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INITIATION REPORT

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July 25, 2017

Onconova Therapeutics (Nasdaq/ONTX)

BUY **INSPIREd Biotech value play**

Onconova Therapeutics is focused on discovering and developing targeted, small molecule product candidates for the treatment of cancer

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Investment Highlights

1) Onconova's Phase 3 INSPIRE trial for second-line higher-risk MDS patients is well underway, with 130 sites in 17 countries already activated by the Company plus 33 more sites activated in Japan by partner SymBio for the IV formulation of its proprietary rigosertib compound. Next news flow related to INSPIRE is expected to come later this year, with an interim data analysis, with full enrollment expected to accrue by early in 2018 and top-line analysis release targeted for later next year.

2) Meanwhile, the Company has not forgotten the larger first-line MDS market, with its combination therapy of oral rigosertib and azacitidine (branded Vidaza). Onconova has made progress this year on the product, including submission of a synopsis and briefing book for a Phase 3 trial protocol for the EMA, and it is expected that a similar submission for a Special Protocol Assessment with be made with the US FDA during Q3/2017. The Company has also initiated an expanded Phase 2 trial for the combination therapy, primarily to optimize dosing and scheduling and obtain additional efficacy data, with the first two patients out of a planned forty recently enrolled.

3) Finally, the Company retains a full pipeline of additional clinical-stage and preclinical product candidates, just waiting for the Company to obtain new partnerships or other financing in order to rekindle its efforts in these areas. Onconova's non-rigosertib product pipeline includes early-stage candidates briciclib for treatment of advanced solid tumors and recilisib for treatment of acute radiation syndromes. The Company's product pipeline also counts three additional small molecule compounds in the pre-clinical stage, including several for which anti-tumor and anti-AML data was recently presented at the 2017 AACR conference; (ON 123300 and ON 150030, respectively) and two more product candidates in formulation stages. The Company is actively seeking additional development partnerships for these other assets.

Current Price	**$1.99**
Price Target	**$5.00**

Estimates	F2015A	F2016A	F2017E
Revenues($000s)	**$11,456**	**$5,546**	**$1,110**
1Q March	114	1,474	210 A
2Q June	123	2,248	250 E
3Q September	1,622	1,651	300 E
4Q December	9,597	173	350 E
EPS (diluted)	**($10.54)**	**($4.44)**	**($3.30)**
1Q March	(3.34)	(2.65)	(1.23) A
2Q June	(4.13)	(1.96)	(0.72) E
3Q September	(2.60)	(0.29)	(0.73) E
4Q December	(0.76)	(0.80)	(0.74) E
EBITDA/Share	($8.80)	($4.43)	($2.37)
EV/EBITDA (x)	N/A	N/A	N/A

Stock Data	
52-Week Range	$1.78-$4.51
Shares Outstanding (mil.)	9.9
Market Capitalization (mil.)	$19.7
Enterprise Value (mil.)	$4.3
Debt to Capital (3/17)	0.0%
Book Value/Share (3/17)	($0.27)
Price/Book	N/A x
Average Trading Volume (3-month)	97,500
Insider Ownership	29.1%
Institutional Ownership	15.4%
Short interest (Millions)	0.29
Dividend / Yield	$0.00/0.0%

Price target and ratings changes over the past 3 yrs:
Initiated - July 25, 2017 - Buy - Price Target $5.00

Please find Important Disclosures beginning on Page 19.

Conclusion

With a Phase 3 trial for second-line high-risk MDS patients well underway and several near-term clinical progress milestones expected in the next 9-12 months, a second Phase 3 trial for first-line HR-MDS patients possibly set to begin as early as sometime next year, a number of other clinical and pre-clinical product candidates waiting for the allocation of additional resources to progress, and a recently bolstered balance sheet, ONTX shares may soon attract the attention of growth-oriented investors, especially as clinical and business progress continues to be announced throughout 2017 and into 2018. Still, possibly due to its smaller size and lower investor profile, these shares continue to trade at a valuation discount to industry peers in the oncology and hematology therapeutic markets, and value investors may also soon be attracted to ONTX shares. Thus, we believe ONTX shares may soon follow those of other oncology-oriented biotechnology companies which have recently exhibited strong price appreciation, and therefore we are initiating coverage on ONTX shares with a BUY rating and 12-18 month price target of $5.00 per share.

Company Business/History

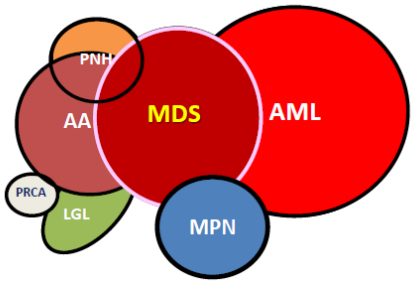
Onconova Therapeutics, Inc., (“Onconova” or “ONTX”), is a clinical-stage biopharmaceutical company focused on discovering and developing novel small molecule product candidates, primarily to treat cancer. Using a proprietary chemistry platform, the Company has created a pipeline of targeted anti-cancer agents designed to work against specific cellular pathways that are important in cancer cells, while causing minimal damage to normal cells. Onconova believes that the product candidates in its pipeline have the potential to be efficacious in a variety of cancers, including three product candidates in clinical trials and several active pre-clinical programs. Substantially all of the Company’s current effort is focused on its lead product candidate, rigosertib, which is being tested in an intravenous formulation as a single agent, and an oral formulation in combination with azacitidine in clinical trials for patients with higher-risk myelodysplastic syndromes ("MDS"). MDS is a hematological malignancy resulting in cytopenia and bone marrow failure which leads to acute myeloid leukemia (AML) in 30% of patients. The Company was founded in 1998, completed its Initial Public Offering in 2013, and has its base of operations in Newtown, Pennsylvania.

Myelodysplastic Syndromes (MDS)

MDS is a group of blood disorders that affect bone marrow function, typically affecting older patients. In MDS, the bone marrow cells appear dysplastic, and their capacity to produce cells is defective. Therefore, blood cells do not develop normally, such that too few healthy blood cells are released into the blood stream, leading to low blood cell counts, or cytopenias. Thus, many patients with MDS require frequent blood transfusions. In most cases, the disease worsens and the patient develops progressive bone marrow failure. In advanced stages of the disease, immature blood cells, or blasts, leave the bone marrow and enter the blood stream, leading to acute myelogenous leukemia ("AML"), which occurs in approximately one-third of patients with MDS.

Based on Surveillance Epidemiology and End Results (SEER) data from the National Cancer Institute, a marketing analytics firm has estimated the 2016 incidence of MDS to be approximately 17,390 cases and the prevalence of MDS to be approximately 61,690 cases in the United States. However, the actual incidence numbers may be higher, due to underdiagnosing and underreporting of new cases of MDS to centralized cancer registries. In addition, the incidence of MDS in the United States may be likely to increase in the future, due to an aging population, improved disease awareness and diagnostic precision, and an increase in the number of cases of secondary, often chemotherapy-induced, MDS. Another factor driving the potential increase in

incidence of MDS in the future is the disease's prevalence in overlap with other conditions and diseases, including AML, but also others, as depicted in the graphic below:



Source: Onconova Therapeutics, clinicaloptions.com

MDS is typically diagnosed using routine blood tests or by observing a combination of certain symptoms, such as shortness of breath, weakness, easy bruising or bleeding, or fever with frequent infections. A diagnosis of MDS is confirmed by evaluating a bone marrow biopsy/aspirate showing dysplastic changes, and, in more advanced cases, the presence of excess blasts, meaning that blasts account for more than 5% of the total number of nucleated cells in the bone marrow. Several classification systems have been developed to gauge the severity of the disease and help determine a prognosis and treatment strategy. Two standard classification systems can be used, the French-American-British morphological classification system as modified by the World Health Organization, or WHO, and the recently revised International Prognostic Scoring System ("IPSS-R") to estimate anticipated survival for patients with MDS based on marrow function and marrow cytogenetics. IPSS-R ranks the severity of chromosome abnormalities, severity of cytopenias, and percentage of bone marrow blasts observed at diagnosis to calculate a five-level risk score: Very Low, Low, Intermediate, High and Very High. MDS patients are generally classified using IPSS-R in order to assess the risk of dying or having their disease progress to AML.

Current Treatment Alternatives for MDS

The most common treatment options currently for MDS for most higher-risk and some lower-risk MDS patients in the United States are hypomethlyating agents, or HMAs, such as Vidaza (azacitidine) marketed by Celgene (CELG, Not Rated) or Dacogen (decitabine) marketed by Johnson & Johnson (JNJ, Not Rated) and Eisai (ESALY, Not Rated). Both pharmaceuticals were approved over a decade ago. One recent industry estimate cites that in the year ended June 2012, approximately 12,500 MDS patients in the United States received treatment with HMAs. Average prices for four leading therapeutics to treat MDS, according to a recent survey by Goodrx.com, ranges from $3,400 to over $17,000, for a single treatment regimen; long-term treatment could be considerably greater.

A significant number of higher-risk MDS patients fail or cannot tolerate treatment with azacitidine or decitabine, which represent the current standard of care for higher-risk MDS patients, and almost all patients who initially respond to therapy eventually progress. Median survival time of higher-risk MDS patients who have failed HMAs is less than one year. Accordingly, it is quite possible that a new therapy that would extend survival in these patients would represent a major contribution in the treatment of MDS.

Allogeneic peripheral blood stem cell or bone marrow transplantation is a potentially curative therapy for MDS. However, since most patients with MDS are elderly and therefore ineligible for transplantation due to the arduous nature of the procedure, this option is generally considered only for the small proportion of younger MDS patients.

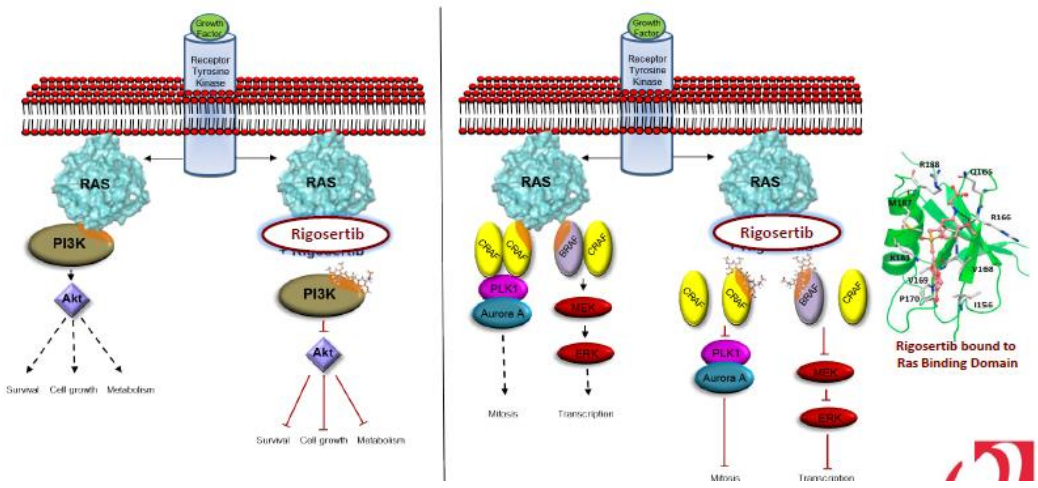
HMAs are believed to inhibit the methylation of DNA. Methylation is a biochemical process involving the addition of a methyl group to DNA and plays an important role in gene expression during cell division and differentiation. Hypomethylation may also restore normal function to genes that are critical for differentiation and proliferation. By contrast, rigosertib is designed to block multiple oncogenic pathways through a RAS mimetic mechanism and/or interfering with RAS function. Because rigosertib has a mechanism of action that is different from HMAs, it may be active in patients who have failed treatment with those drugs. Furthermore, rigosertib's distinct potential mechanism of action has been shown to combine well with approved HMAs - and preclinical studies testing the combination of rigosertib with azacitidine have demonstrated synergy between the two agents. Based on these studies and current understanding of the potential mechanism of action of rigosertib, the Company believes that rigosertib also has the potential to be developed in combination with azacitidine for first line or second line MDS patients and for patients with AML who are not candidates for standard induction chemotherapy; or second-line AML who have failed induction chemotherapy.

Lower-risk MDS patients are those categorized as Very Low, Low or possibly Intermediate risk by the IPSS-R scoring system, with transfusion-dependent anemia. The subset of del(5q) cytogenetic abnormality patients are generally treated with lenalidomide (Celgene's Revlimid). For all other lower-risk MDS patients, supportive care employing blood products, such as red blood cell and platelet transfusions, and erythroid stimulating agents, is the mainstay of therapy. Frequent transfusions introduce many risks, including iron overload, blood borne infections and immune-related reactions. Onconova believes that an oral therapeutic agent that could lower or eliminate the need for transfusions over an extended period of time for the lower-risk population as a whole would fulfill a significant unmet medical need for this patient population.

Product Pipeline

Rigosertib

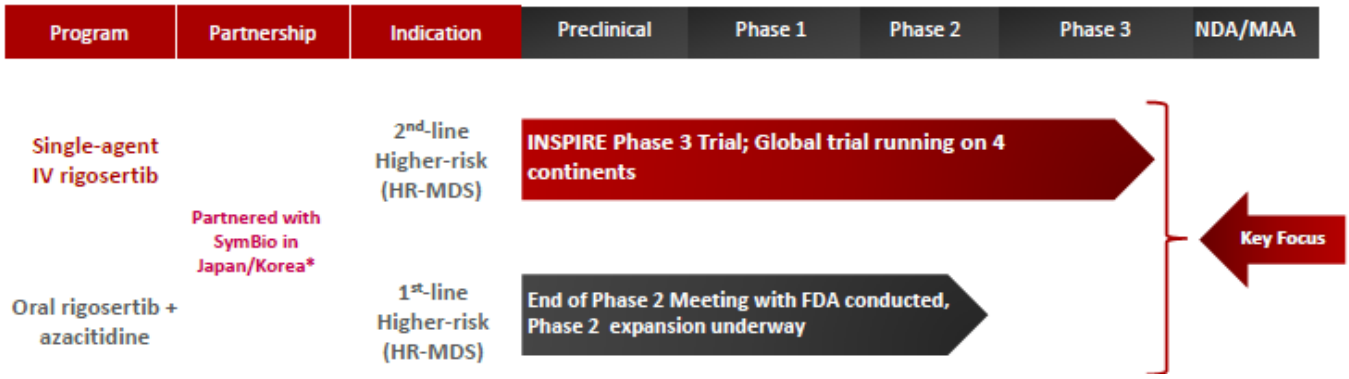
Rigosertib is a small molecule which is believed to block cellular signaling by targeting RAS effector pathways. This is believed to be mediated by the binding of rigosertib to the RAS-binding domain ("RBD"), found in many RAS effector proteins, including the Raf and PI3K kinases. The graphic below depicts rigosertib's novel mechanism of action:



Source: Onconova Therapeutics, Cell, 2016

This mechanism of action may provide a new approach to block the interactions between RAS and its targets containing RBD sites. Rigosertib is currently being tested as a single agent and in combination with azacitidine, in clinical trials of patients with MDS. To date, more than 1,200 patients have been enrolled in rigosertib

clinical trials for MDS and other conditions. The Company is now a party to a collaboration agreement with Japan-based SymBio, which grants SymBio certain rights to commercialize rigosertib in Japan and Korea. Previously, Onconova was a party to a license and development agreement with Baxalta (now part of Shire (SHPG, Not Rated)) which granted Baxalta certain rights to commercialize rigosertib in Europe. However, in August 2016 the European rights for rigosertib reverted to the Company, and at this time Onconova retains the development and commercialization rights to rigosertib in the rest of the world, including in the United States and Europe. The Company is currently considering licensing commercialization rights for rigosertib to other territories in the case of a need for additional funding. The chart below outlines Onconova's clinical product pipeline for the treatment of MDS:



Source: Onconova Therapeutics

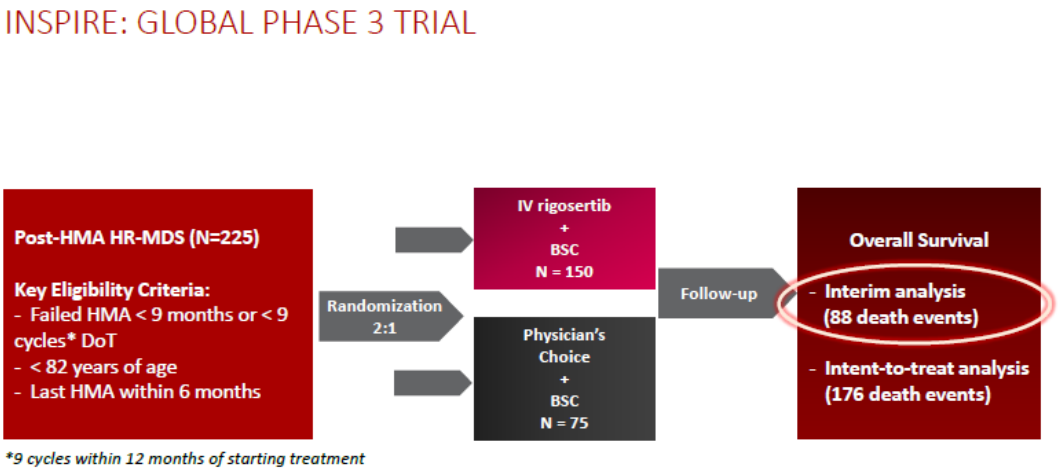
Rigosertib IV for higher-risk MDS – INSPIRE Trial

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

During 2014 and 2015, meetings were held with the US Food and Drug Administration ("FDA"), European Medicines Agency ("EMA") and several European national regulatory authorities to discuss and seek guidance on a path for approval of rigosertib IV in higher-risk MDS patients whose disease had failed HMA therapy. After discussions with the FDA and EMA, the Company refined its patient eligibility criteria by defining what is believed to be a more homogenous patient population. After regulatory feedback, input from key opinion leaders in the US and Europe and based on learnings from the ONTIME study, the Company designed a new randomized controlled Phase 3 trial, referred to as INSPIRE.

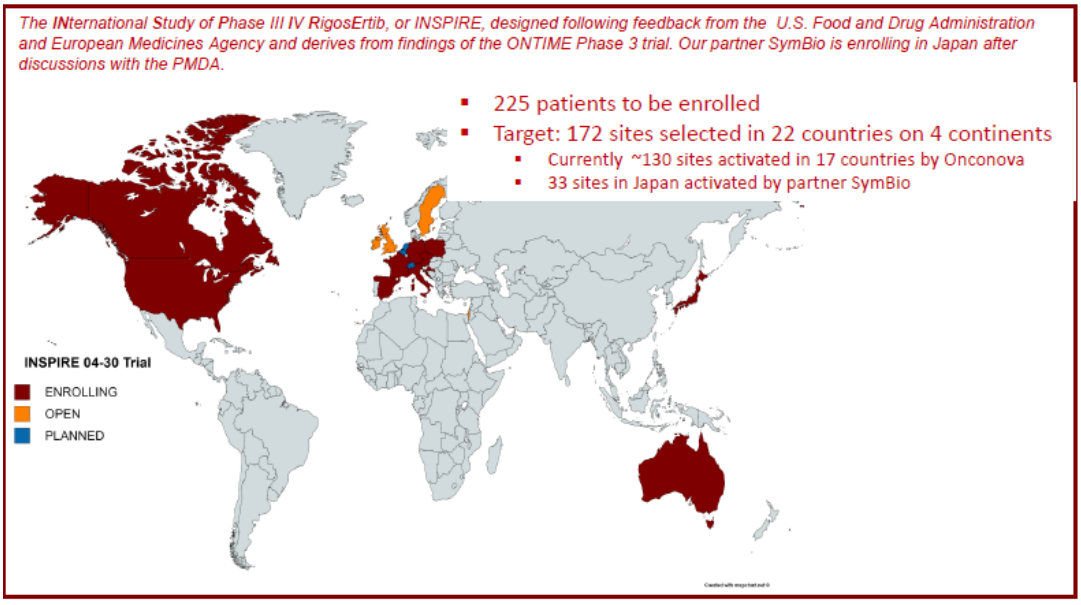
The INSPIRE trial will enroll higher-risk MDS patients under 82 years of age who have progressed on, or failed to respond to, previous treatment with HMAs within nine months or nine cycles over the course of one year after initiation of HMA therapy, and had their last dose of HMA within six months prior to enrollment in the trial. The primary endpoint of this study is overall survival of all randomized patients in the intent-to-treat ("ITT") population and the IPSS-R Very High Risk subgroup. An interim analysis is planned after fifty percent of the total death events have occurred. This randomized trial of approximately 225 patients is expected to be conducted at more than 170 sites globally. The first patient in the INSPIRE trial was enrolled in the US at the MD Anderson Cancer Center in December 2015, while the first patient in Europe was enrolled in March 2016

and the first patient in Japan was enrolled in July 2016. The primary endpoint of INSPIRE is overall survival, and an interim analysis is anticipated in the second half of 2017. The Company anticipates reporting topline data from the INSPIRE trial in 2018. The INSPIRE trial design, eligibility and potential follow-up is shown graphically below:



Source: Onconova Therapeutics, The Lancet Oncology 2016 (17)

Enrollment for the INSPIRE Phase 3 trial for second-line higher-risk MDS patients is highly selective and required an extensive search to identify appropriate candidates meeting the stringent entry criteria. Most recent enrollment figures in the trial are encouraging, with 172 trial sites selected across 22 countries on four continents. To date, Onconova's development partner SymBio Pharmaceuticals has opened 33 sites in Japan collaborating on the INSPIRE protocol, in addition to 130 sites outside Japan activated by the Company, with more sites coming on-line with the near-term expectation of activation of sites in Switzerland and the Netherlands, making 19 countries in total at that time. The map below depicts global progress for the INSPIRE trial:

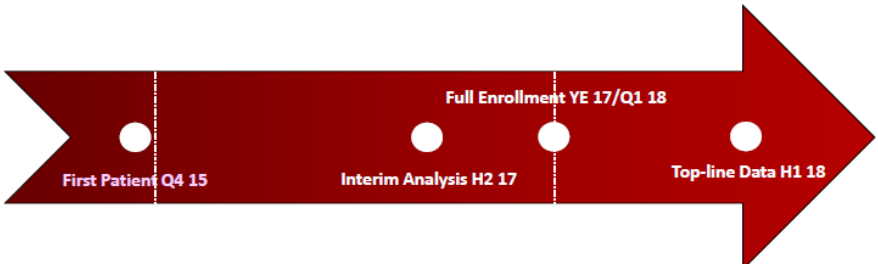


Source: Onconova Therapeutics

The most recent clinical trial progress given by Onconova management occurred during the May 15, 2107 first quarter earnings conference call, and included estimated timeline guidance of

- Interim analysis on track for H2/2017;
- Enrollment rate indicating full accrual in Q1/2018; and
- Top-line data analysis released sometime in 2018.

Interim analysis of INSPIRE will involve a review of the efficacy and safety data for the first half of the trial by the Company's independent data monitoring committee (DMC). This interim analysis may result in the trial continuing as planned, randomization for the Very High Risk MDS subgroup continuing with the other subgroups closed to further accrual, or the trial being stopped for futility. The analysis may also result in an increase to the study's sample size. INSPIRE's statistical analysis plan is currently under review by the FDA. The timelines for enrollment and data analysis of INSPIRE are depicted in graphic form below:



Source: Onconova Therapeutics

Safety and Tolerability of rigosertib in MDS and other hematologic malignancies

Oral rigosertib as a monotherapy has been evaluated in four Phase 1 and 2 studies in MDS and other hematologic malignancies. One study is completed and a clinical study report is available. A comprehensive analysis of IV and oral rigosertib safety in patients with Myelodysplastic Syndromes (MDS) and Acute Myeloid Leukemia (AML) was presented in December 2016 at the American Society of Hematology (ASH) Annual Meeting. The most commonly reported treatment-emergent adverse events (TEAEs) in 10% of patients with MDS/AML receiving rigosertib intravenous (IV) monotherapy were fatigue (33%), nausea (33%), diarrhea (27%), constipation (25%), anemia (24%) and pyrexia (24%). The most common Grade 3 AEs were anemia (21%), febrile neutropenia (13%), pneumonia (12%) and thrombocytopenia (11%). The most common serious AEs were febrile neutropenia (10%), pneumonia (9%), and sepsis (7%). The most common AEs leading to discontinuation of IV rigosertib were sepsis and pneumonia (3% each).

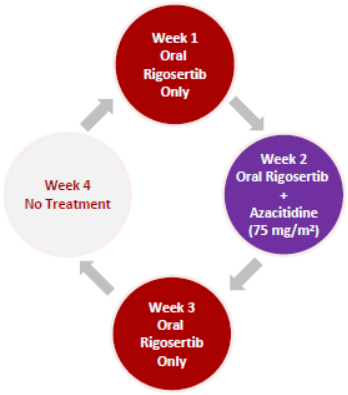
Oral Rigosertib in combination with azacitidine for higher-risk MDS

Most recently, Onconova presented Phase 2 data from an oral rigosertib and azacitidine (Celgene's Vidaza) combination trial in higher-risk MDS at the American Society of Hematology (ASH) Annual Meeting, in December 2016. The data showed that 33 of 40 MDS patients enrolled were evaluable for response at the time of the analysis. The median age of patients was 66, with 73% being male. Measured by the ECOG Scale of performance, which describes a patient's level of functioning in terms of their ability to care for themselves, daily activity, and physical ability (walking, working, etc.) performance status was 0 or 1 in 95% of the patients in the Phase 2 study. ECOG Performance Status grades include:

- 0 or Fully active, able to carry on all pre-disease performance without restriction;
- 1or Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g., light house work, office work;
- 2 or Ambulatory and capable of all self-care but unable to carry out any work activities; up and about more than 50% of waking hours;
- 3 or Capable of only limited self-care; confined to bed or chair more than 50% of waking hours;
- 4 or Completely disabled; cannot carry on any self-care; totally confined to bed or chair; and
- 5 or Dead.

Safety/Tolerability of the Combination

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



Source: Onconova Therapeutics

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

Following an end of Phase 2 meeting with the Food and Drug Administration (FDA) in September 2016, Onconova began development of a Phase 3 protocol. The Company expects to submit this protocol for review by regulatory agencies in the US and Europe in the third quarter of 2017. The Phase 3 trial will be designed as a 1:1 randomized, placebo-controlled trial of oral rigosertib plus azacitidine compared to azacitidine plus placebo. The Company plans to use a full dose of azacitidine, as defined in the product insert, in the combination study. The patient population studied in this trial will be first-line (HMA naïve) higher-risk MDS patients. The primary endpoint for assessment of efficacy will be Response Rate of complete remission (CR) + partial remission (PR,) as per the IWG (International Working Group) 2006 Response criteria. Formal FDA review will be sought via the Special Protocol Assessment (SPA) mechanism. Further details, including sample size and other criteria will be available after completion of regulatory review, which is anticipated in the second half of 2017.

While the Phase 3 trial is being designed, the Company also plans to expand the trial cohort by up to 40 subjects with the view of further studying the investigational therapy. Under a protocol amendment, Onconova anticipates using the expanded cohorts to explore dose optimization by increasing the dose and varying the dose administration scheme of oral rigosertib to identify an optimal dose. The Company is currently in discussions with FDA concerning the trial expansion. The chart below outlines the next steps for Onconova's rigosertib plus azacitidine combination therapy clinical program:

Key Parameters and Milestones for Oral Rigosertib + Azacitidine Phase 3 Program		
Phase 3 Design	Randomized Controlled	1:1 randomization between Aza + placebo and Aza + oral rigosertib
Patient Population	First-line MDS	Higher risk patients indicated for azacitidine (Vidaza)
Primary Endpoint	Composite Response	Complete and Partial Remission per IWG 2006 criteria for MDS
Regulatory Path	To be explored	Special Protocol Assessment (SPA), Fast-track etc.
Protocol Details	2017	After regulatory discussions are completed

Source: Onconova Therapeutics

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.

The Company has 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, Onconova presented data at the Annual ASH Meeting from the 09-05 Phase 2 trial. To date, Phase 2 clinical data has indicated that further study of single agent oral rigosertib in transfusion-dependent, lower-risk MDS patients is warranted. Rigosertib has been generally well tolerated, except for urinary side effects at higher dose levels. Future clinical trials will be needed to evaluate dosing and schedule modifications and their impact on efficacy and 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. The Company has therefore expanded the 09-05 trial by adding an additional cohort of 20 patients to advance the development of this genomic methylation test. To date, a biomarker which would predict response has not been identified. Further testing and development of oral rigosertib for lower-risk MDS will be required.

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

Other Clinical Programs

Most of the Company's clinical efforts are now devoted to the advanced stage development of rigosertib for unmet medical needs of MDS patients. These other product candidates, which are outlined in the chart below, are characterized by the use of patent protected, differentiated small molecule compounds. Other programs are either paused, inactive or require only minimal internal resources and efforts. The Company continues to seek partnerships in one or more geographic territories for all of its non-rigosertib clinical programs.

Compound	Target	Stage	Next Step	Competition	Patents
Briciclib	eIF4E (Cyclin D)	Phase I*	Phase II Dose	4EGI-1	Issued US
Recilisib	GSK-3, Akt	Phase I	Primate efficacy	CBLB502	Issued WW
ON 123300**	**CDK4/6; ARK5**	**Preclinical**	**Toxicology**	**Palbociclib**	**Issued US, EP**
ON 150030**	FLT3 + Src	Pre-clinical	Animal studies	Dasatinib	In process
ON 1231320	PLK2	Formulation	Pre-IND	Volasertib	Issued
ON 108600	CK2	Formulation	Pre-IND	CX-4945	Issued
ON 146040	PI3K a/d	Pre-clinical	Toxicology	IPI-145	In process

Briciclib

Briciclib is a small molecule targeting an important intracellular regulatory protein, Cyclin D1, which is often found at elevated levels in cancer cells. Cyclin D1 expression is regulated through a process termed cap-dependent translation, which requires the function of eukaryotic initiation factor 4E protein. In vitro evidence indicates briciclib binds to eukaryotic initiation factor 4E protein, blocking cap-dependent translation of Cyclin D1 and other cancer proteins, such as c-MYC, leading to tumor cell death. Onconova has been conducting a Phase 1 multi-site dose-escalation trial of briciclib in patients with advanced solid tumors refractory to current therapies. Safety and efficacy assessments are complete in six of the seven dose-escalation cohorts of patients in this trial. As of December 2015, the Investigational New Drug ("IND") for briciclib is on full clinical hold following a drug product lot testing failure. The Company 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. The Company has completed four Phase 1 trials to evaluate the safety and pharmacokinetics of recilisib in healthy human adult subjects using both subcutaneous and oral formulations. Onconova has 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. The Company anticipates 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 three clinical-stage product candidates, the Company has several product candidates that target kinases, cellular metabolism or cell division in preclinical development. Onconova may explore additional collaborations to further the development of these product candidates as the Company focuses internally on more advanced programs.

Research and Development

Since commencing operations, the Company has dedicated a significant portion of its resources to the development of clinical-stage product candidates, particularly rigosertib. Onconova incurred research and development expenses of $20.1 million, $25.9 million and $49.4 during the years ended December 31, 2016, 2015 and 2014, respectively. R&D expenditures in the most recent first quarter of 2017 were $4.9 million, down from $5.8 million in the previous year period.

Partnerships

Baxalta GmbH (Shire)

In September 2012, the Company entered into a development and license agreement with Baxter Healthcare SA, the predecessor in interest to Baxalta GmbH (now part of Shire Pharmaceuticals), pursuant to the granting of 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 $50.0 million 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, at which time, the rights licensed to Baxalta reverted to Onconova at no cost. Among other terms, the Baxalta agreement contemplated development of rigosertib IV in higher-risk MDS patients, through the ONTIME trial and, potentially, additional Phase 3 clinical trials. The ONTIME trial did not achieve its primary endpoint, however, and the Company is continuing the development of rigosertib IV in higher-risk MDS patients through its INSPIRE trial. In accordance with the agreement, Onconova elected to have Baxalta (Shire) fund fifty percent of the costs of the INSPIRE trial, up to $15.0 million, and the Company recorded revenue of approximately $5.0 million and $2.9 million during the years ended December 31, 2016 and 2015, respectively related to Baxalta's funding of the INSPIRE trial, until the funding from Baxalta terminated effective August 30, 2016. Onconova now retains overall responsibility for the trial, including determination of the trial specifications, selection of third party service providers and payment for all services and materials.

SymBio Pharmaceuticals Limited

In July 2011, the Company entered into a license agreement with SymBio, based in Tokyo, Japan, 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 while Onconova has similar obligations outside of the licensed territory. The Company has also entered into an agreement with SymBio providing for the Company to supply SymBio with development-stage product. Under the SymBio license agreement, it has also been agreed that the Company will 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. Onconova 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, Onconova received an upfront payment of $7.5 million, with the potential to receive additional milestone payments of up to an aggregate of $22.0 million from SymBio upon the achievement of specified development and regulatory milestones for specified indications, potential

milestone payments based upon annual net sales of rigosertib by SymBio of up to an aggregate of $30.0 million, and royalty payments at percentage rates ranging from the mid-teens to 20% based on net sales of rigosertib by SymBio. On an accounting basis, the SymBio rigosertib upfront payment and supply agreement are being recognized ratably using the straight line method through December 2027, the expected term of the agreement.

SymBio has conducted Phase 1 trials with IV and oral rigosertib in Japan at their own expense. Currently, SymBio is participating in the INSPIRE trial by enrolling patients in Japan. For all rigosertib trials conducted by SymBio, the Company supplies clinical trial quantities and provides other assistance as requested.

Manufacturing and Commercialization

For its synthetic small molecule product candidates, Onconova conducts its manufacturing activities under individual purchase orders with third-party contract manufacturers, or CMOs. The Company also has quality agreements in place with its key CMOs, and has established an internal quality control group to audit and qualify CMOs in the US and internationally. The Company is working with its CMOs to produce the active pharmaceutical ingredient for rigosertib for both the IV and oral formulations for use in clinical trials, and Onconova further believes that sufficient quantities of the new drug will be available for commercialization if any of the Company's clinical programs receive marketing approval.

The Company currently does not have an internal sales, marketing and distribution organization, but instead may rely on licensing and co-promotion agreements with strategic partners for its products, if approved, in the US and other territories. If Onconova does choose to build a commercial infrastructure to support marketing in the United States at a later date, such commercial infrastructure could be expected to include a targeted oncology sales force supported by sales management, internal sales support, an internal marketing group and distribution support.

Intellectual Property

Onconova owns or has exclusively licensed 79 issued patents and 6 pending applications covering composition-of-matter, process, formulation and indications for method-of-use for rigosertib worldwide, including seven patents and one patent application in the US. The US composition-of-matter patent for rigosertib was in-licensed from Temple University, and currently expires in 2026, while the US method of treatment patent for rigosertib was also licensed from Temple and expires in 2025. These rigosertib patents were licensed from Temple as part of a 1999 agreement, which further requires the Company to pay annual license maintenance fees as well as a low single-digit percentage of net sales as a royalty to Temple, if the product becomes commercialized. In addition to the rigosertib patents, the Company holds 27 patents and two pending patent applications for briciclib, including 2 in the US, and 56 issued patents and 5 pending patent applications for recilisib, including four issued patents and five patent applications in the US. Both briciclib and recilisib were included in the 1999 Temple patent license agreement. The Company also holds patents related to the use of rigosertib in combination with azacitidine, the earliest of which expires in 2028. The Company is also actively seeking to obtain additional patent coverage for its products, including a formulation patent application and patents for process and administration schedule of the potential treatment.

In addition, Onconova has been awarded orphan drug designation for rigosertib for the treatment of MDS in the US and Europe, and its development partner SymBio has received similar designation in Japan.

Competition

The Company is in competition with several approved and additional development programs in its potential markets for MDS and acute radiation syndrome. In MDS, companies competing in this space include Eisai (decitabine), Celgene Corporation (azacitidine in combination with lenalidomide), Cell Therapeutics (CTIC, Not Rated) for its tosedostat in combination with decitabine or cytarabine, Cyclacel Pharmaceuticals (CYCC, Not Rated) for sapacitabine, and Astex Therapeutics/Otsuka (guadecitabine). To the Company's knowledge, there are no Phase 3 trials being conducted for higher-risk MDS patients who have failed treatment with HMAs. In the lower-risk MDS market, competition exists from a number of companies in mid-stage and late-stage clinical trials, such as Celgene (lenalidomide), Array BioPharma (ARRY, Not Rated) for ARRY-614, and Acceleron Pharma (XLRN, Not Rated) for sotatercept and luspatercept. Potential competitors in the acute radiation syndrome (ARS) with products in development to address ARS include Soligenix (SNGX, Not Rated), Cellerant Therapeutics (Private), and Cleveland BioLabs (CBLI, Not Rated) Each of these companies is working with the US government to develop its products through federal contracts and grants.

Recent Results and Balance Sheet/Cash Flow

Onconova reported improved financial results and positive clinical progress for their most recent first quarter 2017 in mid-May, including net revenues of $0.2 million compared with net revenues of $1.5 million in the prior year period and a net loss of $8.3 million or ($1.23) per share, as compared with a net loss of $7.2 million or ($2.65) per share in Q1/2016. Results for Q1/2017, however, included a non-cash charge of $1.5 million for changes in the fair value of warrant liabilities as opposed to a gain for the same line item last year; without this charge operating losses actually decreased this year to $6.8 million from $7.5 million for the same period one year ago. While revenues decreased this year due to the end of a cost-sharing agreement with Baxalta in late 2016, the Company was able to pare its costs in the first quarter of 2017, including reducing general and administrative expenses to $2.1 million from $3.2 million last year and also reducing R&D costs to $4.9 million in Q1/2017 from $5.8 million in Q1/2016.

Significant milestones during the recent quarter and this calendar year to date include:

- Progress on the INSPIRE trial of IV rigosertib in second-line HR-MDS patients, including 172 trial sites selected worldwide in 18 difference countries, with new country site approval expected soon in Switzerland. The Company also has clinical trial applications underway in three more countries in Europe – Estonia, Hungary and Russia. To date, 163 clinical trial sites for INSPIRE have been opened, included 44 in North America, 33 in Japan by partner SymBio and 86 in the rest of the world. Sixty of these sites in 14 countries have begun enrolling patients in INSPIRE, including the first patients enrolled this spring in four new countries: Belgium, Ireland, Israel and Italy;
- In addition, related to INSPIRE, the Company expects a response shortly by both the US FDA and European EMA on its proposed interim and top-line statistical analyses plans – Onconova also recently reported that a second Data Monitoring Committee (DMC) review of safety data from INSPIRE was completed;
- Progress on its clinical program using Oral rigosertib in combination with azacitidine for first-line HR-MDS patients, including submission of a synopsis and briefing book for a Phase 3 trial protocol for the EMA, with the expectation that a similar submission for a Special Protocol Assessment with be made with the US FDA during Q3/2017. Onconova also has enrolled the first two patients in an expanded Phase 2 trial of the combination rigosertib/azacitidine trial, and the Company anticipates ultimately opening more than 10 sites and enrolling up to 40 new patients in the expanded trial ultimately;

- Showed positive results in its preclinical new chemical entities programs, including announcing data at the recent April 2017 AACR annual meeting for ON 123300, a first-in-class dual inhibitor of CDK4/6 + ARK5, as well as for ON 150030, a novel Type 1 inhibitor of FLT3 and Src pathways; and
- Initiated a collaborative development program focusing on a group of rare diseases with a well-defined molecular basis in defects in the Ras Effector Pathway ("Rasopathies"), including preclinical and clinical collaborative programs with the National Institutes of Health, National Cancer Institute, academic investigators and Patient Advocacy groups. Onconova will present further details related to its Rasopathies rare disease program later this year in a Key Opinion Leader session.

Operating cash burn in the first quarter was approximately $6.0 million, and at the end of the first quarter the Company held $15.4 million in cash on its balance sheets, which was augmented after the end of the quarter by receipts from an April 2017 equity offering and subsequent over-allotment of approximately $5.3 million, net. Company management further stated during its first quarter earnings conference call that it anticipates current cash resources will be sufficient to meet operating cash needs through the end of calendar 2017.

The Company's balance sheets for the periods Q4/2016 ending December 2016 and Q1/2017 ending March 2017 are shown below:

Balance Sheets
($000s)

Assets:	12/31/16	3/31/17
Current Assets		
Cash and equivalents	$21,400	$15,389
Receivables	31	126
Prepaid expenses and other current assets	1,638	898
Total current	23,069	16,413
Property and equipment, net	152	129
Other long-term assets	12	12
Total Assets	$23,233	$16,554
Liabilities:		
Current liabilities		
Accounts payable	$5,323	$5,407
Accrued expenses and other current	4,382	4,021
Deferred revenue	455	455
Total current	10,160	9,883
Warrant liability	3,401	4,950
Deferred revenue and other non-current	4,545	4,432
Total liabilities	18,106	19,265
Stockholders' equity	5,127	-2,711
TOTAL LIAB & EQ	$23,233	$16,554

Source: DJSI estimates, Onconova Therapeutics SEC filings

Outlook/Growth Drivers

Clinical program development and other milestones to look for from Onconova for the rest of this calendar year and into next year include:

1) Release of Phase 3 clinical trial interim analysis for IV rigosertib in MDS - 2017;
2) Release of top-line data for Phase 3 clinical trial for IV rigosertib in MDS - 2018;
3) Initiation of Phase 3 trial for combination oral rigosertib/azacitidine - 2017 or 2018 (with additional funding); and
4) Business development activity for preclinical and early-stage product candidates, including potential development partnerships, marketing agreements, government grants/collaborations, and/or new product in-licenses – 2017-2018

On a financial basis, we are estimating that revenues and expenses for the remaining three quarters for Onconova will approximate what the Company reported for their first quarter 2017 results; and thus for 2017E our forecasts for Onconova are revenues of $1.3 million and a net loss of $30.3 million, or ($3.30) per share, including R&D costs of $20.1 million and general and administrative expenses of $9.0 million for the year as a whole. Both expenses and revenues/license fees could increase this year if the Company is successful in signing additional marketing or development partnerships either for new territories of its existing late-stage clinical programs or for its earlier-stage and preclinical product candidates.

Management

Dr. Ramesh Kumar is Co-founder, Director, President, & CEO of Onconova. His prior experience has included positions in R&D or management at Princeton, Bristol-Myers Squibb, DNX Corp., and Kimeragen. Dr. Kumar received his PhD in Molecular Biology from the University of Illinois, Chicago, and trained at the National Cancer Institute. Additionally, Dr. Kumar received BSc and MSc degrees in Microbiology from Panjab University.

Dr. Steven M. Fruchtman has served as Chief Medical Officer and Senior Vice President, R&D and Development of Onconova since January 2015. Prior to joining the Company, Dr. Fruchtman served in management positions with Syntax Pharmaceuticals, Spectrum Pharmaceuticals, Allos Therapeutics, Novartis and Ortho Biotech Products. Dr. Fruchtman is also a board certified hematologist and received his medical degree from New York Medical College and BA degree from Cornell.

Mark P. Guerin has served as CFO of the Company since September 2016 after serving in other financial management positions with the Company since September 2013. Mr. Guerin previously served as Chief Financial Officer for CardioKine. He received is BA in Accounting from DeSales University.

Dr. Manoj Maniar has served as Senior Vice President, Product Development of Onconova since August 2005. Prior to joining the Company, Dr. Maniar was employed in an R&D position with SRI International, a nonprofit research institute. Dr. Maniar received his BS in Pharmacy from Bombay College of Pharmacy and his PhD in Pharmaceutics from the University of Connecticut.

In addition to Dr. Kumar, Onconova's Board of Directors also includes **Michael B. Hoffman,** Chairman of the Board since 2006 and a partner of investment firm Riverstone Holdings; **Dr. Henry S. Bienen**, currently chairman of Rasmussen College and president emeritus of Northwestern University; **Dr. Jerome E. Groopman,** a Professor of Medicine at Harvard Medical School and an attending Hematologist/Oncologist at Beth Israel Deaconess Medical Center; **James J. Marino**, a former Partner at the Dechert LLP law firm; **Dr. Viren Mehta**, a Managing Partner at Mehta Partners; **Dr. E. Premkumar Reddy**, a scientific founder of the Company and a Professor at Mount Sinai School of Medicine; and **Jack E. Stover**, former CEO of Interpace Diagnostics and current CEO of Zebec Therapeutics. Onconova's eight-member Scientific Advisory Board includes **Dr. Alan Williamson,** Chairman**,** formerly with Glaxo, Merck, UCLA, University of Glasgow and the National Institute for Medical Research, UK; **Dr. James F. Holland,** of the Mount Sinai School of Medicine; **Dr. David R. Parkinson**, a Venture Partner at NEA; **Dr. George F. Vande Woude** of the Van Andel Research Institute; **Dr. Ross C. Donehower** of the Johns Hopkins Sidney Kimmel Cancer Center; **Dr. Stephen Nimer** of the Sylvester Comprehensive Cancer Center at the University of Miami; **Dr. Peter K. Vogt** from The Scripps Institute; and **Dr. Anna Marie Skalka** of the Fox Chase Cancer Center.

Stock Valuation/Comparables

We have compiled a four-stock comparison group for Onconova comprised primarily of smaller oncology therapeutic or similar market companies, including Cleveland BioLabs (CBLI, Not Rated), CTI BioPharma (CTIC, Not Rated) (formerly Cell Therapeutics), Cyclacel Pharmaceuticals (CYCC/Not Rated), and Soligenix (SNGX, Not Rated). Since ONTX is not forecast to accrue significant revenues or positive earnings for 2017E or 2018E, we are employing a market capitalization metric to value ONTX, comparing average market cap for our target company with our group of biotechnology stocks with similar stage R&D pipelines and potential markets for their therapeutics, in particular MDS and/or acute radiation sickness. On average, our comparable stock group shows valuation multiples of approximately $50 million in market capitalization, representing a significant premium to ONTX's current market cap, and thus, employing the average market cap of $50 million for ONTX, we have derived a valuation and long-term price target of $5.00 for ONTX shares. Therefore, we are initiating shares of ONTX with a Buy rating and 12-18 month price target of $5.00 per share.

Risk Factors

In addition to normal economic and market risk factors that impact most equities and the common risks shared by Onconova Therapeutics with other companies in the industry, we believe an investment in ONTX involves the following risks:

- **Reliance on key management** – At present, ONTX relies on several key members of its management team who either founded the Company or have been in key executive positions for an extended period of time. Should one or more of these key executives leave the Company, ONTX could find it difficult to replace their long-standing knowledge of operations and industry expertise.
- **Reliance on partnerships –** To date, ONTX has signed development partnerships and joint ventures for its clinical-stage therapeutics. Thus, in the future certain factors related to product marketing and/or new product development may be determined by third parties and out of the control of Company management.
- **Limited stock liquidity** – Trading volume in ONTX stock is comparatively light and these shares have a relatively limited history of trading compared with other healthcare stocks. As such, news regarding ONTX, its target market, partners and/or competitors could lead to significant volatility in the stock price.
- **Competitive markets** – The Company and its partners compete in its target therapeutic markets with a number of companies, many of which are considerably larger than the Company. There can be no assurance that the Company and its partners will be able to successfully compete and launch new products into these competitive markets in the future.
- **FDA and regulatory risks** – ONTX and its partners are subject to regulatory review for ongoing therapeutic products research and development, principally approval and review processes of the US Food and Drug Administration and other non-domestic regulatory agencies. In addition, the quality assurance and manufacture of the Company's therapeutic products are subject to ongoing oversight and regulation, and any negative correspondence from the FDA or other regulatory agencies could have an adverse effect on the ongoing operations of the Company.
- **Lack of historic profitability** - ONTX has not achieved operating profitability since its founding, and according to our forecasts may not be expected to do so in the near future. Although the Company maintains adequate cash reserves at the present time, there can be no assurance the Company will not need to raise additional working capital in the future should operating losses continue.

- **Need to defend patents and other intellectual property** – ONTX currently holds approximately 79 US and International patents on its rigosertib product candidate, as well as additional patents and patent applications for its earlier-stage and preclinical drug candidates, some of which expire in the near future. The Company may be required to defend its patents in the US and overseas in the future, and there can be no assurance these defenses will be successful.

Companies mentioned in this report:

Celgene (CELG, Not Rated)
Merck (MRK, Not Rated)
Bristol-Myers Squibb (BMY, Not Rated)
Johnson & Johnson (JNJ, Not Rated)
Eisai (ESALY, Not Rated)
SymBio Pharmaceuticals (Private)
Shire (SHPG, Not Rated)
Cleveland BioLabs (CBLI, Not Rated)
CTI BioPharma (CTIC, Not Rated) (formerly Cell Therapeutics)
Cyclacel Pharmaceuticals (CYCC/Not Rated)
Soligenix (SNGX, Not Rated)
Acceleron Pharma (XLRN, Not Rated)
Array BioPharma (ARRY, Not Rated)
Astex/Otsuka (OTSKY, Not Rated)
Cellerant Therapeutics (Private)

Robert M. Wasserman

Onconova Therapeutics, Inc.
Consolidated Statements of Income
(In 000s, except per share data)

FYE December	2014	2015	1Q16 March	2Q16 June	3Q16 September	4Q16 December	2016	1Q17 March	2Q17E June	3Q17E September	4Q17E December	2017E	2018E
Revenue	$800	$11,456	$1,474	$2,248	$1,651	$173	$5,546	$210	$250	$300	$350	$1,110	$6,500
Operating Expenses													
General and administrative	15,119	9,533	3,172	2,083	1,975	1,948	9,178	2,116	2,200	2,300	2,400	9,016	10,000
Research and development	49,425	25,895	5,822	5,564	3,991	4,694	20,071	4,886	5,000	5,100	5,200	20,186	21,000
Total operating expenses	64,544	35,428	8,994	7,647	5,966	6,642	29,249	7,002	7,200	7,400	7,600	29,202	31,000
Income (loss) from operations	($63,744)	($23,972)	($7,520)	($5,399)	($4,315)	($6,469)	($23,703)	($6,792)	($6,950)	($7,100)	($7,250)	($28,092)	($24,500)
Other income (loss)	81	9	280	18	2,716	1,036	4,050	(1,549)	(200)	(200)	(200)	(2,149)	(500)
Net income (loss) before taxes	($63,663)	($23,963)	($7,240)	($5,381)	($1,599)	($5,433)	($19,653)	($8,341)	($7,150)	($7,300)	($7,450)	($30,241)	($25,000)
Income taxes	19	16					14					100	100
Net income (loss)	($63,682)	($23,979)					($19,667)					($30,341)	($25,100)
Basic income per share	($29.41)	($10.54)	($2.65)	($1.96)	($0.29)	($0.80)	($4.44)	($1.23)	($0.72)	($0.73)	($0.74)	($3.30)	($1.67)
Diluted income per share	($29.41)	($10.54)	($2.65)	($1.96)	($0.29)	($0.80)	($4.44)	($1.23)	($0.72)	($0.73)	($0.74)	($3.30)	($1.67)
Basic shares outstanding	2,165	2,274	2,732	2,740	5,438	6,797	4,427	6,771	9,900	10,000	10,100	9,193	15,000
Diluted shares outstanding	2,165	2,274	2,732	2,740	5,438	6,797	4,427	6,771	9,900	10,000	10,100	9,193	15,000
Key ratios:													
Revenue growth	N/A	1332.0%	1193.0%	1727.6%	1.8%	-98.2%	-51.6%	-85.8%	-88.9%	-81.8%	102.3%	-80.0%	2995.2%
G &A/revenue	1889.9%	83.2%	215.2%	92.7%	119.6%	1126.0%	165.5%	1007.6%	880.0%	766.7%	685.7%	812.3%	153.8%
R&D/revenue	6178.1%	226.0%	395.0%	247.5%	241.7%	2713.3%	361.9%	2326.7%	2000.0%	1700.0%	1485.7%	1818.6%	323.1%
Tax Rate	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	-0.3%	-0.4%
Deprec, amort & non-cash comp.	3,958	3,958	1,920	630	(2,100)	(410)	40	2,030	2,100	2,150	2,200	8,480	10,000
Cash Flow/share	($27.58)	($8.80)	($1.95)	($1.73)	($0.68)	($0.86)	($4.43)	($0.93)	($0.51)	($0.52)	($0.52)	($2.38)	($1.01)
EBITDA/share	($27.57)	($8.80)	($1.95)	($1.73)	($0.68)	($0.86)	($4.43)	($0.93)	($0.51)	($0.52)	($0.52)	($2.37)	($1.00)

Balance Sheets
($000s)

Assets:	12/31/16	3/31/17
Current Assets		
Cash and equivalents	$21,400	$15,389
Receivables	31	126
Prepaid expenses and other current assets	1,638	898
Total current	23,069	16,413
Property and equipment, net	152	129
Other long-term assets	12	12
Total Assets	$23,233	$16,554
Liabilities:		
Current liabilities		
Accounts payable	$5,323	$5,407
Accrued expenses and other current	4,382	4,021
Deferred revenue	455	455
Total current	10,160	9,883
Warrant liability	3,401	4,950
Deferred revenue and other non-current	4,545	4,432
Total liabilities	18,106	19,265
Stockholders' equity	5,127	-2,711
TOTAL LIAB & EQ	$23,233	$16,554

Quarterly Earnings Comparisons

Revenues (in $Mill)	March	June	September	December	Total
2014					800
2015	114	123	1,622	9,597	11,456
2016	1,474	2,248	1,651	173	5,546
2017E	210	250	300	350	1,110

Earnings per Share (diluted)					
2014					(29.41)
2015	(3.34)	(4.13)	(2.60)	(0.76)	(10.54)
2016	(2.65)	($1.96)	(0.29)	($0.80)	(4.44)
2017E	(1.23)	($0.72)	(0.73)	($0.74)	(3.30)

Revenues by Segment

(In $000s)	2015	2016	2017E	2018E
LLS (The Leukemia and Lymphoma Society)	8,000			
Baxalta	2,893	4,999		
SymBio	563	547	1,110	1,500
Other/New	0	0	0	5,000
Total	$ 11,456	$ 5,546	$ 1,110	$ 6,500

Source: Dawson James Securities, Inc. estimates; Company documents

Important Disclosures:

Price Chart:

Price target and ratings changes over the past 3 years:
Initiated – Buy - July 25, 2017 – Price Target $5.00

Dawson James Securities, Inc. (the "Firm") is a member of the Financial Industry Regulatory Authority ("FINRA") and the Securities Investor Protection Corporation ("SIPC").

The Firm does not make a market in the securities of the subject company (s). The Firm has NOT engaged in investment banking relationships with ONTX in the prior twelve months, as a manager or co-manager of a public offering and has NOT received compensation resulting from those relationships. The Firm may seek compensation for investment banking services in the future from the subject company(s). The Firm has NOT received any other compensation from the subject company(s) in the last 12 months for services unrelated to the managing or co-managing of a public offering.

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Although the statements in this report have been obtained from and are based upon recognized statistical services, issuer reports or communications, or other sources that the Firm believes to be reliable, we cannot guarantee their accuracy. All opinions and estimates included in this report constitute the analyst's judgment as of the date of this report and are subject to change without notice.

Information about valuation methods and risks can be found in the "STOCK VALUATION" and "RISK FACTORS" sections of this report.

The securities of the company discussed in this report may be unsuitable for investors depending on their specific investment objectives and financial position. This report is offered for informational purposes only, and does not constitute an offer or solicitation to buy or sell any securities discussed herein in any jurisdiction where such would be prohibited. Additional information is available upon request.

Ratings Definitions:

1) **Buy**: the analyst believes the price of the stock will appreciate and produce a total return of at least 20% over the next 12-18 months;
2) **Neutral**: the analyst believes the price of the stock is fairly valued for the next 12-18 months;
3) **Sell**: the analyst believes the price of the stock will decline by at least 20% over the next 12-18 months and should be sold.

The following chart reflects the range of current research report ratings for all companies followed by the analysts of the Firm. The chart also reflects the research report ratings relating to those companies for which the Firm has performed investment banking services.

	Company Coverage		Investment Banking	
Ratings Distribution	# of Companies	% of Total	# of Companies	% of Totals
Market Outperform (Buy)	8	67%	2	25%
Market Perform (Neutral)	0	0%	0	0%
Market Underperform (Sell)	0	0%	0	0%
Ratings Suspension*	4	33%	4	100%
Total	12	100%	6	50%
*Suspensions are ratings under review for possible change due to unusual market-moving news, and/or analyst departure/change				

Analyst Certification:

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