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Registration Nos. 333-201317 and 333-215675

PROSPECTUS SUPPLEMENT
(to Prospectus Dated January 7, 2015)

Dated January 24, 2017

23,182,000 Shares



Common Stock

We are offering 23,182,000 shares of our common stock pursuant to this prospectus supplement and the accompanying prospectus. Our common stock is listed for trading on the NASDAQ Global Market under the symbol "CASC." On January 23, 2017, the last reported sale price of our common stock was \$3.65 per share.

Our business and an investment in our common stock involves significant risks. These risks are described under the caption "[Risk Factors](#)" beginning on page S-8 of this prospectus supplement and in the documents incorporated by reference into this prospectus supplement.

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

Concurrently with this offering of common stock and pursuant to a separate prospectus supplement, we are offering 1,818 shares of our Series E Convertible Preferred Stock (and the common stock issuable from time to time upon conversion of the Series E Convertible Preferred Stock).

	<i>Per Share</i>	<i>Total</i>
Public offering price	\$ 3.30	\$76,500,600
Underwriting discount(1)	\$ 0.198	\$ 4,590,036
Proceeds, before expenses, to us	\$ 3.102	\$71,910,564

(1) See "Underwriting" for a description of the compensation payable to the underwriters.

The underwriters may also purchase up to an additional 3,477,300 shares from us at the public offering price, less underwriting discount, within 30 days from the date of this prospectus to cover over-allotments.

The underwriters expect to deliver the shares against payment in New York, New York on or about January 27, 2017.

Joint Book-Running Managers

Cowen and Company

Barclays

Lead Manager

Raymond James

Co-Manager

BTIG

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ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is the prospectus supplement, including the documents incorporated by reference herein, which describes the specific terms of this offering. The second part, the accompanying prospectus, including the documents incorporated by reference therein, provides more general information. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. Before you invest, you should carefully read this prospectus supplement, the accompanying prospectus, all information incorporated by reference herein and therein, as well as the additional information described under “Where You Can Find Additional Information.” These documents contain information you should consider when making your investment decision. This prospectus supplement may add, update or change information contained in the accompanying prospectus. To the extent that any statement we make in this prospectus supplement is inconsistent with statements made in the accompanying prospectus or any documents incorporated by reference therein, the statements made in this prospectus supplement will be deemed to modify or supersede those made in the accompanying prospectus and such documents incorporated by reference therein.

You should rely only on the information contained or incorporated by reference in this prospectus supplement, the accompanying prospectus and in any free writing prospectuses we may provide to you in connection with this offering. Neither we nor the underwriters have authorized any other person to provide you with any information that is different. If anyone provides you with different or inconsistent information, you should not rely on it. We are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the offering of the common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus supplement outside the United States. This prospectus supplement does not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein 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 or the accompanying prospectus are the property of their respective owners.

Throughout this prospectus supplement and accompanying prospectus, unless the context specifies or implies otherwise, the terms “Company,” “Cascadian,” “Oncothyreon,” “Biomira,” “we,” “us,” and “our” refer to Cascadian Therapeutics, Inc., its predecessors, Oncothyreon Inc. and Biomira Inc., and its subsidiaries.

[Table of Contents](#)**PROSPECTUS SUPPLEMENT SUMMARY**

This summary highlights selected information about us, this offering and information appearing elsewhere in this prospectus supplement, in the accompanying prospectus and in the documents incorporated by reference herein and therein. This summary is not complete and does not contain all the information you should consider before investing in our common stock pursuant to this prospectus supplement and the accompanying prospectus. Before making an investment decision, to fully understand this offering and its consequences to you, you should carefully read this entire prospectus supplement and the accompanying prospectus, including "Risk Factors," the financial statements, and related notes, and the other information that we incorporated by reference herein and therein.

Cascadian Therapeutics, Inc.**Overview**

We are a clinical-stage biopharmaceutical company focused on the development of therapeutic products for the treatment of cancer. Our goal is to develop and commercialize novel targeted compounds that have the potential to improve the lives and outcomes of cancer patients. In June 2016, we changed our name to Cascadian Therapeutics, Inc. from Oncothyreon Inc. The change underlies our shift in focus to targeted therapeutics from cancer vaccines. Our lead clinical-stage product candidate is tucatinib (also known as ONT-380), an orally active and selective small molecule HER2 inhibitor. We are also developing CASC-578, a Chk1 kinase inhibitor that is currently in preclinical development.

Tucatinib is a potent and selective small molecule inhibitor of HER2, also known as ErbB2, a receptor tyrosine kinase that is over-expressed in approximately 20% of breast cancers. In addition to breast cancer, HER2 is overexpressed in other malignancies, including subsets of bladder, cervical, colorectal, esophageal, gastric, lung and ovarian cancers. We are developing tucatinib for the treatment of HER2-positive (HER2+) metastatic breast cancer. Over-expression of HER2 in breast cancer has been associated historically with increased mortality in early stage disease, decreased time to relapse and increased incidence of metastases. The introduction of HER2-targeted therapies, including antibody-based therapies and the small molecule tyrosine kinase inhibitor, lapatinib, has led to improvement in the outcomes of patients with HER2+ cancer. Unlike lapatinib, tucatinib selectively inhibits HER2. This selectivity may improve drug tolerability by reducing Grade 3 (severe) diarrhea and skin rash.

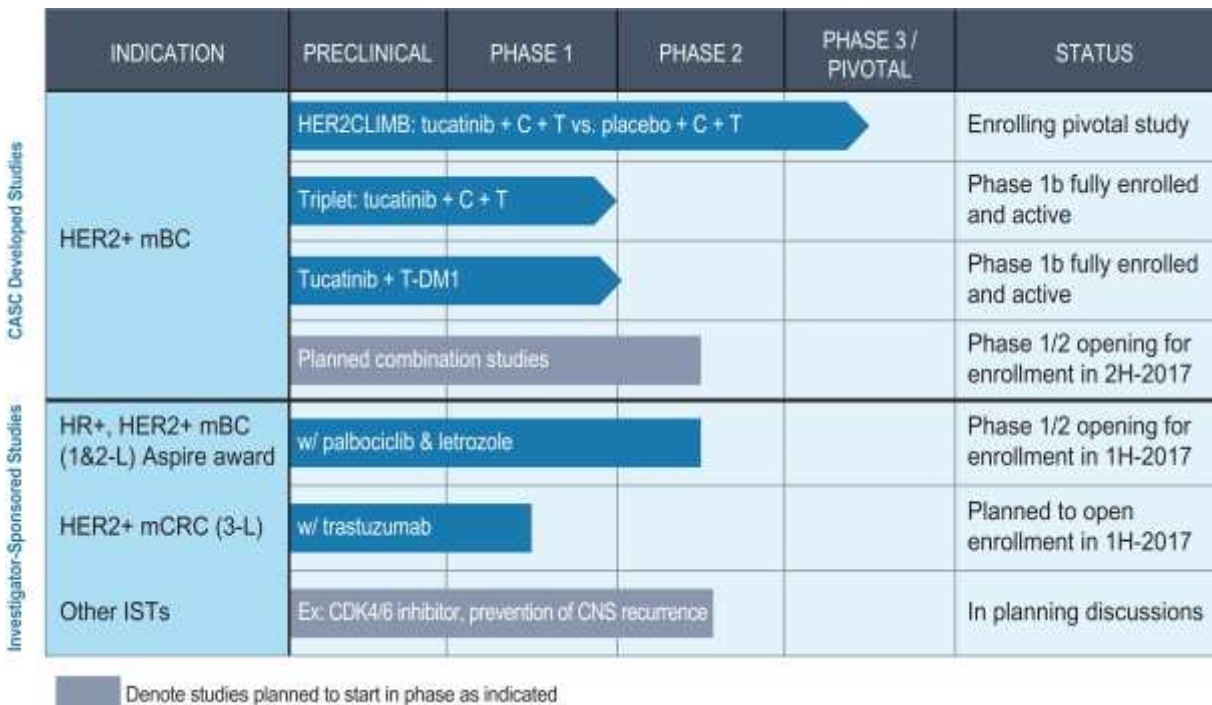
We are currently conducting a randomized (2:1), double-blind, controlled pivotal clinical trial, known as HER2CLIMB, comparing tucatinib in combination with capecitabine and trastuzumab versus placebo in combination with capecitabine and trastuzumab in patients with locally advanced or metastatic HER2+ breast cancer who have had prior treatment with a taxane, trastuzumab, pertuzumab and T-DM1. In addition, our two Phase 1b trials of tucatinib, one in combination with Kadcyla® (ado-trastuzumab emtansine, or T-DM1) and another in combination with Xeloda® (capecitabine) and/or Herceptin® (trastuzumab) are fully enrolled and active patients remain on treatment. Results from these trials indicate these drug combinations are well tolerated and may provide clinical activity in heavily pretreated metastatic breast cancer patients, with and without brain metastases. Tucatinib will also be studied in several investigator-sponsored trials in combination with approved agents in other HER2 expressing cancers or earlier in the metastatic breast cancer treatment paradigm.

In June 2016, we received Fast Track designation from the FDA for our tucatinib program in metastatic HER2+ breast cancer. We continue to evaluate additional opportunities for tucatinib in other

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settings, including potential combination therapies and licensing opportunities in non-core territories, such as China. We have an exclusive license agreement with Array BioPharma Inc. (Array) for the worldwide rights to develop, manufacture and commercialize tucatinib.

The following chart summarizes the current tucatinib development plan.



In June 2016, we presented updated safety and activity data from our combination trial of tucatinib with T-DM1 at the 2016 American Society of Clinical Oncology Annual Meeting. Data from this combination showed the majority of adverse events (AE) were Grade 1 out of a scale from Grade 1 to Grade 5. Most patients who required a dose reduction of tucatinib maintained disease control at the lower dose. The median progression free survival (PFS) in the combination of tucatinib and T-DM1 was 8.2 months and overall response rate (ORR) was 47% at the time of data analysis. Many of the patients with brain metastases in the study had long-term control of both brain metastases and systemic disease. Progression-free survival in the 30 patients with brain metastases was similar to patients without brain metastases. There were no patients without brain metastases at baseline who developed new clinically apparent brain metastases while on the study.

In June 2016, we also presented updated data from our Phase 1b clinical trial combining tucatinib with trastuzumab and capecitabine (triplet combination). In this combination trial, the majority of adverse events were Grade 1, with most patients being able to continue on the full dose of tucatinib. Grade 3 diarrhea was infrequent without a requirement for prophylactic anti-diarrheal medicine. The ORR was 58% and the interim PFS was 6.3 months, with many patients still active on study at the time of the data analysis. Outcomes in patients with brain metastases were similar to patients without brain metastases. In October 2016, data from our triplet combination were presented at the European Society of Clinical Oncology 2016 Congress. Those data results showed clinical activity in HER2+ metastatic lesions to the skin.

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In December 2016, we announced updated data from the Phase 1b triplet combination trial. The updated results showed that the combination continues to be well tolerated. The updated PFS increased to 7.8 months and the ORR increased to 61%. The median duration of response was 10 months. Patients in the Phase 1b triplet combination trial previously received a median of three HER2-targeted agents such as trastuzumab, pertuzumab, lapatinib or T-DM1. These updated results were presented at the 2016 San Antonio Breast Cancer Symposium.

These data support our ongoing HER2CLIMB trial in the triplet combination which began as a Phase 2 trial in February 2016 and was amended to a pivotal trial in December 2016. HER2CLIMB, is a randomized, double-blind, controlled pivotal clinical trial of tucatinib in combination with trastuzumab and capecitabine in HER2+ metastatic breast cancer patients with and without brain metastases; the same triplet combination studied in our Phase 1b trial.

In December 2016, we also announced that following a meeting with the U.S. Food and Drug Administration (FDA) and discussions with our external Steering Committee, we amended the HER2CLIMB trial of tucatinib by increasing the sample size so that, if successful, the trial could serve as a single pivotal study to support a new drug application. The primary endpoint remains PFS based upon independent radiologic review, and the sample size has been increased to approximately 480 patients from 180 patients, including patients who enrolled in HER2CLIMB to date. Patients will also be followed for overall survival, which is a secondary endpoint. Key objectives related to assessing activity in brain metastases include a secondary endpoint of PFS in a subset of patients with brain metastases. HER2CLIMB is currently enrolling in the United States and Canada and is expected to expand into Europe, Australia and Israel in the first half of 2017. Based on current feasibility studies, we expect to complete enrollment of the HER2CLIMB pivotal trial in mid-2019.

In 2017, we also plan to support the initiation of select investigator-sponsored combination trials, including trials in HER2-positive amplified, metastatic colorectal cancer and in combination with palbociclib and letrozole in HER2-positive, hormone-receptor positive metastatic breast cancer.

We are also developing CASC-578, a novel Chk1 cell cycle inhibitor that is an orally available, small molecule kinase inhibitor developed in collaboration with Sentinel Oncology Ltd., of Cambridge, United Kingdom. Chk1 is a protein kinase that regulates the cell division cycle and is activated in response to DNA damage and DNA replication stress. Cancer cells often have mutations that alter DNA damage response signaling pathways that function in parallel with Chk1 to regulate the cell cycle. These mutations may make tumor cells more reliant on the activity of Chk1 to provide cell cycle checkpoint control, which represents a potential weak point that can be exploited by drugs that target Chk1. We plan to complete pharmacology studies in the first half of 2017 and make a determination about whether to conduct IND-enabling studies for CASC-578 in the second half of 2017.

Recent Financial Information

We have not finalized our consolidated financial statements for the period ended December 31, 2016. Based on our current estimates, as of December 31, 2016, we had approximately \$63 million in cash and short-term investments. The actual amounts that we report will be subject to our financial closing procedures and any final adjustments that may be made prior to the time our financial results for the period ended December 31, 2016, are finalized.

[Table of Contents](#)**Concurrent Offering of Series E Convertible Preferred Stock**

Concurrently with this offering of common stock, we are offering 1,818 shares of our Series E Convertible Preferred Stock (and the common stock issuable from time to time upon conversion of the Series E Convertible Preferred Stock), which we refer to herein as the Series E Preferred Stock offering. The Series E Preferred Stock offering is being conducted as a separate public offering by means of a separate prospectus supplement. This offering is not contingent upon the completion of the Series E Preferred Stock offering and the Series E Preferred Stock offering is not contingent upon the completion of this offering. We cannot assure you that either or both of the offerings will be completed.

Termination of At-The-Market Equity Offering Program

On January 23, 2017, we provided notice to Cowen and Company, LLC of our decision to terminate the Sales Agreement, dated June 2, 2016 (Sales Agreement), pursuant to which we could have sold shares having aggregate sales proceeds of \$50 million from time to time, through an “at-the-market” equity offering program. The termination of the Sales Agreement and the “at-the-market” equity offering program will be effective as of the close of business on January 23, 2017.

Recent Reverse Stock Split

In November 2016, at a special meeting of our stockholders, the stockholders approved (i) an amendment to our certificate of incorporation to effect a reverse stock split at a ratio of not less than 1-for-4 and not greater than 1-for-10, with the exact ratio to be set within that range at the discretion of our board of directors and (ii) an amendment to our certificate of incorporation to decrease our authorized shares of common stock to such number determined by calculating the product of 200,000,000 multiplied by two times the reverse stock split ratio. Following the special meeting of our stockholders, our board of directors approved a reverse stock split ratio of 1-for-6 and a resulting reduction in our authorized shares of common stock from 200,000,000 to 66,666,667 shares. In November 2016, we filed an amendment to our certificate of incorporation effecting the reverse stock split and reduction in our authorized shares of common stock. All share numbers disclosed in this prospectus supplement reflect the 1-for-6 reverse stock split.

Corporate Information

Cascadian Therapeutics, Inc. is the successor corporation to Biomira Inc. and Oncothyreon Inc. On August 23, 1985, Biomira Inc. was incorporated under the Canada Business Corporations Act. Oncothyreon Inc. was incorporated in the state of Delaware on September 7, 2007. On December 10, 2007, Oncothyreon became the successor corporation to Biomira by way of an arrangement effected pursuant to Canadian law. On June 9, 2016, we changed our corporate name to Cascadian Therapeutics, Inc. Our executive office is located at 2601 Fourth Avenue, Suite 500, Seattle, Washington 98121 and our telephone number is (206) 801-2100. We maintain an Internet website at www.cascadianrx.com. We have not incorporated the information on our website by reference into this prospectus supplement, and you should not consider it to be a part of this prospectus supplement.

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THE OFFERING	
Common stock offered by us	23,182,000 shares.
Common stock to be outstanding after this offering	45,733,740 shares.
Over-allotment option to purchase additional shares	We have granted the underwriters an over-allotment option for a period of 30 days to purchase an additional 3,477,300 shares of common stock.
Use of proceeds	We plan to use the net proceeds from this offering and our concurrent Series E Preferred Stock offering to fund our tucatinib HER2CLIMB pivotal trial and to support the development of tucatinib in other indications through company or investigator-sponsored trials, as well as for working capital and other general corporate purposes. See "Use of Proceeds."
Risk factors	Investing in our common stock involves significant risks. See "Risk Factors" for a discussion of factors that you should read and consider before investing in our securities.
Concurrent Series E Preferred Stock offering	Concurrently with this offering, we are offering 1,818 shares of our Series E Convertible Preferred Stock (and the common stock issuable from time to time upon conversion of the Series E Convertible Preferred Stock). The Series E Preferred Stock offering is being conducted as a separate public offering by means of a separate prospectus supplement. This offering is not contingent upon the completion of the Series E Preferred Stock offering and the Series E Preferred Stock offering is not contingent upon the completion of this offering.
Series E Preferred Stock registration rights	Purchasers of Series E Preferred Stock in the concurrent Series E Preferred Stock offering will receive registration rights with respect to the shares of common stock issuable upon conversion of Series E Preferred Stock. We will be required to file a registration statement on Form S-3 to register the resale of such shares within 100 days of the issuance date of the Series E Preferred Stock. See "Concurrent Offering of Series E Convertible Preferred Stock."
NASDAQ Global Market symbol	CASC

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The number of shares of our common stock to be outstanding immediately after this offering as shown above is based on 22,551,740 shares outstanding as of September 30, 2016 and excludes:

- 841,449 shares of common stock issuable upon the exercise of warrants outstanding as of September 30, 2016, with a weighted-average exercise price of \$29.89 per share;
- 1,804,159 shares of common stock issuable upon the exercise of stock options outstanding as of September 30, 2016, with a weighted-average exercise price of \$13.67 per share;
- 719,498 shares of common stock issuable upon the exercise of stock options granted after September 30, 2016, with a weighted-average exercise price of \$4.75 per share;
- 81,619 shares of common stock issuable upon the settlement of restricted stock units outstanding as of September 30, 2016;
- 127,150 shares of common stock issuable upon the settlement of restricted stock units granted after September 30, 2016;
- 1,281,479 shares of common stock reserved for future issuance under our equity incentive plans as of September 30, consisting of (i) 1,200,905 shares of common stock reserved for future issuance under our 2016 Equity Incentive Plan and (ii) 80,574 shares of common stock reserved for future issuance under our Employee Stock Purchase Plan;
- 6,680,625 shares of common stock issuable upon the conversion of our preferred stock outstanding as of September 30, 2016, consisting of (i) 1,666,697 shares of common stock issuable upon the conversion of shares of Series A convertible preferred stock; (ii) 888,851 shares of common stock issuable upon the conversion of shares of Series B convertible preferred stock; (iii) 1,250,022 shares of common stock issuable upon the conversion of shares of Series C convertible preferred stock; and (iv) 2,875,055 shares of common stock issuable upon the conversion of shares of Series D convertible preferred stock; and
- 1,818,000 shares of common stock issuable upon the conversion of Series E Convertible Preferred Stock being offered by us in connection with our concurrent Series E Preferred Stock offering.

Except as otherwise indicated, all information in this prospectus supplement assumes no exercise of the underwriters' over-allotment option to purchase additional shares of common stock and reflects the 1-for-6 reverse stock split of our common stock effective November 29, 2016.

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Investing in our securities involves a high degree of risk. You should carefully review the risks and uncertainties described under the heading "Risk Factors" contained in our Quarterly Report on Form 10-Q for the period ended September 30, 2016, which are incorporated by reference into this prospectus supplement and accompanying prospectus in their entirety, as updated or superseded by the risks and uncertainties described under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus supplement and accompanying prospectus, together with the other information in this prospectus supplement and accompanying prospectus, the documents incorporated by reference herein and any free writing prospectus that we may authorize for use in connection with this offering. The risks described in these documents are not the only ones we face, but those that we consider to be material. Each of the risk factors could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our securities, and the occurrence of any of these risks might cause you to lose all or part of your investment.

Risks Related to this Offering

Our management will have broad discretion as to the use of the proceeds from this offering and our concurrent Series E Preferred Stock offering, and we may not use the proceeds effectively.

Our management will have broad discretion in the application of the net proceeds from this offering and our concurrent Series E Preferred Stock offering, and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. Our failure to apply these funds effectively could have a material adverse effect on our business, delay the development of our product candidates and cause the price of our common stock to decline.

Our stockholders will experience substantial additional dilution upon the conversion of Series E Convertible Preferred Stock to be issued pursuant to our concurrent Series E Preferred Stock offering.

The issuance of shares of our common stock upon conversion of Series E Convertible Preferred Stock to be sold pursuant to the Series E Preferred Stock offering would be substantially dilutive to the outstanding shares of common stock. Any dilution or potential dilution may cause our stockholders to sell their shares, which would contribute to a downward movement in the stock price of our common stock.

If you purchase the common stock sold in this offering you will experience immediate and substantial dilution in your investment. You will experience further dilution if we issue additional equity securities in future fundraising transactions.

Since the price per share of our common stock being offered is substantially higher than the net tangible book value per share of our common stock, you will suffer substantial dilution with respect to the net tangible book value of the common stock you purchase in this offering. Based on the public offering price of \$3.30 per share and our net tangible book value as of September 30, 2016, and excluding the effect of conversion of shares of Series E Convertible Preferred Stock to be issued in our concurrent Series E Preferred Stock offering, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of \$0.25 per share with respect to the net tangible book value of the common stock. See "Dilution" for a more detailed discussion of the dilution you will incur if you purchase common stock in this offering.

We have a significant number of stock options, unvested restricted stock units, shares of convertible preferred stock and warrants outstanding. To the extent that these options or warrants are

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exercised, the convertible preferred stock is converted or the restricted stock units are vested, investors purchasing our common stock in this offering may experience further dilution. In addition, if we issue additional common stock, or securities convertible into or exchangeable or exercisable for common stock following the expiration of the lock-up agreement we entered into with the underwriters as described in the section titled "Underwriting," our stockholders, including investors who purchase shares of common stock in this offering, could experience additional dilution, and any such issuances may result in downward pressure on the price of our common stock.

Future sales of a substantial number of shares of our common stock by our existing stockholders could cause our stock price to decline.

The market price of our common stock could decline as a result of sales of our common stock in the public market after the closing of this offering, or the perception that these sales could occur. All of our executive officers and directors have signed a lock-up agreement that restricts their sale of securities for 60 days following this offering, except for Mark Lampert, a former member of our board of directors and an affiliate of Biotechnology Value Fund (BVF), our largest stockholder on an as-converted basis. Therefore, BVF may sell shares immediately following this offering, subject to the volume limitations of Rule 144 of the Securities Act. Additionally, purchasers of Series E Preferred Stock in the concurrent Series E Preferred Stock offering will receive registration rights with respect to the shares of common stock issuable upon conversion of Series E Preferred Stock. We will be required to file a registration statement on Form S-3 to register the resale of such shares, which will permit the holders of Series E Preferred Stock to resell the shares of common stock issuable upon conversion of their Series E Preferred Stock without the volume limitations of Rule 144.

In addition, we have a significant number of stock options and restricted stock units outstanding. If a substantial number of shares of common stock underlying these options or restricted stock units are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

A director recently resigned from our board of directors due to a disagreement with our board and management. As a result of that disagreement, the former director may take steps that could harm our reputation, impede our ability to complete this offering and our concurrent Series E Preferred Stock offering or result in a decline in our stock price.

On January 17, 2017, Mark Lampert, a member of our board of directors and an affiliate of BVF, our largest stockholder on a fully converted basis, resigned from our board of directors. Mr. Lampert's resignation was the result of his disagreement with decisions made by our board of directors related to the initiation of a public offering and the evaluation of strategic alternatives. This offering was approved by all other members of our board of directors in attendance at the meeting of the board. The meeting of the board included the board's independent advisors, and entailed extensive discussion and evaluation of alternatives to finance tucatinib's development plan. Although this offering and our concurrent Series E Preferred Stock offering will result in significant dilution to existing stockholders, our management and our board of directors believe that continuing to fund tucatinib's development and the HER2CLIMB pivotal trial is in the best interest of our existing stockholders and maximizes the potential value of our company. Absent such additional capital, we would be unable to continue to fund the pivotal HER2CLIMB trial and, after time, would receive a going concern opinion from our auditors, which may impede our ability to raise additional capital, reduce our bargaining position in the event a strategic transaction materializes or result in bankruptcy.

From time to time, we give thought to and may discuss potential strategic alternatives. To date, we have not received any proposal with respect to a strategic transaction, and we have not engaged in any negotiations for a strategic transaction. There are no assurances that we will receive any proposal

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for a strategic transaction, or if we did, that such proposal would contain terms favorable to our stockholders or that any consideration and negotiation of any such proposal would result in a transaction. Our board of directors and our management believe that funding HER2CLIMB through pivotal data is the best way to enhance stockholder value whether or not a strategic transaction materializes.

As a result of his disagreement with our board of directors and our management, Mr. Lampert may take steps that could impede our ability to complete this offering and our concurrent Series E Preferred Stock offering, cause these offerings to be completed at a lower stock price, harm our ability to negotiate and/or complete a future strategic transaction and/or result in a future decline in our stock price.

Additionally, BVF, an affiliate of Mr. Lampert, owns approximately 14% of our outstanding common stock and approximately 33% of our outstanding securities on a fully converted basis. BVF also has the right to designate a director to replace Mr. Lampert. Accordingly, BVF may significantly influence our business decisions or corporate actions, including elections of directors, amendments to our organizations documents and approval of strategic transactions. The interests of BVF may not always coincide with the interests of other stockholders, and BVF may act in a manner that advances their best interests and not necessarily those of other stockholders.

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This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein contain or incorporate by reference forward-looking statements. You should read these statements carefully because they discuss future expectations, contain projections of future results of operations or financial condition or state other “forward-looking” information. These statements relate to our, or in some cases, our partners’ future plans, objectives, expectations, intentions and financial performance and the assumptions that underlie these statements. These forward-looking statements include, but are not limited to, statements regarding:

- the results we anticipate from our discovery research, pre-clinical development activities and the clinical trials of our product candidates;
- our belief that our product candidates could potentially be useful for many different oncology indications that address large markets;
- our ability to manage our growth;
- the size of the markets for the treatment of conditions our product candidates target;
- our ability to acquire or in-license additional product candidates and technologies;
- our ability to develop and commercialize tucatinib;
- our ability to generate future revenue;
- financing to support our operations, clinical trials and commercialization of our products;
- our ability to adequately protect our proprietary information and technology from competitors and avoid infringement of proprietary information and technology of our competitors;
- the possibility that government-imposed price restrictions may make our products, if successfully developed and commercialized following regulatory approval, unprofitable;
- potential exposure to product liability claims and the impact that successful claims against us will have on our ability to commercialize our product candidates;
- our ability to obtain on commercially reasonable terms adequate product liability insurance for our commercialized products;
- the possibility that competing products or technologies may make our products, if successfully developed and commercialized following regulatory approval, obsolete;
- our ability to succeed in finding and retaining joint venture and collaboration partners to assist us in the successful development, marketing, distribution and commercialization of our products;
- our ability to attract and retain highly qualified scientific, clinical, manufacturing, and management personnel;
- our ability to identify and capitalize on possible collaboration, strategic partnering, acquisition or divestiture opportunities;
- potential problems with third parties, including suppliers and key personnel, upon whom we are dependent;
- the successful completion of our concurrent Series E Preferred Stock offering;
- the use of proceeds from this offering and our concurrent Series E Preferred Stock offering; and
- our estimates regarding our capital requirements and our need for additional financing.

All forward-looking statements are based on information available to us on the date of this prospectus supplement and we will not update any of the forward-looking statements after the date of this prospectus supplement, except as required by law. Our actual results could differ materially from those discussed in this prospectus supplement, accompanying prospectus and documents incorporated by reference herein and therein. The forward-looking statements contained in this prospectus supplement, accompanying prospectus and documents incorporated by reference herein

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and therein, and other written and oral forward-looking statements made by us from time to time, are subject to certain risks and uncertainties that could cause actual results to differ materially from those anticipated in the forward-looking statements. Factors that might cause such a difference include, but are not limited to, those discussed in “Risk Factors” and elsewhere in this prospectus supplement, accompanying prospectus and documents incorporated by reference herein and therein.

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We estimate that the net proceeds of this offering, after deducting underwriting discounts and commissions and estimated offering expenses, will be approximately \$71.7 million, or \$82.5 million if the underwriters' over-allotment option to purchase additional shares is exercised in full. In addition, we estimate that the net proceeds we will receive from our concurrent Series E Preferred Stock offering will be approximately \$5.6 million, after deducting underwriting discounts and commissions and estimated offering expenses. This offering is not contingent upon the completion of the Series E Preferred Stock offering and the Series E Preferred Stock offering is not contingent upon the completion of this offering. We cannot assure you that either or both of the offerings will be completed.

We plan to use the net proceeds from this offering and our concurrent Series E Preferred Stock offering to fund our tucatinib HER2CLIMB pivotal trial and to support the development of tucatinib in other indications through company or investigator-sponsored trials, as well as for working capital and other general corporate purposes.

The amounts and timing of our actual expenditures may vary significantly depending upon numerous factors, including the status of our product development and clinical trial efforts, regulatory approvals, competition, marketing and sales activities and the market acceptance of any products introduced by us. As of the date of this prospectus supplement, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering and our concurrent Series E Preferred Stock offering. We also cannot estimate precisely the allocation of the net proceeds from this offering and our concurrent Series E Preferred Stock offering among these uses. Pending application of the proceeds of sale of the securities, we intend to invest the net proceeds of the sale in short-term, investment-grade, interest-bearing instruments.

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DILUTION

Our net tangible book value as of September 30, 2016 was approximately \$67.6 million, or \$3.00 per share. Net tangible book value per share is determined by dividing our total tangible assets, less total liabilities, by the number of shares of our common stock outstanding as of September 30, 2016. Dilution with respect to net tangible book value per share represents the difference between the amount per share paid by purchasers of shares of common stock in this offering and the net tangible book value per share of our common stock immediately after this offering.

After giving effect to the sale of 23,182,000 shares of our common stock at the public offering price of \$3.30 per share, after deducting underwriting discounts and commissions and estimated offering expenses, our as adjusted net tangible book value as of September 30, 2016 would have been approximately \$139.4 million, or \$3.05 per share, which excludes the effect of conversion of shares of Series E Convertible Preferred Stock to be issued in our concurrent Series E Preferred Stock offering. This represents an immediate increase in net tangible book value of \$0.05 per share to existing stockholders and immediate dilution of \$0.25 per share to investors purchasing our common stock in this offering at the public offering price. The following table illustrates this dilution on a per share basis:

Public offering price per share		\$3.30
Net tangible book value per share of as September 30, 2016	\$3.00	
Increase in net tangible book value per share attributable to investors purchasing our common stock in this offering	<u>0.05</u>	
As adjusted net tangible book value per share after this offering		<u>3.05</u>
Dilution per share to investors purchasing our common stock in this offering		<u>\$0.25</u>

If the underwriters exercise their over-allotment option to purchase additional shares in full, the as adjusted net tangible book value per share of our common stock after giving effect to this offering would be \$3.05 per share, and the dilution in net tangible book value per share to investors purchasing common stock in this offering would be \$0.25 per share.

The table and discussion above excludes:

- 841,449 shares of common stock issuable upon the exercise of warrants outstanding as of September 30, 2016, with a weighted-average exercise price of \$29.89 per share;
- 1,804,159 shares of common stock issuable upon the exercise of stock options outstanding as of September 30, 2016, with a weighted-average exercise price of \$13.67 per share;
- 719,498 shares of common stock issuable upon the exercise of stock options granted after September 30, 2016, with a weighted-average exercise price of \$4.75 per share;
- 81,619 shares of common stock issuable upon the settlement of restricted stock units outstanding as of September 30, 2016;
- 127,150 shares of common stock issuable upon the settlement of restricted stock units granted after September 30, 2016;
- 1,281,479 shares of common stock reserved for future issuance under our equity incentive plans as of September 30, consisting of (i) 1,200,905 shares of common stock reserved for future issuance under our 2016 Equity Incentive Plan; and (ii) 80,574 shares of common stock reserved for future issuance under our Employee Stock Purchase Plan;
- 6,680,625 shares of common stock issuance upon the conversion of our preferred stock outstanding as of September 30, 2016, consisting of (i) 1,666,697 shares of common stock issuable upon the conversion of shares of Series A convertible preferred stock; (ii) 888,851

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shares of common stock issuable upon the conversion of shares of Series B convertible preferred stock; (iii) 1,250,022 shares of common stock issuable upon the conversion of shares of Series C convertible preferred stock; and (iv) 2,875,055 shares of common stock issuable upon the conversion of shares of Series D convertible preferred stock; and

- 1,818,000 shares of common stock issuable upon the conversion of Series E Convertible Preferred Stock being offered by us in connection with our concurrent Series E Preferred Stock offering.

To the extent that outstanding options, restricted stock units, warrants or convertible securities, have been or may be exercised or settled or other shares are issued, including pursuant to our concurrent Series E Preferred Stock offering, investors purchasing our common stock in this offering may experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

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CONCURRENT OFFERING OF SERIES E CONVERTIBLE PREFERRED STOCK

Concurrently with this offering, we are offering 1,818 shares of our Series E Convertible Preferred Stock (and the common stock issuable from time to time upon conversion of the Series E Convertible Preferred Stock) pursuant to a separate prospectus supplement. Through this offering and our concurrent Series E Preferred Stock offering, we intend to raise gross proceeds of approximately \$82.5 million, based on the public offering price of \$3.30 per share of common stock and \$3,300 per share of Series E Preferred Stock. This offering is not contingent upon our Series E Preferred Stock offering and our Series E Preferred Stock offering is not contingent upon this common stock offering. We cannot assure you that our Series E Preferred Stock offering will be completed.

Purchasers of Series E Preferred Stock in the concurrent Series E Preferred Stock offering will receive registration rights with respect to the shares of common stock issuable upon conversion of Series E Preferred Stock. We will be required to file a registration statement on Form S-3 to register the resale of such shares within 100 days of the issuance date of the Series E Preferred Stock. The registration rights will terminate upon a holder's sale pursuant to the registration statement or Rule 144 under the Securities Act, or the date a holder's registrable shares are eligible for sale without restriction under Rule 144. The registration rights agreement that we will enter into with purchasers of Series E Preferred Stock will include customary covenants of the company and provide that we will indemnify the holders and related parties against certain losses and liabilities. We will bear expenses related to the filing of the registration statement, including expenses of holders' counsel up to \$25,000.

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UNDERWRITING

We and the underwriters for the offering named below have entered into an underwriting agreement with respect to the common stock being offered. Subject to the terms and conditions of the underwriting agreement, each underwriter has severally agreed to purchase from us the number of shares of our common stock set forth opposite its name below. Cowen and Company, LLC and Barclays Capital Inc. are the representatives of the underwriters, or the Representatives.

<u>Underwriters</u>	<u>Number of Shares</u>
Cowen and Company, LLC	9,040,980
Barclays Capital Inc.	9,040,980
Raymond James & Associates, Inc.	3,013,660
BTIG, LLC	2,086,380
Total	<u>23,182,000</u>

The underwriting agreement provides that the obligations of the underwriters are subject to certain conditions precedent and that the underwriters have agreed, severally and not jointly, to purchase all of the shares sold under the underwriting agreement if any of these shares are purchased, other than those shares covered by the over-allotment option described below. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the non-defaulting underwriters may be increased or the underwriting agreement may be terminated.

We have agreed to indemnify the underwriters against specified liabilities, including liabilities under the Securities Act of 1933, and to contribute to payments the underwriters may be required to make in respect thereof.

The underwriters are offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel and other conditions specified in the underwriting agreement. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Over-allotment Option to Purchase Additional Shares. We have granted to the underwriters an over-allotment option to purchase up to 3,477,300 additional shares of common stock at the public offering price, less the underwriting discount. This option is exercisable for a period of 30 days. The underwriters may exercise this option solely for the purpose of covering over-allotments, if any, made in connection with the sale of common stock offered hereby. To the extent that the underwriters exercise this option, the underwriters will purchase additional shares from us in approximately the same proportion as shown in the table above.

Discounts and Commissions. The following table shows the public offering price, underwriting discount and proceeds, before expenses to us. These amounts are shown assuming both no exercise and full exercise of the underwriters' over-allotment option to purchase additional shares.

	<u>Per Share</u>	<u>Total(1)</u>	
		<u>Without Option</u>	<u>With Option</u>
Public offering price	\$ 3.30	\$76,500,600.00	\$87,975,690.00
Underwriting discount	\$ 0.198	\$ 4,590,036.00	\$ 5,278,541.40
Proceeds, before expenses, to Cascadian Therapeutics, Inc.	\$ 3.102	\$71,910,564.00	\$82,697,148.60

(1) Excludes the proceeds to be received by us pursuant to the concurrent Series E Preferred Stock offering and any discounts and commissions paid by us to the underwriters in connection with such offering.

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The underwriters propose to offer the shares of common stock to the public at the public offering price set forth on the cover of this prospectus. The underwriters may offer the shares of common stock to securities dealers at the public offering price less a concession not in excess of \$0.1188 per share. If all of the shares are not sold at the public offering price, the underwriters may change the offering price and other selling terms.

We estimate that the total expenses of this offering and our concurrent Series E Preferred Stock offering, excluding underwriting discount, will be approximately \$200,000, which includes \$25,000 that we have agreed to reimburse the underwriters for the fees incurred by them in connection with this offering and the concurrent Series E Preferred Stock offering.

Discretionary Accounts. The underwriters do not intend to confirm sales of the shares to any accounts over which they have discretionary authority.

Stabilization. In connection with this offering, the underwriters may engage in stabilizing transactions, overallotment transactions, syndicate covering transactions, penalty bids and purchases to cover positions created by short sales.

- Stabilizing transactions permit bids to purchase shares of common stock so long as the stabilizing bids do not exceed a specified maximum, and are engaged in for the purpose of preventing or retarding a decline in the market price of the common stock while the offering is in progress.
- Over-allotment transactions involve sales by the underwriters of shares of common stock in excess of the number of shares the underwriters are obligated to purchase. This creates a syndicate short position which may be either a covered short position or a naked short position. In a covered short position, the number of shares over-allotted by the underwriters is not greater than the number of shares that they may purchase in the over-allotment option. In a naked short position, the number of shares involved is greater than the number of shares in the over-allotment option. The underwriters may close out any short position by exercising their over-allotment option and/or purchasing shares in the open market.
- Syndicate covering transactions involve purchases of common stock in the open market after the distribution has been completed in order to cover syndicate short positions. In determining the source of shares to close out the short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared with the price at which they may purchase shares through exercise of the over-allotment option. If the underwriters sell more shares than could be covered by exercise of the over-allotment option and, therefore, have a naked short position, the position can be closed out only by buying shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that after pricing there could be downward pressure on the price of the shares in the open market that could adversely affect investors who purchase in the offering.
- Penalty bids permit the representative to reclaim a selling concession from a syndicate member when the common stock originally sold by that syndicate member is purchased in stabilizing or syndicate covering transactions to cover syndicate short positions.

These stabilizing transactions, syndicate covering transactions and penalty bids may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock in the open market may be higher than it would otherwise be in the absence of these transactions. Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of our common stock. These transactions may be effected on the Nasdaq Stock Market, in the over-the-counter market or otherwise and, if commenced, may be discontinued at any time.

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Passive Market Making. In connection with this offering, underwriters and selling group members may engage in passive market making transactions in our common stock on the Nasdaq Stock Market in accordance with Rule 103 of Regulation M under the Securities Exchange Act of 1934, as amended, during a period before the commencement of offers or sales of common stock and extending through the completion of the distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, that bid must then be lowered when specified purchase limits are exceeded.

Lock-Up Agreements. Pursuant to certain "lock-up" agreements, we and our executive officers and directors, except for Mark Lampert, a former member of our board of directors and an affiliate of BVF, have agreed, subject to certain exceptions, not to offer, sell, assign, transfer, pledge, contract to sell, or otherwise dispose of or announce the intention to otherwise dispose of, or enter into any swap, hedge or similar agreement or arrangement that transfers, in whole or in part, the economic consequence of ownership of, directly or indirectly, or make any demand or request or exercise any right with respect to the registration of, or file with the SEC a registration statement under the Securities Act relating to, any common stock or securities convertible into or exchangeable or exercisable for any common stock without the prior written consent of the Representatives, for a period of 60 days after the date of the pricing of the offering.

The Representatives, in their sole discretion, may release our common stock and other securities subject to the lock-up agreements described above in whole or in part at any time. When determining whether or not to release our common stock and other securities from lock-up agreements, the Representatives will consider, among other factors, the holder's reasons for requesting the release, the number of shares for which the release is being requested and market conditions at the time of the request.

Canada. The common stock may be sold only to purchasers purchasing, or deemed to be purchasing, as principal, who are accredited investors, as defined in National Instrument 45-106 *Prospectus Exemptions* or subsection 73.3(1) of the *Securities Act* (Ontario), and are permitted clients, as defined in National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*. Any resale of the common stock must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus supplement (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 *Underwriting Conflicts* (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

United Kingdom. Each of the underwriters has represented and agreed that:

- it has not made or will not make an offer of the securities to the public in the United Kingdom within the meaning of section 102B of the Financial Services and Markets Act 2000 (as amended) (FSMA) except to legal entities which are authorized or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to

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invest in securities or otherwise in circumstances which do not require the publication by us of a prospectus pursuant to the Prospectus Rules of the Financial Services Authority (FSA);

- it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of section 21 of FSMA) to persons who have professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 or in circumstances in which section 21 of FSMA does not apply to us; and
- it has complied with and will comply with all applicable provisions of FSMA with respect to anything done by it in relation to the securities in, from or otherwise involving the United Kingdom.

Switzerland. The securities will not be offered, directly or indirectly, to the public in Switzerland and this prospectus does not constitute a public offering prospectus as that term is understood pursuant to article 652a or 1156 of the Swiss Federal Code of Obligations.

European Economic Area. In relation to each Member State of the European Economic Area (the “EEA”) which has implemented the European Prospectus Directive (each, a “Relevant Member State”), an offer of our shares may not be made to the public in a Relevant Member State other than:

- to any legal entity which is a qualified investor, as defined in the European Prospectus Directive;
- to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150 natural or legal persons (other than qualified investors as defined in the European Prospectus Directive), subject to obtaining the prior consent of the relevant dealer or dealers nominated by us for any such offer, or;
- in any other circumstances falling within Article 3(2) of the European Prospectus Directive;

provided that no such offer of our shares shall require us or any underwriter to publish a prospectus pursuant to Article 3 of the European Prospectus Directive or supplement prospectus pursuant to Article 16 of the European Prospectus Directive.

For the purposes of this description, the expression an “offer to the public” in relation to the securities in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the securities to be offered so as to enable an investor to decide to purchase or subscribe for the securities, as the expression may be varied in that Relevant Member State by any measure implementing the European Prospectus Directive in that member state, and the expression “European Prospectus Directive” means Directive 2003/71/EC (and amendments hereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State) and includes any relevant implementing measure in each Relevant Member State. The expression 2010 PD Amending Directive means Directive 2010/73/EU.

We have not authorized and do not authorize the making of any offer of securities through any financial intermediary on our behalf, other than offers made by the underwriters and their respective affiliates, with a view to the final placement of the securities as contemplated in this document. Accordingly, no purchaser of the shares, other than the underwriters, is authorized to make any further offer of shares on our behalf or on behalf of the underwriters.

Electronic Offer, Sale and Distribution of Shares. A prospectus in electronic format may be made available on the websites maintained by one or more of the underwriters or selling group members, if any, participating in this offering and one or more of the underwriters participating in this offering may

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distribute prospectuses electronically. The Representatives may agree to allocate a number of shares to underwriters and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the underwriters and selling group members that will make internet distributions on the same basis as other allocations. Other than the prospectus in electronic format, the information on these websites is not part of this prospectus or the registration statement of which this prospectus forms a part, has not been approved or endorsed by us or any underwriter in its capacity as underwriter, and should not be relied upon by investors.

Other Relationships. Certain of the underwriters and their affiliates have provided, and may in the future provide, various investment banking, commercial banking and other financial services for us and our affiliates for which they have received, and may in the future receive, customary fees. The underwriters and certain of their affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of the common stock and may at any time hold, or recommend to clients that they acquire, long and/or short positions in the common stock.

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LEGAL MATTERS

The validity of the securities offered hereby will be passed upon for us by Fenwick & West LLP, Seattle, Washington. Certain matters will be passed upon for the underwriters by Goodwin Procter 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, 2015, as set forth in their report, which is incorporated by reference in this prospectus supplement and accompanying prospectus. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We file annual, quarterly and other reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at <http://www.sec.gov>. You may also read and copy any document we file at the SEC's Public Reference Room at 100 F Street, NE, Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the Public Reference Room. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, including any amendments to those reports, and other information that we file with or furnish to the SEC pursuant to Section 13(a) or 15(d) of the Exchange Act can also be accessed free of charge by accessing our website at <http://www.cascadianrx.com> under the "Investor—SEC Filings" caption to the SEC's Edgar Database. These filings will be available as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Information contained on our website is not part of this prospectus supplement.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

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

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2015 filed with the SEC on March 14, 2016;
- our Quarterly Reports on Form 10-Q for the periods ended March 31, 2016, June 30, 2016 and September 30, 2016 filed with the SEC on May 9, 2016, August 8, 2016 and November 7, 2016, respectively;
- our Current Reports on Form 8-K filed with the SEC on January 11, 2016, February 24, 2016, March 29, 2016, April 1, 2016, May 19, 2016, June 2, 2016, June 9, 2016, June 14, 2016, June 23, 2016, June 28, 2016, June 29, 2016, October 4, 2016, November 23, 2016, December 7, 2016 and January 23, 2017;
- our definitive proxy statement filed with the SEC on May 6, 2016; and

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- the description of our common stock contained in our registration statement on Form 8-A, filed with the SEC on December 10, 2007, including any amendments or reports 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: Cascadian Therapeutics, Inc., Attention: Investor Relations, 2601 Fourth Avenue, Suite 500, Seattle, Washington 98121, or you may call us at (206) 801-2100.

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PROSPECTUS

\$150,000,000

Oncothyreon 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 \$150,000,000.

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 Global Market under the symbol "ONTY." On December 29, 2014, the last reported sale price of our common stock on The NASDAQ Global Market was \$1.91 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 January 7, 2015

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission (the 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 \$150,000,000. 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 “Oncothyreon Inc.,” the “Company,” “Oncothyreon,” “we,” “us,” and “our” refer to Oncothyreon Inc.

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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 clinical-stage biopharmaceutical company focused primarily on the development of therapeutic products for the treatment of cancer. Our goal is to discover, develop and commercialize novel compounds that have the potential to improve the lives and outcomes of cancer patients. Our current clinical-stage product candidates include ONT-380, an orally active and selective small-molecule HER2 inhibitor, and ONT-10, a therapeutic vaccine targeting MUC1. We are developing preclinical product candidates in oncology, and potentially certain rare diseases, using our recently acquired protocell technology. We also collaborate with partners to discover and develop additional product candidates.

We have entered into a license agreement with Array BioPharma Inc. (Array). Pursuant to the license agreement, Array has granted us an exclusive license to develop, manufacture and commercialize ONT-380, an orally active, reversible and selective small-molecule HER2 inhibitor. HER2, also known as ErbB2, is a receptor tyrosine kinase that is over-expressed in breast cancer and other cancers, such as gastric and ovarian cancer. The license agreement replaced a development and commercialization agreement under which we and Array were previously jointly developing ONT-380. Array previously completed a Phase 1 clinical trial of ONT-380 in patients with heavily pre-treated metastatic breast cancer which demonstrated that the compound was well tolerated and had anti-tumor activity. We have initiated two Phase 1b trials of ONT-380, one in combination with Kadcyla[®] (ado-trastuzumab emtansine or TDM-1) and another in combination with Xeloda[®] (capecitabine) and/or Herceptin[®] (trastuzumab). In December 2014, we announced that interim data from these ongoing Phase 1b trials indicated preliminary clinical activity and tolerability in a heavily pretreated patient population.

We are also conducting a Phase 1 trial for ONT-10, a cancer vaccine directed against the Mucin 1 peptide antigen (MUC1). Results from this trial have demonstrated that ONT-10 activates the humoral arm of the immune system and elicits antibodies specific for MUC1. We are continuing the ongoing Phase 1 trial and we have also recently initiated a Phase 1b trial of ONT-10 in combination with the T-cell agonist antibody varlilumab in collaboration with Celldex Therapeutics, Inc.

We are focused on expanding our pipeline of product candidates through both internal research and collaborative efforts. To support our internal efforts we recently acquired Alpine Biosciences, Inc., a privately held biotechnology company developing protocells, a nanoparticle platform technology designed to enable the targeted delivery of multiple therapeutic agents, including nucleic acids, proteins, peptides and small molecules. We intend to utilize the protocell technology to develop new product candidates for the treatment of cancer and rare diseases, either on our own or with partners. On October 22, 2014 we filed unaudited pro forma condensed combined financial statements for Alpine Biosciences, Inc. for the period ending June 30, 2014 on our Current Report on Form 8-K that are incorporated by reference. Updates to the unaudited pro forma condensed combined statements of operations for the interim period from July 1, 2014 to September 30, 2014 were immaterial. For the interim period, the pro forma combined net loss increased by \$62,000 primarily due to salary and stock-based compensation related to hiring of a key employee that was contingent upon the consummation of the merger. These expenses were recorded in research and development. There were no changes to pro forma combined basic and diluted net loss per share.

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

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not exceed \$150,000,000. 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 \$0.0001 per share.

Preferred Stock

We may offer shares of our preferred stock, par value \$0.0001 per share, in one or more series. Our board of directors or a committee designated by the board will determine the dividend, voting, conversion and other rights of the series of shares of preferred stock being offered. Each series of preferred stock will be more fully described in the particular prospectus supplement that will accompany this prospectus, including redemption provisions, rights in the event of our liquidation, dissolution or the winding up, voting rights and rights to convert into common stock.

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.

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. We may issue warrants independently or together with other securities. Our board of directors will determine the terms of the warrants.

* * *

Oncothyreon is the successor corporation to Biomira Inc. On August 23, 1985, Biomira Inc. was incorporated under the Canada Business Corporations Act. Oncothyreon Inc. was incorporated in the state of Delaware on September 7, 2007. On December 10, 2007, Oncothyreon became the successor corporation to Biomira by way of an arrangement effected pursuant to Canadian law. Our executive office is located at 2601 Fourth Avenue, Suite 500, Seattle, Washington 98121 and our telephone number is (206) 801-2100.

RATIO OF EARNINGS TO FIXED CHARGES

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

	<u>Year Ended December 31,</u>					<u>Nine Months Ended September 30, 2014</u>
	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	
Ratio of earnings to fixed charges(1)	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

- (1) The ratio of earnings to fixed charges represents the number of times that fixed charges are covered by earnings. Earnings consist of income or loss from continuing operations before income taxes and fixed

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charges. Fixed charges consist of interest expensed and capitalized under capital leases and estimated interest expense within rental expense. In the years ended December 31, 2009, 2010, 2011, 2012 and 2013 and the nine months ended September 30, 2014 earnings were sufficient (insufficient) to cover fixed charges by (\$17.0) million, (\$15.8) million, (\$42.6) million, (\$3.4) million, (\$38.7) million and (\$22.4) million, respectively.

[Table of Contents](#)**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, 2014, 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.

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:

- the results we anticipate from our pre-clinical development activities and the clinical trials of our product candidates;
- our belief that our product candidates could potentially be useful for different oncology and potentially also for rare disease indications;
- our ability to manage our growth;
- the size of the markets for the treatment of conditions our product candidates target;
- our ability to acquire or in-license additional product candidates and technologies;
- our ability to manage our relationships with partners and collaborators;
- our ability to generate future revenue;
- financing to support our operations, clinical trials and commercialization of our products;
- our ability to adequately protect our proprietary information and technology from competitors and avoid infringement of proprietary information and technology of our competitors;
- the possibility that government-imposed price restrictions may make our products, if successfully developed and commercialized following regulatory approval, unprofitable;
- potential exposure to product liability claims and the impact that successful claims against us will have on our ability to commercialize our product candidates;

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- our ability to obtain on commercially reasonable terms adequate product liability insurance for our commercialized products;
- the possibility that competing products or technologies may make our products, if successfully developed and commercialized following regulatory approval, obsolete;
- our ability to succeed in finding and retaining joint venture and collaboration partners to assist us in the successful marketing, distribution and commercialization of our products;
- our ability to attract and retain highly qualified scientific, clinical, manufacturing, and management personnel;
- our ability to identify and capitalize on possible collaboration, strategic partnering, acquisition or divestiture opportunities;
- potential problems with third parties, including suppliers and key personnel, upon whom we are dependent; and
- our estimates regarding our capital requirements and our need for additional financing.

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 Part II, Item 1A “Risk Factors” in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, 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.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended (the Exchange Act) and are required to file annual, quarterly and other reports, proxy statements and other information with the 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, 2601 Fourth Avenue, Suite 500, Seattle, Washington 98121, 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.

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Information about us is also available at our website at <http://www.oncothyreon.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, 2013 filed with the SEC on March 13, 2014, including certain information incorporated by reference therein from our Definitive Proxy Statement for our 2014 annual meeting of stockholders filed with the SEC on April 24, 2014;
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2014, June 30, 2014 and September 30, 2014 and filed with the SEC on May 1, 2014, August 11, 2014 and November 6, 2014, respectively;
- our Current Reports on Form 8-K filed on June 2, 2014, June 10, 2014, August 11, 2014 (except with respect to information furnished under Item 2.02), August 18, 2014, September 12, 2014, September 18, 2014, September 23, 2014, October 22, 2014 and December 12, 2014;
- the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on December 10, 2007 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 information that has been 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 Oncothyreon Inc., Attn: Investor Relations, 2601 Fourth Avenue, Suite 500, Seattle, Washington 98121, telephone number (206) 801-2100. 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.

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

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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.

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 of 1933 (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 through The NASDAQ Global Market or any other 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

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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

We are authorized to issue 210,012,500 shares of all classes of capital stock, of which 200,000,000 shares is common stock, \$0.0001 par value per share; 9,990,000 shares are undesignated preferred stock, \$0.0001 par value per share; 10,000 shares are Series A convertible preferred stock, \$0.0001 par value per share and 12,500 shares are Class UA preferred stock, no par value per share. Our capital is stated in U.S. dollars. As of September 30, 2014, we had 91,555,975 outstanding shares of common stock, 10,000 outstanding shares of Series A convertible preferred stock and 12,500 outstanding shares of Class UA preferred stock.

Common Stock

The holders of our common stock are entitled to receive such dividends or distributions as are lawfully declared on our common stock, to have notice of any authorized meeting of stockholders, and to one vote for

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each share of our common stock on all matters which are properly submitted to a vote of stockholders. As a Delaware corporation, we are subject to statutory limitations on the declaration and payment of dividends. In the event of a liquidation, dissolution or winding up of Oncothyreon, holders of our common stock have the right to a ratable portion of assets remaining after satisfaction in full of the prior rights of creditors, including holders of our indebtedness, all liabilities and the aggregate liquidation preferences of any outstanding shares of our preferred stock. The holders of our common stock have no conversion, redemption, preemptive or cumulative voting rights.

Preferred Stock

As of September 30, 2014, other than as described below, no shares of our preferred stock had been issued and no such shares were subject to outstanding options and other rights to purchase or acquire. However, shares of preferred stock may be issued in one or more series from time to time by our board of directors, and the board of directors is expressly authorized to fix by resolution or resolutions the designations and the powers, preferences and rights, and the qualifications, limitations and restrictions thereof, of the shares of each series of preferred stock. Subject to the determination of our board of directors, any shares of our preferred stock that may be issued in the future would generally have preferences over our common stock with respect to the payment of dividends and the distribution of assets in the event of our liquidation, dissolution or winding up.

Series A Convertible Preferred Stock

On September 22, 2014, in connection with the public offering of 10,000 shares of the Company's Series A Convertible Preferred Stock, our board of directors designated 10,000 shares of its authorized and unissued preferred stock as Series A Convertible Preferred Stock and we filed a Certificate of Designation of Preferences, Rights and Limitations of Series A Convertible Preferred Stock with the Delaware Secretary of State.

Voting. Shares of Series A Convertible Preferred Stock generally have no voting rights, except as required by law and except that the consent of holders of a majority of the outstanding Series A Convertible Preferred Stock are required to amend the terms of the Series A Convertible Preferred Stock.

Conversion. Each share of Series A Convertible Preferred Stock is convertible into 1,000 shares of our common stock at any time at the holder's option. The holder, however, is prohibited from converting Series A Convertible Preferred Stock into shares of our common stock if, as a result of such conversion, the holder, together with its affiliates, would own more than 4.99% of the shares of our common stock then issued and outstanding.

Dividends. Shares of Series A Convertible Preferred Stock will not be entitled to receive any dividends, unless and until specifically declared by the Company's board of directors, and will rank:

- senior to all common stock;
- senior to any class or series of capital stock created specifically ranking by its terms junior to the Series A Convertible Preferred Stock;
- on parity with and any class or series of capital stock created specifically ranking by its terms on parity with the Series A Convertible Preferred Stock; and
- junior to the Company's Class UA Preferred Stock and any class or series of capital stock created specifically ranking by its terms senior to the Series A Convertible Preferred Stock.

Liquidation Preference. In the event of our liquidation, dissolution or winding up, holders of Series A will receive a payment equal to \$0.0001 per share of Series A Convertible Preferred Stock before any proceeds are distributed to the holders of common stock, but after any proceeds are distributed to the holder of the our Class UA Preferred Stock.

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Class UA Preferred Stock

Our certificate of incorporation provides for a separate class of preferred stock, the Class UA preferred stock. As of September 30, 2014, 12,500 shares of Class UA preferred stock are issued and outstanding and held by the University of Alberta. Below is a summary of the terms associated with our Class UA preferred stock. Please refer to our certificate of incorporation for a full description of the rights and privileges attached to our Class UA preferred stock.

Voting. Each share of Class UA preferred stock is not entitled to receive notice of, or to attend and vote at, any stockholder meeting unless the meeting is called to consider any matter in respect of which the holders of the shares of Class UA preferred stock would be entitled to vote separately as a class, in which case the holders of the shares of Class UA preferred stock shall be entitled to receive notice of and to attend and vote at such meeting. Amendments to our certificate of incorporation that would increase or decrease the par value of the Class UA preferred stock or alter or change the powers, preferences or special rights of the Class UA preferred stock so as to affect them adversely would require the approval of the Class UA preferred stock.

Conversion. The Class UA preferred stock is not convertible into shares of any other class of our capital stock.

Dividends. The holders of the shares of Class UA preferred stock are not entitled to receive dividends.

Liquidation Preference. In the event of our liquidation, dissolution or winding up, the holders of the Class UA preferred stock are entitled to receive, in preference to the holders of our common stock, an amount equal to the lesser of (a) 20% of the after tax profits, which we refer to as net profits, determined in accordance with generally accepted accounting principles, where relevant, consistently applied, for the period commencing at the end of our last completed fiscal year and ending on the date of the distribution of our assets to stockholders together with 20% of our net profits for the last completed fiscal year and (b) Cdn.\$100 per share.

Redemption. We may, at our option and subject to the requirements of applicable law, redeem at any time the whole or from time to time any part of the then-outstanding shares of Class UA preferred stock for Cdn.\$100 per share.

Anti-Takeover Effect of Unissued Shares of Capital Stock

Common Stock. Our shares of authorized and unissued common stock are available for future issuance without additional stockholder approval. While these additional shares are not designed to deter or prevent a change of control, under some circumstances we could use the additional shares to create voting impediments or to frustrate persons seeking to effect a takeover or otherwise gain control by, for example, issuing those shares in private placements to purchasers who might side with our board of directors in opposing a hostile takeover bid.

Preferred Stock. Our certificate of incorporation grants our board of directors the authority, without any further vote or action by our stockholders, to issue preferred stock in one or more series and to fix the number of shares constituting any such series and the preferences, limitations and relative rights, including dividend rights, dividend rate, voting rights, terms of redemption, redemption price or prices, conversion rights and liquidation preferences of the shares constituting any series. The existence of authorized but unissued preferred stock could reduce our attractiveness as a target for an unsolicited takeover bid since we could, for example, issue shares of preferred stock to parties who might oppose such a takeover bid or shares that contain terms the potential acquirer may find unattractive. This may have the effect of delaying or preventing a change in control, may discourage bids for the common stock at a premium over the market price of the common stock, and may adversely affect the market price of, and the voting and other rights of the holders of, common stock.

Delaware Anti-Takeover Law and Certain Provisions of Our Certificate of Incorporation and By-laws

Certain provisions of Delaware law and our certificate of incorporation and bylaws could make it more difficult to acquire us by means of a tender offer, a proxy contest or otherwise and to remove our incumbent

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officers and directors. These provisions, summarized below, are expected to discourage certain types of coercive takeover practices and inadequate takeover bids and to encourage persons seeking to acquire control of us to first negotiate with us. We believe that the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging takeover or acquisition proposals because, among other things, negotiation of these proposals could result in an improvement of their terms.

We are subject to Section 203 of the General Corporation Law of the State of Delaware, an anti-takeover law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years following the date the person became an interested stockholder, unless, with exceptions, the business combination or the transaction in which the person became an interested stockholder is approved in a prescribed manner. Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. Generally, an interested stockholder is a person who, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status, did own, 15% or more of a corporation’s voting stock. The existence of this provision would be expected to have an anti-takeover effect with respect to transactions not approved in advance by our board of directors, including discouraging attempts that might result in a premium over the market price for the shares of common stock held by stockholders.

Our certificate of incorporation and bylaws require that any action required or permitted to be taken by our stockholders must be effected at a duly called annual or special meeting of the stockholders and may not be effected by written consent. Special meetings of our stockholders may be called only by the Chairman of our board of directors, a majority of our board of directors or our president. Our certificate of incorporation and bylaws also provide that our board of directors will be divided into three classes, with each class serving staggered three-year terms. Except as otherwise set forth in our certificate of incorporation and bylaws, the stockholders may amend or repeal certain provisions of our certificate of incorporation and may amend, alter or repeal our bylaws only with the affirmative vote of the holders of 75% of the shares of capital stock issued and outstanding and entitled to vote at a general or special meeting of our stockholders, as applicable. These provisions may have the effect of deterring hostile takeovers or delaying changes in control of us or our management.

Transfer Agent

The transfer agent for our common stock is Computershare Investor Services Inc., 350 Indiana St., Suite 800, Golden, Colorado 80401, (214) 340-0757.

Listing

Our common stock is quoted on The Nasdaq Global Market under the trading symbol “ONTY.”

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

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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;

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- the certificates or forms required for the issuance of debt securities in definitive form;
- the trustees, depositories, 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 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 depository 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 depository arrangement with respect to any series of debt securities in the prospectus supplement.

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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

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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 depository 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 depository 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 depository or its nominee to the depository 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 depository 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 depository. 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 depository for any debt securities represented by a registered global security is at any time unwilling or unable to continue as depository or stops being a clearing agency registered under the Exchange Act, we will appoint an eligible successor depository. If we fail to appoint an eligible successor depository 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 depository, 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

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- (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.

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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

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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

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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.

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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;

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- 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.

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 Oncothyreon Inc. appearing in Oncothyreon Inc.'s Annual Report on Form 10-K for the year ended December 31, 2013, and the effectiveness of Oncothyreon Inc.'s internal control over financial reporting as of December 31, 2013 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 Exchange Commission) given on the authority of such firm as experts in accounting and auditing. The financial statements of Alpine Biosciences, Inc. as of and for the year ended December 31, 2013, appearing in Oncothyreon Inc.'s Current Report on Form 8-K, as amended, filed with the Securities Exchange Commission on October 22, 2014, have been audited by Ernst & Young LLP, independent auditors, as set forth in their report thereon incorporated by reference therein, and incorporated herein by reference. Such financial statements are incorporated herein in reliance upon the report of Ernst & Young LLP pertaining to such financial statements given on the authority of such firm as experts in accounting and auditing.

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23,182,000 Shares



CASCADIAN
T H E R A P E U T I C S

Cascadian Therapeutics, Inc.

Common Stock

PROSPECTUS SUPPLEMENT

Joint Book-Running Managers

Cowen and Company

Barclays

Lead Manager

Raymond James

Co-Manager

BTIG

January 24, 2017
