notice of Exercise. No ink-original Exercise Notice shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Exercise Notice be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) Trading Days of the date the final Exercise Notice is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant to the Holder evidencing its right to purchase the remaining number of Warrant Shares. For the avoidance of doubt, the Company may not substitute, and the Holder may not request, a cash payment in satisfaction of the Company’s obligation to issue and deliver Warrant Shares pursuant to an Exercise Notice. The Company shall deliver any objection to any Notice of Exercise within one (1) Business Day of receipt of such notice. **The Holder and any**

assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.

5. Delivery of Warrant Shares.

(a) Upon exercise of this Warrant, the Company shall promptly (but in no event later than three (3) Trading Days after the Exercise Date), upon the request of the Holder, credit such aggregate number of shares of Common Stock to which the Holder is entitled pursuant to such exercise to the Holder's or its designee's balance account with The Depository Trust Company ("DTC") through its Deposit Withdrawal Agent Commission system, or if the Company's transfer agent is not participating in the Fast Automated Securities Transfer Program (the "FAST Program") or if the certificates are required to bear a legend regarding restriction on transferability, issue and dispatch by overnight courier to the address as specified in the Exercise Notice, a certificate, registered in the Company's share register in the name of the Holder or its designee, for the number of shares of Common Stock to which the Holder is entitled pursuant to such exercise.

(b) To the extent permitted by law, the Company's obligations to issue and deliver Warrant Shares in accordance with and subject to the terms hereof (including the limitations set forth in Section 11 below) are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance that might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares. Nothing herein shall limit the Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver certificates representing shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

6. Charges, Taxes and Expenses. Issuance and delivery of certificates for shares of Common Stock upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and expenses shall be paid by the Company; *provided, however*, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Warrant Shares or the Warrants in a name other than that of the Holder or an Affiliate thereof. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

7. Replacement of Warrant. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a New Warrant, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction (in such case) and, in each case, a customary and reasonable indemnity and surety bond, if requested by the Company. Applicants for a New Warrant under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Company may prescribe. If a New Warrant is requested as a result of a mutilation of this Warrant, then the Holder shall deliver such mutilated Warrant to the Company as a condition precedent to the Company's obligation to issue the New Warrant.

8. Reservation of Warrant Shares. The Company covenants that it will at all times while this Warrant is outstanding reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares that are initially issuable and deliverable upon the exercise of this entire Warrant, free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 9). The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with

the terms hereof, be duly and validly authorized and issued, and fully paid and nonassessable. The Company will take all such action as may be reasonably necessary to assure that such shares of Common Stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the Common Stock may be listed.

9. Certain Adjustments. The Exercise Price and number of Warrant Shares issuable upon exercise of this Warrant are subject to adjustment from time to time as set forth in this Section 9.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock, (ii) subdivides its outstanding shares of Common Stock into a larger number of shares of Common Stock, (iii) combines its outstanding shares of Common Stock into a smaller number of shares of Common Stock or (iv) issues by reclassification of shares of capital stock any additional shares of Common Stock of the Company, then in each such case the Exercise Price shall be multiplied by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately before such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, *provided, however*, that if such record date shall have been fixed and such dividend is not fully paid on the date fixed therefor, the Exercise Price shall be recomputed accordingly as of the close of business on such record date and thereafter the Exercise Price shall be adjusted pursuant to this paragraph as of the time of actual payment of such dividends. Any adjustment pursuant to clause (ii) or (iii) of this paragraph shall become effective immediately after the effective date of such subdivision or combination.

(b) Pro Rata Distributions. If the Company, at any time while this Warrant is outstanding, distributes to all holders of Common Stock for no consideration (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph) or (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset (in each case, "*Distributed Property*"), then, upon any exercise of this Warrant that occurs after the record date fixed for determination of stockholders entitled to receive such distribution, the Holder shall be entitled to receive, in addition to the Warrant Shares otherwise issuable upon such exercise (if applicable), the Distributed Property that such Holder would have been entitled to receive in respect of such number of Warrant Shares had the Holder been the record holder of such Warrant Shares immediately prior to such record date without regard to any limitation on exercise contained therein.

(c) Fundamental Transactions. If, at any time while this Warrant is outstanding (i) the Company effects any merger or consolidation of the Company with or into another Person, in which the Company is not the surviving entity or the stockholders of the Company immediately prior to such merger or consolidation do not own, directly or indirectly, at least 50% of the voting power of the surviving entity immediately after such merger or consolidation, (ii) the Company effects any sale to another Person of all or substantially all of its assets in one or a series of related transactions, (iii) pursuant to any tender offer or exchange offer (whether by the Company or another Person), holders of capital stock who tender shares representing more than 50% of the voting power of the capital stock of the Company and the Company or such other Person, as applicable, accepts such tender for payment, (iv) the Company consummates a stock purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person whereby such other Person acquires more than the 50% of the voting power of the capital stock of the Company or (v) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than as a result of a subdivision or combination of shares of Common Stock covered by Section 9(a) above) (in any such case, a "*Fundamental Transaction*"), then following such Fundamental Transaction the Holder shall have the right to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant without regard to any limitations on exercise contained herein (the "*Alternate Consideration*"). The Company shall not effect any Fundamental Transaction in which the Company is not the surviving entity or the Alternate Consideration includes securities of another Person unless prior to or simultaneously with the consummation thereof, any successor to the Company, surviving entity or other Person (including any purchaser of assets of the Company) shall assume

the obligation to deliver to the Holder, such Alternate Consideration as, in accordance with the foregoing provisions, the Holder may be entitled to receive, and the other obligations under this Warrant.

(d) Number of Warrant Shares. Simultaneously with any adjustment to the Exercise Price pursuant to paragraph (a) of this Section 9, the number of Warrant Shares that may be purchased upon exercise of this Warrant shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price payable hereunder for the increased or decreased number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment.

(e) Calculations. All calculations under this Section 9 shall be made to the nearest cent or the nearest whole share, as the case may be. For purposes of this Section 9, any calculation of the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall not include treasury shares, if any. Notwithstanding anything to the contrary in this Section 9, no adjustment in the Exercise Price shall be required unless such adjustment would require an increase or decrease of at least 1% in such price; *provided, however*, that any adjustments which by reason of the immediately preceding sentence are not required to be made shall be carried forward and taken into account in any subsequent adjustment.

(f) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 9, the Company at its expense will, at the written request of the Holder, promptly compute such adjustment, in good faith, in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment, including a statement of the adjusted Exercise Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder.

(g) Notice of Corporate Events. If, while this Warrant is outstanding, the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including, without limitation, any granting of rights or warrants to subscribe for or purchase any capital stock of the Company or any subsidiary, (ii) authorizes or approves, enters into any material definitive agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then, except if such notice and the contents thereof shall be deemed to constitute material non-public information, the Company shall deliver to the Holder a notice of such transaction at least ten (10) days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction; *provided, however*, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice. In addition, if while this Warrant is outstanding, if the Company enters into any material definitive agreement contemplating or solicits stockholder approval for any Fundamental Transaction contemplated by Section 9(c), other than a Fundamental Transaction under clause (iii) of Section 9(c), the Company shall deliver to the Holder a notice of such Fundamental Transaction at least fifteen (15) days prior to the date such Fundamental Transaction is consummated. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Company or any of its subsidiaries, the Holder shall keep such information confidential until the Company shall file such notice with the Commission pursuant to a Current Report on Form 8-K.

10. Payment of Exercise Price. Notwithstanding anything contained herein to the contrary, the Holder may, in its sole discretion, satisfy its obligation to pay the Exercise Price through a “net share exercise”, in which event the Company shall issue to the Holder the number of Warrant Shares determined as follows:

$$X = Y [(A-B)/A]$$

where:

“X” equals the number of Warrant Shares to be issued to the Holder;
“Y” equals the total number of Warrant Shares with respect to which this Warrant is then being exercised;
“A” equals the average of the Closing Sale Prices of the shares of Common Stock for the five

“B” (5) consecutive Trading Days ending on the date immediately preceding the Exercise Date; and equals the Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

If Warrant Shares are issued in such a Cashless Exercise, the Company acknowledges and agrees that, in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised and the Company agrees not to take any position contrary to this Section 10. For purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Warrant Shares issued in a “cashless exercise” transaction shall be deemed to have been acquired by the Holder, and the holding period for the Warrant Shares shall be deemed to have commenced, on the date this Warrant was originally issued (provided that the Commission continues to take the position that such treatment is proper at the time of such exercise).

11. Limitations on Exercise. The Company shall not affect the exercise of any portion of this Warrant, and the Holder shall not have the right to exercise any portion of this Warrant, to the extent that after giving effect to such exercise, the Holder (together with the Holder’s Affiliates, and any persons acting as a group together with the Holder or any Holder’s Affiliates) would beneficially own in excess of 4.99% (the “*Maximum Percentage*”) of the Common Stock outstanding immediately after giving effect to such exercise. For purposes of the foregoing sentence, the aggregate number of shares of Common Stock beneficially owned by the Holder and its Affiliates, and any persons acting as a group together with the Holder and the Holder’s Affiliates, shall include the number of Warrant Shares with respect to which the determination of such sentence is being made, but shall exclude Warrant Shares which would be issuable upon (i) exercise of the remaining, unexercised portion of this Warrant beneficially owned by the Holder and its Affiliates, and any persons acting as a group together with the Holder and the Holder’s Affiliates, and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company beneficially owned by the Holder and its Affiliates, and any persons acting as a group together with the Holder and the Holder’s Affiliates (including, without limitation, any convertible notes or convertible preferred stock or warrants) subject to a limitation on conversion or exercise analogous to the limitation contained herein. Except as set forth in the preceding sentence, for purposes of this paragraph, beneficial ownership shall be calculated in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended (the “*Exchange Act*”). The Company shall not be responsible for calculating beneficial ownership in accordance with the provisions of this Section 11. To the extent that the limitation contained in this Section 11 applies, the Holder’s submission of an Exercise Notice shall be deemed to be the Holder’s determination of whether this Warrant is exercisable (in relation to any other securities owned by the Holder together with any Affiliates, and any persons acting as a group together with the Holder and the Holder’s Affiliates) and of which portion of this Warrant is exercisable, in each case subject to the Maximum Percentage, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Warrant, in determining the number of outstanding shares of Common Stock, the Holder may rely on the number of outstanding shares of Common Stock as reflected in the most recent of (1) the Company’s most recent Form 10-K, Form 10-Q, Current Report on Form 8-K or other public filing with the Commission, as the case may be, (2) a more recent written public announcement by the Company, or (3) any other notice by the Company or its transfer agent setting forth the number of shares of Common Stock outstanding. For any reason at any time, upon the written or oral request of the Holder, the Company shall within three (3) Trading Days confirm to the Registered Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder and its Affiliates, and any persons acting as a group together with the Holder and the Holder’s Affiliates, since the date as of which such number of outstanding shares of Common Stock was reported. By written notice to the Company, the Holder may from time to time increase or decrease the Maximum Percentage to 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant and the provisions of this Section 11 shall continue to apply; provided that (y) any such increase will not be effective until the sixty-first (61st) day after such notice is delivered to the Company, and (z) any such increase or decrease will apply only to the Holder. For purposes of clarity, the Common Stock underlying this Warrant in excess of the Maximum Percentage for the Holder shall not be deemed to be beneficially owned by that Holder for any purpose including for purposes of Section 13(d) or Rule 16a-1(a)(1) of the Exchange Act. The provisions set forth herein shall be construed and

implemented in a manner otherwise than in strict conformity with the other terms of this Section 11 to the extent necessary to correct any such provision which may be defective or inconsistent with the intended beneficial ownership limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation.

12. No Fractional Shares. No fractional Warrant Shares will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares that would otherwise be issuable, the number of Warrant Shares to be issued shall be rounded down to the next whole number.

13. Notices. Any and all notices or other communications or deliveries hereunder (including, without limitation, any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile or confirmed e-mail at the facsimile number or e-mail address specified in the books and records of the Company prior to 5:00 PM Eastern Time on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile or confirmed e-mail at the facsimile number or e-mail address specified in the books and records of the Company on a day that is not a Trading Day or later than 5:00 PM Eastern Time on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service specifying next business day delivery, or (iv) upon actual receipt by the Person to whom such notice is required to be given, if by hand delivery.

14. Warrant Agent. Upon thirty (30) days' notice to the Holder, the Company may appoint a warrant agent to serve as warrant agent under this Warrant. Any such warrant agent shall promptly cause notice of its appointment as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

15. Miscellaneous.

(a) No Rights as a Stockholder. The Holder, solely in such Person's capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person's capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, amalgamation, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which such Person is then entitled to receive upon the due exercise of this Warrant. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities (upon exercise of this Warrant or otherwise) or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors of the Company.

(b) Authorized Shares. (i) Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its articles of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (a) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (b) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant, and (c) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof as may be necessary to enable the Company to perform its obligations under this Warrant.

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

(c) Successors and Assigns. Subject to the restrictions on transfer set forth in this Warrant and compliance with applicable securities laws, this Warrant may be assigned by the Holder. This Warrant shall be binding on and inure to the benefit of the Company and the Holder and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant.

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

(e) Acceptance. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

(f) Governing Law: Jurisdiction. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW THEREOF. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HERewith OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. EACH OF THE COMPANY AND THE HOLDER HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

(g) Headings. The headings herein are for convenience only, do not constitute a part of this Warrant and shall not be deemed to limit or affect any of the provisions hereof.

(h) Severability. In case any one or more of the provisions of this Warrant shall be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Warrant shall not in any way be affected or impaired thereby, and the Company and the Holder will attempt in good faith to agree upon a valid and enforceable provision which shall be a commercially reasonable substitute therefor, and upon so agreeing, shall incorporate such substitute provision in this Warrant.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

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

ONCONOVA THERAPEUTICS, INC.

By: _____
Name: Ramesh Kumar, Ph.D.
Title: President and CEO

NOTICE OF EXERCISE

TO: ONCONOVA THERAPEUTICS, INC.

The undersigned Holder hereby exercises the right to purchase _____ shares of Common Stock (“*Warrant Shares*”) of Onconova Therapeutics, Inc., a Delaware corporation (the “*Company*”), evidenced by Warrant No. _____ (the “*Warrant*”). Capitalized terms used herein and not otherwise defined shall have the respective meanings set forth in the Warrant.

1. Form of Exercise Price. The Holder intends that payment of the Exercise Price shall be made as:

- a “cash exercise” with respect to _____ Warrant Shares; and/or
- a “net share exercise” pursuant to Section 10 of the Warrant with respect to _____ Warrant Shares.

Warrant Shares shall be issued in the name of the undersigned Holder or in such other name as is specified below:

2. Payment of Exercise Price: Cash Exercise. In the event that the Holder has elected a “cash exercise” with respect to some or all of the Warrant Shares, the Holder shall pay the Exercise Price in the sum of \$ _____ to the Company in accordance with the terms of the Warrant.

3. Payment of Exercise Price: Net Share Exercise. In the event that the Holder has elected a net share exercise with respect to some or all of the Warrant Shares, the Holder represents and warrants that the average of the Closing Sale Prices of the shares of Common Stock (as reported by Bloomberg Financial Markets) for the five (5) consecutive Trading Days ending on the date immediately preceding the Exercise Date is \$ _____. The calculation of the number of Warrant Shares to be issued in accordance with Section 10 of the Warrant is as follows:

4. Delivery of Warrant Shares. The Company shall cause the Warrant Agent to deliver to Holder, or its designee or agent as specified above, _____ shares of Common Stock in respect of the exercise contemplated hereby. The Warrant Shares shall be delivered to the following DWAC Account Number or by physical delivery of a certificate to:

Date: _____

Name of Registered Holder

By: _____
Name:
Title:

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Ramesh Kumar, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Onconova Therapeutics, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 15, 2016

/s/ Ramesh Kumar, Ph.D.

Ramesh Kumar, Ph.D.

President and Chief Executive Officer

(Principal Executive and Principal Operating Officer)

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Mark Guerin, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Onconova Therapeutics, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 15, 2016

/s/ Mark Guerin

Mark Guerin

Vice President, Financial Planning and Accounting and Chief Accounting Officer

(Principal Financial and Principal Accounting Officer)

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of Onconova Therapeutics, Inc. (the "Company") on Form 10-Q for the period ended June 30, 2016, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Ramesh Kumar, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. That information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 15, 2016

/s/ Ramesh Kumar, Ph.D

Ramesh Kumar, Ph.D.

President and Chief Executive Officer

(Principal Executive and Principal Operating Officer)

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of Onconova Therapeutics, Inc. (the "Company") on Form 10-Q for the period ended June 30, 2016, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Mark Guerin, Vice President, Financial Planning and Accounting of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. That information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 15, 2016

/s/ Mark Guerin

Mark Guerin

Vice President, Financial Planning and Accounting
and Chief Accounting Officer

(Principal Financial Officer and Principal Accounting Officer)

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing.
