Filed Pursuant to Rule 424(b)(5)
Registration No. 333-160251

PROSPECTUS SUPPLEMENT TO PROSPECTUS DATED JULY 17, 2009

OncoGenex Pharmaceuticals, Inc.

3,174,602 Shares of Common Stock
Warrants to Purchase up to 1,587,301 Shares of Common Stock

Pursuant to this prospectus supplement and the accompanying prospectus, we are offering up to 3,174,602 shares of our common stock, par value $0.001 per share, and warrants to purchase up to 1,587,301 shares of our common stock. The common stock and warrants will be sold in units, with each unit consisting of one share of common stock and one half (1/2) of a warrant, with each whole warrant exercisable to purchase one share of common stock at an initial exercise price of $20.00 per share of common stock. Each warrant will be exercisable at any time on or after the date of issuance and will expire five years from the date of issuance. Each unit will be sold to investors in this offering at a negotiated price of $15.75 per unit. Units will not be issued or certificated. The shares of common stock and warrants will be issued separately but can only be purchased together in this offering. We refer to the shares of common stock issued in this offering, and the warrants to purchase common stock issued in this offering, collectively as the securities. The shares of common stock issuable from time to time upon exercise of the warrants are also being offered pursuant to this prospectus supplement and the accompanying prospectus.

Our common stock is listed on the Nasdaq Capital Market under the symbol "OGXI." On October 18, 2010, the last reported sale price of our common stock on the Nasdaq Capital Market was $18.75 per share. There is no established public trading market for the warrants, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any national securities exchange.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. SEE "RISK FACTORS" BEGINNING ON PAGE S-3 OF THIS PROSPECTUS SUPPLEMENT. YOU SHOULD READ THIS PROSPECTUS SUPPLEMENT, THE ACCOMPANYING PROSPECTUS, AND THE DOCUMENTS INCORPORATED BY REFERENCE INTO THIS PROSPECTUS SUPPLEMENT AND THE ACCOMPANYING PROSPECTUS CAREFULLY BEFORE YOU MAKE YOUR INVESTMENT DECISION.

	Per Unit	Total
Public offering price	$ 15.750	$ 49,999,981
Underwriting discounts and commissions	$ 0.945	$ 2,999,999
Proceeds, before expenses, to us	$ 14.805	$ 46,999,982

Delivery of the securities offered hereby is expected to be made on or about October 22, 2010.

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

Stifel Nicolaus Weisel
Sole Book-Running Manager

Needham & Company, LLC **Rodman & Renshaw, LLC** **Wedbush PacGrow Life Sciences**

The date of this prospectus supplement is October 19, 2010

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You should rely only on the information contained in, or incorporated by reference into, this prospectus supplement and contained in, or incorporated by reference into, the accompanying prospectus or any free writing prospectus, as modified and superseded pursuant to Rule 412 under the Securities Act of 1933, as amended, or the Securities Act. We have not, and the underwriters have not, authorized anyone to provide you with different information. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this prospectus supplement and the accompanying prospectus. You should not rely on any unauthorized information or representation. This prospectus supplement is an offer to sell only the securities being offered hereby and only under circumstances and in jurisdictions where it is lawful to do so. You should assume that the information in this prospectus supplement, the accompanying prospectus and any free writing prospectus is accurate only as of the date on the front of the applicable document and that any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus supplement, the accompanying prospectus or any free writing prospectus, or any sale of a security.

ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is the prospectus supplement, including the documents incorporated by reference, which describes the specific terms of this offering. The second part, the accompanying prospectus, including the documents incorporated by reference, provides more general information. Generally, when we refer to "this prospectus," we are referring to both parts of this document combined. We urge you to carefully read this prospectus supplement and the accompanying prospectus, and the documents incorporated herein and therein, before buying any of the securities being offered under this prospectus supplement. This prospectus supplement may add, update or change information contained in the accompanying prospectus. If the information varies between this prospectus supplement and the accompanying prospectus, you should rely on the information contained in this prospectus supplement; provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date — for example, a document incorporated by reference in the accompanying prospectus — the statement in the document having the later date modifies or supersedes the earlier statement in accordance with Rule 412 under the Securities Act.

Market data and industry statistics used throughout this prospectus supplement, the accompanying prospectus and the documents incorporated by reference therein are based on independent industry publications, reports by market research firms and other published independent sources. Although we believe these sources are credible, we have not independently verified the data or information obtained from these sources. Accordingly, investors should not place undue reliance on this information. By including such market data and information, we do not undertake a duty to update or provide that data in the future.

When used in this prospectus supplement and the accompanying prospectus, the terms "OncoGenex," "we," "our" and "us" refer to OncoGenex Pharmaceuticals, Inc., a Delaware corporation, and its subsidiary, unless otherwise specified or unless the context requires otherwise.

This prospectus supplement, the accompanying prospectus, and the information incorporated herein and therein by reference includes trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus supplement, the accompanying prospectus or any related free writing prospectus are the property of their respective owners.

NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference into these documents contain forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. Forward-looking statements deal with our current plans, intentions, beliefs and expectations and statements of future economic performance. Statements containing terms such as "believe," "do not believe," "plan," "expect," "intend," "estimate," "anticipate" and other phrases of similar meaning are considered to contain uncertainty and are forward-looking statements. In addition, from time to time we or our representatives have made or will make forward-looking statements orally or in writing. Furthermore, such forward-looking statements may be included in various filings that we make with the Securities and Exchange Commission, or the SEC, or press releases or oral statements made by or with the approval of one of our authorized executive officers. These forward-looking statements are subject to certain known and unknown risks and uncertainties, as well as assumptions that could cause actual results to differ materially from those reflected in these forward-looking statements. Factors that might cause actual results to differ include, but are not limited to, those set forth under "Risk Factors," in our most recent Annual Report on Form 10-K and Quarterly Report on Form 10-Q and in our future filings made with the SEC. Readers are cautioned not to place undue reliance on any forward-looking statements contained herein, which reflect management's opinions only as of the date hereof. Except as required by law, OncoGenex undertakes no obligation to revise or publicly release the results of any revisions to any forward-looking statements. You are advised, however, to consult any additional disclosures we have made or will make in our reports to the SEC on Forms 10-K, 10-Q and 8-K. All subsequent written and oral forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by the cautionary statements contained in this prospectus supplement and the accompanying prospectus.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights certain information about us, this offering and information appearing elsewhere in this prospectus supplement, in the accompanying prospectus and in the documents we incorporate by reference. This summary is not complete and does not contain all of the information that you should consider before investing in our securities. You should read this entire prospectus supplement and the accompanying prospectus carefully, including the information referred to under the heading "Risk Factors" in this prospectus supplement, and the financial statements and other information incorporated by reference in this prospectus supplement and the accompanying prospectus, when making an investment decision.

OncoGenex Pharmaceuticals, Inc.

Product Candidates

We are a biopharmaceutical company committed to the development and commercialization of new cancer therapies that address treatment resistance in cancer patients. We have five product candidates in our pipeline, namely, custirsen (also known as OGX-011/TV-1011), OGX-427, OGX-225, SN2310 and CSP-9222, with each product candidate having a distinct mechanism of action and representing a unique opportunity for cancer drug development.

Our product candidates custirsen, OGX-427 and OGX-225 focus on mechanisms of treatment resistance in cancer patients and are designed to address treatment resistance by blocking the production of specific proteins that we believe promote survival of tumor cells and are over-produced in response to a variety of cancer treatments. Our aim in targeting these particular proteins is to disable the tumor cell's adaptive defenses and thereby render the tumor cells more susceptible to attack by a variety of cancer therapies, including chemotherapy, which we believe will increase survival time and improve the quality of life for cancer patients. Product candidate SN2310 is a novel camptothecin for the treatment of cancer. Camptothecins are potent anticancer agents that belong to the family of drugs called topoisomerase I inhibitors that bind reversibly to the TOPO-I-DNA complex causing breaks in the DNA strands during replication resulting in cell death. Product candidate CSP-9222 is the lead compound from a family of compounds, which have been in-licensed from Bayer, that demonstrate activation of programmed cell death in pre-clinical models.

Accounting Update

We are subject to a non-cancellable lease arrangement for office space located in Bothell, Washington, which is considered to be in excess of our current requirements. We are currently in the process of evaluating opportunities to exit or sublet portions of the leased space. The liability was initially computed as the present value of the difference between the remaining lease payments due less the estimate of net sublease income and expenses. Subsequent changes in the liability due to accretion, or changes in estimates of sublease assumptions are recognized as adjustments to restructuring charges in future periods. In September 2010, we revised our sublease income assumptions used to estimate the excess lease facility liability. This change in estimate resulted in an increase of the excess lease liability and $4,038,000 in expense recorded in September 2010 to reflect this change in estimate. The estimated liability remaining with respect to excess facilities was $7,804,000 at September 30, 2010.

Amendment of Stockholder Rights Plan

We have a stockholder rights plan that may have the effect of discouraging unsolicited takeover proposals. The stockholder rights plan is discussed in more detail under the caption "Certain Provisions of Delaware Law, the Company's Certificate of Incorporation and Bylaws and the Company's Stockholder Rights Plan" beginning on page 27 of the accompanying prospectus. In connection with this offering, we may amend the stockholder rights plan to permit certain investors to acquire beneficial ownership of 15% or more of our outstanding shares of common stock without triggering the provisions of the plan.

Corporate Information

We were organized as a California corporation in October 1991 and subsequently reorganized as a Delaware corporation in September 1995. Our principal executive offices are located at 1522 217th Place SE, Suite 100, Bothell, Washington 98021, and our telephone number is (425) 686-1500. Our website is located at http://www.oncogenex.com. Except for information specifically incorporated herein by reference, the information contained on or accessible through our website is not a part of this prospectus supplement or the accompanying prospectus.

The Offering

Securities offered by us in this offering	3,174,602 units, with each unit consisting of one share of common stock and one half (1/2) of a warrant, with each whole warrant exercisable to purchase one share of common stock. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the warrants. Each warrant will be exercisable at any time on or after the date of issuance until the fifth anniversary of the issuance of the warrants at an exercise price of $20.00 per share of common stock. This prospectus supplement also relates to the offering of the shares of common stock issuable upon exercise of the warrants. For additional information regarding the warrants, see "Description of Securities We are Offering — Warrants " below.
Shares of common stock to be outstanding immediately after this offering	9,655,107 shares (assumes none of the warrants issued in the offering are exercised)
Use of proceeds	We intend to use the net proceeds from this offering to advance our product pipeline and general corporate purposes. See "Use of Proceeds" on page S-23 of this prospectus supplement.
Markets for common stock and warrants	Our common stock is listed on the Nasdaq Capital Market under the symbol "OGXI". However, there is no established public trading market for the warrants, and we do not expect a market to develop. In addition, we do not intend to apply to list the warrants on any national securities exchange. The warrants are immediately separable from the shares of our common stock being offered as part of the units.
Risk factors	This investment involves a high degree of risk. See "Risk Factors" beginning on page S-3 of this prospectus supplement.

The number of shares of our common stock that will be outstanding immediately after this offering as shown above is based on 6,480,505 shares outstanding as of October 13, 2010. The number of shares outstanding as of October 13, 2010, as used throughout this prospectus supplement, unless otherwise indicated, excludes:

- 651,947 shares of our common stock issuable upon the exercise of stock options outstanding as of October 13, 2010 at a weighted average exercise price of $6.99 per share;
- an aggregate of 422,524 additional shares of common stock reserved for future issuance under our equity incentive plans as of October 13, 2010;
- warrants outstanding as of October 13, 2010 to purchase an aggregate of 54,167 shares of common stock at exercise of $79.56 per share and with an expiration date of October 17, 2010; and
- up to 1,587,301 shares of our common stock issuable upon the exercise of warrants to be issued in this offering at an exercise price of $20.00 per share.

Unless otherwise stated, all information contained in this prospectus supplement reflects a public offering price of $15.75 per unit

RISK FACTORS

An investment in our securities involves a substantial risk of loss. You should carefully consider these risk factors, together with all of the other information included or incorporated by reference in this prospectus supplement and the accompanying prospectus, as modified and superseded pursuant to Rule 412 under the Securities Act, before you decide to invest in our securities. The occurrence of any of the following risks could harm our business. In that case, the trading price of our common stock could decline, and you may lose all or part of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our operations. You should also refer to the other information contained in this prospectus supplement and the accompanying prospectus or incorporated by reference herein and therein, including our financial statements and the notes to those statements and the information set forth under the heading "Note Regarding Forward-Looking Statements."

Risks Related to this Offering

We will have broad discretion in how we use the proceeds, and we may use the proceeds in ways in which you and other stockholders may disagree.

We intend to use the net proceeds from this offering to advance our product pipeline and general corporate purposes. Our management will have broad discretion in the application of the proceeds from this offering and could spend the proceeds in ways that do not necessarily improve our operating results or enhance the value of our common stock.

Investors in this offering will suffer immediate and substantial dilution in the net tangible book value per share of our common stock.

Because the price per unit in this offering is substantially higher than the net tangible book value per share of common stock, investors in this offering will suffer immediate and substantial dilution in the net tangible book value per share of common stock. Based on an offering price of $15.75 per unit, if you purchase securities in this offering, you will suffer immediate and substantial dilution of approximately $8.72 per share in the net tangible book value of our common stock. See "Dilution" on page S-24 for a more detailed discussion of the dilution you will incur in connection with this offering.

There is no public market for the warrants to purchase common stock in this offering.

There is no established public trading market for the warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply for listing the warrants on any national securities exchange or other trading market. Without an active market, the liquidity of the warrants will be limited.

The exercise of our outstanding options and warrants will dilute shareholders and could decreaseour stock price.

The existence of our outstanding options and warrants, including any warrants to be issued pursuant to this offering, may adversely affect our stock price due to sales of a large number of shares or the perception that such sales could occur. These factors also could make it more difficult to raise funds through future offerings of common stock or warrants, and could adversely impact the terms under which we could obtain additional equity capital. Exercise of outstanding options and warrants, or any future issuance of additional shares of common stock or other equity securities, including but not limited to options, warrants or other derivative securities convertible into our common stock, may result in significant dilution to our shareholders and may decrease our stock price.

Risks Related to Our Business

We have a limited operating history, have incurred losses since inception and anticipate that we will continue to incur losses for the foreseeable future. We have never had any products available for commercial sale and we may never achieve or sustain profitability.

We are a clinical-stage biopharmaceutical company with a limited operating history. We are not profitable and have incurred losses in each year since our inception. We have never had any products available for commercial sale and we have not generated any revenue from product sales. We do not anticipate that we will generate revenue from the sale of products in the foreseeable future. Our only revenue to date has been collaboration revenue under our Collaboration Agreement with Teva Pharmaceutical Industries Ltd., or Teva. We have not yet submitted any products for approval by regulatory authorities. We continue to incur research and development and general and administrative expenses related to our operations. We expect to continue to incur losses for the foreseeable future, and we expect these losses to increase as we continue our research activities and conduct development of, and seek regulatory approvals for, our product candidates, and prepare for and begin to commercialize any approved products. If our product candidates fail in clinical trials or do not gain regulatory approval, or if our product candidates do not achieve market acceptance, we may never become profitable. Even if we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods.

Because we depend on financing from third parties for our operations, our business may fail if such financing becomes unavailable or is offered on commercially unreasonable terms.

To date, we have financed our operations primarily through the sale of our equity securities and from the upfront payment we received pursuant to our Collaboration Agreement with Teva. We believe that our existing capital resources and interest thereon, including the upfront payment we received from Teva in December 2009, will be sufficient to meet our current operating requirements into mid-2012 and expect that both phase 3 prostate cancer trials will be fully accrued by this time. However, if our Collaboration Agreement with Teva were to be terminated or if Teva failed to fulfill its obligations thereunder, or if the trials accrue slower than expected or are initiated later than expected, or if we change our development plans, acquire rights to new product candidates or cannot find third party collaborators for our other product candidates, we may need additional capital sooner than we expect. Our future capital requirements will depend on many factors, including without limitation:

- maintaining our partnership with Teva and Teva's ongoing commitment to develop custirsen in a timely fashion;
- the scope and results of our preclinical and clinical trials;
- whether we experience delays in our preclinical and clinical development programs, or slower than anticipated product development;
- whether opportunities to acquire additional product candidates arise and the costs of acquiring and developing those product candidates;
- whether we are able to enter into additional third party collaborative partnerships to develop and/or commercialize any of our other product candidates on terms that are acceptable to us;
- the timing and requirements of, and the costs involved in, conducting studies required to obtain regulatory approvals for our product candidates from the FDA and comparable foreign regulatory agencies;
- the availability of third parties to perform the key development tasks for our product candidates, including conducting preclinical and clinical studies and manufacturing our product candidates to be tested in those studies and the associated costs of those services; and

- the costs involved in preparing, filing, prosecuting, maintaining, defending the validity of and enforcing, patent claims and other costs related to patent rights and other intellectual property rights, including litigation costs and the results of such litigation.

If we are unable to raise funds on acceptable terms when it becomes necessary to do so, we may not be able to continue developing our product candidates, acquire or develop additional product candidates or respond to competitive pressures or unanticipated requirements. For these reasons, any inability to raise additional capital when we require it could have a materially adverse effect on our business.

We are dependent upon our collaborative relationship with Teva to further develop and commercialize custirsen, and if our relationship were not to be successful or were to be terminated, we may not be able to effectively develop and/or commercialize custirsen, which would have a material adverse effect on the Company.

Under our Collaboration Agreement with Teva, we rely heavily on Teva to collaborate with us in respect of the development and global commercialization of custirsen. Furthermore, under such Collaboration Agreement, we and Teva must agree on any changes to the Clinical Development Plan for custirsen. As a result of our dependence on our relationship with Teva, the eventual success or commercial viability of custirsen is largely beyond our control. The financial returns to us, if any, under our Collaboration Agreement with Teva depend in large part on the achievement of development and commercialization milestones, plus a share of any revenues from sales. Therefore, our success, and any associated financial returns to us and our investors, will depend in large in part on the performance of Teva under the agreement.

We are subject to a number of additional specific risks associated with our dependence on our collaborative relationship with Teva, including:

- adverse decisions by Teva or the Joint Steering Committee regarding the development and commercialization of custirsen;
- possible disagreements as to the timing, nature and extent of our development plans, including clinical trials or regulatory approval strategy;
- loss of significant rights if we fail to meet our obligations under the Collaboration Agreement;
- our limited control over clinical trials with respect to custirsen;
- changes in key management personnel at Teva that are members of the Joint Steering Committee; and
- possible disagreements with Teva regarding the Collaboration Agreement or ownership of proprietary rights.

If we and Teva are unable to reach an agreement under the Clinical Development Plan, or if either we or Teva fail to perform our respective obligations or effectively manage our relationship, such occurrence could cause clinical trial, regulatory approval or development progress to be significantly delayed or halted, could result in costly or time consuming litigation or arbitration and could have a material adverse effect on our business.

If Teva's business strategy changes, it may adversely affect the development and commercialization of custirsen.

Teva may change its business strategy. Decisions by Teva to either reduce or eliminate its participation in the oncology field, to emphasize other competitive agents currently in its portfolio, or to add additional competitive agents to its portfolio, could result in a decision to terminate the Collaboration Agreement. In the event of termination of the Collaboration Agreement, among other things, we may have responsibility for paying for any remaining costs of all three phase 3 clinical trials. Any such termination could adversely affect the timing and extent of development and commercialization activities, which could cause significant delays and funding shortfalls impacting those activities and seriously harm our business.

We are highly dependent on the success of our lead product candidate, custirsen, and we cannot give any assurance that custirsen or any of our other product candidates will receive regulatory approval.

Custirsen has been evaluated in five phase 2 clinical trials, and results for these trials were previously disclosed. If competitive products developed by third parties show significant benefit in the cancer indications in which we are developing our product candidates, any planned supportive or primary registration trials may be delayed, altered or not initiated and custirsen may never receive regulatory approval. In order to market custirsen, we and Teva must, among other things, conduct additional clinical trials, including phase 3 or registration clinical trials, to demonstrate safety and efficacy. We have initiated two registration trials with custirsen. OGX-427 and SN2310 have been evaluated in humans, though we have very limited safety data and have not yet established efficacy in humans. We have completed enrollment in the phase 1 clinical trial of SN2310 and the dose limiting toxicity that defined a maximum tolerated dose in this heavily pretreated patient population, as expected, was significant neutropenia. Additional clinical trials will be required with SN2310 to establish the safety and efficacy of this product candidate. Neither OGX-225 nor CSP-9222 have yet been tested in humans. Our pre-clinical testing of these product candidates may not be successful and we may be unable to initiate clinical evaluation of them. Our clinical development programs for our product candidates may not receive regulatory approval either if such product candidates fail to demonstrate that they are safe and effective in clinical trials and consequently fail to obtain necessary approvals from the FDA, or similar non-U.S. regulatory agencies, or if we have inadequate financial or other resources to advance these product candidates through the clinical trial process. Any failure to obtain regulatory approval of custirsen or our other product candidates would have a material and adverse impact on our business.

Clinical trials may not demonstrate a clinical benefit of our product candidates.

Positive results from pre-clinical studies and early clinical trials, including those results from the custirsen clinical trials conducted to date, should not be relied upon as evidence that later-stage or large-scale clinical trials will succeed. We will be required to demonstrate with substantial evidence through well-controlled clinical trials that our product candidates are safe and effective for use in a diverse population before we can seek regulatory approvals for their commercial sale. Success in early clinical trials does not mean that future clinical trials will be successful because product candidates in later-stage clinical trials may fail to demonstrate sufficient safety and efficacy to the satisfaction of the FDA and other non-U.S. regulatory authorities despite having progressed through initial clinical trials.

Even after the completion of our planned phase 3 clinical trials, the FDA or other non-U.S. regulatory authorities may disagree with our clinical trial design and our interpretation of data, and may require us to conduct additional clinical trials to demonstrate the efficacy of our product candidates.

Our clinical trials may be suspended or terminated at any time, including by the FDA, other regulatory authorities, the Institutional Review Board, or IRB, overseeing the clinical trial at issue, any of our clinical trial sites with respect to that site, by Teva in the case of custirsen, or by us. Any failure or significant delay in completing clinical trials for our product candidates could materially harm our financial results and the commercial prospects for our product candidates.

We do not know whether any of our currently planned future clinical trials for custirsen or OGX-427 will proceed or be completed on schedule, or at all, or, with respect to our current portfolio of product candidates, whether we will be able to initiate any future pre-clinical studies or clinical trials, as applicable, beyond those currently planned. The completion or commencement of future pre-clinical studies or clinical trials could be substantially delayed or prevented by several factors, including:

- decrease in Teva's level of focus and efforts to develop custirsen;
- delay or failure to obtain sufficient manufacturing supply of custirsen;
- delay or failure to obtain acceptance from the FDA of Avecia as our manufacturer for custirsen;

- limited number of, and competition for, suitable patients with the particular types of cancer required for enrollment in our clinical trials;
- limited number of, and competition for, suitable sites to conduct clinical trials;
- delay or failure to obtain required future additional funding, when needed, through private or public offerings of our equity securities, debt financings, or the execution of a licensing, partnership or collaboration agreement with a third party for any of our product candidates;
- introduction of new product candidates to the market in therapeutic areas similar to those which we are developing our product candidates;
- concurrent evaluation of new investigational product candidates in therapeutic areas similar to those which we are developing our product candidates;
- delay or failure to obtain the FDA's or non-U.S. regulatory agencies' approval or agreement to commence a clinical trial, including our phase 3 or registration clinical trials or amendment thereto under a Special Protocol Assessment;
- delay or failure to obtain sufficient supplies of the product candidate for our clinical trials;
- delay or failure to reach agreement on acceptable clinical trial agreement terms or clinical trial protocols with prospective sites or investigators; and
- delay or failure to obtain the approval of the IRB to conduct a clinical trial at a prospective site.

The completion of our clinical trials currently in progress could also be substantially delayed or prevented by several factors, including:

- delay or failure to obtain sufficient manufacturing supply of custirsen;
- delay or failure to obtain acceptance from the FDA of Avecia as our manufacturer for custirsen;
- slower than expected rates of patient recruitment and enrollment;
- failure of patients to complete the clinical trial;
- unforeseen safety issues;
- lack of efficacy evidenced during clinical trials;
- termination of our clinical trials by one or more clinical trial sites;
- inability or unwillingness of patients or medical investigators to follow clinical trial protocols;
- inability to monitor patients adequately during or after treatment;
- introduction of competitive products that may impede our ability to retain patients in clinical trials; and
- delay or failure to obtain future additional funding through private or public offerings of our equity securities, debt financings, or the execution of a licensing, partnership or collaboration agreement with a third party for any of our product candidates in the event of material unforeseen costs relating to our clinical trials currently in progress.

Our clinical trials may be suspended or terminated at any time by the FDA, other regulatory authorities, the IRB overseeing the clinical trial at issue, any of our clinical trial sites with respect to that site, or us. Any failure or significant delay in completing clinical trials for our product candidates could materially harm our financial results and the commercial prospects for our product candidates.

Our product candidates may cause undesirable and potentially serious side effects during clinical trials that could delay or prevent their regulatory approval or commercialization.

In phase 1 and Phase 2 studies, custirsen has been administered to 294 patients with various types of cancer. Some of the patients experienced various adverse events, the majority of which are associated with other treatments in the protocol and the disease. The majority of adverse events were mild and the most common adverse events associated with custirsen consisted of flu-like symptoms. Of the serious adverse events associated with custirsen, neutropenia, vomiting, dehydration, pyrexia, pleural effusion and difficulty breathing (also known as "dyspnea") were the most common events, occurring in > 2% of patients.

OGX-427 has been administered to 63 patients with various types of cancer in a phase 1 clinical trial. Enrollment in the five cohorts with dose-escalation of OGX-427 as monotherapy and in the two cohorts in which docetaxel was administered in combination with OGX-427 is complete. There was only one dose-limiting toxicity; thus, the maximum tolerated dose (MTD) was not reached. Of the 46 patients presented at ASCO 2010, the majority of the adverse events were infusion reactions which were documented in 72% of patients and increased in incidence with increasing dose. The majority (93%) were grade 1 or 2. Grade 3/4 laboratory events which occurred in decreasing frequency were lymphopenia, prolonged PTT, neutropenia, hyponatremia, anemia, elevated creatinine and thrombocytopenia. During both monotherapy and when OGX-477 was administered as combination therapy there was evidence of decrease in tumor markers (CA-125 and PSA); decreases in Hsp27+ CTCs (circulating tumor cells); and reduction of serum Hsp27 protein levels.

SN2310 has been administered to 26 patients with various types of cancer in a phase 1 clinical trial. Enrollment for this clinical trial has been completed. Some of the patients experienced adverse events, which were considered unrelated to study drug and attributed to underlying disease. Of the adverse events associated with SN2310, most were mild and the most common events were nausea, diarrhea, vomiting and fatigue. Mild to moderate reactions (back/chest pain, flushing) have been observed during infusions. Significant neutropenia has occurred in some patients and was the dose-limiting toxicity observed, sometimes associated with fever or septicemia.

Since patients in our clinical trials have advanced stages of cancer, we expect that additional adverse events, including serious adverse events, will occur.

Undesirable side effects caused by any of our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in the denial of regulatory approval by the FDA or non-U.S. regulatory authorities for any or all targeted indications. This, in turn, could prevent us from commercializing our product candidates and generating revenues from their sale. In addition, if our product candidates receive marketing approval and we or others later identify undesirable side effects caused by the product:

- Teva may elect to terminate the ongoing clinical trials and cease development of custirsen;
- regulatory authorities may withdraw their approval of the product;
- we may be required to recall the product, change the way the product is administered, conduct additional clinical trials or change the labeling of the product;
- a product may become less competitive and product sales may decrease; or
- our reputation may suffer.

Any one or a combination of these events could prevent us from achieving or maintaining market acceptance of the affected product or could substantially increase the costs and expenses of commercializing the product, which in turn could delay or prevent us from generating significant revenues from the sale of the product.

Recent events have raised questions about the safety of marketed drugs and may result in increased cautiousness by the FDA in reviewing new drugs based on safety, efficacy or other regulatory considerations and may result in significant delays in obtaining regulatory approvals, additional clinical trials being required, or more stringent product labeling requirements. Any delay in obtaining, or the inability to obtain, applicable regulatory approvals, would prevent us from commercializing its product candidates.

Even if we or Teva receive regulatory approval to market our product candidates, the market may not be receptive to our products.

Even if our product candidates obtain regulatory approval, resulting products may not gain market acceptance among physicians, patients, health care payors and/or the medical community. We believe that the degree of market acceptance will depend on a number of factors, including the:

- timing of market introduction of competitive products;
- safety and efficacy of our products;
- prevalence and severity of any side effects;
- potential advantages or disadvantages over alternative treatments;
- strength of marketing and distribution support;
- price of our products, both in absolute terms and relative to alternative treatments; and
- availability of coverage and reimbursement from government and other third-party payors.

If our future product candidates fail to achieve market acceptance, we may not be able to generate significant revenue or achieve or sustain profitability.

We may not be able to negotiate the exit or sublease of excess office and laboratory space currently leased in Bothell, Washington, on terms acceptable to us or at all.

We are a party to a non-cancellable lease arrangement for office and laboratory space located in Bothell, Washington, which is considered to be in excess of our current requirements. We have been seeking to exit or sublease this excess space. To date, we have not entered into any agreement for the exit or sublease of this space, or identified which transactions or transaction structures would most benefit shareholders. The goal of minimizing future lease expenditures will impact any decisions we make regarding specific deal structures or transactions into which we may enter. We can provide no assurances that we will be able to negotiate the exit or sublease of this space, on terms acceptable to us or at all or on terms which meet our or our shareholders' expectations.

Although we have entered into a Collaboration Agreement with Teva for custirsen, we have not yet partnered with third party collaborators with respect to any of our other product candidates, and we cannot control whether we will be able to do so on favorable terms or at all.

Our business strategy relies in part on potentially partnering successful product candidates with larger companies to complement our internal development and commercialization efforts. While we have successfully entered into a Collaboration Agreement with Teva with respect to custirsen, it may be difficult for us to find third parties that are willing to enter into a collaboration on acceptable economic terms or at all with respect to our other product candidates. We also will be competing with many other companies as we seek partners for our other product candidates and we may not be able to compete successfully against those other companies. If we are not able to enter

into collaboration arrangements for our other product candidates, we would be required to undertake and fund further development, clinical trials, manufacturing and commercialization activities solely at our own expense and risk. If we are unable to finance and/or successfully execute those expensive activities, our business could be materially and adversely effected.

If our competitors develop and market products that are more effective, safer or less expensive than our future product candidates, our clinical trials and commercial opportunities will be negatively impacted.

The life sciences industry is highly competitive, and we face significant competition from many pharmaceutical, biopharmaceutical and biotechnology companies that are researching and marketing products designed to address cancer indications for which we are currently developing products or for which we may develop products in the future. We are aware of several other companies which are developing therapeutics that seek to promote tumor cell death by inhibiting proteins believed to promote cell survival. Any products we may develop in the future are also likely to face competition from other drugs and therapies. Many of our competitors have significantly greater financial, manufacturing, marketing and drug development resources than we do. Large pharmaceutical companies, in particular, have extensive experience in clinical testing and in obtaining regulatory approvals for drugs. These companies also have significantly greater research and marketing capabilities than we do. In addition, many universities and private and public research institutes are, or may become, active in cancer research, the products of which may be in direct competition with ours. If our competitors market products that are more effective, safer or less expensive than our future product candidates, if any, or that reach the market sooner than our future product candidates, if any, we may not achieve commercial success.

If new therapies become broadly used, we may need to conduct clinical trials of our product candidates in combination with these new therapies to demonstrate safety and efficacy of the combination. Additional trials will delay the development of our product candidates and increase our costs. The failure of certain of our product candidates to work in combination with these new therapies would have an adverse effect on our business.

Our intention is to combine certain of our product candidates with therapies that are broadly used by clinicians and considered highly effective. As new therapies are developed, we will need to assess these therapies to determine whether to conduct clinical trials of our product candidates in combination with them to demonstrate safety and efficacy of the combination. If we determine that it is appropriate to conduct additional clinical trials of our product candidates in combination with these new therapies, the development of our product candidates will be delayed and our costs will be increased. If these clinical trials generate safety concerns or lack of efficacy, our business would be adversely affected.

If our product candidates become approved in combination with a specific therapy that is broadly used and that therapy becomes displaced by another product, the market for our product candidate may decrease.

If we were to be successfully sued related to our products or operations, we could face substantial liabilities that may exceed our resources.

We may be held liable if any of our products or operations cause injury or death or are found otherwise unsuitable during product testing, manufacturing, marketing or sale. These risks are inherent in the development of pharmaceutical products. We currently maintain Commercial General and Umbrella Liability policies with combined limits of $10 million per occurrence and in the aggregate and in addition, a $10 million per claim and annual aggregate product liability insurance policy related to our clinical trials consistent with industry standards. When necessary for our products, we intend to obtain additional product liability insurance. Insurance coverage may be prohibitively expensive, may not fully cover potential liabilities or may not be available in the future. Inability to obtain sufficient insurance coverage at an acceptable cost or otherwise to protect against potential product liability claims could prevent or inhibit the commercialization of our products. If we were to be sued for any injury caused by or associated with our products or operations, the litigation could consume substantial time and attention of our management, and the resulting liability could exceed our total assets.

If we fail to acquire and develop products or product candidates at all or on commercially reasonable terms, we may be unable to grow our business.

We currently do not have internal discovery capabilities and are dependent upon pharmaceutical and biotechnology companies and other researchers to sell or license products or product candidates to us. To date, three of our product candidates have been derived from technologies discovered by the Vancouver Prostate Centre and licensed to us by UBC and one candidate has been in-licensed from Bayer. We intend to continue to rely on the Vancouver Prostate Centre, UBC and other research institutions and other biotechnology or pharmaceutical companies as sources of product candidates. We cannot guarantee that the Vancouver Prostate Centre or UBC will continue to develop new product candidate opportunities, that we will continue to have access to such opportunities or that we will be able to purchase or license these product candidates on commercially reasonable terms, or at all. If we are unable to purchase or license new product candidates from the Vancouver Prostate Centre or UBC, we will be required to identify alternative sources of product candidates.

The success of our product pipeline strategy depends upon our ability to identify, select and acquire pharmaceutical product candidates. Proposing, negotiating and implementing an economically viable product acquisition or license is a lengthy and complex process. We compete for partnering arrangements and license agreements with pharmaceutical and biotechnology companies and academic research institutions. Our competitors may have stronger relationships with third parties with whom we are interested in collaborating and/or may have more established histories of developing and commercializing products. As a result, our competitors may have a competitive advantage in entering into partnering arrangements with such third parties. In addition, even if we find promising product candidates, and generate interest in a partnering or strategic arrangement to acquire such product candidates, we may not be able to acquire rights to additional product candidates or approved products on terms that we find acceptable, or at all. If we fail to acquire and develop product candidates from others, we may be unable to grow our business.

We expect that any product candidate that we acquire rights to will require additional development efforts prior to commercial sale, including extensive clinical evaluation and approval by the FDA and non-U.S. regulatory authorities. All product candidates are subject to the risks of failure inherent in pharmaceutical product development, including the possibility that the product candidate will not be shown to be sufficiently safe and effective for approval by regulatory authorities. Even if the product candidates are approved, we cannot be sure that we would be capable of economically feasible production or commercial success.

We will need to retain additional personnel and expand our other resources in order to promote custirsen in the event we exercise our co-promotion option and develop our other product candidates. If we fail to effectively expand our operations, including attracting and retaining key management and scientific personnel, we may be unable to successfully develop or commercialize our product candidates and our business may be materially adversely affected.

We will need to expand and effectively manage our managerial, operational, financial, development and other resources in order to successfully pursue our research, development and commercialization efforts for our existing and future product candidates. Our success depends on our continued ability to attract, retain and motivate highly qualified personnel, including management, pre-clinical and clinical personnel, including our executive officers Scott Cormack and Cindy Jacobs, and to recruit and retain a new Chief Financial Officer. Currently, Cameron Lawrence, the Director of Financial Reporting, is our interim principal financial officer. We are in the process of searching for executive talent to fill the Chief Financial Officer position on a permanent basis. In addition, although we have entered into employment agreements with each of Mr. Cormack and Dr. Jacobs, such agreements permit the executive to terminate his or her employment with us at any time, subject to providing us with advance written notice.

Should custirsen receive marketing approval in the United States and Canada, or should we exercise our co-promotion option, which we do not anticipate having the funds to do, we would need to hire a substantial number of specialized personnel, including field-based medical affairs representatives. In turn, we would need to increase our administrative headcount to support such expanded development and commercialization operations with respect to our product candidates. Our ability to attract and retain qualified personnel in the future is subject to intense competition for qualified personnel among biotechnology, pharmaceutical and other businesses and our current

financial position. The loss of the services of any of our senior management, or our inability to recruit a new Chief Financial Officer, could delay or prevent the development and commercialization of our product candidates, or have other adverse effects on our business for an indefinite term. In particular, if we lose any members of our current senior management team, we may not be able to find suitable replacements in a timely fashion or at all and our business may be harmed as a result. Among other things, if any of such events were to occur, we may not be able to comply with our contractual obligations to Teva under our Collaboration Agreement or advance our product candidates, which could have a material adverse effect on our business.

We have scientific and clinical advisors who assist us in formulating our development and clinical strategies. These advisors are not employees of the Company and may have commitments to, or consulting or advisory contracts with, other entities that may limit their availability to us. In addition, our advisors may have arrangements with other companies to assist those companies in developing products or technologies that may compete with ours.

We may encounter difficulties in managing our expected growth and in expanding our operations successfully.

As we advance our product candidates OGX-427, OGX-225, and CSP-9222 through development and clinical trials, we will need to develop or expand our development, regulatory, manufacturing, marketing and sales capabilities or contract with third parties to provide these capabilities for us. Maintaining additional relationships and managing our future growth will impose significant added responsibilities on members of our management. We must be able to: manage our development efforts effectively; manage our clinical trials effectively; hire, train and integrate additional management, development, administrative and sales and marketing personnel; improve our managerial, development, operational and finance systems; and expand our facilities, all of which may impose a strain on our administrative and operational infrastructure.

Under the Collaboration Agreement, Teva is responsible for the commercialization costs associated with custirsen; however, if we were to exercise our co-promotion option, which we do not anticipate having sufficient funds to do, we would need to expand our marketing and sales capabilities. In addition, as we have primary responsibility for the oversight of the second-line trial in CRPC, we must be able to manage our development responsibilities effectively, which may impose a strain on our administrative and operational infrastructure.

Furthermore, we may acquire additional businesses, products or product candidates that complement or augment our existing business. Integrating any newly acquired business, product or product candidate could be expensive and time-consuming. We may not be able to integrate any acquired business, product or product candidate successfully or operate any acquired business profitably. Our future financial performance will depend, in part, on our ability to manage any future growth effectively and our ability to integrate any acquired businesses. We may not be able to accomplish these tasks, and our failure to accomplish any of them could prevent us from successfully growing the Company.

We may need to further develop our financial and reporting processes, procedures and controls to support our anticipated growth.

To manage the anticipated growth of our operations and personnel, we may be required to improve existing, or implement new, operational and financial systems, processes and procedures, and to expand, train and manage our employee base. Our current and planned systems, procedures and controls may not be adequate to support our future operations.

We may be adversely impacted if our controls over external financial reporting fail or are circumvented.

We regularly review and update our internal controls, disclosure controls and procedures, and corporate governance policies. In addition, we are required under the Sarbanes Oxley Act of 2002 to report annually on our internal control over financial reporting. If it were to be determined that our internal control over financial reporting is not effective, such shortcoming could have an adverse effect on our business and financial results and the price of our common stock could be negatively affected. This reporting requirement could also make it more difficult or more costly for us to obtain certain types of insurance, including director and officer liability insurance, and we may

be forced to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. Any system of internal controls, however well designed and operated, is based in part on certain assumptions and can provide only reasonable, not absolute, assurances that the objectives of the system are met. Any failure or circumvention of the controls and procedures or failure to comply with regulation concerning control and procedures could have a material effect on our business, results of operation and financial condition. Any of these events could result in an adverse reaction in the financial marketplace due to a loss of investor confidence in the reliability of our financial statements, which ultimately could negatively impact the market price of our shares, increase the volatility of our stock price and adversely affect our ability to raise additional funding. The impact of these events could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees and as executive officers.

We rely, in part, on third parties to conduct clinical trials for our product candidates and plan to rely on third parties to conduct future clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may be unable to obtain regulatory approval for or commercialize our current and future product candidates.

To implement our product development strategies, we rely on third parties, such as collaborators, contract research organizations, medical institutions, clinical investigators and contract laboratories, to conduct our clinical trials of our product candidates. In particular, we will have limited control over the two OGX-011 phase 3 trials over which Teva will have primary oversight. Although we rely on third parties to conduct our clinical trials, we are responsible for ensuring that each of our clinical trials is conducted in accordance with our investigational plan and protocol. Moreover, the FDA and non-U.S. regulatory authorities require us to comply with regulations and standards, commonly referred to as Good Clinical Practices, or GCPs, for conducting, monitoring, recording and reporting the results of clinical trials to ensure that the data and results are scientifically credible and accurate and that the clinical trial subjects are adequately informed of the potential risks of participating in clinical trials. Our reliance on third parties does not relieve us of these responsibilities and requirements. If the third parties conducting our clinical trials do not perform their contractual duties or obligations, do not meet expected deadlines or need to be replaced, or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to GCPs or for any other reason, we may need to enter into new arrangements with alternative third parties and our clinical trials may be extended, delayed or terminated. In addition, a failure by such third parties to perform their obligations in compliance with GCPs may cause our clinical trials to fail to meet regulatory requirements, which may require us to repeat our clinical trials.

We rely on third parties to manufacture and supply our product candidates.

We do not own or operate manufacturing facilities, and we depend on third-party contract manufacturers for production of our product candidates. We lack the resources and the capability to manufacture any of our product candidates ourselves. To date, our product candidates have been manufactured in limited quantities for pre-clinical studies and clinical trials. All active pharmaceutical ingredient for custirsen has been manufactured for us by Isis Pharmaceuticals Inc., or Isis, or Avecia and all drug product has been manufactured for us by Formatech, Inc., Pyramid Laboratories, Inc. and Laureate Pharma, Inc., in each case pursuant to a purchase order or short-term contract which has been fulfilled. We will need to obtain FDA approval of Avecia as our contract manufacturer and additional quantities of custirsen to complete our phase 3 clinical trials.

All active pharmaceutical ingredient for OGX-427 for IND-enabling toxicology studies and initial clinical trials has been manufactured for us by Avecia and all drug product has been manufactured for us by Laureate Pharma, Inc., in each case pursuant to a purchase order or short-term contract which has been fulfilled.

If, in the future, one of our product candidates is approved for commercial sale, we or a pharmaceutical partner that has licensed such product candidates, will need to manufacture that product candidate in commercial quantities. We cannot assure you that the third-party manufacturers with which we have contracted in the past will have sufficient capacity to satisfy our future manufacturing needs, that we will be able to negotiate additional purchases of active pharmaceutical ingredient or drug product from these or alternative manufacturers on terms favorable to us, or at all, or that a pharmaceutical partner that has licensed will have sufficient capacity or expertise to satisfy future needs.

Third party manufacturers may fail to perform under their contractual obligations, or may fail to deliver the required commercial quantities of bulk drug substance or finished product on a timely basis and at commercially reasonable prices. We have experienced manufacturing quality issues resulting in an unusable lot of product candidate. Any performance failure on the part of our contract manufacturers could delay regulatory approval of our contract manufacturers, clinical development or regulatory approval of our product candidates or commercialization of our future product candidates, depriving us of potential product revenue and resulting in additional losses. If we are required to identify and qualify an alternate manufacturer, we may be forced to delay or suspend our clinical trials, regulatory submissions, required approvals or commercialization of our product candidates, which may cause us to incur higher costs and could prevent us from commercializing our product candidates successfully. If we are unable to find one or more replacement manufacturers capable of production at a reasonably favorable cost, in adequate volumes, of adequate quality, and on a timely basis, we would likely be unable to meet demand for our product candidates and our clinical trials could be delayed or we could lose potential revenue. Our ability to replace an existing active pharmaceutical ingredient manufacturer may be difficult because the number of potential manufacturers is limited to approximately four manufacturers, and the FDA must inspect any replacement manufacturer and review information related to product produced at the manufacturer before they can begin manufacturing our product candidates. It may be difficult or impossible for us to identify and engage a replacement manufacturer on acceptable terms in a timely manner, or at all. We expect to continue to depend on third-party contract manufacturers for the foreseeable future.

Our product candidates require precise, high quality manufacturing. Any of our contract manufacturers will be subject to ongoing periodic unannounced inspection by the FDA and non-U.S. regulatory authorities to ensure strict compliance with current Good Manufacturing Practices (cGMP), and other applicable government regulations and corresponding standards. If our contract manufacturers fail to achieve and maintain high manufacturing standards in compliance with cGMP regulations, we may experience manufacturing errors resulting in patient injury or death, product recalls or withdrawals, delays or interruptions of production or failures in product testing or delivery, delay or prevention of filing or approval of marketing applications for our product candidates, cost overruns or other problems that could seriously harm our business.

Significant scale-up of manufacturing may require additional validation studies, which the FDA must review and approve. Additionally, any third party manufacturers we retain to manufacture our product candidates on a commercial scale must pass an FDA pre-approval inspection for conformance to the cGMPs before we can obtain approval of our product candidates. If we are unable to successfully increase the manufacturing capacity for a product candidate in conformance with cGMPs, the regulatory approval or commercial launch of any related products may be delayed or there may be a shortage in supply.

Global credit and financial market conditions could negatively impact the value of our current portfolio of cash equivalents and investment securities

Our cash and cash equivalents are maintained in highly liquid investments with maturities of 90 days or less at the time of purchase. As of the date of this filing, we are not aware of any material losses or other significant deterioration in the fair value of our cash equivalents or investment securities since December 31, 2009. However, no assurance can be given that deterioration in conditions of the global credit and financial markets would not negatively impact our current portfolio of cash equivalents and investment securities and, as result, our financial condition.

Risks Related to Our Intellectual Property

Our proprietary rights may not adequately protect our technologies and product candidates.

Our commercial success will depend on our ability to obtain patents and/or regulatory exclusivity and maintain adequate protection for our technologies and product candidates in the United States and other countries. We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies and future product candidates are covered by valid and enforceable patents or are effectively maintained as trade secrets.

We and our collaborators, including Teva, intend to apply for additional patents covering both our technologies and product candidates, as we deem appropriate. However, we or our collaborators may fail to apply for patents on important technologies or product candidates in a timely fashion, or at all. Our existing patents and any future patents we or our collaborators obtain may not be sufficiently broad to prevent others from practicing our technologies or from developing competing products and technologies. In addition, we do not always control the patent prosecution of subject matter that we license from others. Accordingly, we are sometimes unable to exercise a significant degree of control over such intellectual property as we would over our own. Moreover, the patent positions of biopharmaceutical companies are highly uncertain and involve complex legal and factual questions for which important legal principles remain unresolved. As a result, the validity and enforceability of our patents cannot be predicted with certainty. In addition, we cannot guarantee that:

- we or our licensors were the first to make the inventions covered by each of our issued patents and pending patent applications;
- we or our licensors were the first to file patent applications for these inventions;
- others will not independently develop similar or alternative technologies or duplicate any of our technologies;
- any of our or our licensors' pending patent applications will result in issued patents;
- any of our or our licensors' patents will be valid or enforceable;
- any patents issued to us or our licensors and collaboration partners will provide us with any competitive advantages, or will not be challenged by third parties;
- we will develop additional proprietary technologies that are patentable; or
- the patents of others will not have an adverse effect on our business.

The actual protection afforded by a patent varies on a product-by-product basis, from country to country and depends upon many factors, including the type of patent, the scope of its coverage, the availability of regulatory related extensions, the availability of legal remedies in a particular country and the validity and enforceability of the patents. The ability of us or our collaborators to maintain and solidify our proprietary position for our product candidates will depend on our success in obtaining effective claims and enforcing those claims once granted. Our issued patents and those that may issue in the future, or those licensed to us or our collaborators, may be challenged, invalidated, unenforceable or circumvented, and the rights granted under any issued patents may not provide us with proprietary protection or competitive advantages against competitors with similar products. Due to the extensive amount of time required for the development, testing and regulatory review of a potential product, it is possible that, before any of our product candidates can be commercialized, any related patent may expire or remain in force for only a short period following commercialization, thereby reducing any advantage of the patent.

We and our collaborators, including Teva, also rely on trade secrets to protect some of our technology, especially where it is believed that patent protection is appropriate or obtainable. However, trade secrets are difficult to maintain. While we use reasonable efforts to protect our trade secrets, our or our collaboration partners' employees, consultants, contractors or scientific and other advisors may unintentionally or willfully disclose our proprietary information to competitors. Enforcement of claims that a third party has illegally obtained and is using trade secrets is expensive, time consuming and uncertain. In addition, non-U.S. courts are sometimes less willing than U.S. courts to protect trade secrets. If our competitors independently develop equivalent knowledge, methods and know-how, we would not be able to assert our trade secrets against them and our business could be harmed.

We and our collaborators, including Teva, may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting and defending patents on all of our product candidates and products, when and if we have any, in every jurisdiction would be prohibitively expensive. Competitors may use our technologies in jurisdictions where we or our licensors have not obtained patent protection to develop their own products. These products may compete with our products, when and if we have any, and may not be covered by any of our or our licensors' patent claims or other intellectual property rights.

The laws of some non-U.S. countries do not protect intellectual property rights to the same extent as the laws of the United States, and many companies have encountered significant problems in protecting and defending such rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biotechnology and/or pharmaceuticals, which could make it difficult for us to stop the infringement of our patents. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business.

The intellectual property protection for our product candidates is dependent on third parties.

With respect to custirsen, OGX-427 and OGX-225, we have exclusively licensed from UBC certain issued patents and pending patent applications covering the respective antisense sequences underlying these product candidates and their commercialization and use and we have licensed from Isis certain issued patents and pending patent applications directed to product compositions and chemical modifications used in product candidates for commercialization, use and the manufacturing thereof, as well as some alternative antisense sequences. We have also received a sublicense from Isis under certain third party patent portfolios directed to such modifications. We have entered into an exclusive in-licensing agreement with Bayer for development of caspase activators that are presently being evaluated in preclinical studies.

The patents and pending patent applications underlying our licenses do not cover all potential product candidates, modifications and uses. In the case of patents and patent applications licensed from Isis, we do not have and have not had any control over the filing, prosecution or enforcement of these patents or patent applications. In the case of patents and patent applications licensed from Bayer, we did not have any control over the filing of the patents and patent applications before the effective date of the Bayer license, and have had control over the filing and prosecution of these patents and patent applications after the effective date of the Bayer license. Under certain circumstances, we also have the right to enforce patents and patent applications licensed from Bayer. We cannot be certain that such prosecution efforts have been or will be conducted in compliance with applicable laws and regulations or will result in valid and enforceable patents. We also cannot be assured that our licensors or their respective licensors will agree to enforce any such patent rights at our request or devote sufficient efforts to attain a desirable result. Any failure by our licensors or any of their respective licensing partners to properly protect the intellectual property rights relating to our product candidates could have a material adverse effect on our financial condition and results of operation.

We may become involved in disputes with Teva or potential future collaborators over intellectual property ownership, and publications by our research collaborators and scientific advisors could impair our ability to obtain patent protection or protect our proprietary information, which, in either case, could have a significant impact on our business.

Inventions discovered under research, material transfer or other such collaborative agreements, including our Collaboration Agreement with Teva, may become jointly owned by us and the other party to such agreements in some cases and the exclusive property of either party in other cases. Under some circumstances, it may be difficult to determine who owns a particular invention, or whether it is jointly owned, and disputes could arise regarding ownership of those inventions. These disputes could be costly and time consuming and an unfavorable outcome could have a significant adverse effect on our business if we were not able to protect or license rights to these inventions. In addition, our research collaborators and scientific advisors generally have contractual rights to publish our data and other proprietary information, subject to our prior review. Publications by our research collaborators and scientific advisors containing such information, either with our permission or in contravention of the terms of

their agreements with us, may impair our ability to obtain patent protection or protect our proprietary information, which could significantly harm our business.

The patent protection for our product candidates or products may expire before we are able to maximize their commercial value which may subject us to increased competition and reduce or eliminate our opportunity to generate product revenue.

The patents for our product candidates have varying expiration dates and, when these patents expire, we may be subject to increased competition and we may not be able to recover our development costs. For example, certain of the U.S. patents directed to custirsen and its use that have been licensed from UBC are scheduled to expire in 2020 and 2021. In some of the larger economic territories, such as the United States and Europe, patent term extension/restoration may be available to compensate for time taken during aspects of the product candidate's regulatory review. However, we cannot be certain that an extension will be granted, or if granted, what the applicable time period or the scope of patent protection afforded during any extended period will be. In addition, even though some regulatory agencies may provide some other exclusivity for a product candidate under its own laws and regulations, we may not be able to qualify the product candidate or obtain the exclusive time period.

If we are unable to obtain patent term extension/restoration or some other exclusivity, we could be subject to increased competition and our opportunity to establish or maintain product revenue could be substantially reduced or eliminated. Furthermore, we may not have sufficient time to recover our development costs prior to the expiration of our U.S. and non-U.S. patents.

We may incur substantial costs as a result of litigation or other proceedings relating to patent and other intellectual property rights and we may be unable to protect our rights to, or use of, our technology.

If we choose to go to court to stop someone else from using the inventions claimed in our patents or our licensed patents, that individual or company has the right to ask the court to rule that these patents are invalid and/or should not be enforced against that third party. These lawsuits are expensive and would consume time and other resources even if we were successful in stopping the infringement of these patents. In addition, there is a risk that the court will decide that these patents are invalid or unenforceable and that we do not have the right to stop the other party from using the inventions. There is also the risk that, even if the validity or unenforceability of these patents is upheld, the court will refuse to stop the other party on the grounds that such other party's activities do not infringe our rights.

If we wish to use the technology or compound claimed in issued and unexpired patents owned by others, we will need to obtain a license from the owner, enter into litigation to challenge the validity or enforceability of the patents or incur the risk of litigation in the event that the owner asserts that we infringed its patents. The failure to obtain a license to technology or the failure to challenge an issued patent that we may require to discover, develop or commercialize our product candidates may have a material adverse impact on us.

If a third party asserts that we infringed its patents or other proprietary rights, we could face a number of risks that could seriously harm our results of operations, financial condition and competitive position, including:

- patent infringement and other intellectual property claims, which would be costly and time consuming to defend, whether or not the claims have merit, and which could delay the regulatory approval process and divert management's attention from our business;
- substantial damages for past infringement, which we may have to pay if a court determines that our product candidates or technologies infringe a competitor's patent or other proprietary rights;
- a court prohibiting us from selling or licensing our technologies or future drugs unless the third party licenses its patents or other proprietary rights to us on commercially reasonable terms, which it is not required to do; and

- if a license is available from a third party, we may have to pay substantial royalties or lump sum payments or grant cross licenses to our patents or other proprietary rights to obtain that license.

The biotechnology industry has produced a proliferation of patents, and it is not always clear to industry participants, including us, which patents cover various types of products or methods of use. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform. If we are sued for patent infringement, we would need to demonstrate that our product candidates or methods of use either do not infringe the patent claims of the relevant patent, and/or that the patent claims are invalid, and/or the patent is unenforceable and we may not be able to do this. Proving invalidity, in particular, is difficult since it requires a showing of clear and convincing evidence to overcome the presumption of validity enjoyed by issued patents.

U.S. patent laws as well as the laws of some foreign jurisdictions provide for provisional rights in published patent applications beginning on the date of publication, including the right to obtain reasonable royalties, if a patent subsequently issues and certain other conditions are met.

Because some patent applications in the United States may be maintained in secrecy until the patents are issued, because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, and because publications in the scientific literature often lag behind actual discoveries, we cannot be certain that others have not filed patent applications for technology covered by our licensors' issued patents or our pending applications or our licensors' pending applications, or that we or our licensors were the first to invent the technology.

Patent applications filed by third parties that cover technology similar to ours may have priority over our or our licensors' patent applications and could further require us to obtain rights to issued patents covering such technologies. If another party files a United States patent application on an invention similar to ours, we may elect to participate in or be drawn into an interference proceeding declared by the U.S. PTO to determine priority of invention in the United States. The costs of these proceedings could be substantial, and it is possible that such efforts would be unsuccessful, resulting in a loss of our United States patent position with respect to such inventions.

Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. In addition, any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our ability to raise the funds necessary to continue our operations. We cannot predict whether third parties will assert these claims against us or against the licensors of technology licensed to us, or whether those claims will harm our business. If we are forced to defend against these claims, whether they are with or without any merit, whether they are resolved in favor of or against us or our licensors, we may face costly litigation and diversion of management's attention and resources. As a result of these disputes, we may have to develop costly non-infringing technology, or enter into licensing agreements. These agreements, if necessary, may be unavailable on terms acceptable to us, if at all, which could seriously harm our business or financial condition.

If we breach any of the agreements under which we license rights to our product candidates or technology from third parties, we could lose license rights that are important to our business. Certain of our license agreements may not provide an adequate remedy for their breach by the licensor.

We license the development and commercialization rights for most of our product candidates, including custirsen, OGX-427, OGX-225 and CSP-9222, and we expect to enter into similar licenses in the future. Under such licenses, we are subject to various obligations such as sublicensing, royalty and milestone payments, annual maintenance fees, limits on sublicensing, insurance obligations and the obligation to use commercially reasonable best efforts to develop and exploit the licensed technology. If we fail to comply with any of these obligations or otherwise breach these agreements, our licensors may have the right to terminate the license in whole or in part or to terminate the exclusive nature of the license. Loss of any of these licenses or the exclusivity rights provided therein could harm our financial condition and operating results. In addition, certain of our license agreements with UBC eliminate our ability to obtain money damages in respect of certain claims against UBC.

Under the terms of our Collaboration Agreement with Teva, we are required to use commercially reasonable efforts to maintain and not to breach in any material manner certain of our third party license agreements relating to custirsen. If we breach any of these agreements in a material manner, we would be in breach of the Collaboration Agreement with Teva, which would allow them to terminate the Collaboration Agreement.

We may be subject to damages resulting from claims that we, or our employees or consultants, have wrongfully used or disclosed alleged trade secrets of third parties.

Many of our employees were previously employed, and certain of our consultants are currently employed, at universities or biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we have not received any claim to date, we may be subject to claims that these employees or consultants or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of these current or former employers. Litigation may be necessary to defend against these claims. If we fail in defending such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. We may be subject to claims that employees of our partners or licensors of technology licensed by us have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. We may become involved in litigation to defend against these claims. If we fail in defending such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel.

Risks Related to our Common Stock and Other Securities

If we raise additional financing, the terms of such transactions may cause dilution to existing shareholders or contain terms that are not favorable to us.

To date, our sources of cash have been limited primarily to proceeds from the private or public placement of our securities and proceeds from the Collaboration Agreement with Teva. In the future, we may seek to raise additional financing through private placements or public offerings of our equity or debt securities. We cannot be certain that additional funding will be available on acceptable terms, or at all. To the extent that we raise additional funds by issuing equity securities, our shareholders may experience significant dilution. Any debt financing, if available, may involve restrictive covenants, such as limitations on our ability to incur additional indebtedness, limitations on our ability to acquire or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business.

The price for our common stock is volatile.

The market prices for our common stock and that of emerging growth companies generally have historically been highly volatile. Future announcements concerning us or our competitors may have a significant impact on the market price of our common stock.

The stock markets also experience significant price and volume fluctuation unrelated to the operating performance of particular companies. These market fluctuations may also adversely affect the market price of our common stock.

An increase in the market price of our common shares, which is uncertain and unpredictable, may be your sole source of gain from an investment in our securities. An investment in our securities may not be appropriate for investors who require dividend income.

We have never declared or paid cash dividends on our capital stock. We do not anticipate paying any cash dividends on our capital stock in the foreseeable future. We currently intend to retain all available funds and any future earnings to fund the development and growth of our business. As a result, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future. Accordingly, an investment in our common shares may not be appropriate for investors who require dividend income.

Anti-takeover provisions in our shareholder rights plan, our constating documents and under Delaware law could make a third party acquisition of the Company difficult.

We have a shareholder rights plan that may have the effect of discouraging unsolicited takeover proposals. Specifically, the rights issued under the shareholder rights plan could cause significant dilution to a person or group that attempts to acquire us on terms not approved in advance by our board of directors. In addition, our certificate of incorporation and bylaws contain provisions that may discourage unsolicited takeover proposals that shareholders may consider to be in their best interests. These provisions include the ability of our board of directors to designate the terms of and issue new series of preferred stock and the ability of our board of directors to amend the bylaws without stockholder approval. In addition, as a Delaware corporation, we are subject to Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years following the date that the stockholder became an interested stockholder, unless certain specific requirements are met as set forth in Section 203. Collectively, these provisions could make a third party acquisition of the Company difficult or could discourage transactions that otherwise could involve payment of a premium over prevailing market prices for our common stock.

Risks Related to Our Industry

The regulatory approval process is expensive, time consuming and uncertain and may prevent us from obtaining approvals for the commercialization of some or all of our product candidates.

The research, testing, manufacturing, labeling, approval, selling, marketing and distribution of drug products are subject to extensive regulation by the FDA and non-U.S. regulatory authorities, which regulations differ from country to country. We are not permitted to market our product candidates in the United States until we receive approval of a NDA, from the FDA. We have not submitted an application for or received marketing approval for any of our product candidates. Obtaining approval of an NDA can be a lengthy, expensive and uncertain process. In addition, failure to comply with FDA, non-U.S. regulatory authorities' or other applicable United States and non-U.S. regulatory requirements may, either before or after product approval, if any, subject our company to administrative or judicially imposed sanctions, including:

- restrictions on the products, manufacturers or manufacturing process;
- warning letters;
- civil and criminal penalties;
- injunctions;
- suspension or withdrawal of regulatory approvals;
- product seizures, detentions or import bans;
- voluntary or mandatory product recalls and publicity requirements;
- total or partial suspension of production;
- imposition of restrictions on operations, including costly new manufacturing requirements; and
- refusal to approve pending NDAs or supplements to approved NDAs.

Regulatory approval of an NDA or NDA supplement is not guaranteed, and the approval process is expensive and may take several years. The FDA also has substantial discretion in the drug approval process. Despite the time and expense exerted, failure can occur at any stage, and we could encounter problems that cause us to abandon clinical trials or to repeat or perform additional pre-clinical studies and clinical trials. The number of pre-

clinical studies and clinical trials that will be required for FDA approval varies depending on the drug candidate, the disease or condition that the drug candidate is designed to address, and the regulations applicable to any particular drug candidate. The FDA can delay, limit or deny approval of a drug candidate for many reasons, including:

- a drug candidate may not be deemed safe or effective;
- the FDA may not find the data from pre-clinical studies and clinical trials sufficient;
- the FDA might not approve our third-party manufacturer's processes or facilities;
- the FDA may change its approval policies or adopt new regulations; or
- third party products may enter the market and change approval requirements.

Even if we obtain regulatory approvals for our product candidates, the terms of approvals and ongoing regulation of our product candidates may limit how we manufacture and market our product candidates, which could materially impair our ability to generate revenue.

Upon regulatory approval to market any of our product candidates, if any, the approved product and its manufacturer are subject to continual review. Any regulatory approval that we receive for a product candidate is likely to be subject to limitations on the indicated uses for which the end product may be marketed, or include requirements for potentially costly post-approval follow-up clinical trials. In addition, if the FDA and/or non-U.S. regulatory authorities approve any of our product candidates, the labeling, packaging, adverse event reporting, storage, advertising and promotion for the end product will be subject to extensive regulatory requirements. We and the manufacturers of our products, when and if we have any, will also be required to comply with cGMP regulations, which include requirements relating to quality control and quality assurance as well as the corresponding maintenance of records and documentation. Further, regulatory agencies must approve these manufacturing facilities before they can be used to manufacture our products, when and if we have any, and these facilities are subject to ongoing regulatory inspection. If we fail to comply with the regulatory requirements of the FDA and other non-U.S. regulatory authorities, or if previously unknown problems with our products, when and if we have any, manufacturers or manufacturing processes are discovered, we could be subject to administrative or judicially imposed sanctions, including:

- restrictions on the products, manufacturers or manufacturing process;
- warning letters;
- civil or criminal penalties or fines;
- injunctions;
- product seizures, detentions or import bans;
- voluntary or mandatory product recalls and publicity requirements;
- suspension or withdrawal of regulatory approvals;
- total or partial suspension of production;
- imposition of restrictions on operations, including costly new manufacturing requirements; and
- refusal to approve pending NDAs or supplements to approved NDAs.

In addition, the FDA and non-U.S. regulatory authorities may change their policies and additional regulations may be enacted that could prevent or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States, Canada or abroad. If we are not able to maintain regulatory compliance, we would likely not be permitted to market our future product candidates and we may not achieve or sustain profitability.

There is a high risk that our drug development activities will not result in commercial products.

Our product candidates are in various stages of development and are prone to the risks of failure inherent in drug development. We will need to complete significant additional clinical trials before we can demonstrate that our product candidates are safe and effective to the satisfaction of the FDA and non-U.S. regulatory authorities. Clinical trials are expensive and uncertain processes that take years to complete. Failure can occur at any stage of the process, and successful early clinical trials do not ensure that later clinical trials will be successful. Product candidates in later-stage clinical trials may fail to show desired efficacy and safety traits despite having progressed through initial clinical trials. A number of companies in the pharmaceutical industry have suffered significant setbacks in advanced clinical trials, even after obtaining promising results in earlier clinical trials. In addition, a clinical trial may prove successful with respect to a secondary objective, but fail to demonstrate clinically significant benefits with respect to a primary objective. Failure to satisfy a primary objective in a phase 3 clinical trial (registration trial) would generally mean that a product candidate would not receive regulatory approval.

If government and third-party payors fail to provide coverage and adequate reimbursement rates for our product candidates, our revenues and potential for profitability will be reduced.

In the United States and elsewhere, our product revenues will depend principally upon the reimbursement rates established by third-party payors, including government health administration authorities, managed-care providers, public health insurers, private health insurers and other organizations. These third-party payors are increasingly challenging the price, and examining the cost-effectiveness, of medical products and services. In addition, significant uncertainty exists as to the reimbursement status, if any, of newly approved drugs, pharmaceutical products or product indications. We may need to conduct post-marketing clinical trials in order to demonstrate the cost-effectiveness of products. Such clinical trials may require us to commit a significant amount of management time and financial and other resources. If reimbursement of such product is unavailable or limited in scope or amount or if pricing is set at unsatisfactory levels, our revenues could be reduced.

In some countries other than the United States, particularly the countries of the European Union and Canada, the pricing of prescription pharmaceuticals is subject to governmental control. In these countries, obtaining pricing approval from governmental authorities can take six to twelve months or longer after the receipt of regulatory marketing approval of a product for an indication. To obtain reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost-effectiveness of one of our product candidates to other available therapies. If reimbursement of such product candidate is unavailable or limited in scope or amount or if pricing is set at unsatisfactory levels, our revenues could be reduced.

Domestic and foreign governments continue to propose and pass legislation designed to reduce the cost of healthcare, including drugs. In the United States, there have been, and we expect that there will continue to be, federal and state proposals to implement similar governmental control. In addition, increasing emphasis on managed care in the United States will continue to put pressure on the pricing of pharmaceutical products. For example, the Medicare Prescription Drug Improvement and Modernization Act of 2003 reforms the way Medicare will cover and reimburse for pharmaceutical products. The legislation expands Medicare coverage for drug purchases by the elderly and eventually will introduce a new reimbursement methodology based on average sales prices for certain drugs. In addition, the new legislation provides authority for limiting the number of outpatient drugs that will be covered in any therapeutic class. As a result of the new legislation and the expansion of federal coverage of drug products, we expect that there will be additional pressure to contain and reduce costs. The Medicaid program and state healthcare laws and regulations may also be modified to change the scope of covered products and/or reimbursement methodology. Cost control initiatives could decrease the established reimbursement rates that we receive for any products in the future, which would limit our revenues and profitability. Legislation and regulations affecting the

pricing of pharmaceutical products, including custirsen, may change at any time, which could further limit or eliminate reimbursement rates for custirsen or other product candidates.

Failure to obtain regulatory approval outside the United States would prevent us or Teva from marketing our product candidates abroad.

We intend to market certain of our existing and future product candidates in non-North American markets. In order to market our existing and future product candidates in the European Union and many other non-North American jurisdictions, we must obtain separate regulatory approvals. We have had limited interactions with non-North American regulatory authorities. Approval procedures vary among countries and can involve additional testing, and the time required to obtain approval may differ from that required to obtain FDA approval. Approval by the FDA or other regulatory authorities does not ensure approval by regulatory authorities in other countries, and approval by one or more non-North American regulatory authorities does not ensure approval by regulatory authorities in other countries or by the FDA. The non-North American regulatory approval process may include all of the risks associated with obtaining FDA approval. We may not obtain non-North American regulatory approvals on a timely basis, if at all. We may not be able to file for non-North American regulatory approvals and may not receive necessary approvals to commercialize our existing and future product candidates in any market.

We are at risk of securities class action litigation.

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us because our stock price and those of other biotechnology and biopharmaceutical companies have experienced significant stock price volatility in recent years and particularly over the past year. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could harm our business.

USE OF PROCEEDS

We expect the net proceeds from this offering to be approximately $46.7 million, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We currently intend to use the net proceeds we receive from the sale of the units in this offering to advance our product pipeline, including our lead program, custirsen, and OGX-427, which is currently in clinical development as a treatment for prostate cancer and bladder cancer, as well as for general corporate purposes. Pending such uses, the net proceeds will be held in highly liquid investments.

DILUTION

Our net tangible book value on June 30, 2010 was approximately $20.9 million, or approximately $3.24 per share of common stock based upon 6,441,676 shares outstanding. Net tangible book value per share is determined by dividing our net tangible book value, which consists of tangible assets less total liabilities, by the number of shares of common stock outstanding on that date. Without taking into account any other changes in our net tangible book value after June 30, 2010, other than to give effect to our receipt of the estimated net proceeds from the sale of 3,174,602 units at an offering price of $15.75 per unit, less the underwriting fees and our estimated offering expenses, our net tangible book value as of June 30, 2010, after giving effect to the items above, would have been approximately $67.6 million, or $7.03 per share. This represents an immediate increase in net tangible book value of $3.78 per share of common stock to our existing stockholders and an immediate dilution in net tangible book value of $8.72 per share of common stock to purchasers of units in this offering. The following table illustrates this calculation on a per share basis:

Public offering price per unit		$ 15.75
Net tangible book value per share as of June 30, 2010	$ 3.24	
Increase in net tangible book value per share attributable to the offering	3.78	
As-adjusted net tangible book value per share after giving effect to the offering		7.03
Dilution in net tangible book value per share to new investors		$ 8.72

The foregoing table excludes the following, each stated as of June 30, 2010:

- 677,276 shares of our common stock issuable upon the exercise of stock options outstanding as of June 30, 2010 at a weighted average exercise price of $6.69 per share;
- 436,024 shares of common stock reserved for future issuance as of June 30, 2010 under our stock plans;
- warrants outstanding as of June 30, 2010 to purchase an aggregate of 183,385 shares of common stock at exercise prices ranging from $74.70 to $79.56 per share and expiration dates ranging from August 2010 to October 2010; and
- up to 1,587,301 shares of our common stock issuable upon the exercise of warrants to be issued in this offering, at an exercise price of $20.00 per share.

DESCRIPTION OF SECURITIES WE ARE OFFERING

In this offering, we are offering 3,174,602 units, consisting of 3,174,602 shares of common stock and warrants to purchase up to 1,587,301 shares of common stock. Each unit consists of one share of common stock and one half (1/2) of a warrant, with each whole warrant exercisable to purchase one share of common stock at an initial exercise price of $20.00 per share of common stock. This prospectus supplement also relates to the offering of shares of our common stock upon exercise, if any, of the warrants. Units will not be issued or certificated. The shares of common stock and warrants will be issued separately but can only be purchased together in units in this offering. This description of the units in this prospectus supplement is qualified in its entirety by reference to the warrants.

Common Stock

The material terms and provisions of our common stock are described under the caption "Description of Capital Stock" beginning on page 14 of the accompanying prospectus.

We have a stockholder rights plan that may have the effect of discouraging unsolicited takeover proposals. The stockholder rights plan is discussed in more detail under the caption "Certain Provisions of Delaware Law, the Company's Certificate of Incorporation and Bylaws and the Company's Stockholder Rights Plan" beginning on page 27 of the accompanying prospectus. In connection with this offering, we may amend the stockholder rights plan to permit certain investors to acquire beneficial ownership of 15% or more of our outstanding shares of common stock without triggering the provisions of the plan.

Warrants

The material terms and provisions of the warrants being offered pursuant to this prospectus supplement and the accompanying prospectus are summarized below. This summary is subject to and qualified in its entirety by the form of warrant, which has been filed by us as an exhibit to a Current Report on Form 8-K in connection with this offering. You should review a copy of the form of warrant for a complete description of the terms and conditions applicable to the warrants.

General Terms of the Warrants

The warrants to be issued in this offering represent the rights to purchase up to a total of 1,587,301 shares of common stock at an initial exercise price of $20.00 per share. Each warrant may be exercised at any time and from time to time on or after the date of delivery of the warrants until the five-year anniversary thereof.

Delivery

The warrants to be issued in this offering will be delivered from us to the underwriters or as the underwriters direct promptly following the closing.

Exercise

Holders of the warrants may exercise their warrants to purchase shares of our common stock on or before the expiration date, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our common stock purchased upon such exercise. Otherwise, holders may exercise pursuant to a "cashless exercise" feature. The cashless exercise feature permits a holder to elect to surrender a portion of the shares of common stock subject to the warrant in lieu of paying cash for the exercise price, provided the exercise price is greater than the average of the closing sale prices of the our common stock for the ten consecutive trading days ending on the trading day immediately preceding the date of the exercise notice.

Transferability

Subject to applicable laws, the warrants may be transferred at the option of the holders upon surrender of the warrants to us together with the appropriate instruments of transfer.

Certain Adjustments

The exercise price and number of shares of common stock issuable upon exercise of a warrant are subject to appropriate adjustment in the event of stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting our common stock.

Fundamental Transactions

If we enter into, or are a party to, certain fundamental transactions pursuant to which our shareholders are entitled or required to receive securities issued by another company or cash or other assets in exchange for our common stock, a holder of a warrant will have the right to receive, upon exercise of the warrant, consideration as if such holder had exercised the warrant immediately prior to such fundamental transaction.

Rights as a Stockholder

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

Limitations on Exercise

The number of shares of our common stock that may be acquired by a holder upon any exercise of a warrant shall be limited so that the total number of shares of our common stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of common stock would be aggregated with the holder's for purposes of Section 13(d) of the Exchange Act does not exceed 4.99% of the total number of issued and outstanding shares of our common stock (including for such purpose the shares of common stock issuable upon such exercise). We refer to this as the beneficial ownership limitation. The holder may elect to change this beneficial ownership limitation from 4.99% to any other percentage not in excess of 9.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise) upon 61 days' prior written notice.

Amendments

The warrants may be amended with the written consent of the holders of a majority of the warrants then outstanding.

Listing

There is no established public trading market for the warrants, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any national securities exchange.

UNDERWRITING

Subject to the terms and conditions set forth in an underwriting agreement between us and Stifel, Nicolaus & Company, Incorporated, as representative of the several underwriters, each of the several underwriters named below has agreed to purchase from us the aggregate number of units set forth opposite its name below:

Underwriter	Number of Units
Stifel, Nicolaus & Company, Incorporated	2,063,490
Needham & Company, LLC	380,952
Rodman & Renshaw, LLC	365,080
Wedbush Morgan Securities, Inc.	365,080
Total	3,174,602

The underwriting agreement provides that the obligations of the several underwriters are subject to various conditions, including approval of legal matters by counsel. The nature of the underwriters' obligations commits them to purchase and pay for all of the units listed above if any are purchased.

Stifel, Nicolaus & Company, Incorporated expects to deliver the securities offered hereby on or about October 22, 2010.

Commissions and Discounts

The underwriters propose to offer the units directly to the public at the public offering price set forth on the cover page of this prospectus supplement, and at this price less a concession not in excess of $0.567 per unit to other dealers. After this offering, the offering price and other selling terms may be changed by the underwriters. The units are offered subject to receipt and acceptance by the underwriters and to the other conditions of the offering, including the right to reject orders in whole or in part.

The following table summarizes the compensation to be paid to the underwriters by us and the proceeds, before expenses, payable to us:

	Per Unit	Total
Public offering price	$ 15.750	$ 49,999,981
Underwriting discounts and commissions	$ 0.945	$ 2,999,999
Proceeds, before expenses, to us	$ 14.805	$ 46,999,982

In addition, we have agreed to reimburse the underwriters for the fees and expenses incurred by them in connection with the offering in an amount not to exceed $100,000.

In compliance with the guidelines of the Financial Industry Regulatory Authority, or FINRA, the maximum consideration or discount to be received by any FINRA member or independent broker dealer may not exceed 8.0% of the aggregate amount of the securities offered pursuant to this prospectus supplement.

Indemnification of Underwriters

We will indemnify the underwriters against some civil liabilities, including liabilities under the Securities Act. If we are unable to provide this indemnification, we will contribute to payments the underwriters may be required to make in respect of those liabilities.

No Sales of Similar Securities

The underwriters will require all of our directors and officers to agree not to offer, sell, agree to sell, directly or indirectly, or otherwise dispose of any shares of common stock or any securities convertible into or exchangeable for shares of common stock, subject to certain exceptions, without the prior written consent of Stifel, Nicolaus & Company, Incorporated for a period of 90 days after the date of this prospectus supplement. Notwithstanding the foregoing, if (a) during the last 17 days of this 90-day period, we release or publish financial results or results from operations or announce material news or a material event or (b) prior to the expiration of this 90-day period, we announce that we will release or publish financial results or results from operations during the 15-day period following the last day of the 90-day period, then in each case the above restrictions will be automatically extended until the expiration of the 18-day period beginning on the date of release of the earnings results or the announcement of the material news or material event, as applicable, subject to certain exceptions, unless Stifel, Nicolaus & Company, Incorporated waives, in writing, such extension.

Subject to certain exceptions, we have agreed that for a period of 90 days after the date of this prospectus supplement, subject to extension as described above, we will not, without the prior written consent of Stifel, Nicolaus & Company, Incorporated, offer, sell, contract to sell or otherwise dispose of any shares of common stock or any securities that are substantially similar to the common stock, including any securities that are convertible into or exchangeable for, or that represent the right to receive, shares of common stock or any such substantially similar securities, except for:

- the securities offered in this offering;

- the shares of common stock issuable upon conversion or exercise of convertible or exercisable securities outstanding on the date of this prospectus supplement; and
- the shares of our common stock that are issued under our existing stock option plans.

Nasdaq Capital Market Listing

Our common stock is quoted on the Nasdaq Capital Market under the symbol "OGXI."

Stabilizing Transactions and Penalty Bids

The underwriters have informed us that they will not engage in over-allotment, stabilizing or syndicate covering transactions in connection with this offering.

Miscellaneous

The underwriters have provided, and may in the future provide, various investment banking and other financial services for us for which services they have received, and may receive in the future, customary fees.

LEGAL MATTERS

Our counsel, Dorsey & Whitney LLP, Seattle, Washington, will pass upon the validity of the securities being offered hereby. The underwriters are being represented in connection with this offering by Goodwin Procter LLP, Boston, Massachusetts.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2009, and the effectiveness of internal control over financial reporting as of December 31, 2009, as set forth in its reports, which are incorporated by reference in this prospectus supplement, the accompanying prospectus and elsewhere in the registration statement on Form S-3 of which this prospectus supplement and the accompanying prospectus are a part. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's reports, given on such firm's authority as an expert in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the securities covered by this prospectus supplement and the accompanying prospectus. This prospectus supplement and the accompanying prospectus, which are part of the registration statement, do not contain all of the information set forth in the registration statement or the exhibits and schedules filed therewith. For further information with respect to us and the securities covered by this prospectus supplement and the accompanying prospectus, please see the registration statement and the exhibits filed with the registration statement. A copy of the registration statement and the exhibits filed with the registration statement may be inspected without charge at the Public Reference Room maintained by the SEC, located at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the Public Reference Room. The SEC also maintains an Internet website that contains reports, proxy and information statements and other information regarding registrants that file electronically with the SEC. The address of the website is http://www.sec.gov.

We are subject to the information and periodic reporting requirements of the Exchange Act and, in accordance therewith, we file periodic reports, proxy statements and other information with the SEC. Such periodic reports, proxy statements and other information are available for inspection and copying at the Public Reference Room and website of the SEC referred to above. We maintain a website at http://www.oncogenex.com. You may access our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed pursuant to Sections 13(a) or 15(d) of the Exchange Act with the SEC free of

charge at our website as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. Our website and the information contained on that site, or connected to that site, are not incorporated into and are not a part of this prospectus supplement or the accompanying prospectus.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC and applicable law permits us to "incorporate by reference" into this prospectus supplement and the accompanying prospectus information that we have or may in the future file with or furnish to the SEC. This means that we can disclose important information by referring you to those documents. You should read carefully the information incorporated herein by reference because it is an important part of this prospectus supplement and the accompanying prospectus. We hereby incorporate by reference the following documents into this prospectus supplement and the accompanying prospectus:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2009, filed with the SEC on March 8, 2010;
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2010, filed with the SEC on May 6, 2010, as amended by that certain Amendment No. 1 to Form 10-Q filed with the SEC on May 10, 2010;
- our Quarterly Report on Form 10-Q for the quarter ended June 30, 2010, filed with the SEC on August 5, 2010;
- our Current Reports on Form 8-K, filed with the SEC on February 25, 2010 (both reports filed on such date), March 1, 2010, March 10, 2010, March 24, 2010, June 7, 2010, June 14, 2010, June 23, 2010, August 10, 2010, September 27, 2010, September 30, 2010 and October 15, 2010;
- all other reports filed pursuant to Section 13(a) or 15(d) of the Exchange Act since the end of the fiscal year covered by the annual report referred to above; and
- the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on September 27, 1995 under Section 12 of the Exchange Act, including any amendment or report filed for the purpose of updating such description.

Additionally, all documents filed by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus supplement until the termination or completion of this offering shall be deemed to be incorporated by reference into this prospectus supplement and the accompanying prospectus (other than current reports or portions thereof furnished under Item 2.02 or 7.01 of Form 8-K, unless such current reports or portions thereof specifically reference their contents as being filed) from the respective dates of the filing of such documents. Any information that we subsequently file with the SEC that is incorporated by reference as described above will automatically update and supersede any previous information that is part of this prospectus supplement and the accompanying prospectus.

Upon written or oral request, we will provide you without charge, a copy of any or all of the documents incorporated by reference, other than exhibits to those documents unless the exhibits are specifically incorporated by reference in the documents. Please send requests to OncoGenex Pharmaceuticals, Inc., Attn: Cameron Lawrence, 1522 217th Place SE, Suite 100, Bothell, Washington 98021, telephone number (425) 686-1500.

PROSPECTUS

$100,000,000

OncoGenex Pharmaceuticals, Inc.

Common Stock, Preferred Stock, Debt Securities and Warrants

We may offer and sell any combination of common stock, preferred stock, warrants, debt securities and any combination thereof, with a total value of up to $100,000,000.

This prospectus provides a general description of securities we may offer and sell from time to time. Each time we sell those securities, we will provide their specific terms in a supplement to this prospectus. This prospectus supplement may also add, update or change information contained in this prospectus. You should read this prospectus and the applicable prospectus supplement carefully before you invest in any securities. This prospectus may not be used to consummate a sale of securities unless accompanied by the applicable prospectus supplement.

We may offer and sell these securities, from time to time, to or through one or more underwriters, dealers and agents, or directly to purchasers, on a continuous or delayed basis, at prices and on other terms to be determined at the time of offering. If we use agents, underwriters or dealers to sell the securities, we will name them and describe their compensation in a prospectus supplement.

Our common stock is listed on the Nasdaq Capital Market under the symbol "OGXI."

An investment in our securities involves a high degree of risk. You should carefully consider the information under the heading "Risk Factors" beginning on page 8 of this prospectus before investing in our securities.

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

The date of this prospectus is July 17, 2009

You should rely only on the information contained or incorporated by reference in this prospectus. We have not authorized anyone to provide you with information different from that contained in this prospectus. We are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. The information contained in this prospectus is accurate only as of the date of this prospectus.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission (the "Commission") using a "shelf" registration process. Under this shelf registration process, from time to time, we may sell any combination of the securities described in this prospectus in one or more offerings, up to a total dollar amount of $100,000,000. We have provided to you in this prospectus a general description of the securities we may offer. Each time we sell securities under this shelf registration process, we will provide a prospectus supplement that will contain specific information about the terms of the offering. We may also add, update or change in the prospectus supplement any of the information contained in this prospectus. To the extent there is a conflict between the information contained in this prospectus and the prospectus supplement, you should rely on the information in the prospectus supplement; provided that, if any statement in one of these documents is inconsistent with a statement in another document having a later date — for example, a document incorporated by reference in this prospectus or any prospectus supplement — the statement in the document having the later date modifies or supersedes the earlier statement. You should read both this prospectus and any prospectus supplement together with additional information described under the next heading "Where You Can Find More Information."

We have not authorized any dealer, salesman or other person to give any information or to make any representations other than those contained or incorporated by reference in this prospectus and the accompanying prospectus supplement. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or the accompanying prospectus supplement. This prospectus and the accompanying supplement to this prospectus do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and the accompanying supplement to this prospectus constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus and the accompanying prospectus supplement is accurate on any date subsequent to the date set forth on the front cover of this document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus and any accompanying prospectus supplement is delivered or securities sold on a later date.

THIS PROSPECTUS MAY NOT BE USED TO OFFER AND SELL SECURITIES UNLESS IT IS ACCOMPANIED BY A PROSPECTUS SUPPLEMENT.

PROSPECTUS SUMMARY

This summary highlights information contained or incorporated by reference in this prospectus. Because this is only a summary, it does not contain all of the information that may be important to you. You should read the entire prospectus, including our historical consolidated financial statements and the notes to those financial statements, included in this prospectus. You should also carefully consider the matters discussed under "Risk Factors."

In this prospectus, unless the context otherwise requires, the terms "OncoGenex Pharmaceuticals, Inc.," the "Company", "OncoGenex," "we," "us" and "our" refer to OncoGenex Pharmaceuticals, Inc.

As permitted by the rules and regulations of the Commission, the registration statement that contains this prospectus includes additional information not contained in this prospectus. You may read the registration statement and the other reports we file with the Commission at the Commission's web site or at the Commission's offices described below under the heading "Where You Can Find More Information."

Company Overview

OncoGenex is a biopharmaceutical company committed to the development and commercialization of new therapies that address unmet needs in the treatment of cancer. The Company has five product candidates in its pipeline, namely, OGX-011, OGX-427, OGX-225, SN2310 and CSP-9222, with each product candidate having a distinct mechanism of action and representing a unique opportunity for cancer drug development.

OncoGenex' product candidates OGX-011, OGX-427 and OGX-225 focus on mechanisms of treatment resistance in cancer patients and are designed to address treatment resistance by blocking the production of specific proteins that OncoGenex believes promote survival of tumor cells and are over-produced in response to a variety of cancer treatments. OncoGenex' aim in targeting these particular proteins is to disable the tumor cell's adaptive defenses and thereby render the tumor cells more susceptible to attack with a variety of cancer therapies, including chemotherapy, which OncoGenex believes will increase survival time and improve the quality of life for cancer patients. Product candidate SN2310 is a novel camptothecin for the treatment of cancer. Camptothecins are potent anticancer agents that belong to the family of drugs called topoisomerase I inhibitors that bind reversibly to the TOPO-I-DNA complex causing breaks in the DNA strands during replication resulting in cell death. Product candidate CSP-9222 is the lead compound from a family of compounds demonstrating activation of programmed cell death in pre-clinical models that have been in-licensed from Bayer HealthCare LLC.

Product Candidate OGX-011

We have designed two phase 3 clinical trials to evaluate the clinical benefit of OGX- 011 in metastatic castrate resistant prostate cancer, or CRPC. OncoGenex believes that two phase 3 trials will be required for initial product marketing approval. The two clinical trial designs are:

- Evaluating a survival benefit for OGX-011 in combination with first-line docetaxel treatment in approximately 800 men with CRPC; and
- Evaluating a durable pain palliation benefit for OGX-011 in combination with docetaxel as second-line chemotherapy in approximately 300 men with CRPC.

OncoGenex intends to conduct the above phase 3 trials with OGX-011 in metastatic CRPC, subject to the receipt of additional funding through corporate partnerships, debt or equity financings.

OGX-011 has received Fast Track designation from the U.S. Food & Drug Administration (FDA) for the treatment of progressive metastatic prostate cancer in combination with docetaxel. The FDA has agreed on the design of two phase 3 registration trials, via the Special Protocol Assessment (SPA) process, of OGX-011 in combination with chemotherapy. One trial design evaluating OGX-011 with first-line chemotherapy investigates overall survival as the primary endpoint, whereas the other trial design evaluating OGX-011 with second-line chemotherapy investigates pain palliation as the primary endpoint.

Final results of a randomized phase 2 Trial evaluating the benefit of combining OGX-011 with first-line docetaxel chemotherapy were presented during an oral presentation at the American Society of Clinical Oncology (ASCO) 2009 Annual Meeting. Analyses indicating a survival benefit in patients treated with OGX-011 in combination with first-line docetaxel compared to docetaxel alone, the latter of which being the current standard care for patients with advanced, progressive metastatic prostate cancer, is described below:

- The median overall survival in patients with advanced metastatic prostate cancer who were treated with OGX-011 plus docetaxel in a randomized phase 2 trial was 23.8 months compared to 16.9 months for patients treated with docetaxel alone, indicating a 6.9 month survival advantage in the OGX-011 arm;
- The unadjusted hazard ratio (HR), unadjusted hazard ratio (HR), a measure used to compare the death rates between treatment groups, was 0.61, representing a 39% lower rate of death for patients treated with OGX-011; and
- A prospectively defined multivariate analysis indicated that the significant predictors of overall survival were treatment arm, performance status and presence of metastases other than in bone or lymph nodes. Patients treated with OGX-011 had a rate of death 51% lower than patients treated with docetaxel alone (HR=0.49; p=0.012). Additional exploratory analyses found that the lower rate of death was associated with the effect of OGX-011 treatment even when varying amounts of chemotherapy were administered (i.e. OGX-011 treatment resulted in a lower rate of death when compared to the control arm for patients receiving 6 or less cycles of chemotherapy as well as for patients receiving 10 cycles of chemotherapy).

OGX-011 treatment was well tolerated in combination with docetaxel. There was an increase in incidence of mild fever, chills and creatinine levels (a laboratory measure for reduced kidney function) and a moderate to significant decrease in circulating lymphocytes in the blood (another laboratory measure) without any increase in infection rate compared to the docetaxel arm.

Durable pain palliation defined as pain palliation of 12 weeks or greater has been observed in another phase 2 trial evaluating patients with metastatic CRPC who progressed while receiving, or within 6 months of completing, first-line docetaxel treatment. In this trial, 44% of patients who were retreated with docetaxel as second-line treatment in combination with OGX-011 had durable pain palliation. This is favorable even when compared to the 35% pain responses of 3 weeks or greater observed in the phase 3 study registering docetaxel as first-line chemotherapy in patients with CRPC. Due to the results of this

phase 2 trial, the other phase 3 registration trial will evaluate the durable pain palliation benefit of OGX-011 in patients treated with second-line chemotherapy.

Product Candidate OGX-427

A phase 1 trial has evaluated 41 patients with a variety of cancers, with enrollment ongoing. OGX-427 was first evaluated as a single agent in a dose escalation manner up to 1000mg OGX-427. A maximum tolerated dose was not identified up to and including the 1000mg dose of OGX-427 monotherapy. Subsequently, as defined by the protocol, an 800mg dose of OGX-427 in combination with docetaxel was evaluated, to be followed by, a 1000mg OGX-427 plus docetaxel. OGX-427 is administered as three loading doses within the first nine days and then continued weekly, with three weeks defined as a treatment cycle, until disease progression or toxicity. In those groups receiving OGX-427 in combination with docetaxel, 75mg/M2 docetaxel was administered on day 1 of every 3-week cycle starting after completion of the OGX-427 loading doses.

Preliminary results of this phase 1 trial were presented during an oral presentation at the American Society of Clinical Oncology (ASCO) 2009 Annual Meeting. Patients enrolled had a diagnosis of breast, ovarian, prostate or non-small cell lung cancer and most had failed multiple prior chemotherapy treatments. A median of two cycles (range of one to eight cycles) was administered.

OGX-427 treatment was well tolerated as a monotherapy. No evidence of altered cardiac activity was observed. A majority of adverse events were mild and mainly occurred during the loading doses. Adverse events consisted of chills, itching and fatigue in over one-third of patients. There was a trend for increasing incidence of some mild adverse events with escalating OGX-427 doses. For example, 33% of patients at the 200mg dose compared to 67% of patients at the 1000mg dose had mild adverse events during the loading doses. The half-life of OGX-427 in the blood remained constant, although there appeared to be an increase in maximum blood levels and a corresponding decease in blood clearance of OGX-427 as doses were escalated.

The combination of 800mg OGX-427 with docetaxel was also well tolerated and escalation to 1000mg OGX-427 with docetaxel will be evaluated next.

Circulating tumor cells (CTCs), an emerging metric to assess treatment effect, was evaluated at baseline before treatment and during treatment. Both total and Hsp27-positive CTCs were evaluated. Declines of 50% or greater in both total and Hsp27-positive CTCs were observed in over one-half of the patients in each cohort and in each cancer category. Declines in Hsp27 CTCs to 5 or less cells occurred in 27% of patients who had greater than 5 CTCs at baseline. Reduction in tumor markers defined as declines of prostate specific antigen, or PSA, levels in prostate cancer or CA-125 levels in ovarian cancer were also observed. A reduction in PSA level was observed in 7 of 20 patients (35%) with prostate cancer and a reduction in CA-125 levels was observed in 3 of 5 patients (60%) with ovarian cancer.

Product Candidates OGX-225, SN2310 and CSP-9222

SN2310 was evaluated in a phase 1 clinical trial to evaluate safety in patients with advanced cancer who have received on average three to five prior chemotherapy treatments. The phase 1 clinical trial has been completed.

OGX-225, an inhibitor of insulin growth factor binding proteins 2 and 5, and CSP-9222 are in pre-clinical development.

Abandoned Private Placement

Between late 2008 and June 18, 2009, we were engaged in preliminary discussions with a number of potential investors, both directly and through registered broker-dealers, concerning a possible private placement of shares of our common stock and/or warrants to purchase shares of our common stock having an aggregate offering value of between $5 million and $50 million. We and any person acting on our behalf offered securities only to persons that were, or that we reasonably believed to be, accredited investors, as defined in Regulation D under the Securities Act of 1933, as amended. The private placement was intended to be completed in reliance upon Rule 506 of Regulation D. On June 18, 2009, the Company abandoned the private placement and all offering activity in connection therewith terminated. No offers to buy or indications of interest given in the private placement discussions were accepted. This prospectus supersedes any offering materials used in the abandoned private placement.

* * *

The Company was incorporated in the state of California in October 1991 and subsequently reorganized as a Delaware corporation in September 1995. The Company's principal executive offices are located at 1522 217th Place SE, Suite 100, Bothell, Washington 98021, and its telephone number is (425) 686-1500.

RISK FACTORS

An investment in our securities involves a high degree of risk. The prospectus supplement applicable to each offering of securities will contain a discussion of the risks applicable to an investment in our securities. Prior to making a decision about investing in our securities, you should carefully consider the specific factors discussed under the heading "Risk Factors" in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in the prospectus supplement or appearing or incorporated by reference in this prospectus. You should also consider the risks, uncertainties and assumptions discussed under Item 1A, "Risk Factors," in our Annual Report on Form 10-K for the fiscal year ended December 31, 2008, which is incorporated herein by reference, and may be amended, supplemented or superseded from time to time by other reports we file with the Commission in the future. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act") and are required to file annual, quarterly and other reports, proxy statements and other information with the Commission. You may inspect and copy these reports, proxy statements and other information at the public reference facilities maintained by the Commission in Washington, D.C., 100 F Street N.E., Washington, D.C. 20549. Copies of such materials can be obtained from the Commission's public reference section at prescribed rates. You may obtain information on the operation of the public reference rooms by calling the Commission at (800) SEC-0330. Additionally, the Commission maintains an Internet site (http://www.sec.gov) that contains reports, proxy and information statements, and various other of our information. You may also inspect the documents described herein at our principal executive offices, 1522 217th Place SE, Suite 100, Bothell, Washington 98021, during normal business hours.

In addition, we are subject to the filing requirements prescribed by the securities legislation of all Canadian provinces or territories. You are invited to read and copy any reports, statements or other information that we file with the Canadian provincial securities commissions or other similar regulatory authorities at their respective public reference rooms. These filings are also electronically available from the Canadian System for Electronic Document Analysis and Retrieval at http://www.sedar.com, which is commonly known by the acronym "SEDAR," the Canadian equivalent of the Commission's EDGAR system.

Information about us is also available at our website at http://www.oncogenex.com. However, the information on our website is not a part of this prospectus and is not incorporated by reference into this prospectus.

INCORPORATION OF INFORMATION BY REFERENCE

The Commission allows us to "incorporate by reference" information that we file with the Commission, which means that we can disclose important information to you by referring you to those other documents. The information incorporated by reference is an important part of this prospectus, and information we file later with the Commission will automatically update and supercede this information. All documents filed by us with the Commission under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (excluding any information furnished in current reports on Form 8-K under Item 2.02 or 7.01 of such form) after the date of initial filing of this registration statement and until the date that the offering of securities by means of this prospectus is terminated shall be deemed to be incorporated by reference into this prospectus. We incorporate by reference the following previously filed documents:

- Our Annual Report on Form 10-K for the year ended December 31, 2008, including certain information incorporated by reference therein from our Definitive Proxy Statement for our 2009 annual meeting of stockholders;
- Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2009;
- Our current reports on Form 8-K filed on February 17, 2009, March 9, 2009, March 11, 2009, April 2, 2009 and June 26, 2009 (excluding any information furnished in such reports under Item 2.02 and 7.01);
- The financial statements and financial information required by Rule 3-05 and Article 11 of Regulation S-X disclosed by the Company in its Definitive Proxy Statement filed on July 3, 2008; and
- The description of our common stock contained in our registration statement on Form 8-A filed with the Commission on September 27, 1995 under Section 12 of the Exchange Act, including any amendment or report filed for the purpose of updating such description.

Upon written or oral request, we will provide without charge to each person, including any beneficial owner, to whom this prospectus is delivered, a copy of any or all of such documents that are incorporated herein by reference (other than exhibits to such documents unless such exhibits are specifically incorporated by reference into the documents that this prospectus incorporates). Written or oral requests for copies should be directed to OncoGenex Pharmaceuticals, Inc., Attn: Stephen Anderson, 1522 217th Place SE, Suite 100, Bothell, Washington 98021, telephone number (425) 686-1500. See the section of this prospectus entitled "Where You Can Find More Information" for information concerning how to read and obtain copies of materials that we file with the Commission at the Commission's public offices.

Any statement contained in this prospectus, or in a document all or a portion of which is incorporated by reference, shall be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, any supplement or any document incorporated by reference modifies or supersedes such statement. Any such statement so modified or superseded shall not, except as so modified or superseded, constitute a part of this prospectus.

FORWARD-LOOKING STATEMENTS

This document contains and incorporates by reference "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements involve a number of risks and uncertainties. We caution readers that any forward-looking statement is not a guarantee of future performance and that actual results could differ materially from those contained in the forward-looking statement. These statements are based on current expectations of future events. Such statements include, but are not limited to, statements about the anticipated benefits of the acquisition (the "Arrangement") completed on August 21, 2008 by Sonus Pharmaceuticals, Inc. ("Sonus") of OncoGenex Technologies Inc. (pursuant to which Sonus changed its name to OncoGenex Pharmaceuticals, Inc.), including future financial and operating results, the combined company's plans, objectives, expectations and intentions, costs and expenses, interest rates, outcome of contingencies, financial condition, results of operations, liquidity, business strategies, cost savings, objectives of management and other statements that are not historical facts. You can find many of these statements by looking for words like "believes," "expects," "anticipates," "estimates," "may," "should," "will," "could," "plan," "intend," or similar

expressions in this document or in documents incorporated by reference in this document. We intend that such forward-looking statements be subject to the safe harbors created thereby. Examples of these forward-looking statements include, but are not limited to:

- our anticipated future capital requirements and the terms of any capital financing agreements;
- progress and preliminary and future results of clinical trials;
- anticipated regulatory filings, requirements and future clinical trials;
- timing and amount of future contractual payments, product revenue and operating expenses; and
- market acceptance of our products and the estimated potential size of these markets.

These forward-looking statements are based on the current beliefs and expectations of our management and are subject to significant risks and uncertainties. If underlying assumptions prove inaccurate or unknown risks or uncertainties materialize, actual results may differ materially from current expectations and projections. The following factors, among others, could cause actual results to differ from those set forth in the forward-looking statements:

- future capital requirements and uncertainty of obtaining additional funding through corporate partnerships, debt or equity financings;
- dependence on the development and commercialization of products;
- the risk that results in humans may not be indicative of results in future studies;
- the risk that results of research and preclinical studies may not be indicative of results in humans;
- uncertainty relating to the timing and results of clinical trials;
- uncertainties regarding the safety and effectiveness of the Company's products and technologies;
- the timing, expense and uncertainty associated with the development and regulatory approval process for products;
- uncertainties regarding the Company's future operating results, and the risk that the Company's products will not obtain the requisite regulatory approvals to commercialize its products or that the future sales of the Company's products may be less than expected;
- acceptance of our products by the medical community;
- our ability to build out our product candidate pipeline through product in-licensing or acquisition activities;
- the uncertainty associated with exiting or subleasing our excess office and laboratory space;
- general competitive conditions within the drug development and pharmaceutical industry;
- the potential inability to integrate and realize benefits from the Arrangement;

- the reliance on third parties who license intellectual property rights to the Company to comply with the terms of such agreements and to enforce, prosecute and defend such intellectual property rights;
- the potential for product liability issues and related litigation;
- the potential for claims arising from the use of hazardous materials in our business;
- proper management of our operations will be critical to the success of the Company;
- the potential inability to successfully protect and enforce our intellectual property rights;
- the impact of current, pending or future legislation, regulations and legal actions in the United States, Canada and elsewhere affecting the pharmaceutical and healthcare industries;
- currency fluctuation in the Company's primary markets;
- volatility in the value of our common stock;
- fluctuations in our operating results;
- history of operating losses and uncertainty of future financial results; and
- general economic conditions.

You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this document or, in the case of documents referred to or incorporated by reference, the date of those documents.

All subsequent written or oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. We do not undertake any obligation to release publicly any revisions to these forward-looking statements to reflect events or circumstances after the date of this document or to reflect the occurrence of unanticipated events, except as may be required under applicable U.S. securities law. If we do update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect to those or other forward-looking statements.

RATIO OF EARNINGS TO FIXED CHARGES

The following table shows our ratio of earnings to fixed charges for the periods indicated.

	Year Ended December 31,					
	2004	2005	2006	2007	2008	Three Months Ended March 31, 2009
Ratio of earnings to fixed charges[1]	—	—	—	—	—	—
Deficiency of earnings to fixed charges[2]	(3,665)	(4,497)	(10,919)	(7,823)	(10,691)	(2,419)

(1) In each of the periods presented, no earnings were sufficient to cover fixed charges.

(2) The deficiency of earnings is equivalent to net income (loss) before tax benefit (provision) and extraordinary gain.

USE OF PROCEEDS

We will retain broad discretion over the use of the net proceeds to us from the sale of our securities under this prospectus. Unless otherwise provided in the applicable prospectus supplement, we intend to use the net proceeds from the sale of securities under this prospectus for general corporate purposes, which may include funding research and development, increasing our working capital, reducing indebtedness, acquisitions or investments in businesses, products or technologies that are complementary to our own and capital expenditures. We will set forth in the prospectus supplement our intended use for the net proceeds received from the sale of any securities. Pending the application of the net proceeds, we intend to invest the net proceeds in short-term, investment-grade, interest-bearing securities.

PLAN OF DISTRIBUTION

We may sell the securities covered by this prospectus to one or more underwriters for public offering and sale by them, and may also sell the securities to investors directly or through agents. We will name any underwriter or agent involved in the offer and sale of securities in the applicable prospectus supplement. We have reserved the right to sell or exchange securities directly to investors on our own behalf in jurisdictions where we are authorized to do so. We may distribute the securities from time to time in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

We may solicit directly offers to purchase the securities being offered by this prospectus. We may also designate agents to solicit offers to purchase the securities from time to time. We will name in a prospectus supplement any agent involved in the offer or sale of our securities. Unless otherwise indicated in a prospectus supplement, an agent will be acting on a best efforts basis, and a dealer will purchase securities as a principal for resale at varying prices to be determined by the dealer.

If we utilize an underwriter in the sale of the securities being offered by this prospectus, we will execute an underwriting agreement with the underwriter at the time of sale and we will provide the name of any underwriter in the prospectus supplement that the underwriter will use to make resales of the securities to the public. In connection with the sale of the securities, we, or the purchasers of securities for whom the underwriter may act as agent, may compensate the underwriter in the form of underwriting discounts or commissions. The underwriter may sell the securities to or through dealers, and those dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters or commissions from the purchasers for whom they may act as agent.

We will provide in the applicable prospectus supplement any compensation we pay to underwriters, dealers or agents in connection with the offering of the securities, and any discounts, concessions or commissions allowed by underwriters to participating dealers. Underwriters, dealers and agents participating in the distribution of the securities may be deemed to be underwriters within the meaning of the Securities Act, and any discounts and commissions received by them and any profit realized by them on resale of the securities may be deemed to be underwriting discounts and commissions. We may enter into agreements to indemnify underwriters, dealers and agents against civil

liabilities, including liabilities under the Securities Act, and to reimburse them for certain expenses. We may grant underwriters who participate in the distribution of our securities under this prospectus an option to purchase additional securities to cover any over-allotments in connection with the distribution.

The securities we offer under this prospectus may or may not be listed on a national securities exchange. To facilitate the offering of securities, certain persons participating in the offering may engage in transactions that stabilize, maintain or otherwise affect the price of the securities. This may include over-allotments or short sales of the securities, which involves the sale by persons participating in the offering of more securities than we sold to them. In these circumstances, these persons would cover such over-allotments or short positions by making purchases in the open market or by exercising their over-allotment option. In addition, these persons may stabilize or maintain the price of the securities by bidding for or purchasing securities in the open market or by imposing penalty bids, whereby selling concessions allowed to dealers participating in the offering may be reclaimed if securities sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. These transactions may be discontinued at any time.

We may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of stock, and they may use securities received from us in settlement of those derivatives to close out any related open borrowings of stock. The third party in these sale transactions will be an underwriter and will be identified in the applicable prospectus supplement or in a post-effective amendment to the registration statement relating to this prospectus. In addition, we may otherwise loan or pledge securities to a financial institution or other third party that in turn may sell the securities short using this prospectus. The financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

To the extent required pursuant to Rule 424(b) of the Securities Act, or other applicable rule, we will file a prospectus supplement to describe the terms of any offering of our securities covered by this prospectus. The prospectus supplement will disclose:

- the terms of the offer;
- the names of any underwriters, including any managing underwriters, as well as any dealers or agents;
- the purchase price of the securities from us;
- the net proceeds to us from the sale of the securities;
- any delayed delivery arrangements;
- any underwriting discounts, commissions or other items constituting underwriters' compensation and any commissions paid to agents;
- any initial public offering price; and
- other facts material to the transaction.

We will bear substantially all of the costs, expenses and fees in connection with the registration of our securities under this prospectus. The underwriters, dealers and agents may engage in transactions with us, or perform services for us, in the ordinary course of business.

DESCRIPTION OF CAPITAL STOCK

General

As of the date of this prospectus, our authorized capital stock consists of 16,019,930 shares. Those shares consist of 11,019,930 shares of common stock, par value of $0.001 per share, and 5,000,000 shares of preferred stock. The only equity securities currently outstanding are shares of common stock. As of June 23, 2009, there were approximately 5,551,760 shares of common stock issued and outstanding. Our common stock is traded on the Nasdaq Capital Market under the symbol “OGXI”.

The following description summarizes the material terms of our capital stock. This summary is, however, subject to the provisions of our certificate of incorporation and bylaws. For greater detail about our capital stock, please refer to our certificate of incorporation and bylaws.

Common Stock

Each holder of common stock is entitled to one vote for each share held on all matters to be voted upon by the stockholders, except that all holders are entitled to cumulate their votes in the election of directors. Every stockholder voting in the election of directors may cumulate his or her votes and may cast all such votes for a single director or may distribute them among the number to be voted for, or for any two or more of them as the stockholder may see fit. At any meeting of the stockholders, a quorum as to any matter shall consist of a majority of the votes entitled to be cast on the matter, except where a larger quorum is required by law, by our certificate of incorporation or by our bylaws.

Holders of our common stock are entitled to receive dividends declared by our board of directors out of funds legally available for the payment of dividends, subject to the rights, if any, of preferred stockholders. In the event of our liquidation, dissolution or winding up, holders of common stock are entitled to share ratably in all of our assets remaining after we pay our liabilities and distribute the liquidation preference of any then outstanding preferred stock. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of holders of any series of preferred stock that we may designate and issue in the future. Holders of common stock have no preemptive or other subscription or conversion rights. There are no redemption or sinking fund provisions applicable to the common stock. All outstanding shares of our common stock are fully paid and nonassessable, and any shares of our common stock to be issued upon an offering pursuant to this prospectus and the related prospectus supplement will be fully paid and nonassessable upon issuance.

The transfer agent and registrar for our common stock is Computershare Investor Services Inc.

See “Certain Provisions of Delaware Law, the Company’s Certificate of Incorporation and Bylaws and the Company’s Stockholder Rights Plan” for a description of provisions of the Company’s certificate of incorporation and bylaws which may have the effect of delaying, deferring or preventing changes in the Company’s control.

Preferred Stock

The following description of preferred stock and the description of the terms of any particular series of preferred stock that we choose to issue hereunder and that will be set forth in the related prospectus supplement are not complete. These descriptions are qualified in their entirety by reference to the certificate of designation relating to that series. The rights, preferences, privileges and restrictions of the preferred stock of each series will be fixed by the certificate of designation relating to that series.

The board of directors has the authority, without stockholder approval, subject to limitations prescribed by law, to provide for the issuance of the shares of preferred stock in one or more series, and by filing a certificate pursuant to the applicable law of the State of Delaware, to establish from time to time the number of shares to be included in each such series, and to fix the designation, powers, preferences and rights of the shares of each series and the qualifications, limitations or restrictions, including, but not limited to, the following:

- the number of shares constituting that series;
- dividend rights and rates;
- voting rights;
- conversion terms;
- rights and terms of redemption (including sinking fund provisions); and
- rights of the series in the event of liquidation, dissolution or winding up.

All shares of preferred stock offered hereby will, when issued, be fully paid and nonassessable and will not have any preemptive or similar rights. Our board of directors could authorize the issuance of shares of preferred stock with terms and conditions that could have the effect of discouraging a takeover or other transaction that might involve a premium price for holders of the shares or which holders might believe to be in their best interests.

We will set forth in a prospectus supplement relating to the series of preferred stock being offered the following items:

- the title and stated value of the preferred stock;
- the number of shares of the preferred stock offered, the liquidation preference per share and the offering price of the preferred stock;
- the dividend rate(s), period(s) and/or payment date(s) or method(s) of calculation applicable to the preferred stock;
- whether dividends are cumulative or non-cumulative and, if cumulative, the date from which dividends on the preferred stock will accumulate;
- the procedures for any auction and remarketing, if any, for the preferred stock;
- the provisions for a sinking fund, if any, for the preferred stock;
- the provision for redemption, if applicable, of the preferred stock;
- any listing of the preferred stock on any securities exchange;
- the terms and conditions, if applicable, upon which the preferred stock will be convertible into common stock, including the conversion price (or manner of calculation) and conversion period;
- voting rights, if any, of the preferred stock;
- a discussion of any material and/or special United States federal income tax considerations applicable to the preferred stock;

- the relative ranking and preferences of the preferred stock as to dividend rights and rights upon the liquidation, dissolution or winding up of our affairs;
- any limitations on issuance of any class or series of preferred stock ranking senior to or on a parity with the class or series of preferred stock as to dividend rights and rights upon liquidation, dissolution or winding up of our affairs; and
- any other specific terms, preferences, rights, limitations or restrictions of the preferred stock.

The transfer agent and registrar for any series of preferred stock will be set forth in the applicable prospectus supplement.

DESCRIPTION OF DEBT SECURITIES

This description is a summary of the material provisions of the debt securities and the related indenture. We urge you to read the form of indenture filed as an exhibit to the registration statement of which this prospectus is a part because the indenture, and not this description, governs your rights as a holder of debt securities. References in this prospectus to an "indenture" refer to the particular indenture under which we may issue a series of debt securities.

General

The terms of each series of debt securities will be established by or pursuant to a resolution of our board of directors and set forth or determined in the manner provided in an officers' certificate or by a supplemental indenture. Debt securities may be issued in separate series without limitation as to aggregate principal amount. We may specify a maximum aggregate principal amount for the debt securities of any series. The particular terms of each series of debt securities will be described in a prospectus supplement relating to such series, including any pricing supplement. The prospectus supplement will set forth specific terms relating to some or all of the following:

- the offering price;
- the title;
- any limit on the aggregate principal amount;
- the person who shall be entitled to receive interest, if other than the record holder on the record date;
- the date the principal will be payable;
- the interest rate, if any, the date interest will accrue, the interest payment dates and the regular record dates;
- the place where payments may be made;
- any mandatory or optional redemption provisions;
- if applicable, the method for determining how the principal, premium, if any, or interest will be calculated by reference to an index or formula;
- if other than U.S. currency, the currency or currency units in which principal, premium, if any, or interest will be payable and whether we or the holder may elect payment to be made in a different currency;

- the portion of the principal amount that will be payable upon acceleration of stated maturity, if other than the entire principal amount;
- any defeasance provisions if different from those described below under “Satisfaction and Discharge; Defeasance”;
- any conversion or exchange provisions;
- any obligation to redeem or purchase the debt securities pursuant to a sinking fund;
- whether the debt securities will be issuable in the form of a global security;
- any subordination provisions, if different from those described below under “Subordination”;
- any deletions of, or changes or additions to, the events of default or covenants; and
- any other specific terms of such debt securities.

Unless otherwise specified in the prospectus supplement, the debt securities will be registered debt securities. Debt securities may be sold at a substantial discount below their stated principal amount, bearing no interest or interest at a rate which at the time of issuance is below market rates.

Exchange and Transfer

Debt securities may be transferred or exchanged at the office of the security registrar or at the office of any transfer agent designated by us.

We will not impose a service charge for any transfer or exchange, but we may require holders to pay any tax or other governmental charges associated with any transfer or exchange.

In the event of any potential redemption of debt securities of any series, we will not be required to:

- issue, register the transfer of, or exchange, any debt security of that series during a period beginning at the opening of business 15 days before the day of mailing of a notice of redemption and ending at the close of business on the day of the mailing; or
- register the transfer of or exchange any debt security of that series selected for redemption, in whole or in part, except the unredeemed portion being redeemed in part.

We may initially appoint the trustee as the security registrar. Any transfer agent, in addition to the security registrar, initially designated by us will be named in the prospectus supplement. We may designate additional transfer agents or change transfer agents or change the office of the transfer agent. However, we will be required to maintain a transfer agent in each place of payment for the debt securities of each series.

Global Securities

The debt securities of any series may be represented, in whole or in part, by one or more global securities. Each global security will:

- be registered in the name of a depositary that we will identify in a prospectus supplement;
- be deposited with the depositary or nominee or custodian; and

- bear any required legends.

No global security may be exchanged in whole or in part for debt securities registered in the name of any person other than the depositary or any nominee unless:

- the depositary has notified us that it is unwilling or unable to continue as depositary or has ceased to be qualified to act as depositary;
- an event of default is continuing; or
- the Company executes and delivers to the trustee an officers' certificate stating that the global security is exchangeable.

As long as the depositary, or its nominee, is the registered owner of a global security, the depositary or nominee will be considered the sole owner and holder of the debt securities represented by the global security for all purposes under the indenture. Except in the above limited circumstances, owners of beneficial interests in a global security:

- will not be entitled to have the debt securities registered in their names;
- will not be entitled to physical delivery of certificated debt securities; and
- will not be considered to be holders of those debt securities under the indentures.

Payments on a global security will be made to the depositary or its nominee as the holder of the global security. Some jurisdictions have laws that require that certain purchasers of securities take physical delivery of such securities in definitive form. These laws may impair the ability to transfer beneficial interests in a global security.

Institutions that have accounts with the depositary or its nominee are referred to as "participants." Ownership of beneficial interests in a global security will be limited to participants and to persons that may hold beneficial interests through participants. The depositary will credit, on its book-entry registration and transfer system, the respective principal amounts of debt securities represented by the global security to the accounts of its participants.

Ownership of beneficial interests in a global security will be shown on and effected through records maintained by the depositary, with respect to participants' interests, or any participant, with respect to interests of persons held by participants on their behalf.

Payments, transfers and exchanges relating to beneficial interests in a global security will be subject to policies and procedures of the depositary.

The depositary policies and procedures may change from time to time. Neither we nor the trustee will have any responsibility or liability for the depositary's or any participant's records with respect to beneficial interests in a global security.

Payment and Paying Agent

The provisions of this paragraph will apply to the debt securities unless otherwise indicated in the prospectus supplement. Payment of interest on a debt security on any interest payment date will be made to the person in whose name the debt security is registered at the close of business on the regular record date. Payment on debt securities of a particular series will be payable at the office of a paying agent or

paying agents designated by us. However, at our option, we may pay interest by mailing a check to the record holder. The corporate trust office will be designated as our sole paying agent.

We may also name any other paying agents in the prospectus supplement. We may designate additional paying agents, change paying agents or change the office of any paying agent. However, we will be required to maintain a paying agent in each place of payment for the debt securities of a particular series.

All moneys paid by us to a paying agent for payment on any debt security which remain unclaimed at the end of two years after such payment was due will be repaid to us. Thereafter, the holder may look only to us for such payment.

Consolidation, Merger and Sale of Assets

Except as otherwise set forth in the prospectus supplement, we may not consolidate with or merge into any other person, in a transaction in which we are not the surviving corporation, or convey, transfer or lease our properties and assets substantially as an entirety to, any person, unless:

- the successor, if any, is a U.S. corporation, limited liability company, partnership, trust or other entity;
- the successor assumes our obligations on the debt securities and under the indenture;
- immediately after giving effect to the transaction, no default or event of default shall have occurred and be continuing; and
- certain other conditions are met.

Events of Default

Unless we inform you otherwise in the prospectus supplement, the indenture will define an event of default with respect to any series of debt securities as one or more of the following events:

(1) failure to pay principal of or any premium on any debt security of that series when due;

(2) failure to pay any interest on any debt security of that series for 30 days when due;

(3) failure to deposit any sinking fund payment when due;

(4) failure to perform any other covenant in the indenture continued for 90 days after being given the notice required in the indenture;

(5) our bankruptcy, insolvency or reorganization; and

(6) any other event of default specified in the prospectus supplement.

An event of default of one series of debt securities is not necessarily an event of default for any other series of debt securities.

If an event of default, other than an event of default described in clause (5) above, shall occur and be continuing, either the trustee or the holders of at least 25% in aggregate principal amount of the

outstanding securities of that series may declare the principal amount of the debt securities of that series to be due and payable immediately.

If an event of default described in clause (5) above shall occur, the principal amount of all the debt securities of that series will automatically become immediately due and payable. Any payment by us on subordinated debt securities following any such acceleration will be subject to the subordination provisions described below under "Subordinated Debt Securities."

After acceleration the holders of a majority in aggregate principal amount of the outstanding securities of that series may, under certain circumstances, rescind and annul such acceleration if all events of default, other than the non-payment of accelerated principal, or other specified amount, have been cured or waived.

Other than the duty to act with the required care during an event of default, the trustee will not be obligated to exercise any of its rights or powers at the request of the holders unless the holders shall have offered to the trustee reasonable indemnity. Generally, the holders of a majority in aggregate principal amount of the outstanding debt securities of any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee or exercising any trust or power conferred on the trustee.

A holder will not have any right to institute any proceeding under the indentures, or for the appointment of a receiver or a trustee, or for any other remedy under the indentures, unless:

(1) the holder has previously given to the trustee written notice of a continuing event of default with respect to the debt securities of that series;

(2) the holders of at least 25% in aggregate principal amount of the outstanding debt securities of that series have made a written request and have offered reasonable indemnity to the trustee to institute the proceeding; and

(3) the trustee has failed to institute the proceeding and has not received direction inconsistent with the original request from the holders of a majority in aggregate principal amount of the outstanding debt securities of that series within 90 days after the original request.

Holders may, however, sue to enforce the payment of principal or interest on any debt security on or after the due date without following the procedures listed in (1) through (3) above.

Modification and Waiver

Except as provided in the next two succeeding paragraphs, the applicable trustee and we may make modifications and amendments to the indentures (including, without limitation, through consents obtained in connection with a tender offer or exchange offer for, outstanding securities) and may waive any existing default or event of default (including, without limitation, through consents obtained in connection with a tender offer or exchange offer for, outstanding securities) with the consent of the holders of a majority in aggregate principal amount of the outstanding securities of each series affected by the modification or amendment.

However, neither we nor the trustee may make any amendment or waiver without the consent of the holder of each outstanding security of that series affected by the amendment or waiver if such amendment or waiver would, among other things:

- change the amount of securities whose holders must consent to an amendment, supplement or waiver;
- change the stated maturity of any debt security;
- reduce the principal on any debt security or reduce the amount of, or postpone the date fixed for, the payment of any sinking fund;
- reduce the principal of an original issue discount security on acceleration of maturity;
- reduce the rate of interest or extend the time for payment of interest on any debt security;
- make a principal or interest payment on any debt security in any currency other than that stated in the debt security;
- impair the right to enforce any payment after the stated maturity or redemption date;
- waive any default or event of default in payment of the principal of, premium or interest on any debt security (except certain rescissions of acceleration); or
- waive a redemption payment or modify any of the redemption provisions of any debt security;

Notwithstanding the preceding, without the consent of any holder of outstanding securities, we and the trustee may amend or supplement the indentures:

- to provide for the issuance of and establish the form and terms and conditions of debt securities of any series as permitted by the indenture;
- to provide for uncertificated securities in addition to or in place of certificated securities;
- to provide for the assumption of our obligations to holders of any debt security in the case of a merger, consolidation, transfer or sale of all or substantially all of our assets;
- to make any change that does not adversely affect the legal rights under the indenture of any such holder;
- to comply with requirements of the Commission in order to effect or maintain the qualification of an indenture under the Trust Indenture Act; or
- to evidence and provide for the acceptance of appointment by a successor trustee with respect to the debt securities of one or more series and to add to or change any of the provisions of the indenture as shall be necessary to provide for or facilitate the administration of the trusts by more than one Trustee.

The consent of holders is not necessary under the indentures to approve the particular form of any proposed amendment. It is sufficient if such consent approves the substance of the proposed amendment.

Satisfaction and Discharge; Defeasance

We may be discharged from our obligations on the debt securities of any series that have matured or will mature or be redeemed within one year if we deposit with the trustee enough cash to pay all the

principal, interest and any premium due to the stated maturity date or redemption date of the debt securities.

Each indenture contains a provision that permits us to elect:

- to be discharged from all of our obligations, subject to limited exceptions, with respect to any series of debt securities then outstanding; and/or
- to be released from our obligations under the following covenants and from the consequences of an event of default resulting from a breach of certain convenants, including covenants as to payment of taxes and maintenance of corporate existence.

To make either of the above elections, we must deposit in trust with the trustee enough money to pay in full the principal and interest on the debt securities. This amount may be made in cash and/or U.S. government obligations. As a condition to either of the above elections, we must deliver to the trustee an opinion of counsel that the holders of the debt securities will not recognize income, gain or loss for federal income tax purposes as a result of the action.

If any of the above events occurs, the holders of the debt securities of the series will not be entitled to the benefits of the indenture, except for the rights of holders to receive payments on debt securities or the registration of transfer and exchange of debt securities and replacement of lost, stolen or mutilated debt securities.

Notices

Notices to holders will be given by mail to the addresses of the holders in the security register.

Governing Law

The indentures and the debt securities will be governed by, and construed under, the law of the State of New York.

Regarding the Trustee

The indenture limits the right of the trustee, should it become a creditor of us, to obtain payment of claims or secure its claims.

The trustee is permitted to engage in certain other transactions. However, if the trustee, acquires any conflicting interest, and there is a default under the debt securities of any series for which they are trustee, the trustee must eliminate the conflict or resign.

Subordination

Payment on subordinated debt securities will, to the extent provided in the indenture, be subordinated in right of payment to the prior payment in full of all of our senior indebtedness (except that holders of the notes may receive and retain (i) permitted junior securities and (ii) payments made from the trust described under “Satisfaction and Discharge; Defeasance”). Any subordinated debt securities also are effectively subordinated to all debt and other liabilities, including lease obligations, if any.

Upon any distribution of our assets upon any dissolution, winding up, liquidation or reorganization, the payment of the principal of and interest on subordinated debt securities will be subordinated in right of payment to the prior payment in full in cash or other payment satisfactory to the

holders of senior indebtedness. In the event of any acceleration of subordinated debt securities because of an event of default, the holders of any senior indebtedness would be entitled to payment in full in cash or other payment satisfactory to such holders of all senior indebtedness obligations before the holders of subordinated debt securities are entitled to receive any payment or distribution, except for certain payments made by the trust described under "Satisfaction and Discharge; Defeasance." The indenture requires us or the trustee to promptly notify holders of designated senior indebtedness if payment of subordinated debt securities is accelerated because of an event of default.

We may not make any payment on subordinated debt securities, including upon redemption at the option of the holder of any subordinated debt securities or at our option, if:

- a default in the payment of the principal, premium, if any, interest, rent or other obligations in respect of designated senior indebtedness occurs and is continuing beyond any applicable period of grace (called a "payment default"); or
- a default other than a payment default on any designated senior indebtedness occurs and is continuing that permits holders of designated senior indebtedness to accelerate its maturity, and the trustee receives notice of such default (called a "payment blockage notice) from us or any other person permitted to give such notice under the indenture (called a "non-payment default").

We may resume payments and distributions on subordinated debt securities:

- in the case of a payment default, upon the date on which such default is cured or waived or ceases to exist; and
- in the case of a non-payment default, 179 days after the date on which the payment blockage notice is received by the trustee, if the maturity of the designated senior indebtedness has not been accelerated.

No new period of payment blockage may be commenced pursuant to a payment blockage notice unless 365 days have elapsed since the initial effectiveness of the immediately prior payment blockage notice and all scheduled payments of principal, premium, if any, and interest on the notes that have come due have been paid in full in cash. No non-payment default that existed or was continuing on the date of delivery of any payment blockage notice shall be the basis for any later payment blockage notice.

If the trustee or any holder of the notes receives any payment or distribution of our assets in contravention of the subordination provisions on subordinated debt securities before all senior indebtedness is paid in full in cash, property or securities, including by way of set-off, or other payment satisfactory to holders of senior indebtedness, then such payment or distribution will be held in trust for the benefit of holders of senior indebtedness or their representatives to the extent necessary to make payment in full in cash or payment satisfactory to the holders of senior indebtedness of all unpaid senior indebtedness.

In the event of our bankruptcy, dissolution or reorganization, holders of senior indebtedness may receive more, ratably, and holders of subordinated debt securities may receive less, ratably, than our other creditors (including our trade creditors). This subordination will not prevent the occurrence of any event of default under the indenture.

We are not prohibited from incurring debt, including senior indebtedness, under the indenture. We may from time to time incur additional debt, including senior indebtedness.

We are obligated to pay reasonable compensation to the trustee and to indemnify the trustee against certain losses, liabilities or expenses incurred by the trustee in connection with its duties under the indenture. The trustee's claims for these payments will generally be senior to those of noteholders in respect of all funds collected or held by the trustee.

Certain Definitions

"indebtedness" means:

(1) all indebtedness, obligations and other liabilities for borrowed money, including overdrafts, foreign exchange contracts, currency exchange agreements, interest rate protection agreements, and any loans or advances from banks, or evidenced by bonds, debentures, notes or similar instruments, other than any account payable or other accrued current liability or obligation incurred in the ordinary course of business in connection with the obtaining of materials or services;

(2) all reimbursement obligations and other liabilities with respect to letters of credit, bank guarantees or bankers' acceptances;

(3) all obligations and liabilities in respect of leases required in conformity with generally accepted accounting principles to be accounted for as capitalized lease obligations on our balance sheet;

(4) all obligations and other liabilities under any lease or related document in connection with the lease of real property which provides that we are contractually obligated to purchase or cause a third party to purchase the leased property and thereby guarantee a minimum residual value of the leased property to the lessor and our obligations under the lease or related document to purchase or to cause a third party to purchase the leased property;

(5) all obligations with respect to an interest rate or other swap, cap or collar agreement or other similar instrument or agreement or foreign currency hedge, exchange, purchase or other similar instrument or agreement;

(6) all direct or indirect guaranties or similar agreements in respect of, and our obligations or liabilities to purchase, acquire or otherwise assure a creditor against loss in respect of, indebtedness, obligations or liabilities of others of the type described in (1) through (5) above;

(7) any indebtedness or other obligations described in (1) through (6) above secured by any mortgage, pledge, lien or other encumbrance existing on property which is owned or held by us; and

(8) any and all refinancings, replacements, deferrals, renewals, extensions and refundings of, or amendments, modifications or supplements to, any indebtedness, obligation or liability of the kind described in clauses (1) through (7) above.

"permitted junior securities" means (i) equity interests in OncoGenex; or (ii) debt securities of OncoGenex that are subordinated to all senior indebtedness and any debt securities issued in exchange for senior indebtedness to substantially the same extent as, or to a greater extent than the notes are subordinated to senior indebtedness under the indenture.

"senior indebtedness" means the principal, premium, if any, interest, including any interest accruing after bankruptcy, and rent or termination payment on or other amounts due on our current or future indebtedness, whether created, incurred, assumed, guaranteed or in effect guaranteed by us, including any deferrals, renewals, extensions, refundings, amendments, modifications or supplements to the above. However, senior indebtedness does not include:

- indebtedness that expressly provides that it shall not be senior in right of payment to subordinated debt securities or expressly provides that it is on the same basis or junior to subordinated debt securities;
- our indebtedness to any of our majority-owned subsidiaries; and
- subordinated debt securities.

DESCRIPTION OF WARRANTS

General

We may issue warrants for the purchase of our debt securities, preferred stock or common stock, or any combination thereof. Warrants may be issued independently or together with our debt securities, preferred stock or common stock and may be attached to or separate from any offered securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between us and a bank or trust company, as warrant agent. The warrant agent will act solely as our agent in connection with the warrants. The warrant agent will not have any obligation or relationship of agency or trust for or with any holders or beneficial owners of warrants. This summary of certain provisions of the warrants is not complete. For the terms of a particular series of warrants, you should refer to the prospectus supplement for that series of warrants and the warrant agreement for that particular series.

Debt warrants

The prospectus supplement relating to a particular issue of warrants to purchase debt securities will describe the terms of the debt warrants, including the following:

- the title of the debt warrants;
- the offering price for the debt warrants, if any;
- the aggregate number of the debt warrants;
- the designation and terms of the debt securities, including any conversion rights, purchasable upon exercise of the debt warrants;
- if applicable, the date from and after which the debt warrants and any debt securities issued with them will be separately transferable;
- the principal amount of debt securities that may be purchased upon exercise of a debt warrant and the exercise price for the warrants, which may be payable in cash, securities or other property;
- the dates on which the right to exercise the debt warrants will commence and expire;
- if applicable, the minimum or maximum amount of the debt warrants that may be exercised at any one time;

- whether the debt warrants represented by the debt warrant certificates or debt securities that may be issued upon exercise of the debt warrants will be issued in registered or bearer form;
- information with respect to book-entry procedures, if any; the currency or currency units in which the offering price, if any, and the exercise price are payable;
- if applicable, a discussion of material U.S. federal income tax considerations;
- the antidilution provisions of the debt warrants, if any;
- the redemption or call provisions, if any, applicable to the debt warrants;
- any provisions with respect to the holder's right to require us to repurchase the warrants upon a change in control or similar event; and
- any additional terms of the debt warrants, including procedures, and limitations relating to the exchange, exercise and settlement of the debt warrants.

Debt warrant certificates will be exchangeable for new debt warrant certificates of different denominations. Debt warrants may be exercised at the corporate trust office of the warrant agent or any other office indicated in the prospectus supplement. Prior to the exercise of their debt warrants, holders of debt warrants will not have any of the rights of holders of the debt securities purchasable upon exercise and will not be entitled to payment of principal or any premium, if any, or interest on the debt securities purchasable upon exercise.

Equity warrants

The prospectus supplement relating to a particular series of warrants to purchase our common stock or preferred stock will describe the terms of the warrants, including the following:

- the title of the warrants;
- the offering price for the warrants, if any;
- the aggregate number of warrants;
- the designation and terms of the common stock or preferred stock that may be purchased upon exercise of the warrants;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each security;
- if applicable, the date from and after which the warrants and any securities issued with the warrants will be separately transferable;
- the number of shares of common stock or preferred stock that may be purchased upon exercise of a warrant and the exercise price for the warrants;
- the dates on which the right to exercise the warrants shall commence and expire;
- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;

- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- if applicable, a discussion of material U.S. federal income tax considerations;
- the antidilution provisions of the warrants, if any;
- the redemption or call provisions, if any, applicable to the warrants;
- any provisions with respect to holder's right to require us to repurchase the warrants upon a change in control or similar event; and
- any additional terms of the warrants, including procedures, and limitations relating to the exchange, exercise and settlement of the warrants.

Holders of equity warrants will not be entitled:

- to vote, consent or receive dividends;
- receive notice as stockholders with respect to any meeting of stockholders for the election of our directors or any other matter; or
- exercise any rights as stockholders of OncoGenex.

CERTAIN PROVISIONS OF DELAWARE LAW, THE COMPANY'S CERTIFICATE OF INCORPORATION AND BYLAWS AND THE COMPANY'S STOCKHOLDER RIGHTS PLAN

The following paragraphs summarize certain provisions of the Delaware General Corporation Law, or the DGCL, and the Company's certificate of incorporation and bylaws. The summary does not purport to be complete and is subject to and qualified in its entirety by reference to the DGCL and to the Company's certificate of incorporation and bylaws, copies of which are on file with the Commission as exhibits to documents previously filed by the Company. See "Where You Can Find More Information."

Our certificate of incorporation limits the personal liability of our directors to OncoGenex and our stockholders to the fullest extent permitted by the DGCL. The inclusion of this provision in our certificate of incorporation may reduce the likelihood of derivative litigation against directors and may discourage or deter stockholders or management from bringing a lawsuit against directors for breach of their duty of care.

Our bylaws provide that special meetings of stockholders can be called only by the board of directors, the Chairman of the board of directors or the President. Stockholders are not permitted to call a special meeting and cannot require the board of directors to call a special meeting.

We have a stockholder rights plan that may have the effect of discouraging unsolicited takeover proposals. Specifically, the rights issued thereunder could cause significant dilution to a person or group that attempts to acquire us on terms not approved in advance by our board of directors. In addition, our constating documents contain provisions that may discourage unsolicited takeover proposals that stockholders may consider to be in their best interests. These provisions include the ability of our board of directors to designate the terms of and issue new series of preferred stock and the ability of our board of directors to amend the bylaws without stockholder approval.

We are subject to Section 203 of the DGCL, which prohibits a Delaware corporation from engaging in any "business combination" with an "interested stockholder," for a period of three years after the date of the transaction in which a person became an "interested stockholder," unless:

- prior to such date the board of directors of the corporation approved either the "business combination" or the transaction that resulted in the stockholder becoming an "interested stockholder;"
- upon consummation of the transaction which resulted in the stockholder becoming an "interested stockholder," the "interested stockholder" owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of voting shares outstanding (but not the voting shares owned by the "interested stockholder") those shares owned (1) by persons who are directors and also officers and (2) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- at or subsequent to such time the "business combination" is approved by the board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of a least 66 2/3% of the outstanding voting stock that is not owned by the "interested stockholder."

A "business combination" includes mergers, stock or asset sales and other transactions resulting in a financial benefit to the "interested stockholders." An "interested stockholder" is a person who, together with affiliates and associates, owns (or within three years, did own) 15% or more of the corporation's voting stock. Although Section 203 permits us to elect not to be governed by its provisions, we have not made this election. As a result of the application of Section 203, potential acquirers of OncoGenex may be discouraged from attempting to effect an acquisition transaction with us, thereby possibly depriving holders of our securities of certain opportunities to sell or otherwise dispose of such securities at above-market prices pursuant to such transactions.

LEGAL MATTERS

Dorsey & Whitney, LLP, Seattle, Washington, will issue an opinion about certain legal matters with respect to the securities. Any underwriters or agents will be advised about legal matters relating to any offering by their own counsel.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2008, as set forth in its report, which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on its authority as experts in accounting and auditing.

OncoGenex Pharmaceuticals, Inc.

3,174,602 Shares of Common Stock
Warrants to Purchase up to 1,587,301 Shares of Common Stock

PROSPECTUS SUPPLEMENT

October 19, 2010

Stifel Nicolaus Weisel

Needham & Company, LLC

Rodman & Renshaw, LLC

Wedbush PacGrow Life Sciences