Table of Contents

Filed Pursuant to Rule 424(b)(5)
Registration No. 333-184829

PROSPECTUS SUPPLEMENT TO PROSPECTUS DATED NOVEMBER 30, 2012

OncoGenex Pharmaceuticals, Inc.

$16,300,000 in Shares of Common Stock
956,938 of Series A-1 Units consisting of Common Stock and Warrants
(239,234 Shares of Common Stock Underlying the Warrants)

Pursuant to this prospectus supplement and the accompanying prospectus, we are offering up to $16,000,000 in shares of our common stock, par value $0.001 per share, 956,938 of our Series A-1 Units and 126,582 shares of our common stock to Lincoln Park Capital Fund, LLC, or LPC, under a purchase agreement dated April 30, 2015, or the Purchase Agreement.

The securities being offered include:

- 126,582 shares of common stock valued at $2.37 per share to be issued to LPC as Commitment Shares, in consideration for entering into the Purchase Agreement;
- 956,938 Series A-1 Units, with each Series A-1 unit consisting of one share of common stock, par value $0.001 per share, and a Series A-1 warrant to purchase one-quarter of one share of common stock, that LPC is purchasing for gross proceeds of $2,000,000 on the date of this prospectus supplement, which we refer to as the "Initial Purchase;"
- 239,234 shares of common stock underlying the Series A-1 warrants; and
- Up to $16,000,000 of shares of common stock that may be sold from time to time after the Initial Purchase, at the Company's sole discretion, to LPC over the next 24 months in accordance with the Purchase Agreement.

This prospectus supplement and the accompanying prospectus also cover the resale of the shares of common stock andSeries A-1 warrants by LPC to the public.

Our common stock is listed on The NASDAQ Capital Market under the symbol "OGXI." On April 29, 2015, the last reported sale price of our common stock on The NASDAQ Capital Market was $2.09 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.

Under the registration statement to which this prospectus supplement forms a part, we may not sell our securities in a primary offering with a value exceeding one-third of our public float in any 12-month period (unless our public float rises to $75.0 million or more). As of March 4, 2015, the aggregate market value of our outstanding common stock held by non-affiliates, or public float, was approximately $58.8 million, based on 22,679,086 shares of outstanding common stock, of which approximately 215,393 shares were held by affiliates, and a price of $2.62 per share, which was the last reported sale price of our common stock on The NASDAQ Capital Market on March 4, 2015. We have not offered any securities pursuant to General Instruction I.B.6. of Form S-3 in the prior 12-month period that ends on and includes the date of this prospectus.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. SEE "RISK FACTORS" BEGINNING ON PAGE S-8 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.

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.

The date of this prospectus supplement is April 30, 2015

TABLE OF CONTENTS

	Page No.
Prospectus Supplement	
About This Prospectus Supplement	S-1
Note Regarding Forward-Looking Statements	S-2
Prospectus Supplement Summary	S-3
Risk Factors	S-8
Use of Proceeds	S-10
Dilution	S-11
Description of Securities We Are Offering	S-12
Plan of Distribution	S-14
Legal Matters	S-17
Experts	S-17
Where You Can Find More Information	S-17
Incorporation of Certain Documents by Reference	S-18
Accompanying Prospectus	
About This Prospectus	1
Prospectus Summary	2
Ratio of Earnings to Fixed Charges	4
Risk Factors	5
Where You Can Find More Information	5
Incorporation of Information by Reference	6
Forward-Looking Statements	7
Use of Proceeds	8
Selected Financial Data	8
Plan of Distribution	9
Description of Capital Stock	11
Description of Debt Securities	13
Description of Warrants	21
Certain Provisions of Delaware Law, the Company's Certificate of Incorporation and Bylaws, and the Company's Stockholder Rights Plan	23
Legal Matters	25
Experts	25

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 Lincoln Park Capital Fund, LLC, or LPC, has 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, including the documents incorporated herein by reference, is the prospectus supplement, which describes the specific terms of this offering. The second part, including the documents incorporated therein by reference, is the accompanying prospectus, which 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, the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus, 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.

Market data and industry statistics used throughout this prospectus supplement, the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus 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 documents incorporated by reference into this prospectus supplement and the accompanying prospectus include 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 this prospectus supplement and the accompanying prospectus contain "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 future financial and operating results, 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 prospectus supplement, the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. 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:

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

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. Factors that might cause such a difference include those discussed in the section entitled "Risk Factors," as well as those discussed in our Annual Report on Form 10-K and in our Quarterly Report on Form 10-Q. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this prospectus supplement or, in the case of the accompanying prospectus and the documents referred to or incorporated by reference, the date of those documents. You are advised to consult any additional disclosures we have made or will make in our reports to the Securities and Exchange Commission, or SEC, on Forms 10-K, 10-Q and 8-K.

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 prospectus supplement 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.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights certain information about us, this offering and information appearing elsewhere in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. 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 in the section entitled "Risk Factors" in this prospectus supplement, and the financial statements and other information incorporated by reference into this prospectus supplement and the accompanying prospectus when making an investment decision.

OncoGenex Pharmaceuticals, Inc.

We are a biopharmaceutical company committed to the development and commercialization of new therapies that address treatment resistance in cancer patients. We have three product candidates in our pipeline: custirsen, apatorsen and OGX-225, each of which has a distinct mechanism of action and represents a unique opportunity for cancer drug development. Of the product candidates in our pipeline, custirsen and apatorsen are clinical-stage assets.

Our product candidates custirsen, apatorsen and OGX-225 focus on mechanisms of treatment resistance in cancer patients and are designed to block the production of specific proteins that we believe promote treatment resistance and 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, thereby rendering the tumor cells more susceptible to attack with a variety of cancer therapies. We believe this approach will increase survival time and improve the quality of life for cancer patients.

Recent Developments

Agreement with Lincoln Park Capital Fund, LLC

On April 30, 2015, we entered into a Purchase Agreement with Lincoln Park Capital Fund, LLC, or LPC, which provides that, upon the terms and subject to the conditions and limitations set forth therein, (i) we have the right to sell to LPC up to $16,000,000 of shares of our common stock from time to time at our sole discretion, and (ii) LPC will purchase 956,938 Series A-1 units as described below, which we refer to as the "Initial Purchase." In addition, in consideration for LPC's entry into the Purchase Agreement, we have agreed to issue to LPC 126,582 shares of our common stock value at approximately $2.37 per share, which we refer to as the "Commitment Shares."

We are filing this prospectus supplement with regard to the offering of up to $16,300,000 of shares of our common stock, which consists of (i) the 126,582 Commitment Shares and (ii) additional shares of common stock with an aggregate offering price of up to $16,000,000 which we may sell from time to time, in our sole discretion, to LPC over the next 24 months subject to the conditions and limitations in the Purchase Agreement. Additionally, we are filing this prospectus supplement with regard to the offering of 956,938 Series A-1 units, with each Series A-1 unit consisting of one share of common stock and a Series A-1 warrant to purchase one-quarter of one share of common stock, that LPC is purchasing as an Initial Purchase pursuant to the Purchase Agreement. This prospectus supplement also relates to the offering of the shares of common stock issuable upon exercise of the Series A-1 warrants.

Under the Purchase Agreement, as often as every other business day during the 24-month term of the Purchase Agreement, we, in our sole option and subject to the conditions and limitations in the Purchase Agreement, may direct LPC to purchase up to 125,000 shares of common stock with such amounts increasing as the closing sale price of our common stock as reported on The NASDAQ Capital Market increases. This amount shall increase to 175,000 shares of common stock if the closing sale price of our stock is greater than $3.00 per share and up to 225,000 shares of common stock if the closing sale price is greater than $5.00. We refer to each such purchase as a "Regular Purchase."

Additionally, provided the closing sale price of our common stock as reported on The NASDAQ Capital Market is not below $1.50 per share, we may direct LPC to purchase on the following business day up to the lesser of (i) 750,000 shares of common stock or (ii) 30% of the trading volume on the date of such purchase. We refer to each such purchase as an “Accelerated Purchase” and the date of such purchases as the “Accelerated Purchase Date.” The purchase price for the additional shares is the lower of:

- the closing sale price of our common stock as reported on The NASDAQ Capital Market on the Accelerated Purchase Date; or
- 97% of the Accelerated Purchase Date’s volume weighted average price.

The purchase price will be equitably adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction occurring during the business days used to compute the purchase price.

There are no trading volume requirements or restrictions under the Purchase Agreement, but there are limitations on the number of shares we can direct LPC to purchase, as described below. We will control the timing and amount of any sales of our common stock to LPC, and we may at any time, in our sole discretion terminate the Purchase Agreement without fee, penalty or cost, upon one business day notice. LPC may not assign or transfer its rights or obligations under the Purchase Agreement.

The Purchase Agreement limits our sales of shares of common stock to LPC to the lesser of: (a) the maximum number of shares of our common stock that we may issue without breaching our obligations under applicable rules of The NASDAQ Stock Market or obtaining stockholder approval under such rules, and (b) the maximum number of shares of our common stock that we may issue without exceeding the limitations set forth in General Instruction I.B.6. of Form S-3 and the interpretive guidance of the SEC applicable to these transactions (such lesser number of shares is referred to as the “Maximum Share Cap”). The Purchase Agreement also prohibits us from directing LPC to purchase any shares of common stock if those shares, when aggregated with all other shares of our common stock then beneficially owned by LPC and its affiliates, would result in LPC and its affiliates having beneficial ownership, at any single point in time, of more than 9.99% of the then total outstanding shares of our common stock (as calculated pursuant to Section 13(d) of the Exchange Act and Rule 13d-3 thereunder).

The number of shares ultimately offered for sale by LPC depends on the number of shares purchased by LPC under the Purchase Agreement.

The following table sets forth the effect of issuance and the amount of proceeds we would receive from LPC from the sale of shares that are registered in this offering at varying purchase prices (without accounting for certain fees and expenses):

Assumed Average Purchase Price	Maximum Number of Registered Shares to be Sold to LPC(1)(2)	Percentage of Outstanding Shares After Giving Effect to the Sale of Shares to LPC(3)	Gross Proceeds from the Sale of Shares to LPC Under the Purchase Agreement
$1.00	16,000,000	40.2%	$16,000,000
$2.00	8,000,000	25.2%	$16,000,000
$2.09(4)	7,655,502	24.4%	$16,000,000
$3.50	4,571,429	16.1%	$16,000,000
$5.00	3,200,000	11.9%	$16,000,000

(1) If we seek to issue shares, including shares from other transactions but not included in this offering that may be aggregated with this transaction under the applicable rules of The NASDAQ Stock Market, in excess of 4,535,817, or 19.99% of the total common stock outstanding as of the date of the Purchase Agreement, we

may be required to seek stockholder approval in order to be in compliance with the rules of The NASDAQ Stock Market.

(2) Does not include the 956,938 Series A-1 units issued to LPC as the Initial Purchase or the 126,582 Commitment Shares to be issued to LPC as consideration for LPC entering into the Purchase Agreement.

(3) The denominator is based on 22,679,086 shares outstanding as of April 29, 2015, adjusted to include the issuance of 956,938 shares of common stock included in the Series A-1 units and the 126,582 Commitment Shares to be issued to LPC as consideration for its commitment to purchase our common stock pursuant to the Purchase Agreement, and the number of shares set forth in the adjacent column which we would have sold to LPC. The numerator is based on the number of shares issuable under the Purchase Agreement at the corresponding assumed purchase price set forth in the adjacent column.

(4) The closing sale price of our common stock as reported by The NASDAQ Capital Market on April 29, 2015.

Termination of Sales Agreement with MLV & Co. LLC

On June 18, 2013, we entered into a sales agreement, the Sales Agreement, with MLV & Co. LLC to sell shares of our common stock having aggregate sales proceeds of $25,000,000, from time to time, through an “at the market” equity offering program under which MLV & Co. LLC acted as sales agent. On April 27, 2015, we terminated the “at the market” offering and the agreement with MLV & Co. LLC.

Corporate Information

We were incorporated in California in October 1991 and subsequently reorganized as a Delaware corporation in March 1995. Our principal executive offices are located 19820 North Creek Parkway, Suite 201, Bothell, Washington 98011, 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

Common stock offered in this offering	Up to $16,000,000 of shares of common stock, that, in our sole discretion, we may sell to Lincoln Park Capital Fund, LLC, or LPC, over the next 24 months in accordance with the terms and subject to the conditions and limitations of the Purchase Agreement, and 126,582 shares of common stock that we are issuing to LPC as consideration for LPC's entry into the Purchase Agreement.
Series A-1 units offered in this offering	956,938 Series A-1 units, with each Series A-1 unit consisting of one share of common stock and a Series A-1 warrant to purchase one-quarter of one share of common stock at an initial exercise price of $2.40 per share. This prospectus supplement also relates to the offering of the shares of common stock issuable upon exercise of the Series A-1 warrants. Each Series A-1 warrant will be exercisable at any time after six months following the date of issuance until the date that is five years and six months after the issuance of the Series A-1 warrants. See the section entitled "Description of Securities We are Offering—Warrants."
Shares of common stock to be outstanding immediately after this offering	Up to 31,360,448 shares, assuming an average sales price of $2.09 per share for the remaining $16,000,000 that may be sold from time to time, which assumed average sales price was the closing price of our common stock on April 29, 2015 as reported on The NASDAQ Capital Market, and including LPC's Initial Purchase of 956,938 Series A-1 units sold and the 126,582 shares of common stock to be issued to LPC as consideration for LPC's entry into the Purchase Agreement. The actual number of shares issued and outstanding will vary depending on the sale prices of shares sold to LPC in this offering. This number of shares of common stock outstanding assumes that none of the Series A-1 warrants issued in the offering are exercised.
Use of proceeds	We intend to use the net proceeds we receive from this offering to advance our proprietary product candidates custirsen and apatorsen as well as for general corporate purposes. We may also potentially use a portion of the net proceeds to advance our pre-clinical product candidates or to in-license or acquire additional clinical or pre-clinical assets. See the section entitled "Use of Proceeds."
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 Series A-1 warrants, and we do not expect a market to develop. In addition, we do not intend to apply to list the Series A-1 warrants on any national securities exchange. The Series A-1

	warrants are immediately separable from the shares of our common stock being offered as part of the Series A-1 units.
Risk factors	This investment involves a high degree of risk. See the section entitled "Risk Factors."

The foregoing table is based on 22,621,426 shares outstanding as of December 31, 2014, assumes the issuances and sales described above and excludes:

- 1,283,419 shares of common stock issuable upon the exercise of options outstanding as of December 31, 2014, at a weighted average exercise price of $10.55 per share;
- 680,201 shares of common stock subject to restricted stock units outstanding as of December 31, 2014;
- 1,587,301 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2014, with an exercise price of $20.00 per share;
- 3,450,201 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2014, with an exercise price of $4.00 per share; and
- 943,157 shares of common stock reserved for future issuance under our 2010 Performance Incentive Plan as of December 31, 2014; and
- 239,234 shares of common stock issuable upon exercise of the Series A-1 warrants offered by this prospectus supplement.

Unless otherwise indicated, the information contained in this prospectus supplement reflects an assumed average offering price of $2.09 per share, which price was the closing price of our common stock on April 29, 2015, as reported on The NASDAQ Capital Market.

RISK FACTORS

An investment in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should consider carefully the risks and uncertainties described below and discussed in our annual report on Form 10-K for the fiscal year ended December 31, 2014, which is incorporated by reference into this prospectus supplement and the accompanying prospectus in its entirety, together with other information in this prospectus supplement, the accompanying prospectus, the documents incorporated by reference and any free writing prospectus that we have authorized for use in connection with this offering. The risks described in these documents are not the only ones we face, but those that we currently consider to be material. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors that could have material adverse effects on our future results. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could be seriously harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment. Please also read carefully the section above entitled "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 we receive from this offering to advance our proprietary product candidates custirsen and apatorsen as well as for general corporate purposes. We may also potentially use a portion of the net proceeds to advance our pre-clinical product candidates or to in-license or acquire additional clinical or pre-clinical assets. 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.

The sale or issuance of our common stock to Lincoln Park Capital Fund, LLC, or LPC, will dilute our existing shareholders, and the sale of the shares of common stock acquired by LPC, or the perception that such sales may occur, could cause the price of our common stock to fall.

This prospectus supplement relates to up to $18,300,000 of Series A-1 units and common stock that we may sell to LPC pursuant to the terms of the Purchase Agreement. We can elect to direct LPC to make purchases of common stock of up to $16,000,000 in our sole discretion. Sales of our common stock, if any, to LPC will depend upon market conditions, our cash needs and other factors to be determined by us. Therefore, other than the Initial Purchase of 956,938 of our Series A-1 units upon the commencement of this offering and the 126,582 shares to be issued to LPC as Commitment Shares, LPC may ultimately purchase all, some or none of the shares of our common stock offered pursuant to this prospectus supplement. The purchase price for the common stock to be sold to LPC pursuant to the Purchase Agreement will fluctuate based on the closing price of our common stock as reported on The NASDAQ Capital Market. After LPC has acquired such shares, LPC may sell all, some or none of such shares in the market or in other transactions. The number of shares ultimately offered for sale by LPC depends on the number of shares we direct LPC to purchase under the Purchase Agreement. Depending upon market liquidity at the time, a sale of shares by us to LPC pursuant to the Purchase Agreement or the resale of shares by LPC at any given time could cause the trading price of our common stock to decline. The sale of a substantial number of shares of our common stock under this offering, or anticipation of such sales, could make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise wish to effect sales.

Sales to LPC by us under the Purchase Agreement may result in substantial dilution to the interests of other holders of our common stock. See "Dilution" for a more detailed discussion of the dilution you will incur in connection with this offering.

Table of Contents

There is no public market for the Series A-1 warrants to purchase common stock in this offering.

There is no established public trading market for the Series A-1 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 Series A-1 warrants on any national securities exchange or other trading market. Without an active market, the liquidity of the Series A-1 warrants will be limited.

The exercise of our outstanding options and warrants and the vesting of our outstanding restricted stock units will dilute stockholders and could decrease our stock price.

The exercise of our outstanding options and warrants and the vesting of our outstanding restricted stock units 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 our securities, and could adversely impact the terms under which we could obtain additional equity capital. Exercise of outstanding options and warrants, vesting of outstanding restricted stock units or any future issuance of additional shares of common stock or other equity securities, including but not limited to options, warrants, restricted stock units or other derivative securities convertible into our common stock, may result in significant dilution to our stockholders and may decrease our stock price.

USE OF PROCEEDS

We estimate that the net proceeds to us from the sale of the securities offered pursuant to this prospectus will be up to approximately $17.9 million over an approximately 24-month period, assuming that we sell all of the shares offered under this prospectus supplement, after deducting estimated fees and expenses.

We intend to use the net proceeds we receive from this offering to advance our proprietary product candidates custirsen and apatorsen as well as for general corporate purposes. We may also potentially use a portion of the net proceeds to advance our pre-clinical product candidates or to in-license or acquire additional clinical or pre-clinical assets. Pending such uses, the net proceeds will be held in highly liquid investments.

DILUTION

Our net tangible book value as of December 31, 2014 was approximately $34.1 million, or approximately $1.51 per share of common stock based on 22,621,426 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.

After giving effect to the Initial Sale of 956,938 Series A-1 units at an offering price of $2.09 per unit, the issuance of 126,582 Commitment Shares, and the assumed issuance of 7,655,502 shares of common stock at an assumed offering price of $2.09 per share for aggregate gross proceeds of $16,000,000, and after deducting estimated fees and expenses, we would have had a net tangible book value as of December 31, 2014 of approximately $51.9 million, or $1.66 per share of common stock. This represents an immediate increase in the net tangible book value of $0.15 per share to our existing stockholders and an immediate dilution in net tangible book value of $0.43 per share to the investor in this offering. The following table illustrates this per share dilution:

Assumed public offering price per share of common stock		$2.09
Public offering price per Series A-1 unit		2.09
Net tangible book value per share as of December 31, 2014	$1.51	
Increase in net tangible book value per share attributable to the offering	0.15	
As adjusted net tangible book value per share after giving effect to the offering		1.66
Dilution in net tangible book value per share to new investor		$0.43

The foregoing table excludes:

- 1,283,419 shares of common stock issuable upon the exercise of options outstanding as of December 31, 2014, at a weighted average exercise price of $10.55 per share;
- 680,201 shares of common stock subject to restricted stock units outstanding as of December 31, 2014;
- 1,587,301 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2014, with an exercise price of $20.00 per share;
- 3,450,201 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2014, with an exercise price of $4.00 per share; and
- 943,157 shares of common stock reserved for future issuance under our 2010 Performance Incentive Plan as of December 31, 2014; and
- 239,234 shares of common stock issuable upon exercise of the Series A-1 warrants offered by this prospectus supplement.

DESCRIPTION OF SECURITIES WE ARE OFFERING

In this offering, we are offering up to $16,000,000 of shares of our common stock to LPC. We are also offering LPC an Initial Purchase of 956,938 of Series A-1 units, with each Series A-1 unit consisting of one share of common stock and a Series A-1 warrant to purchase one-quarter of one share of common stock at an initial exercise price of $2.40 per share, as well as 126,582 Commitment Shares. Each Series A-1 warrant will be exercisable at any time after six months following the date of issuance until the date that is five years and six months after the issuance of the Series A-1 warrants. Each Series A-1 unit will be sold to LPC in this offering at a price of $2.09 per unit. The Series A-1 units will not be issued or certificated. The shares of common stock and Series A-1 warrants will be issued separately but can only be purchased together in the Series A-1 units in this offering.

The shares of common stock issuable from time to time upon exercise of the Series A-1 warrants are also being offered pursuant to this prospectus supplement and the accompanying prospectus.

Common Stock

The material terms and provisions of our common stock are described in the section entitled “Description of Capital Stock” in 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 in the section entitled “Certain Provisions of Delaware Law, the Company’s Certificate of Incorporation and Bylaws and the Company’s Stockholder Rights Plan” in the accompanying prospectus.

Series A-1 Warrants

The material terms and provisions of the Series A-1 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 Series A-1 warrant, which will be filed as an exhibit to a Current Report on Form 8-K to be filed by us with the SEC in connection with this offering. You should review a copy of the form of Series A-1 warrant for a complete description of the terms and conditions applicable to the Series A-1 warrants.

The Series A-1 warrants to be issued in this offering represent the rights to purchase up to a total of 239,234 shares of common stock at an initial exercise price of $2.40 per share. Each Series A-1 warrant may be exercised at any time after six months following date of issuance until the date that is five years and six months after of the issuance of the Series A-1 warrants.

Delivery

The Series A-1 warrants to be issued in this offering will be delivered from us to the LPC or as LPC directs promptly following the closing.

Exercise

Holders of the Series A-1 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. If, any only if, at the time of exercise, our registration statement on Form S-3 is not effective for the issuance of any portion of the warrants, holders may exercise pursuant to a “cashless exercise” feature as to the portion of the warrant for which the registration statement is not then effective. 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, each Series A-1 warrant may be transferred at the option of the holders upon surrender of the warrant 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 each Series A-1 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 stockholders 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 Series A-1 warrant will have the right to receive, upon exercise of such 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 Series A-1 warrants or by virtue of a holder's ownership of shares of our common stock, the holders of the Series A-1 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 Series A-1 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 Securities Exchange Act of 1934, as amended, or 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 Series A-1 warrants may be amended with the written consent of the holders of a majority of the Series A-1 warrants then outstanding.

Listing

There is no established public trading market for the Series A-1 warrants, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the Series A-1 on any national securities exchange.

PLAN OF DISTRIBUTION

Pursuant to this prospectus supplement and the accompanying prospectus, we are offering up to $16,000,000 in shares of our common stock, par value $0.001 per share, 956,938 Series A-1 Units and 126,582 shares of our common stock to Lincoln Park Capital Fund, LLC, or LPC, under a Purchase Agreement dated April 30, 2015, or the Purchase Agreement.

The securities being offered include:

- 126,582 shares of common stock valued at $2.37 per share to be issued to LPC as Commitment Shares, in consideration for entering into the Purchase Agreement;
- An Initial Purchase of 956,938 Series A-1 Units, with each Series A-1 unit consisting of one share of common stock, par value $0.001 per share, and a Series A-1 warrant to purchase one-quarter of one share of common stock, that LPC is purchasing for gross proceeds of $2,000,000 on the date of this prospectus supplement;
- 239,234 shares of common stock underlying the Series A-1 warrants; and
- Up to $16,000,000 of shares of common stock that may be sold from time to time after the Initial Purchase, at the Company's sole discretion, to LPC over the next 24 months in accordance with the Purchase Agreement.

This prospectus supplement and the accompanying prospectus also cover the resale of the shares of common stock and the Series A-1 warrants by LPC to the public.

In consideration LPC's entry into the Purchase Agreement, we are issuing 126,582 Commitment Shares to LPC pursuant to this prospectus supplement. The Purchase Agreement provides that, upon the terms and subject to the conditions and limitations set forth therein, LPC will make an Initial Purchase of 956,938 Series A-1 units for gross proceeds of $2,000,000 on the date of this prospectus supplement and, thereafter, is irrevocably committed to purchase an aggregate of up to $16,000,000 of shares of our common stock over the 24-month term of the Purchase Agreement.

Our estimated offering expenses are approximately $130,000.

The Purchase Agreement provides that, from time to time over the term of the Purchase Agreement, on any business day, and as often as every other business day, and in our sole discretion, we may direct LPC to purchase up to 125,000 shares of our common stock, which we refer to as a "Regular Purchase," except that the aggregate price of any individual Regular Purchase shall not exceed $1,000,000 without the mutual consent of the parties on the purchase date. The maximum number of shares in any individual Regular Purchase will increase to 175,000 shares if the closing sale price of our common stock as reported on The NASDAQ Capital Market on the purchase date is not below $3.00 and to 225,000 shares if the closing sale price of our common stock as reported on The NASDAQ Capital Market on the purchase date is not below $5.00. The purchase price per share of common stock to be purchased by LPC in a Regular Purchase will be the lower of (i) the lowest sale price of our common stock on the purchase date as reported on The NASDAQ Capital Market, and (ii) the arithmetic average of the three lowest closing sale prices of our common stock during the ten consecutive business days prior to the purchase date as reported on The NASDAQ Capital Market.

Additionally, provided the closing sale price of our common stock as reported on The NASDAQ Capital Market of our common stock is not below $1.50 per share, we can direct LPC to purchase on the following business day up to the lesser of (i) 750,000 shares of common stock, or (ii) 30% of the trading volume on the date of such a purchase. We refer to each such purchase as an "Accelerated Purchase" and the date of such purchases as the "Accelerated Purchase Date." The purchase price for the additional shares is the lower of:

- the closing sale price of our common stock as reported on The NASDAQ Capital Market on the Accelerated Purchase Date; or
- 97% of the Accelerated Purchase Date's volume weighted average price.

The Purchase Agreement limits our sales of shares of common stock to LPC to the lesser of: (a) the maximum number of shares of our common stock that we may issue without breaching our obligations under applicable rules of the NASDAQ Capital Market or obtaining stockholder approval under such rules, and (b) the maximum number of shares of our common stock that we may issue without exceeding the limitations set forth in General Instruction I.B.6. of Form S-3 and the interpretive guidance of the SEC applicable to these transactions (such lesser number of shares is referred to as the “Maximum Share Cap”). The Purchase Agreement also prohibits us from directing LPC to purchase any shares of common stock if those shares, when aggregated with all other shares of our common stock then beneficially owned by LPC and its affiliates, would result in LPC and its affiliates having beneficial ownership, at any single point in time, of more than 9.99% of the then total outstanding shares of our common stock (as calculated pursuant to Section 13(d) of the Exchange Act and Rule 13d-3 thereunder).

We may suspend the sale of shares to LPC pursuant to this prospectus supplement for certain periods of time for certain reasons, including if this prospectus supplement is required to be supplemented or amended to include additional material information.

This offering will terminate on the date that all shares offered by this prospectus supplement have been sold or, if earlier, the expiration or termination of the Purchase Agreement. We have the right to terminate the Purchase Agreement at any time, at no cost to us, upon one business day’s notice to LPC. In the event bankruptcy proceedings are initiated by or against us, the Purchase Agreement will automatically terminate without action of any party.

LPC is an “underwriter” within the meaning of Section 2(a)(11) of the Securities Act. LPC has informed us that it will use a broker-dealer unaffiliated with LPC to effectuate all resales, if any, of the shares of common stock that it may purchase from us pursuant to the Purchase Agreement. Such sales will be made on The NASDAQ Capital Market at prices and at terms then prevailing or at prices related to the then current market price. Each such unaffiliated broker-dealer will be an underwriter within the meaning of Section 2(a)(11) of the Securities Act. LPC has informed us that each such broker-dealer will receive commissions from LPC that will not exceed customary brokerage commissions.

We know of no existing arrangements between LPC and any other stockholder, broker, dealer, underwriter or agent relating to the sale or distribution of the shares offered by this prospectus supplement. At the time a particular offer of shares is made, a prospectus supplement, if required, will be distributed that will set forth the names of any agents, underwriters or dealers and any compensation from the selling stockholder, and any other required information.

We have entered into an agreement with Academy Securities, Inc., a registered broker-dealer and FINRA member, pursuant to which Academy Securities, Inc. agreed to act as the placement agent in connection with the purchase agreement with Lincoln Park. Academy Securities, Inc. will receive $10,000 as compensation in connection with its services in connection herewith, upon receipt of written confirmation from the Financial Industry Regulatory Authority, Inc., or FINRA, to the effect that FINRA’s Corporate Finance Department has determined not to raise any objection with respect to the fairness or reasonableness of the terms of the Purchase Agreement or the transactions contemplated thereby. We also agreed to reimburse Academy Securities, Inc. for reasonable out of pocket expenses incurred in connection with its services up to an aggregate of $5,000.

We have agreed to indemnify LPC, Academy Securities, Inc. and certain other persons against certain liabilities in connection with the offering of shares of common stock offered hereby, including liabilities arising under the Securities Act or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities. Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers, and controlling persons, we have been advised that in the opinion of the SEC this indemnification is against public policy as expressed in the Securities Act and is therefore, unenforceable.

LPC has represented to us that at no time prior to the date of the Purchase Agreement has LPC or its agents, representatives or affiliates engaged in or effected, in any manner whatsoever, directly or indirectly, any short

sale (as such term is defined in Rule 200 of Regulation SHO of the Exchange Act) of our common stock or any hedging transaction. LPC has agreed that during the term of the Purchase Agreement it, its agents, representatives or affiliates will not enter into or effect, directly or indirectly, any of the foregoing transactions.

We have advised LPC that it is required to comply with Regulation M promulgated under the Exchange Act, to the extent applicable to this offering. With certain exceptions, Regulation M precludes the selling stockholder, any affiliated purchasers, and any broker-dealer or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the shares offered by this prospectus supplement.

Transfer Agent

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

Listing of Common Stock

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

LEGAL MATTERS

Our counsel, Fenwick & West LLP, Seattle, Washington, will pass upon the validity of the securities being offered hereby. LPC is being represented in connection with this offering by Greenberg Traurig, LLP, New York, New York.

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, 2014, and the effectiveness of internal control over financial reporting as of December 31, 2014, as set forth in their 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 their 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 year ended December 31, 2014, filed with the SEC on March 26, 2015;
- our Current Reports on Form 8-K filed with the SEC on February 12, 2015, April 27, 2015 and April 30, 2015;
- our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 16, 2015;
- 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; and
- and the description of our preferred stock purchase rights contained in our registration statement on Form 8-A filed with the SEC on July 25, 2002 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 into this prospectus supplement and accompanying prospectus, 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: Sandra Thomson, 19820 North Creek Parkway, Suite 201, Bothell, Washington 98011, telephone number (425) 686-1500.

Table of Contents

PROSPECTUS

$100,000,000

OncoGenex Pharmaceuticals, Inc.

Common Stock, Preferred Stock,
Debt Securities and Warrants

We may offer and sell common stock, preferred stock, debt securities, and warrants, or 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 is not an offer and 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.” On November 7, 2012, the last reported sale price of our common stock on the NASDAQ Capital Market was $12.08 per share.

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 5 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 November 30, 2012

TABLE OF CONTENTS

	PAGE
ABOUT THIS PROSPECTUS	1
PROSPECTUS SUMMARY	2
RATIO OF EARNINGS TO FIXED CHARGES	4
RISK FACTORS	5
WHERE YOU CAN FIND MORE INFORMATION	5
INCORPORATION OF INFORMATION BY REFERENCE	6
FORWARD-LOOKING STATEMENTS	7
USE OF PROCEEDS	8
SELECTED FINANCIAL DATA	8
PLAN OF DISTRIBUTION	9
DESCRIPTION OF CAPITAL STOCK	11
DESCRIPTION OF DEBT SECURITIES	13
DESCRIPTION OF WARRANTS	21
CERTAIN PROVISIONS OF DELAWARE LAW, THE COMPANY'S CERTIFICATE OF INCORPORATION AND BYLAWS, AND THE COMPANY'S STOCKHOLDER RIGHTS PLAN	23
LEGAL MATTERS	25
EXPERTS	25

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, 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."

You should rely only on the information contained in or incorporated by reference into this prospectus or any applicable prospectus supplement. No dealer, salesperson or any other person is authorized to give any information or to make any representation other than the information and representations contained in or incorporated by reference into this prospectus or any applicable prospectus supplement. If different information is given or different representations are made, you may not rely on that information or those representations as having been authorized by us. You may not imply from the delivery of this prospectus and any applicable prospectus supplement, nor from a sale made under this prospectus and any applicable prospectus supplement, that our affairs are unchanged since the date of this prospectus and any applicable prospectus supplement or that the information contained in any document incorporated by reference is accurate as of any date other than the date of the document incorporated by reference, regardless of the time of delivery of this prospectus and any applicable prospectus supplement or any sale of a security. This prospectus and any applicable prospectus supplement may only be used where it is legal to sell the securities.

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

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.

PROSPECTUS SUMMARY

This summary may not contain all the information that you should consider before investing in securities. You should read the entire prospectus and the information incorporated by reference in this prospectus carefully, including "Risk Factors" and the financial data and related notes and other information incorporated by reference, before making an investment decision.

Company Overview

We are a biopharmaceutical company committed to the development and commercialization of new therapies that address treatment resistance in cancer patients. We have three product candidates in our pipeline, custirsen, OGX-427, and OGX-225, each of which has a distinct mechanism of action and represents a unique opportunity for cancer drug development. Of the product candidates in our pipeline, custirsen and OGX-427 are clinical-stage assets.

Our product candidates custirsen, OGX-427, and OGX-225 focus on mechanisms of treatment resistance in cancer patients. These products are designed to block 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, thereby rendering the tumor cell more susceptible to attack with a variety of cancer therapies. We believe this approach will increase survival time and improve the quality of life for cancer patients.

The Securities We May Offer

With this prospectus, we may offer common stock, preferred stock, debt securities, and warrants, or any combination of the foregoing. The aggregate offering price of securities that we offer with this prospectus will not exceed $100,000,000. Each time we offer securities with this prospectus, we will provide offerees with a prospectus supplement that will contain the specific terms of the securities being offered. The following is a summary of the securities we may offer with this prospectus.

Common Stock

We may offer shares of our common stock, par value $0.001 per share.

Preferred Stock

We may offer shares of our preferred stock, par value $0.001 per share, in one or more series. Our board of directors will determine the dividend, voting, conversion and other rights of the series of shares of preferred stock being offered.

Debt Securities

We may offer general obligations, which may be secured or unsecured, senior or subordinated and convertible into shares of our common stock or preferred stock. In this prospectus, we refer to the senior debt securities and the subordinated debt securities together as the "debt securities." The senior debt securities will have the same rank as all of our other indebtedness that is not subordinated. The subordinated debt securities will be entitled to payment only after payment on our senior debt. In addition, the subordinated debt securities will be effectively subordinated to creditors. Our board of directors will determine the terms of each series of debt securities being offered.

Table of Contents

We will issue the debt securities under an indenture or indentures between us and a trustee. In this document, we have summarized general features of the debt securities from the indentures. We encourage you to read the indentures, which are exhibits to the registration statement of which this prospectus is a part.

Warrants

We may offer warrants for the purchase of debt securities, shares of preferred stock or shares of common stock. Our board of directors will determine the terms of the warrants.

* * *

We were incorporated in the state of California in October 1991 and subsequently reorganized as a Delaware corporation in March 1995. Our principal executive offices are located at 1522 217th Place SE, Suite 100, Bothell, Washington 98021; the telephone number is (425) 686-1500.

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,					Nine Months Ended September 30,
	2007	2008	2009	2010	2011	2012
Ratio of earnings to fixed charges(1)	—	—	—	—	—	—
Deficiency of earnings to fixed charges(2)	(7,823)	(10,691)	(2,465)	(15,584)	(14,673)	(16,995)

(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.

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 Part II, Item 1A, "Risk Factors," in our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2012, which is incorporated herein by reference, and may be amended, supplemented, or superseded from time to time by other reports we file with the SEC 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, or the Exchange Act, and are required to file annual, quarterly, and other reports, proxy statements, and other information with the SEC. You may inspect and copy these reports, proxy statements, and other information at the public reference facilities maintained by the SEC in Washington, D.C., 100 F Street N.E., Washington, D.C. 20549. Copies of such materials can be obtained from the SEC's public reference section at prescribed rates. You may obtain information on the operation of the public reference rooms by calling the SEC at (800) SEC-0330. Additionally, the SEC 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 SEC'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 SEC allows us to "incorporate by reference" information that we file with the SEC, 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 SEC will automatically update and supercede this information. We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14, or 15(d) of the Exchange Act prior to the termination of any offering of securities made by this prospectus:

- Our Annual Report on Form 10-K for the year ended December 31, 2011, including certain information incorporated by reference therein from our Definitive Proxy Statement for our 2012 annual meeting of stockholders;
- Our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2012, June 30, 2012 and September 30, 2012;
- Our current reports on Form 8-K filed on March 16, 2012 and June 1, 2012;
- 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;
- The description of our preferred stock purchase rights contained in our registration statement on Form 8-A filed with the Commission on July 25, 2002 under Section 12 of the Exchange Act, including any amendment or report filed for the purpose of updating such description; and
- Filings we make with the SEC pursuant to the Exchange Act after the date of the initial registration statement, of which this prospectus is a part, and prior to the effectiveness of the registration statement.

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: Michelle Burris, 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 SEC at the SEC'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 prospectus 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 prospectus and documents incorporated herein by reference contain "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 future financial and operating results, 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 prospectus or in documents incorporated by reference into this prospectus . 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:

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

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. Factors that might cause such a difference include those discussed in Item 1A "Risk Factors" in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2012, as well as those discussed in this prospectus and in the documents incorporated by reference into this prospectus. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this prospectus 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 prospectus 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.

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, long-term, investment-grade, interest-bearing securities.

SELECTED FINANCIAL DATA

The following table sets forth certain of our historical selected financial information. Effective January 1, 2012, we adopted the Financial Accounting Standards Board's Accounting Standards Update, or ASU, No. 2011-05, *Comprehensive Income (Topic 220): Presentation of Comprehensive Income,* or ASU 2011-05, which requires an entity to present the total of comprehensive income (loss), the components of net income (loss) and the components of other comprehensive income (loss), either in a single continuous statement of comprehensive income or in two separate but consecutive statements. Also effective January 1, 2012, we adopted ASU 2011-12, *Comprehensive Income (Topic 220)*, or ASU 2011-12, which defers the requirement to present reclassification adjustments from other comprehensive income to net income on the face of the financial statements, pending further deliberation by the FASB.

ASU 2011-05 and ASU 2011-12 revise the manner in which entities present comprehensive income (loss) in their financial statements. The following selected financial information revises historical information to illustrate the new presentation required by ASU 2011-05 and ASU 2011-12 for the periods presented.

The following table sets forth our historical selected consolidated financial information as of the dates and for the periods indicated.

Statements of Comprehensive Loss

	Year ended December 31,		
	2011	**2010**	**2009**
(in thousands)			
Loss for the period	$14,673	$12,584	$5,476
Gross Unrealized loss on cash equivalents and marketable securities	(11)	(35)	—
Gross Unrealized gain on cash equivalents and marketable securities	7	—	—
Comprehensive loss	$14,677	$12,619	$5,476

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 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 short positions by making purchases in the open market or by exercising their option to purchase additional securities. 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. 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.

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 public offering price; and
- other facts material to the transaction.

We will bear all or 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 30,000,000 shares. Those shares consist of 25,000,000 shares of common stock, par value of $0.001 per share, and 5,000,000 shares of preferred stock, par value of $0.001 per share. As of September 30, 2012, there were 14,646,403 shares of common stock issued and outstanding. In addition, as of September 30, 2012, we had reserved, pursuant to various plans, 1,273,770 shares of our common stock for issuance upon exercise of stock options by our employees, directors, officers and consultants, of which 790,494 were reserved for outstanding options and 483,276 were available for future option grants, and, as of September 30, 2012, there were exercisable warrants outstanding to purchase 1,587,301 shares of our common stock at an exercise price of $20.00 per share, which expire in October 2015. 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 our certificate of incorporation and bylaws which may have the effect of delaying, deferring or preventing changes in control of the Company.

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

The following description of the terms of the debt securities summarizes some general terms that will apply to the debt securities. The description is not complete, and we refer you to the indentures which we filed with the SEC as exhibits to the registration statement of which this prospectus is a part.

General

The debt securities will be either our senior debt securities or our subordinated debt securities. We will issue our debt securities under one or more separate indentures between us and a trustee. Senior debt securities will be issued under a senior indenture and subordinated securities will be issued under a subordinated indenture. A copy of the form of each type of indenture has been filed as an exhibit to the registration statement of which this prospectus is a part. The indentures may be supplemented by one or more supplemental indentures. We refer to the senior indenture and the subordinated indenture, together with any supplemental indentures, as the "indentures" throughout the remainder of this prospectus.

The indentures do not limit the amount of debt securities that we may issue. The indentures provide that debt securities may be issued up to the principal amount that we authorize from time to time. The senior debt securities will be secured or unsecured and will have the same rank as all of our other indebtedness that is not subordinated. The subordinated debt securities will be secured or unsecured and will be subordinated and junior to all senior indebtedness. The terms of the indentures do not contain any covenants or other provisions designed to give holders of any debt securities protection against changes in our operations, financial condition or transactions involving us, but those provisions may be included in the documents that include the specific terms of the debt securities.

We may issue the debt securities in one or more separate series of senior debt securities and subordinated debt securities. The prospectus supplement relating to the particular series of debt securities being offered will specify the particular amounts, prices and terms of those debt securities. These terms may include:

- the title of the debt securities;
- any limit upon the aggregate principal amount of the debt securities;
- if other than United States dollars, the currency or currencies, including the euro and other composite currencies, in which payments on the debt securities will be payable and whether the holder may elect payment to be made in a different currency;
- the date or dates when payments on the principal must be made or the method of determining that date or dates;
- interest rates, and the dates from which interest, if any, will accrue, and the dates when interest is payable and the maturity;
- the right, if any, to extend the interest payment periods and the duration of the extensions;
- the places where payments may be made and the manner of payments;
- any mandatory or optional redemption provisions;
- any subordination provisions;
- the denominations in which debt securities will be issued;
- the terms applicable to any debt securities issued at a discount from their stated principal amount;
- the currency or currencies of payment of principal or interest and the period, if any, during which a holder may elect to pay in a currency other than the currency in which the debt securities are denominated;

- if the amount of payments of principal or interest is to be determined by reference to an index or formula, or based on a coin or currency other than that in which the debt securities are stated to be payable, the manner in which these amounts are determined and the calculation agent, if any;
- whether the debt securities will be secured or unsecured;
- whether the debt securities will be issued in the form of one or more global securities in temporary or definitive form;
- whether and on what terms we will pay additional amounts to holders of the debt securities that are not United States persons in respect of any tax, assessment or governmental charge withheld or deducted and, if so, whether and on what terms we will have the option to redeem the debt securities rather than pay the additional amounts;
- the certificates or forms required for the issuance of debt securities in definitive form;
- the trustees, depositaries, authenticating or paying agents, transfer agents or registrars of the debt securities;
- any deletions of, or changes or additions to, the events of default or covenants;
- conversion or exchange provisions, if any, including conversion or exchange prices or rates and adjustments to those prices and rates; and
- any other specific terms of the debt securities.

If any debt securities are sold for any foreign currency or currency unit or if any payments on the debt securities are payable in any foreign currency or currency unit, the prospectus supplement will contain any restrictions, elections, tax consequences, specific terms and other information with respect to the debt securities and the foreign currency or currency unit.

Some of the debt securities may be issued as original issue discount debt securities. Original issue discount securities may bear no interest or bear interest at below-market rates and will be sold at a discount below their stated principal amount and may bear no or below market interest. The applicable prospectus supplement will also contain any special tax, accounting or other information relating to original issue discount securities other kinds of debt securities that may be offered, including debt securities linked to an index or payable in currencies other than United States dollars.

Senior Debt Securities

Payment of the principal of, premium, if any, and interest on senior debt securities will rank on a parity with all of our other indebtedness that is not subordinated.

Subordinated Debt Securities

Payment of the principal of, premium, if any, and interest on subordinated debt securities will be junior in right of payment to the prior payment in full of all of our unsubordinated debt, including senior debt securities. We will state in the applicable prospectus supplement relating to any subordinated debt securities the subordination terms of the securities as well as the aggregate amount of outstanding debt, as of the most recent practicable date, that by its terms would be senior to the subordinated debt securities. We will also state in such prospectus supplement limitations, if any, on issuance of additional senior debt.

Registrar and Paying Agent

The debt securities may be presented for registration of transfer or for exchange at the corporate trust office of the security registrar or at any other office or agency that we maintain for those purposes. In addition, the debt securities may be presented for payment of principal, interest and any premium at the office of the paying agent or at any office or agency that we maintain for those purposes.

Global Securities

We may issue the debt securities of a series in whole or in part in the form of one or more global certificates that will be deposited with a depositary we will identify in a prospectus supplement. We may issue global debt securities in either temporary or definitive form. We will describe the specific terms of the depositary arrangement with respect to any series of debt securities in the prospectus supplement.

Conversion or Exchange Rights

Debt securities may be convertible into or exchangeable for shares of our common stock. The terms and conditions of conversion or exchange will be stated in the applicable prospectus supplement. The terms will include, among others, the following:

- the conversion or exchange price;
- the conversion or exchange period;
- provisions regarding the convertibility or exchangeability of the debt securities, including who may convert or exchange;
- events requiring adjustment to the conversion or exchange price;
- provisions affecting conversion or exchange in the event of our redemption of the debt securities; and
- any anti-dilution provisions, if applicable.

Registered Global Securities

Unless and until it is exchanged in whole or in part for debt securities in definitive registered form, a registered global security may not be transferred except as a whole:

- by the depositary for that registered global security to its nominee;
- by a nominee of the depositary to the depositary or another nominee of the depositary; or
- by the depositary or its nominee to a successor of the depositary or a nominee of the successor.

The prospectus supplement relating to a series of debt securities will describe the specific terms of the depositary arrangement involving any portion of the series represented by a registered global security.

We anticipate that the following provisions will apply to all depositary arrangements for debt securities:

- ownership of beneficial interests in a registered global security will be limited to persons that have accounts with the depositary for that registered global security, these persons being referred to as “participants,” or persons that may hold interests through participants;
- upon the issuance of a registered global security, the depositary for the registered global security will credit, on its book-entry registration and transfer system, the participants’ accounts with the respective principal amounts of the debt securities represented by the registered global security beneficially owned by the participants;
- any dealers, underwriters or agents participating in the distribution of the debt securities will designate the accounts to be credited; and
- ownership of beneficial interest in that registered global security will be shown on, and the transfer of that ownership interest will be effected only through, records maintained by the depositary for that registered global security for interests of participants and on the records of participants for interests of persons holding through participants.

The laws of some states may require that specified purchasers of securities take physical delivery of the securities in definitive form. These laws may limit the ability of those persons to own, transfer or pledge beneficial interests in registered global securities.

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

- will not be entitled to have the debt securities represented by a registered global security registered in their names;
- will not receive or be entitled to receive physical delivery of the debt securities in definitive form; and
- will not be considered the owners or holders of the debt securities under the indenture.

Accordingly, each person owning a beneficial interest in a registered global security must rely on the procedures of the depositary for the registered global security and, if the person is not a participant, on the procedures of a participant through which the person owns its interest, to exercise any rights of a holder under the indenture.

We understand that under existing industry practices, if we request any action of holders or if an owner of a beneficial interest in a registered global security desires to give or take any action that a holder is entitled to give or take under the indenture, the depositary for the registered global security would authorize the participants holding the relevant beneficial interests to give or take the action, and the participants would authorize beneficial owners owning through the participants to give or take the action or would otherwise act upon the instructions of beneficial owners holding through them.

We will make payments of principal and premium, if any, and interest, if any, on debt securities represented by a registered global security registered in the name of a depositary or its nominee to the depositary or its nominee as the registered owners of the registered global security. None of us, the trustee or any other of our agents or agents of the trustee will be responsible or liable for any aspect of the records relating to, or payments made on account of, beneficial ownership interests in the registered global security or for maintaining, supervising or reviewing any records relating to the beneficial ownership interests.

We expect that the depositary for any debt securities represented by a registered global security, upon receipt of any payments of principal and premium, if any, and interest, if any, in respect of the registered global security, will immediately credit participants' accounts with payments in amounts proportionate to their respective beneficial interests in the registered global security as shown on the records of the depositary. We also expect that standing customer instructions and customary practices will govern payments by participants to owners of beneficial interests in the registered global security held through the participants, as is now the case with the securities held for the accounts of customers in bearer form or registered in "street name." We also expect that any of these payments will be the responsibility of the participants.

If the depositary for any debt securities represented by a registered global security is at any time unwilling or unable to continue as depositary or stops being a clearing agency registered under the Exchange Act, we will appoint an eligible successor depositary. If we fail to appoint an eligible successor depositary within 90 days, we will issue the debt securities in definitive form in exchange for the registered global security. In addition, we may at any time and in our sole discretion decide not to have any of the debt securities of a series represented by one or more registered global securities. In that event, we will issue debt securities of the series in a definitive form in exchange for all of the registered global securities representing the debt securities. The trustee will register any debt securities issued in definitive form in exchange for a registered global security in the name or names as the depositary, based upon instructions from its participants, will instruct the trustee.

Merger, Consolidation or Sale of Assets

Under the terms of the indentures, we may consolidate or merge with another company, or sell, lease or convey all or substantially all our assets to another company, if:

- we are the continuing entity; or
- (i) we are not the continuing entity, (ii) the successor entity is organized under the laws of the United States of America and expressly assumes all payments on all of the debt securities and the performance and observance of all the covenants and conditions of the applicable indenture, and (iii) the merger, sale of assets or other transaction must not cause a default on the debt securities and we must not already be in default.

Events of Default

Unless otherwise provided for in the prospectus supplement, the term "event of default," when used in the indentures means any of the following:

- failure to pay interest for 30 days after the date payment is due and payable; however, if we extend an interest payment period under the terms of the debt securities, the extension will not be a failure to pay interest;
- failure to pay principal or premium, if any, on any debt security when due, either at maturity, upon any redemption, by declaration or otherwise;
- failure to perform other covenants for 60 days after notice that performance was required;
- certain events in bankruptcy, insolvency or reorganization of our company; or
- any other event of default provided in the applicable resolution of our board of directors or the supplemental indenture under which we issue a series of debt securities.

An event of default for a particular series of debt securities does not necessarily constitute an event of default for any other series of debt securities issued under an indenture. If an event of default relating to the payment of interest, principal or any sinking fund installment involving any series of debt securities has occurred and is continuing, the trustee or the holders of not less than 25% in aggregate principal amount of the debt securities of each affected series may declare the entire principal of all the debt securities of that series to be due and payable immediately.

If an event of default relating to the performance of other covenants occurs and is continuing for a period of 60 days after notice of that event of default, or if any other event of default occurs and is continuing involving all of the series of senior debt securities, then the trustee or the holders of not less than 25% in aggregate principal amount of all of the series of senior debt securities may declare the entire principal amount of all of the series of senior debt securities due and payable immediately.

Similarly, if an event of default relating to the performance of other covenants occurs and is continuing for a period of 60 days after notice, or if any other event of default occurs and is continuing involving all of the series of subordinated debt securities, then the trustee or the holders of not less than 25% in aggregate principal amount of all of the series of subordinated debt securities may declare the entire principal amount of all of the series of subordinated debt securities due and payable immediately.

If, however, the event of default relating to the performance of other covenants or any other event of default that has occurred and is continuing is for less than all of the series of senior debt securities or subordinated debt securities, then, the trustee or the holders of not less than 25% in aggregate principal amount of each affected series of the senior debt securities or the subordinated debt securities, as the case may be, may declare the entire principal amount of all debt securities of that affected series due and payable immediately. The holders of not

less than a majority, or any applicable supermajority, in aggregate principal amount of the debt securities of a series may, after satisfying conditions, rescind and annul any of the above-described declarations and consequences involving the series.

If an event of default relating to events in bankruptcy, insolvency or reorganization occurs and is continuing, then the principal amount of all of the debt securities outstanding, and any accrued interest, will automatically become due and payable immediately, without any declaration or other act by the trustee or any holder.

Each indenture imposes limitations on suits brought by holders of debt securities against us. Except for actions for payment of overdue principal or interest, no holder of debt securities of any series may institute any action against us under each indenture unless:

- the holder has previously given to the trustee written notice of default and continuance of that default;
- the holders of at least 25% in principal amount of the outstanding debt securities of the affected series have requested that the trustee institute the action;
- the requesting holders have offered the trustee reasonable indemnity for expenses and liabilities that may be incurred by bringing the action;
- the trustee has not instituted the action within 60 days of the request; and
- the trustee has not received inconsistent direction by the holders of a majority in principal amount of the outstanding debt securities of the series.

We will be required to file annually with the trustee a certificate, signed by an officer of our company, stating whether or not the officer knows of any default by us in the performance, observance or fulfillment of any condition or covenant of an indenture.

Discharge, Defeasance and Covenant Defeasance

We can discharge or defease our obligations under the indentures as stated below or as provided in the prospectus supplement.

Unless otherwise provided in the applicable prospectus supplement, we may discharge obligations to holders of any series of debt securities that have not already been delivered to the trustee for cancellation and that have either become due and payable or are by their terms to become due and payable, or are scheduled for redemption, within one year. We may effect a discharge by irrevocably depositing with the trustee cash or United States government obligations, as trust funds, in an amount certified to be enough to pay when due, whether at maturity, upon redemption or otherwise, the principal of, premium, if any, and interest on the debt securities and any mandatory sinking fund payments.

Unless otherwise provided in the applicable prospectus supplement, we may also discharge any and all of our obligations to holders of any series of debt securities at any time, which we refer to as “defeasance.” We may also be released from the obligations imposed by any covenants of any outstanding series of debt securities and provisions of the indentures, and we may omit to comply with those covenants without creating an event of default under the trust declaration, which we refer to as “covenant defeasance.” We may effect defeasance and covenant defeasance only if, among other things:

- we irrevocably deposit with the trustee cash or United States government obligations, as trust funds, in an amount certified to be enough to pay at maturity, or upon redemption, the principal, premium, if any, and interest on all outstanding debt securities of the series;
- we deliver to the trustee an opinion of counsel from a nationally recognized law firm to the effect that (i) in the case of covenant defeasance, the holders of the series of debt securities will not recognize income, gain or loss for United States federal income tax purposes as a result of the defeasance, and

will be subject to tax in the same manner and at the same times as if no covenant defeasance had occurred and (ii) in the case of defeasance, either we have received from, or there has been published by, the Internal Revenue Service a ruling or there has been a change in applicable United States federal income tax law, and based on that ruling or change, the holders of the series of debt securities will not recognize income, gain or loss for United States federal income tax purposes as a result of the defeasance and will be subject to tax in the same manner as if no defeasance had occurred; and

- in the case of subordinated debt securities, no event or condition will exist that, based on the subordination provisions applicable to the series, would prevent us from making payments of principal of, premium, if any, and interest on any of the applicable subordinated debt securities at the date of the irrevocable deposit referred to above or at any time during the period ending on the 91st day after the deposit date.

Although we may discharge or decrease our obligations under the indentures as described in the two preceding paragraphs, we may not avoid, among other things, our duty to register the transfer or exchange of any series of debt securities, to replace any temporary, mutilated, destroyed, lost or stolen series of debt securities or to maintain an office or agency in respect of any series of debt securities.

Modification of the Indenture

Except as provided in the prospectus supplement, each indenture provides that we and the trustee may enter into supplemental indentures without the consent of the holders of debt securities to:

- secure any debt securities;
- evidence the assumption by a successor corporation of our obligations and the conversion of any debt securities into the capital stock of that successor corporation, if the terms of those debt securities so provide;
- add covenants for the protection of the holders of debt securities;
- cure any ambiguity or correct any inconsistency in the indenture;
- establish the forms or terms of debt securities of any series; and
- evidence and provide for the acceptance of appointment by a successor trustee.

Each indenture also provides that we and the trustee may, with the consent of the holders of not less than a majority in aggregate principal amount of debt securities of all series of senior debt securities or of subordinated debt securities then outstanding and affected, voting as one class, add any provisions to, or change in any manner, eliminate or modify in any way the provisions of, the indenture or modify in any manner the rights of the holders of the debt securities. We and the trustee may not, however, without the consent of the holder of each outstanding debt security affected:

- extend the stated maturity of any debt security;
- reduce the principal amount or premium, if any;
- reduce the rate or extend the time of payment of interest;
- reduce any amount payable on redemption;
- change the currency in which the principal, unless otherwise provided for a series, premium, if any, or interest is payable;
- reduce the amount of the principal of any debt security issued with an original issue discount that is payable upon acceleration or provable in bankruptcy;
- impair the right to institute suit for the enforcement of any payment on any debt security when due; or
- reduce the percentage of holders of debt securities of any series whose consent is required for any modification of the indenture for any such series.

Concerning the Trustee

Each indenture provides that there may be more than one trustee under the indenture, each for one or more series of debt securities. If there are different trustees for different series of debt securities, each trustee will be a trustee of a trust under the indentures separate and apart from the trust administered by any other trustee under the indenture. Except as otherwise indicated in this prospectus or any prospectus supplement, any action permitted to be taken by a trustee may be taken by that trustee only on the one or more series of debt securities for which it is the trustee under the indenture. Any trustee under the indentures may resign or be removed from one or more series of debt securities. All payments of principal of, premium, if any, and interest on, and all registration, transfer, exchange, authentication and delivery of, the debt securities of a series may be effected by the trustee for that series at an office or agency designated by the trustee of that series.

If the trustee becomes a creditor of our company, each indenture places limitations on the right of the trustee to obtain payment of claims or to realize on property received in respect of any such claim as security or otherwise. The trustee may engage in other transactions. If it acquires any conflicting interest relating to any duties concerning the debt securities, however, it must eliminate the conflict or resign as trustee.

The holders of a majority in aggregate principal amount of any series of debt securities then outstanding will have the right to direct the time, method and place of conducting any proceeding for exercising any remedy available to the trustee concerning the applicable series of debt securities, so long as the direction:

- would not conflict with any rule of law or with the applicable indenture;
- would not be unduly prejudicial to the rights of another holder of the debt securities; and
- would not involve any trustee in personal liability.

Each indenture provides that if an event of default occurs, is not cured and is known to any trustee, the trustee must use the same degree of care as a prudent person would use in the conduct of his or her own affairs in the exercise of the trust's power. The trustee will be under no obligation to exercise any of its rights or powers under the indenture at the request of any of the holders of the debt securities, unless they have offered to the trustee security and indemnity satisfactory to the trustee.

No Individual Liability of Incorporators, Stockholders, Officers or Directors

Each indenture provides that no incorporator and no past, present or future stockholder, officer or director of our company or any successor corporation in those capacities will have any individual liability for any of our obligations, covenants or agreements under the debt securities or such indenture.

Governing Law

The indentures and the debt securities will be governed by, and construed in accordance with, the laws of the State of New York.

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 our 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 our certificate of incorporation and bylaws, copies of which are on file with the SEC as exhibits to documents previously filed by us. 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 certificate of incorporation and bylaws include a number of provisions that could deter hostile takeovers or delay or prevent changes in control of our company, including the following:

- only the chairman of the board, the chief executive office, the president or a majority of our board of directors may call special meetings of stockholders, and the business transacted at special meetings of stockholders is limited to the business stated in the notice of such meetings;
- advance notice procedures for stockholders seeking to bring business before our annual meeting of stockholders or to nominate candidates for election as directors at our annual meeting of stockholders, including certain requirements regarding the form and content of a stockholder's notice;
- our board of directors may designate the terms of and issue new series of preferred stock;
- unless otherwise required by our bylaws, our certificate of incorporation or by law, our board of directors may amend our bylaws without stockholder approval; and
- only our board of directors may fill vacancies on our board of directors.

We have a stockholder rights plan that may also 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, 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, our potential acquirers 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

Fenwick & West 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

The consolidated financial statements of OncoGenex Pharmaceuticals, Inc. appearing in OncoGenex Pharmaceuticals, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2011, and the effectiveness of OncoGenex Pharmaceuticals, Inc.'s internal control over financial reporting as of December 31, 2011 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon included therein, and incorporated herein by reference. Such financial statements are, and audited financial statements to be included in subsequently filed documents will be, incorporated herein in reliance upon the reports of Ernst & Young LLP pertaining to such financial statements and the effectiveness of our internal control over financial reporting as of the respective dates (to the extent covered by consents filed with the Securities and Exchange Commission) given on the authority of such firm as experts in accounting and auditing.

$16,300,000 in Shares of Common Stock

956,938 Series A-1 Units consisting of Common Stock and Warrants
(239,234 Shares of Common Stock Underlying the Warrants)

PROSPECTUS SUPPLEMENT

April 30, 2015