

ATHERSYS, INC / NEW
Form 424B3
January 14, 2016
Table of Contents

Filed Pursuant to Rule 424(b)(3)
Registration No. 333-208629

PROSPECTUS

16,600,000 Shares

Common Stock

This prospectus relates to a common stock purchase agreement that we entered into with Aspire Capital Fund, LLC (referred to in this prospectus as *Aspire Capital* or the *selling stockholder*) and the potential sale of up to 16,600,000 shares of our common stock by Aspire Capital, consisting of 16,350,000 shares that we may issue at our option to Aspire Capital in the future pursuant to the terms of that purchase agreement and 250,000 shares that we previously issued to Aspire Capital as consideration for entering into that purchase agreement. The prices at which Aspire Capital may sell the shares pursuant to this prospectus will be determined by the prevailing market price for the shares or in negotiated transactions. We will not receive proceeds from the sale of our shares by Aspire Capital. However, we may receive proceeds of up to \$30.0 million from the sale of our common stock to Aspire Capital pursuant to that purchase agreement we entered into with Aspire Capital. The Company and Aspire Capital have entered into the common stock purchase agreement to replace the prior common stock purchase agreement between the Company and Aspire Capital that recently expired according to its terms.

Aspire Capital is an *underwriter* within the meaning of the Securities Act of 1933, as amended.

Our common stock is listed on the NASDAQ Capital Market under the symbol *ATHX*. The last sale price of our common stock on January 13, 2016, as reported by the NASDAQ Capital Market, was \$1.06 per share.

Investing in any of our securities involves risk. Please read carefully the section entitled Risk Factors beginning on page 6 of this prospectus.

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 14, 2016

Table of Contents**TABLE OF CONTENTS**

	Page
<u>ABOUT THIS PROSPECTUS</u>	i
<u>PROSPECTUS SUMMARY</u>	1
<u>RISK FACTORS</u>	6
<u>CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS</u>	7
<u>USE OF PROCEEDS</u>	8
<u>COMMON STOCK PRICE RANGE</u>	8
<u>DIVIDEND POLICY</u>	9
<u>DILUTION</u>	9
<u>SELLING STOCKHOLDER</u>	10
<u>THE ASPIRE CAPITAL TRANSACTION</u>	11
<u>DESCRIPTION OF CAPITAL STOCK</u>	16
<u>CERTAIN U.S. FEDERAL INCOME AND ESTATE TAX CONSIDERATIONS FOR NON-U.S. HOLDERS</u>	17
<u>PLAN OF DISTRIBUTION</u>	20
<u>LEGAL MATTERS</u>	21
<u>EXPERTS</u>	21
<u>WHERE YOU CAN FIND MORE INFORMATION</u>	21
<u>INFORMATION WE INCORPORATE BY REFERENCE</u>	21

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the SEC. The prospectus relates to shares of our common stock which the selling stockholder named in this prospectus may sell from time to time. We will not receive any of the proceeds from these sales. We have agreed to pay the expenses incurred in registering these shares, including legal and accounting fees.

You should read this prospectus together with the additional information described under the heading **Where You Can Find More Information**. You should rely only on the information contained or incorporated by reference in this prospectus and in any prospectus supplement or in any free writing prospectus that we may provide you. We have not, and the selling stockholder has not, authorized anyone to provide you with information different from that contained in this prospectus. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. You should not assume that the information contained in this prospectus, any prospectus supplement, any document incorporated by reference or any free writing prospectus is accurate as of any date other than the date of such document.

The selling stockholder is offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where it is lawful to do so. The selling stockholder should not make an offer of these shares in any state where the offer is not permitted. Brokers or dealers should confirm the existence of an exemption from registration or effect a registration in connection with any offer and sale of these shares.

References in this prospectus to the terms **we**, **us**, **Athersys** or **the Company** or other similar terms mean Athersys, Inc. and its consolidated subsidiaries, unless we state otherwise or the context indicates otherwise.

Table of Contents

PROSPECTUS SUMMARY

This summary highlights information contained elsewhere or incorporated by reference into this prospectus. Because it is a summary, it does not contain all of the information that you should consider before investing in our securities. You should read this entire prospectus carefully, including the section entitled Risk Factors and the documents that we incorporate by reference into this prospectus, before making an investment decision.

The Company

We are an international biotechnology company that is focused primarily in the field of regenerative medicine. We are committed to the discovery and development of best-in-class therapies designed to extend and enhance the quality of human life. We have established a portfolio of therapeutic product development programs to address significant unmet medical needs in multiple disease areas. Our MultiStem[®] cell therapy, a patented and proprietary allogeneic stem cell product, is our lead platform product and is currently being evaluated in later-stage clinical trials. Our current clinical development programs are focused on treating neurological conditions, cardiovascular disease, inflammatory and immune disorders, and other conditions where the current standard of care is limited or inadequate for many patients. We are also applying our pharmaceutical discovery capabilities to identify and develop small molecule compounds with potential applications in indications such as obesity, related metabolic conditions and certain neurological conditions. These represent major areas of clinical need, as well as substantial commercial opportunities.

We believe our MultiStem therapy represents a potential breakthrough in the field of regenerative medicine and stem cell therapy and could be used to treat a range of disease indications. MultiStem treatment enhances tissue repair and healing in multiple ways, including reducing inflammatory damage, protecting tissue that is at risk following acute or ischemic injury, and promoting formation of new blood vessels in regions of ischemic injury. These cells appear to be responsive to the environment in which they are administered, by homing to sites of injury and providing active disease response, while producing proteins that may provide benefit in both acute and chronic conditions. In contrast to traditional pharmaceutical products or biologics that generally act through a single biological mechanism of action, MultiStem cell therapy may enhance healing and tissue repair through multiple distinct mechanisms acting in parallel, such as by producing a range of therapeutic factors and dynamically responding to the needs of the body, resulting in a more effective therapeutic response.

The MultiStem product is unique among regenerative medicine approaches because it can be manufactured on a large scale, may be administered in an off-the-shelf manner with minimal processing, and can augment healing in multiple ways, providing biological potency and therapeutic effects that other cell therapy approaches may not be able to achieve. Additionally, MultiStem treatment has demonstrated a consistent safety profile in both preclinical and clinical studies. Like drugs and biologics, the product is cleared from the body over time, enhancing product safety relative to other types of stem cell therapy. While the product does not permanently engraft in the patient, the therapeutic effects of treatment with MultiStem cells appear to have durability.

We believe the therapeutic and commercial potential for MultiStem cell therapy to be very broad, applying to many areas of significant unmet medical need. We are pursuing opportunities in several potential multi-billion dollar markets. While traditional pharmaceuticals and biologic therapies typically may be used to treat only a single disease or a narrowly defined set of related conditions, MultiStem cell therapy appears to have far broader potential and could be developed in different formulations and with different delivery approaches to effectively treat a range of disease indications.

We have evaluated the use of MultiStem cell therapy as a potential treatment in several disease areas. Working with an international network of leading investigators and prominent research and clinical institutions, and through our own

internal efforts, we explored the potential for MultiStem therapy to be used as a treatment of acute and chronic forms of neurological conditions, cardiovascular disease, inflammatory and immune disorders, certain pulmonary conditions and other areas of unmet medical need. Each of our clinical stage programs targets an area of significant medical need and represents major commercial market opportunities.

Our development approach has historically involved establishing collaborative relationships with leading research and clinical centers in the United States and internationally. This has enabled us to methodically advance multiple programs in areas of defined unmet medical need in a resource efficient manner.

Table of Contents

Furthermore, by emphasizing the potential application of our technologies in areas of significant clinical need, we believe we are well positioned to utilize recent regulatory initiatives that are designed to promote the rapid and cost effective development of innovative new therapies. These include recent initiatives in the United States being implemented by the United States Food and Drug Administration, or FDA, involving the broadened application of the accelerated approval pathway, and the new Breakthrough Therapies framework, as well as the new accelerated Regenerative Medicine regulatory framework in Japan that is designed to enable rapid conditional authorization of qualified regenerative medicine therapies. We believe such initiatives could accelerate the development and commercialization of products like MultiStem cell therapy, if clinical results demonstrate appropriate safety and therapeutic effectiveness, thereby increasing shareholder value.

Recent Developments

On December 17, 2015, we put in place a new equity facility with Aspire Capital, as described in greater detail below. The facility replaces the prior two-year equity arrangement that we entered into with Aspire Capital in October 2013, which replaced a previous two-year equity arrangement entered into in November 2011. Pursuant to those agreements, at our discretion, we sold Aspire Capital an aggregate of 12.3 million shares of common stock at market-based prices over the four-year period. Aspire Capital has been a long-term investor and currently owns approximately 1,074,914 shares of our common stock. The new equity facility represents an additional tool for accessing capital to complement business collaborations, grants and traditional fundraising, and as such, provides us with added financial strength and flexibility. Under the new agreement, we have the right to sell up to \$30.0 million of shares of common stock to Aspire Capital under certain conditions, as described further below. We intend to use the facility when it is opportunistic in the marketplace to help support the achievement of our operational objectives.

We had \$28.5 million of cash and cash equivalents available to fund our operations on September 30, 2015. This leaves us well positioned to continue to fund our core operations, including supporting the completion of our ongoing clinical studies, as well as other operational priorities such as process development and additional clinical trial planning and preparation.

Corporate Information

We are incorporated in Delaware in 1995 and our headquarters are located at 3201 Carnegie Avenue, Cleveland, Ohio 44115. Our telephone number is (216) 431-9900. Our website is <http://www.athersys.com>. The information accessible through our website is not part of this prospectus, other than the documents that we file with the SEC that are incorporated by reference into this prospectus.

Table of Contents

This Offering

Common stock being offered by the selling stockholder	16,600,000 shares
Common stock outstanding	83,285,747 shares (as of December 1, 2015)
Use of Proceeds	The selling stockholder will receive all of the proceeds from the sale of the shares offered for sale by it under this prospectus. We will not receive proceeds from the sale of the shares by the selling stockholder. However, we may receive up to \$30.0 million in proceeds from the sale of our common stock to the selling stockholder under the common stock purchase agreement, subject to certain conditions described further below, which we intend to use for working capital and general corporate purposes to help support the achievement of our operational objectives. See Use of Proceeds.
Risk Factors	An investment in our common stock involves a high degree of risk. See Risk Factors beginning on page 6 for a discussion of certain factors that you should consider when evaluating an investment in our common stock.
NASDAQ symbol	Our common stock is listed on The NASDAQ Capital Market, or NASDAQ, under the symbol ATHX.

Unless otherwise indicated, all information in this prospectus excludes:

8,455,885 shares of common stock authorized and reserved for future issuance under outstanding awards under our equity incentive plans;

617,673 shares of common stock authorized and reserved for future issuance under our equity incentive plans; and

4,864,893 shares of common stock issuable upon exercise of outstanding warrants.

On December 17, 2015, we entered into a common stock purchase agreement, which we refer to as the Purchase Agreement, with Aspire Capital, which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital is committed to purchase up to an aggregate of \$30.0 million of shares of our common stock over the approximately 36-month term of the Purchase Agreement, should we elect to sell shares to Aspire Capital. In consideration for entering into the Purchase Agreement, concurrently with the execution of the Purchase Agreement, we issued to Aspire Capital 250,000 shares of our common stock, which we refer to as the Commitment Shares, as a commitment fee. Concurrently with entering into the Purchase Agreement, we also entered into a registration rights agreement with Aspire Capital, which we refer to as the Registration Rights Agreement, pursuant to which we agreed to file one or more registration statements, including the registration statement of which this prospectus is a part, as permissible and necessary to register under the Securities Act, the sale of the shares of our common stock that have been and may be issued to Aspire Capital under the Purchase Agreement.

As of December 1, 2015, there were 83,285,747 shares of our common stock outstanding. The 16,600,000 shares of our common stock offered hereby represent approximately 19.9% of the total number of shares of our common stock

outstanding as of December 1, 2015. The number of shares of our common stock ultimately offered for sale by Aspire Capital is dependent upon the number of shares we elect to sell to Aspire Capital under the Purchase Agreement.

Pursuant to the Purchase Agreement and the Registration Rights Agreement, we have registered under the Securities Act 16,600,000 shares of our common stock, which includes the Commitment Shares and an additional 16,350,000 shares of common stock that we may issue to Aspire Capital. All 16,600,000 shares of common stock are being offered pursuant to this prospectus.

Table of Contents

If we elect to sell more than the 16,600,000 shares of common stock offered hereby, we must first register under the Securities Act the sale by Aspire Capital of any additional shares we may elect to sell to Aspire Capital before we can put such additional shares to Aspire Capital under the Purchase Agreement.

The Purchase Agreement also provides that the number of shares that may be sold pursuant to the Purchase Agreement shall be limited to 19.99% of our outstanding shares of common stock as of December 17, 2015 (or 16,657,745 shares), which we refer to as the Exchange Cap, unless stockholder approval or an exception pursuant to the rules of the NASDAQ Capital Market is obtained to issue more than 19.99%. This limitation shall not apply if, at any time the Exchange Cap is reached and at all times thereafter, the average price paid for all shares issued under the Purchase Agreement is equal to or greater than \$1.03, which was the closing sale price of our common stock on December 17, 2015. We are not required or permitted to issue any shares of common stock under the Purchase Agreement if such issuance would breach our obligations under the rules or regulations of the Nasdaq Capital Market. If we elect to sell more than the 16,657,745 shares of our common stock, we must first obtain the approval of our stockholders to do so, if necessary, and register under the Securities Act the sale of any additional shares we may elect to sell to Aspire Capital before we can put such additional shares to Aspire Capital under the Purchase Agreement.

We have the right, in our sole discretion, on any business day on which the closing sale price of our common stock equals or exceeds \$0.25 per share (the Floor Price), to present Aspire Capital with a purchase notice (each, a Purchase Notice), directing Aspire Capital (as principal) to purchase up to 200,000 shares of our common stock per trading day (each a Purchase Share), provided that the aggregate price of such purchase shall not exceed \$500,000 per trading day, up \$30.0 million of our common stock in the aggregate. The purchase price per Purchase Share pursuant to such Purchase Notice (the Purchase Price) is the lower of (i) the lowest sale price for the Company's common stock on the date of sale or (ii) the arithmetic average of the three lowest closing sale prices for the Company's common stock during the ten (10) consecutive business days ending on the business day immediately preceding the purchase date of those securities. The applicable Purchase Price will be determined prior to delivery of any Purchase Notice.

In addition, on any date on which we submit a Purchase Notice to Aspire Capital in an amount of at least 100,000 shares, we also have the right, in our sole discretion, to present Aspire Capital with a volume-weighted average price purchase notice (each, a VWAP Purchase Notice) directing Aspire Capital to purchase an amount of common stock equal to up to 30% of the aggregate shares of the Company's common stock traded on The NASDAQ Capital Market on the next business day (the VWAP Purchase Date), subject to a maximum number of shares we may determine (the VWAP Purchase Share Volume Maximum). The purchase price per Purchase Share pursuant to such VWAP Purchase Notice (the VWAP Purchase Price) shall be the lower of (i) the closing sale price on the date of sale and (ii) 95% of the volume weighted average price for the Company's common stock traded on The NASDAQ Capital Market on (i) the VWAP Purchase Date if the aggregate shares to be purchased on that date does not exceed the VWAP Purchase Share Volume Maximum, or (ii) the portion of such business day until such time as the aggregate shares to be purchased will equal the VWAP Purchase Share Volume Maximum. Further, if the sale price of the Company's common stock falls on the VWAP Purchase Date below the greater of (i) 90% of the closing price of our common stock on the business day immediately preceding the VWAP Purchase Date or (ii) the price set by us in the VWAP Purchase Notice (the VWAP Minimum Price Threshold), the VWAP Purchase Price will be determined using the percentage in the VWAP Purchase Notice of the total shares traded for such portion of the VWAP Purchase Date prior to the time that the sale price of our common stock fell below the VWAP Minimum Price Threshold and the volume weighted average price of our common stock sold during such portion of the VWAP Purchase Date prior to the time that the sale price of our common stock fell below the VWAP Minimum Price Threshold.

Under the Purchase Agreement, the Company and Aspire Capital may not effect any sales of shares of our common stock pursuant to the Purchase Agreement on any business day that the closing sale price of our common stock is less than the Floor Price. This Floor Price and the respective prices and share numbers in the preceding paragraphs shall be

appropriately adjusted for any reorganization, recapitalization, stock dividend, stock split, reverse stock split or other similar transaction. Additionally, the Purchase Agreement provides that the Company and Aspire Capital shall not effect any sales under the Purchase Agreement if such shares proposed to be issued and sold, when aggregated with all other shares of the Company's common stock that Aspire Capital and its affiliates beneficially own, would result in Aspire Capital and its affiliates beneficially owning more than 19.99% of the Company's then-issued and outstanding common stock.

Table of Contents

There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to Aspire Capital. Aspire Capital has no right to require any sales by us, but is obligated to make purchases from us as we direct in accordance with the Purchase Agreement. We may deliver multiple Purchase Notices and VWAP Purchase Notices to Aspire Capital from time to time during the term of the Purchase Agreement, so long as the most recent purchase has been completed. There are no limitations on use of proceeds, financial or business covenants, restrictions on future fundings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement. The Purchase Agreement may be terminated by us at any time, at our discretion, without any penalty or cost to us.

On January 13, 2015, the SEC declared the registration statement, of which this prospectus is a part, effective, and on January 14, 2015, all other conditions to commencement were satisfied such that we may now begin selling shares of our common stock to Aspire Capital pursuant to the Purchase Agreement.

Table of Contents

RISK FACTORS

Investing in our common stock involves risk. Prior to making a decision about investing in our common stock, you should carefully consider the following risk factors, as well as specific risk factors discussed under the heading "Risk Factors" in our most recent Annual Report on Form 10-K and in our most recent Quarterly Reports on Form 10-Q, which are or will be 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 risks we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations. If any of these risks actually occurs, our business, results of operations and financial condition could suffer. In that case, the trading price of our common stock could decline, and you could lose part of your investment.

Risks Related to this Offering and our Common Stock

The sale of our common stock to Aspire Capital may cause substantial dilution to our existing stockholders and the sale of the shares of common stock acquired by Aspire Capital could cause the price of our common stock to decline.

We have registered for sale the Commitment Shares that we have issued and an additional 16,350,000 shares that we may sell to Aspire Capital under the Purchase Agreement. It is anticipated that shares registered in this offering will be sold by Aspire Capital over a period of up to approximately 36-months from the date of this prospectus. The number of shares of common stock that we may sell under the Purchase Agreement may exceed 16,600,000 shares, depending on the sales price. If we elect to sell more than the 16,600,000 shares of common stock offered hereby, we must first register under the Securities Act the sale by Aspire Capital of any additional shares we may elect to sell to Aspire Capital before we can put such additional shares to Aspire Capital under the Purchase Agreement. Additionally, the number of shares ultimately offered for sale by Aspire Capital under this prospectus is dependent upon the number of shares we elect to sell to Aspire Capital under the Purchase Agreement. Depending upon market liquidity at the time, sales of shares of our common stock under the Purchase Agreement or issuance of shares upon the exercise of the warrants may cause the trading price of our common stock to decline.

Aspire Capital may ultimately purchase all, some or none of the \$30.0 million of common stock that, together with the Commitment Shares, is the subject of this prospectus. Aspire Capital may sell all, some or none of our shares that it holds or comes to hold under the Purchase Agreement. Sales by Aspire Capital of shares acquired pursuant to the Purchase Agreement under the registration statement, of which this prospectus is a part, may result in dilution to the interests of other holders of our common stock. In addition, the sale of a substantial number of shares of our common stock by Aspire Capital in this offering or anticipation of such sales, could make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise wish to effect sales. However, we have the right to control the timing and amount of sales of shares issued to Aspire Capital under the Purchase Agreement, and the Purchase Agreement may be terminated by us at any time at our discretion without any penalty or cost to us.

If we do not continue to meet the listing standards established by the NASDAQ Capital Market, the common stock may not remain listed for trading.

The NASDAQ Capital Market has established certain quantitative criteria and qualitative standards that companies must meet in order to remain listed for trading on these markets. We cannot guarantee that we will be able to maintain all necessary requirements for listing; therefore, we cannot guarantee that our common stock will remain listed for trading on the NASDAQ Capital Market or other similar markets.

We may not be able to utilize a significant portion of our net operating loss or research tax credit carryforwards or other tax attributes, which could harm our profitability.

As of December 31, 2014, we had U.S. federal net operating loss and research and development tax credit carryforwards of approximately \$88,283,000 and \$2,934,000, respectively. Such operating losses and tax credits may be used to reduce future taxable income and tax liabilities and will expire at various dates between 2019 and 2035. We also had foreign tax credit carryforwards of approximately \$200,000. Such tax credits will expire between 2015 and 2019. We also had state and city net operating loss carryforwards aggregating approximately \$35,994,000. Such operating losses may be used to reduce future taxable income and tax liabilities and will expire at various dates between 2015 and 2035.

The utilization of net operating loss and tax credit carryforwards generated prior to October 2012 is substantially limited under Section 382 of the Internal Revenue Code of 1986, as amended (the Code), as a result of an ownership change that occurred in connection with our equity offering in October 2012. U.S. federal net operating loss carryforwards of \$48,213,000, research and development tax credits of \$2,723,000, and state and local net operating loss carryforwards of \$29,218,000 generated in 2014 and 2013, as well as foreign tax credits of \$200,000, are not subject to annual limitations (the Unlimited Attributes).

Our ability to utilize the Unlimited Attributes also may be limited if we experience an ownership change. A Section 382 ownership change generally occurs if one or more stockholders or groups of stockholders who own at least 5% of our stock increase their ownership by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. Similar rules may apply under state tax laws. This offering or future issuances or sales of our stock (including certain transactions involving our stock that are outside of our control) could cause an ownership change. If an ownership change occurs, Section 382 of the Code would impose an annual limit on the amount of pre-ownership change net operating loss carryforwards and other tax attributes (including our Unlimited Attributes) we can use to reduce our taxable income, potentially increasing and accelerating our liability for income taxes, and also potentially causing those tax attributes to expire unused. It is possible that such an ownership change could materially reduce our ability to use our net operating loss carryforwards or other tax attributes to offset taxable income, which could harm our profitability.

Table of Contents

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents incorporated by reference, contains, and any prospectus supplement may contain, statements that constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements may be identified by the use of predictive, future-tense or forward-looking terminology, such as anticipates, believes, can, continue, could, estimates, expects, plans, potential, should, will, or other similar expressions. These statements speak only as of the date of this prospectus, the date of the prospectus supplement or the date of the document incorporated by reference, as applicable, and we undertake no ongoing obligation, other than that imposed by law, to update these statements. These statements appear in a number of places in this prospectus, including the documents incorporated by reference, and relate to, among other things, the expected timetable for development of our product candidates, our growth strategy, and our future financial performance, including our operations, economic performance, financial condition, prospects, and other future events.

In addition, a number of known and unknown risks, uncertainties, and other factors could affect the accuracy of these statements. Some of the more significant known risks that we face are the risks and uncertainties inherent in the process of discovering, developing, and commercializing products that are safe and effective for use as human therapeutics, including the uncertainty regarding market acceptance of our product candidates and our ability to generate revenues. These risks may cause our actual results, levels of activity, performance, or achievements to differ materially from any future results, levels of activity, performance, or achievements expressed or implied by these forward-looking statements. Other important factors to consider in evaluating our forward-looking statements include:

our ability to raise capital to fund our operations;

the timing and nature of results from our MultiStem clinical trials;

the possibility of delays in, adverse results of, and excessive costs of the development process;

our ability to successfully initiate and complete clinical trials of our product candidates;

uncertainty regarding market acceptance of our product candidates and our ability to generate revenues, including MultiStem cell therapy for the prevention of Graft-versus-Host Disease and the treatment of stroke, acute myocardial infarction, acute respiratory distress syndrome, spinal cord injury and other disease indications;

our ability to reach a definitive agreement with a Japanese company to collaborate on the development and commercialization of MultiStem cell therapy for several indications in Japan;

changes in external market factors;

changes in our industry's overall performance;

changes in our business strategy;

our ability to protect and defend our intellectual property and related business operations, including the successful prosecution of our patent applications and enforcement of our patent rights, and operate our business in an environment of rapid technology and intellectual property development;

our possible inability to realize commercially valuable discoveries in our collaborations with pharmaceutical and other biotechnology companies;

our ability to meet milestones under our collaboration agreements;

our collaborators' ability to continue to fulfill their obligations under the terms of our collaboration agreement;

the success of our efforts to enter into new strategic partnerships and advance our programs, including, without limitation, in the United States, Europe and Japan;

our possible inability to execute our strategy due to changes in our industry or the economy generally;

changes in productivity and reliability of suppliers;

the success of our competitors and the emergence of new competitors; and

the risks referred to in the Risk Factors section.

These factors and the other risk factors described in this prospectus and any prospectus supplement, including the documents incorporated by reference, are not necessarily all of the important factors that could cause actual results to differ materially from those expressed in any of our forward-looking statements. Other unknown or unpredictable factors also could harm our results. Consequently, there can be no assurance that the actual results or developments anticipated by us will be realized or, even if substantially realized, that they will have the expected consequences to or effects on us. We cannot guarantee that any forward-looking statement will be realized, although we believe we have been prudent in our plans and assumptions. Achievement of future results is subject to risks, uncertainties and inaccurate assumptions.

Table of Contents**USE OF PROCEEDS**

The selling stockholder will receive all of the proceeds from the sale of the shares offered for sale by it under this prospectus. We will not receive proceeds from the sale of the shares by the selling stockholder. However, we may receive up to \$30.0 million in proceeds from the sale of our common stock to the selling stockholder under the Purchase Agreement. We will bear all reasonable expenses incident to the registration of the shares of our common stock under federal and state securities laws other than expenses incident to the delivery of the shares to be sold by Aspire Capital. Any transfer taxes payable on these shares and any commissions and discounts payable to underwriters, agents, brokers or dealers will be paid by Aspire Capital.

Assuming the sale by us of all of \$30.0 million of shares of our common stock to Aspire Capital and estimated expenses of \$0.1 million, the total net proceeds to us, would be \$29.9 million, which we currently intend to use for working capital and general corporate purposes to help support the achievement of our operational objectives.

This anticipated use of net proceeds from the sale of our common stock to Aspire Capital under the Purchase Agreement represents our intentions based upon our current plans and business conditions. As a result, our management will retain broad discretion over the allocation of the net proceeds from the sale of our common stock to Aspire Capital under the Purchase Agreement.

COMMON STOCK PRICE RANGE

Our common stock is listed on the NASDAQ Capital Market under the symbol ATHX. The following table sets forth, for the periods indicated, the high and low sales prices for our common stock as reported on the NASDAQ Capital Market.

	High	Low
Year ending December 31, 2016		
First Quarter (through January 13, 2016)	\$ 1.49	\$ 0.98
Year ending December 31, 2015		
Fourth Quarter	\$ 1.19	\$ 0.94
Third Quarter	\$ 1.57	\$ 1.00
Second Quarter	\$ 3.23	\$ 0.90
First Quarter	\$ 3.43	\$ 1.54
Year ending December 31, 2014		
Fourth Quarter	\$ 1.74	\$ 1.13
Third Quarter	\$ 1.99	\$ 1.31
Second Quarter	\$ 3.50	\$ 1.08
First Quarter	\$ 4.33	\$ 2.51

The last reported sales price for our common stock on January 13, 2016 is set forth on the cover page of this prospectus. As of December 17, 2015, there were approximately 535 holders of record of our common stock. Additionally, shares of common stock are held by financial institutions as nominees for beneficial owners that are deposited into participant accounts at DTC, which are considered to be held of record by Cede & Co. and are included in the holders of record as one stockholder.

Table of Contents**DIVIDEND POLICY**

We would have to rely upon dividends and other payments from our wholly-owned subsidiary, ABT Holding Company, to generate the funds necessary to make dividend payments, if any, on our common stock. ABT Holding Company, however, is legally distinct from us and has no obligation to pay amounts to us. The ability of ABT Holding Company to make dividend and other payments to us is subject to, among other things, the availability of funds and applicable state laws. However, there are no restrictions such as government regulations or material contractual arrangements that restrict the ability of ABT Holding Company to make dividend and other payments to us. We did not pay cash dividends on our common stock during the past three years ended December 31, 2014. We do not anticipate that we will pay any dividends on our common stock in the foreseeable future. Rather, we anticipate that we will retain earnings, if any, for use in the development of our business.

DILUTION

If you acquire shares of our common stock from the selling stockholder in this offering, your ownership interest will be diluted to the extent of the difference between the public offering price per share of our common stock and the pro forma net tangible book value per share of our common stock after this offering. Our historical net tangible book value of common stock as of September 30, 2015 was \$15.5 million, or \$0.19 per share of common stock. Historical net tangible book value per share represents the amount of our total tangible assets less total liabilities, divided by the total number of shares of common stock outstanding.

After giving effect to the issuance of 250,000 Commitment Shares and the sale of 16,350,000 shares of common stock to Aspire Capital at an assumed price of \$1.03, which was the closing price of our common stock on the NASDAQ Capital Market on December 17, 2015, and after deducting estimated offering expenses payable by us, our pro forma net tangible book value as of September 30, 2015 would have been \$32.2 million, or \$0.32 per share of common stock. This represents an immediate increase in pro forma net tangible book value of \$0.13 per share to our existing stockholders and an immediate dilution in pro forma net tangible book value of \$0.71 per share to investors participating in this offering. The following table illustrates this per share dilution:

Assumed offering price per share	\$ 1.03
Historical net tangible book value per share as of September 30, 2015	\$ 0.19
Increase in net tangible book value per share attributable to this offering	0.13
Pro forma net tangible book value per share after this offering	0.32
Dilution per share to investors participating in this offering	\$ 0.71

Each \$0.25 increase in the per share price at which we sell shares to Aspire Capital under the Purchase Agreement from the assumed offering price of \$1.03 per share would increase our pro forma net tangible book value by \$4.1 million, our pro forma net tangible book value per share by \$0.04 and dilution per share to new investors purchasing shares of common stock in this offering by \$0.21, assuming that the number of shares of common stock offered, as set forth on the cover page of this prospectus, remains the same and after deducting estimated aggregate offering expenses payable by us. This information is supplied for illustrative purposes only.

The table and calculations set forth above are based on the number of shares of common stock outstanding as of September 30, 2015 and assumes no exercise of any outstanding options or warrants. To the extent that options or warrants are exercised, there will be further dilution to new investors.

The above information excludes the following:

8,455,885 shares of common stock authorized and reserved for future issuance under outstanding awards under our equity incentive plans;

617,673 shares of common stock authorized and reserved for future issuance under our equity incentive plans; and

4,864,893 shares of common stock issuable upon exercise of outstanding warrants.

Table of Contents**SELLING STOCKHOLDER**

The following table presents information regarding the selling stockholder as of the dates indicated. Neither the selling stockholder nor any of its affiliates has held a position or office, or had any other material relationship, with us.

Selling Stockholder	Shares Beneficially Owned Before Offering (1)	Percentage of Shares Beneficially Owned Before Offering (1)	Shares to be Sold in the Offering	Percentage of Outstanding Shares	
				Beneficially Owned After Offering (3)	Beneficially Owned After Offering (4)
Aspire Capital (2)	1,174,814	1.4%	16,600,000	1,174,814	1.2%

- (1) Beneficial ownership is determined in accordance with the rules and regulations of the SEC. In general, a person is deemed to be the beneficial owner of (i) any shares of our common stock over which such person has sole or shared voting power or investment power, plus (ii) any shares which such person has the right to acquire beneficial ownership of within 60 days, whether through the exercise of options, warrants or otherwise. The percentage of ownership set forth above for the time period before the offering is based on 83,285,747 shares of our common stock outstanding as of December 1, 2015. Prior to its acquisitions under the Purchase Agreement, Aspire Capital beneficially owned 1,074,914 shares of our common stock and warrants to purchase an additional 99,900 shares of common stock.
- (2) Aspire Capital Partners LLC (Aspire Partners) is the Managing Member of Aspire Capital Fund LLC (Aspire Fund). SGM Holdings Corp (SGM) is the Managing Member of Aspire Partners. Mr. Steven G. Martin (Mr. Martin) is the president and sole shareholder of SGM, as well as a principal of Aspire Partners. Mr. Erik J. Brown (Mr. Brown) is the president and sole shareholder of Red Cedar Capital Corp (Red Cedar), which is a principal of Aspire Partners. Mr. Christos Komissopoulos (Mr. Komissopoulos) is president and sole shareholder of Chrisko Investors Inc (Chrisko), which is a principal of Aspire Partners. Each of Aspire Partners, SGM, Red Cedar, Chrisko, Mr. Martin, Mr. Brown, and Mr. Komissopoulos may be deemed to be a beneficial owner of common stock held by Aspire Fund. Each of Aspire Partners, SGM, Red Cedar, Chrisko, Mr. Martin, Mr. Brown, and Mr. Komissopoulos disclaims beneficial ownership of the common stock held by Aspire Fund.
- (3) Prior to its acquisitions under the Purchase Agreement, Aspire Capital beneficially owned 1,074,914 shares of our common stock and warrants to purchase an additional 99,900 shares of common stock. These securities were acquired through various private placements completed since 2011.
- (4) The percentage of ownership for the time period after the offering is based on 83,580,394 shares of common stock outstanding as of the date hereof and assumes the issuance and sale by the Company to Aspire Capital of an additional 16,350,000 shares under the Purchase Agreement and the resale by Aspire Capital of all 16,600,000 shares being offered pursuant to this prospectus.

Table of Contents

THE ASPIRE CAPITAL TRANSACTION

General

On December 17, 2015, we entered into the Purchase Agreement, which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital is committed to purchase up to an aggregate of \$30.0 million of shares of our common stock over the 36-month term of the Purchase Agreement. In consideration for entering into the Purchase Agreement, concurrently with the execution of the Purchase Agreement, we issued to Aspire Capital the Commitment Shares. Concurrently with entering into the Purchase Agreement, we also entered into the Registration Rights Agreement, in which we agreed to file one or more registration statements, as permissible and necessary to register under the Securities Act, the sale of the shares of our common stock that have been and may be issued to Aspire Capital under the Purchase Agreement. The Company and Aspire Capital are entering into the Purchase Agreement to replace the prior purchase agreement between the Company and Aspire Capital that recently expired according to its terms.

As of December 1, 2015, there were 83,285,747 shares of our common stock outstanding. The 16,600,000 shares of our common stock offered hereby represent approximately 19.9% of the total number of shares of our common stock outstanding as of December 1, 2015. The number of shares of our common stock ultimately offered for sale by Aspire Capital is dependent upon the number of shares we elect to sell to Aspire Capital under the Purchase Agreement.

Pursuant to the Purchase Agreement and the Registration Rights Agreement, we have registered under the Securities Act 16,600,000 shares of our common stock, which includes the Commitment Shares and an additional 16,350,000 shares of common stock that we may issue to Aspire Capital. All 16,600,000 shares of common stock are being offered pursuant to this prospectus. If we elect to sell more than the 16,600,000 shares of common stock offered hereby, we must first register under the Securities Act the sale by Aspire Capital of any additional shares we may elect to sell to Aspire Capital before we can put such additional shares to Aspire Capital under the Purchase Agreement.

The Purchase Agreement provides that the number of shares that may be sold pursuant to the Purchase Agreement shall be limited to the Exchange Cap, unless stockholder approval or an exception pursuant to the rules of the NASDAQ Capital Market is obtained to issue more than 19.99%. This limitation shall not apply if, at any time the Exchange Cap is reached and at all times thereafter, the average price paid for all shares issued under the Purchase Agreement is equal to or greater than \$1.03, which was the closing sale price of our common stock on December 17, 2015. We are not required or permitted to issue any shares of common stock under the Purchase Agreement if such issuance would breach our obligations under the rules or regulations of the NASDAQ Capital Market. If we elect to sell more than the 16,657,745 shares of our common stock, we must first obtain the approval of our stockholders to do so, if necessary, and register under the Securities Act the sale of any additional shares we may elect to sell to Aspire Capital before we can put such additional shares to Aspire Capital under the Purchase Agreement.

We have the right, in our sole discretion, on any business day on which the closing sale price of our common stock equals or exceeds the Floor Price, to present Aspire Capital with a purchase notice (each, a Purchase Notice), directing Aspire Capital (as principal) to purchase up to 200,000 shares of our common stock per trading day (each a Purchase Share), provided that the aggregate price of such purchase shall not exceed \$500,000 per trading day, up \$30.0 million of our common stock in the aggregate. The purchase price per Purchase Share pursuant to a Purchase Notice (the Purchase Price) is the lower of (i) the lowest sale price for the Company s common stock on the date of sale or (ii) the arithmetic average of the three lowest closing sale prices for the Company s common stock during the ten (10) consecutive business days ending on the business day immediately preceding the purchase date of those securities. The applicable Purchase Price will be determined prior to delivery of any Purchase Notice.

Table of Contents

In addition, on any date on which we submit a Purchase Notice to Aspire Capital in an amount of at least 100,000 shares, we also have the right, in our sole discretion, to present Aspire Capital with a volume-weighted average price purchase notice (each, a "VWAP Purchase Notice") directing Aspire Capital to purchase an amount of common stock equal to up to 30% of the aggregate shares of the Company's common stock traded on The NASDAQ Capital Market on the next business day (the "VWAP Purchase Date"), subject to a maximum number of shares we may determine (the "VWAP Purchase Share Volume Maximum"). The purchase price per Purchase Share pursuant to such VWAP Purchase Notice (the "VWAP Purchase Price") shall be the lower of (i) the closing sale price on the date of sale and (ii) 95% of the volume weighted average price for the Company's common stock traded on The NASDAQ Capital Market on (i) the VWAP Purchase Date if the aggregate shares to be purchased on that date does not exceed the VWAP Purchase Share Volume Maximum, or (ii) the portion of such business day until such time as the aggregate shares to be purchased will equal the VWAP Purchase Share Volume Maximum. Further, if the sale price of the Company's common stock falls on the VWAP Purchase Date below the greater of (i) 90% of the closing price of our common stock on the business day immediately preceding the VWAP Purchase Date or (ii) the price set by us in the VWAP Purchase Notice (the "VWAP Minimum Price Threshold"), the VWAP Purchase Price will be determined using the percentage in the VWAP Purchase Notice of the total shares traded for such portion of the VWAP Purchase Date prior to the time that the sale price of our common stock fell below the VWAP Minimum Price Threshold and the volume weighted average price of our common stock sold during such portion of the VWAP Purchase Date prior to the time that the sale price of our common stock fell below the VWAP Minimum Price Threshold.

Under the Purchase Agreement, the Company and Aspire Capital may not effect any sales of shares of our common stock pursuant to the Purchase Agreement on any business day that the closing sale price of our common stock is than the Floor Price. The Floor Price and the respective prices and share numbers in the preceding paragraphs shall be appropriately adjusted for any reorganization, recapitalization, stock dividend, stock split, reverse stock split or other similar transaction. Additionally, the Purchase Agreement provides that the Company and Aspire Capital shall not effect any sales under the Purchase Agreement if such shares proposed to be issued and sold, when aggregated with all other shares of the Company's common stock that Aspire Capital and its affiliates beneficially own, would result in Aspire Capital and its affiliates beneficially owning more than 19.99% of the Company's then issued and outstanding common stock.

There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to Aspire Capital. Aspire Capital has no right to require any sales by us, but is obligated to make purchases from us as we direct in accordance with the Purchase Agreement. We may deliver multiple Purchase Notices and VWAP Purchase Notices to Aspire Capital from time to time during the term of the Purchase Agreement, so long as the most recent purchase has been completed. There are no limitations on use of proceeds, financial or business covenants, restrictions on future fundings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement. The Purchase Agreement may be terminated by us at any time, at our discretion, without any penalty or cost to us. The rights and obligations of Aspire Capital under the Purchase Agreement are not assignable or transferable.

On January 13, 2015, the SEC declared the registration statement, of which this prospectus is a part, effective, and on January 14, 2015, all other conditions to commencement were satisfied such that we may now begin selling shares of our common stock to Aspire Capital pursuant to the Purchase Agreement.

Purchase of Shares under the Purchase Agreement

Under the Purchase Agreement, we may direct Aspire Capital to purchase up to 200,000 shares of our common stock per trading day so long as no sale pursuant to such Purchase Notice may exceed \$500,000 per trading day. The Purchase Price of such shares is equal to the lesser of:

the lowest sale price of our common stock on the purchase date on the principal market of the common stock, or the Principal Market, during normal trading hours; or

the arithmetic average of the three lowest closing sale prices for our common stock on the Principal Market during the twelve consecutive trading days ending on the trading day immediately preceding the purchase date.

In addition, on any date on which we submit a Purchase Notice to Aspire Capital in an amount of at least 100,000 shares we also have the right to direct Aspire Capital to purchase an amount of stock equal to up to 30% of the aggregate shares of the Company's common stock traded on The NASDAQ Capital Market on the next trading day, subject to the VWAP Purchase Share Volume Maximum and the VWAP Minimum Price Threshold, which is equal to the greater of (a) 90% of the closing price on the Principal Market on the business day immediately preceding the VWAP Purchase Date or (b) such higher price as set forth by the Company in the VWAP Purchase Notice. The VWAP Purchase Price of such shares is the lower of:

Table of Contents

(a) 95% of the volume-weighted average price for our common stock traded on the Principal Market during normal trading hours:

on the VWAP Purchase Date, if the aggregate shares traded on the Principal Market have exceeded the VWAP Purchase Share Volume Maximum; or

the portion of the VWAP Purchase Date until such time as the sooner to occur of (i) the time at which the aggregate shares traded on the Principal Market has exceeded the VWAP Purchase Share Volume Maximum or (ii) the time at which the sale price of the common stock falls below the VWAP Minimum Price Threshold

or

(b) the closing price on the VWAP Purchase Date.

The Purchase Price will be adjusted for any reorganization, recapitalization, stock dividend, stock split, reverse stock split or other similar transaction occurring during the period(s) used to compute the Purchase Price. We may deliver multiple Purchase Notices and VWAP Purchase Notices to Aspire Capital from time to time during the term of the Purchase Agreement, so long as the most recent purchase has been completed.

Compliance with NASDAQ Capital Market Rules

The Purchase Agreement provides that the number of shares that may be sold pursuant to the Purchase Agreement shall be limited to the Exchange Cap, unless stockholder approval or an exception pursuant to the rules of the NASDAQ Capital Market is obtained to issue more than 19.99%. This limitation shall not apply if, at any time the Exchange Cap is reached and at all times thereafter, the average price paid for all shares issued under the Purchase Agreement is equal to or greater than \$1.03, which was the closing sale price of our common stock on December 17, 2015. We are not required or permitted to issue any shares of common stock under the Purchase Agreement if such issuance would breach our obligations under the rules or regulations of the Nasdaq Capital Market. If we elect to sell more than the 16,657,745 shares of our common stock, we must first obtain the approval of our stockholders to do so, if necessary, and register under the Securities Act the sale of any additional shares we may elect to sell to Aspire Capital before we can put such additional shares to Aspire Capital under the Purchase Agreement.

Minimum Share Price

Under the Purchase Agreement, the Company and Aspire Capital may not effect any sales of shares of our Common Stock on any trading day that the closing sale price of our Common Stock is less than \$0.25 per share, which shall be appropriately adjusted for any reorganization, recapitalization, stock dividend, stock split, reverse stock split or other similar transaction.

Beneficial Ownership Limitation

Under the Purchase Agreement, the Company and Aspire Capital may not effect any sales of shares of our common stock if such shares proposed to be issued and sold, when aggregated with all other shares of our common stock beneficially owned by Aspire Capital and its affiliates, would result in the beneficial ownership by Aspire Capital and its affiliates of more than 19.99% of our then issued and outstanding shares of common stock.

Events of Default

Generally, Aspire Capital may terminate the Purchase Agreement upon the occurrence of any of the following events of default:

the effectiveness of any registration statement that is required to be maintained effective pursuant to the terms of the Registration Rights Agreement between us and Aspire Capital lapses for any reason (including, without limitation, the issuance of a stop order) or is unavailable to Aspire Capital for the sale of our shares of common stock, and such lapse or unavailability continues for a period of ten consecutive

Table of Contents

business days or for more than an aggregate of thirty business days in any 365-day period, which is not in connection with a post-effective amendment to any such registration statement or the filing of a new registration statement; provided, however, that in connection with any post-effective amendment to such registration statement or the filing of a new registration statement that is required to be declared effective by the SEC, such lapse or unavailability may continue for a period of no more than thirty consecutive business days, which such period shall be extended for up to additional thirty business days if we receive a comment letter from the SEC in connection therewith;

the suspension from trading or failure of our common stock to be listed on a Principal Market (as defined in the Purchase Agreement) for a period of three (3) consecutive business days;

the delisting of our common stock from the NASDAQ Capital Market, and our common stock is not immediately thereafter trading on the New York Stock Exchange, the NYSE MKT, the NYSE Arca, the NASDAQ Global Select Market, the NASDAQ Global Market, the OTC Bulletin Board, or the OTCQB or OTCQX market places of the OTC Markets;

our transfer agent's failure to issue to Aspire Capital shares of our common stock under the Purchase Agreement within five business days after an applicable purchase date that Aspire Capital is entitled to receive;

any breach by us of the representations, warranties, covenants or other term or condition contained in the Purchase Agreement or any related agreements that could reasonably be expected to have a material adverse effect except, in the case of a breach of a covenant which is reasonably curable, only if such breach continues uncured for a period of at least five business days;

if we become insolvent or are generally unable to pay our debts as they become due;

any participation or threatened participation in insolvency or bankruptcy proceedings by or against us; or

If at any time the number of shares sold pursuant to the Purchase Agreement exceeds the Exchange Cap, if applicable, unless and until stockholder approval is obtained.

Our Termination Rights

The Purchase Agreement may be terminated by us at any time, at our discretion, without any cost to us.

No Short-Selling or Hedging by Aspire Capital

Aspire Capital has agreed that neither it nor any of its agents, representatives and affiliates shall engage in any direct or indirect short-selling or hedging, which establishes a net short position with respect to our common stock during any time prior to the termination of the Purchase Agreement.

Effect of Performance of the Purchase Agreement on Our Stockholders

The Purchase Agreement does not limit the ability of Aspire Capital to sell any or all of the 16,600,000 shares registered in this offering. It is anticipated that shares registered in this offering will be sold over a period of up to approximately 36 months from the date of this prospectus. The sale by Aspire Capital of a significant amount of shares registered in this offering at any given time could cause the market price of our common stock to decline or to be highly volatile. Sales to Aspire Capital by us pursuant to the Purchase Agreement also may result in dilution to the interests of other holders of our common stock. However, we have the right to control the timing and amount of sales of our shares to Aspire Capital, and the Purchase Agreement may be terminated by us at any time at our discretion without any penalty or cost to us.

Table of Contents**Amount of Potential Proceeds to be Received under the Purchase Agreement**

In connection with entering into the Purchase Agreement, we authorized the sale to Aspire Capital of up to \$30.0 million of shares of our common stock. The number of shares ultimately offered for sale by Aspire Capital in this offering is dependent upon the number of shares we elect to sell to Aspire Capital under the Purchase Agreement, which could exceed 16,600,000 shares, and is subject to daily limits. The following table sets forth the amount of proceeds we would receive from Aspire Capital from the sale of shares at varying purchase prices:

Assumed Average Purchase Price	Number of Additional Shares to be Sold if Full Purchase(1)	Percentage of Outstanding Shares After Giving Effect to the Aspire Capital Transaction(2)	Proceeds from the Sale of Shares to Aspire Capital Under the Common Stock Purchase Agreement
\$1.00	16,350,000	16.4%	\$ 16,350,000
\$1.50	16,350,000	16.4%	\$ 24,525,000
\$2.00	15,000,000	15.2%	\$ 30,000,000
\$2.50	12,000,000	12.6%	\$ 30,000,000
\$3.00	10,000,000	10.7%	\$ 30,000,000

(1) Excludes 250,000 Commitment Shares.

(2) All denominators used include the number of shares outstanding as of December 1, 2015, as well as the Commitment Shares.

Table of Contents

DESCRIPTION OF CAPITAL STOCK

We are authorized to issue 150,000,000 shares of common stock, par value \$0.001 per share, and 10,000,000 shares of preferred stock, par value \$0.001 per share.

Common Stock

This section describes the general terms and provisions of our common stock. For more detailed information, you should refer to our Certificate of Incorporation and Bylaws, copies of which have been filed with the SEC.

Holders of shares of common stock will be entitled to receive dividends if and when declared by the board of directors from funds legally available therefor, and, upon liquidation, dissolution or winding-up of our company, will be entitled to share ratably in all assets remaining after payment of liabilities. The holders of shares of common stock will not have any preemptive rights, but will be entitled to one vote for each share of common stock held of record. Stockholders will not have the right to cumulate their votes for the election of directors. The shares of common stock offered hereby, when issued, will be fully paid and nonassessable.

Preferred Stock

This section describes the general terms and provisions of our preferred stock. For more detailed information, you should refer to our Certificate of Incorporation and Bylaws, copies of which have been filed with the SEC.

Our board of directors is authorized, without action by our stockholders, to designate and issue up to 10,000,000 shares of preferred stock, par value \$0.001 per share, in one or more series. The board of directors can fix the rights, preferences and privileges of the shares of each series and any of its qualifications, limitations or restrictions. Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of common stock. The issuance of preferred stock, while providing flexibility in connection with possible future financings, acquisitions and other corporate purposes could, under certain circumstances, have the effect of delaying, deferring or preventing a change in control of us and could adversely affect the market price of our common stock. We do not have any shares of preferred stock outstanding, and we have no current plans to issue any preferred stock.

Transfer Agent and Registrar

We have appointed Computershare Investor Services as the transfer agent and registrar for our common stock.

Listing

Our common stock is listed on the NASDAQ Capital Market under the symbol ATHX.

Table of Contents

CERTAIN U.S. FEDERAL INCOME AND ESTATE TAX CONSIDERATIONS FOR NON-U.S. HOLDERS

General

The following is a summary of certain U.S. federal income and estate tax considerations related to the ownership and disposition of our common stock by a non-U.S. holder, as defined below, that acquires our common stock pursuant to this offering. This discussion assumes that a non-U.S. holder will hold our common stock issued pursuant to this offering as a capital asset within the meaning of Section 1221 of the Internal Revenue Code of 1986, as amended (the Code) (generally, for investment purposes). This summary does not address all aspects of U.S. federal income and estate taxation that may be relevant to a particular investor in light of the investor's individual circumstances, and does not purport to be a complete analysis of all the potential tax considerations relating thereto. In addition, this discussion does not address (i) other U.S. federal tax laws, such as gift tax laws, (ii) state, local or non-U.S. tax consequences, (iii) the special tax rules that may apply to certain investors, including, without limitation, banks, insurance companies, financial institutions, controlled foreign corporations, passive foreign investment companies, broker-dealers, grantor trusts, personal holding companies, taxpayers who have elected mark-to-market accounting, tax-exempt entities, regulated investment companies, real estate investment trusts, entities or arrangements classified as partnerships for U.S. federal income tax purposes or other pass-through entities (or an investor in such entities or arrangements), pension plans, or U.S. expatriates and former long-term residents of the United States, (iv) the special tax rules that may apply to an investor that acquires, holds, or disposes of our common stock as part of a straddle, hedge, constructive sale, conversion or other integrated or risk reduction transaction, or (v) the impact, if any, of the alternative minimum tax or the Medicare tax imposed on net investment income.

This summary is based on current provisions of the Code, applicable Treasury regulations promulgated thereunder, judicial opinions, and published rulings of the Internal Revenue Service (the IRS), all as in effect on the date of this prospectus and all of which are subject to differing interpretations or change, possibly with retroactive effect. We have not sought, and will not seek, any ruling from the IRS or any opinion of counsel with respect to the tax consequences discussed herein, and there can be no assurance that the IRS will not take a position contrary to the tax consequences discussed below or that any position taken by the IRS would not be sustained.

As used in this discussion, the term "U.S. person" means a person that is, for U.S. federal income tax purposes, (i) a citizen or individual resident of the United States, (ii) a corporation (or other entity taxed as a corporation) created or organized (or treated as created or organized) in the United States or under the laws of the United States or any state thereof or the District of Columbia, (iii) an estate the income of which is subject to U.S. federal income taxation regardless of its source, or (iv) a trust if (A) a court within the United States is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have the authority to control all substantial decisions of the trust, or (B) it has in effect a valid election under applicable Treasury regulations to be treated as a U.S. person. As used in this summary, the term "non-U.S. holder" means a beneficial owner of our common stock that is, for U.S. federal income tax purposes, an individual, corporation, estate or trust that is not a U.S. person.

The tax treatment of a partnership (or any other entity or arrangement treated as a partnership for U.S. federal income tax purposes) and each partner thereof will generally depend upon the status and activities of the partnership and such partner. A holder that is treated as a partnership for U.S. federal income tax purposes or a partner in such partnership should consult its own tax advisor regarding the U.S. federal income tax consequences applicable to it and its partners of the acquisition, ownership and disposition of our common stock.

THIS DISCUSSION IS ONLY A SUMMARY OF CERTAIN U.S. FEDERAL INCOME AND ESTATE TAX CONSIDERATIONS RELATED TO THE OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK BY NON-U.S. HOLDERS. IT IS NOT TAX ADVICE. EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS

OWN TAX ADVISOR WITH RESPECT TO THE PARTICULAR TAX CONSEQUENCES OF THE ACQUISITION, OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK, INCLUDING THE APPLICABILITY AND EFFECT OF ANY STATE, LOCAL, AND NON-U.S. TAX LAWS, AS WELL AS U.S. FEDERAL ESTATE AND GIFT TAX LAWS, AND ANY APPLICABLE TAX TREATY.

Certain U.S. Federal Income Tax Considerations

Distributions on Common Stock

As discussed under *Dividend Policy*, we do not anticipate paying dividends. If we pay cash or distribute property to holders of shares of common stock, such distributions generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Distributions in excess of current and accumulated earnings and profits will constitute a return of capital that will be applied against and reduce (but not below zero) the non-U.S. holder's adjusted tax basis in our common stock. Any remaining excess will be treated as gain from the sale or exchange of the common stock and will be treated as described under *Gain or Loss on Sale, Exchange or Other Taxable Disposition of Common Stock* below.

Dividends paid to a non-U.S. holder that are not effectively connected with the non-U.S. holder's conduct of a trade or business in the United States generally will be subject to withholding of U.S. federal income tax at a rate of 30% of the gross amount of the dividend or such lower rate as may be specified by an applicable income tax treaty. A non-U.S. holder that wishes to claim the benefit of an applicable tax treaty withholding rate generally will be required to (i) duly complete and execute an IRS Form W-8BEN, an IRS Form W-8BEN-E, or other applicable IRS Form W-8 (or any successor form of the foregoing) and certify under penalties of perjury that such holder is not a U.S. person and is eligible for the benefits of the applicable tax treaty or (ii) if our common stock is held through certain foreign intermediaries, satisfy the relevant certification requirements of applicable Treasury regulations. These forms may need to be periodically updated.

Table of Contents

A non-U.S. holder eligible for a reduced rate of withholding of U.S. federal income tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS. Non-U.S. holders should consult their own tax advisors regarding their entitlement to benefits under an applicable income tax treaty and the manner of claiming the benefits of such treaty (including, without limitation, the need to obtain a U.S. taxpayer identification number).

Dividends that are effectively connected with a non-U.S. holder's conduct of a trade or business in the United States, and, if required by an applicable income tax treaty, attributable to a permanent establishment or fixed base maintained by the non-U.S. holder in the United States, generally are subject to U.S. federal income tax on a net income basis at the U.S. federal income tax rates generally applicable to a U.S. person and are not subject to withholding of U.S. federal income tax, provided that the non-U.S. holder establishes an exemption from such withholding by complying with certain certification and disclosure requirements. Any such effectively connected dividends (and, if required, dividends attributable to a U.S. permanent establishment or fixed base) received by a non-U.S. holder that is treated as a foreign corporation for U.S. federal income tax purposes may be subject to an additional branch profits tax at a 30% rate, or such lower rate as may be specified by an applicable income tax treaty.

Gain on Sale, Exchange or Other Taxable Disposition of Common Stock

Subject to the summary below regarding backup withholding and FATCA, any gain recognized by a non-U.S. holder on a sale or other taxable disposition of our common stock generally will not be subject to U.S. federal income tax, unless:

- (i) the gain is effectively connected with the conduct of a trade or business of the non-U.S. holder in the United States (and, if required by an applicable income tax treaty, is attributable to a U.S. permanent establishment or fixed base of the non-U.S. holder),
- (ii) the non-U.S. holder is an individual who is present in the United States for a period or periods aggregating 183 days or more in the taxable year of that disposition, and certain other conditions are met, or
- (iii) we are or have been a United States real property holding corporation (a "USRPHC") for U.S. federal income tax purposes at any time during the shorter of the five-year period ending on the date of disposition or the period that the non-U.S. holder held the common stock.

Any gain recognized by a non-U.S. holder that is described in clause (i) of the preceding paragraph generally will be subject to U.S. federal income tax at the income tax rates generally applicable to a U.S. person, and such non-U.S. holder will be required to file a U.S. federal income tax return. Such non-U.S. holders are urged to consult their tax advisors regarding the possible application of these rules. Any gain of a non-U.S. holder that is treated as a foreign corporation for U.S. federal income tax purposes that is described in clause (i) above may also be subject to an additional branch profits tax at a 30% rate, or such lower rate as may be specified by an applicable income tax treaty. An individual non-U.S. holder that is described in clause (ii) of such paragraph generally will be subject to a flat 30% tax (or a lower applicable tax treaty rate) on the U.S. source capital gain derived from the disposition, which may be offset by U.S. source capital losses during the taxable year of the disposition. With respect to clause (iii) of the preceding paragraph, a U.S. corporation generally is a USRPHC if the fair market value of its U.S. real property interests equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. We believe that we are not currently and do not anticipate

becoming a USRPHC. Even if we are or were to become a USRPHC, gain arising from the sale other taxable disposition by a non-U.S. holder of our common stock will not be subject to U.S. federal income tax if our common stock is regularly traded on an established securities market and such non-U.S. holder holds or held (at any time during the shorter of the five-year period ending on the date of disposition or the non-U.S. holder's holding period) 5% or less of our common stock. If a non-U.S. holder holds or held (at any time during the relevant period) more than 5% of our common stock and if we were a USRPHC at any time during the relevant period, such non-U.S. holder generally will be subject to U.S. federal income tax on the net gain derived from a taxable disposition at the income tax rates generally applicable to a U.S. person. Non-U.S. holders are urged to consult their own tax advisors regarding the potential applicability of these rules as well as any income tax treaty in their particular circumstances.

Table of Contents

Information Reporting and Backup Withholding

We generally must report annually to the IRS and to each non-U.S. holder of our common stock the amount of dividends paid to such holder on our common stock, the tax, if any, withheld with respect to those dividends, and such holder's name and address. Copies of the information returns reporting those dividends and withholding may also be made available to the tax authorities in the country in which the non-U.S. holder is a resident under the provisions of an applicable income tax treaty or agreement. Information reporting also is generally required with respect to the proceeds from sales and other dispositions of our common stock to or through the U.S. office (and in certain cases, the foreign office) of a broker, unless the non-U.S. holder establishes that it is not a U.S. person.

Under some circumstances, Treasury regulations require backup withholding of U.S. federal income tax, currently at a rate of 28%, on reportable payments with respect to our common stock. A non-U.S. holder generally may eliminate the requirement for backup withholding by providing certification of its foreign status, under penalties of perjury, on a duly completed and executed IRS Form W-8BEN, IRS Form W-8BEN-E, or other applicable IRS Form W-8 (or any successor form of the foregoing) or by otherwise establishing an exemption. Notwithstanding the foregoing, backup withholding and information reporting may apply if either we or our paying agent has actual knowledge, or reason to know, that a holder is a U.S. person. Backup withholding is not an additional tax. Rather, the amount of any backup withholding will be allowed as a credit against a non-U.S. holder's U.S. federal income tax liability, if any, and may entitle such non-U.S. holder to a refund, provided that certain required information is timely furnished to the IRS. Non-U.S. holders are urged to consult their own tax advisors regarding the application of backup withholding and the availability of and procedure for obtaining an exemption from backup withholding in their particular circumstances.

U.S. Federal Estate Tax Considerations

Our common shares owned or treated as owned by an individual who is not a citizen or resident (as specially defined for U.S. federal estate tax purposes) of the United States at the time of death will be includible in the individual's gross estate for U.S. federal estate tax purposes, unless an applicable estate tax treaty provides otherwise, and therefore may be subject to U.S. federal estate tax.

FATCA

The Foreign Account Tax Compliance Act provisions of the Hiring Incentives to Restore Employment Act and Treasury regulations thereunder, commonly referred to as FATCA, when applicable, will impose a U.S. federal withholding tax of 30% on certain types of payments, including payments of U.S.-source dividends and gross proceeds from the sale or other disposition of certain securities producing such U.S.-source dividends made to (i) foreign financial institutions unless they agree to collect and disclose to the IRS information regarding their direct and indirect U.S. account holders, and (ii) certain non-financial foreign entities unless they certify certain information regarding their direct and indirect U.S. owners. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules. Under final Treasury regulations, as modified by IRS Notice 2015-66 and IRS Notice 2013-43, the withholding obligations described above generally apply to payments of U.S.-source dividends made on or after July 1, 2014, and will apply to payments of gross proceeds from a sale or other disposition of securities producing such U.S.-source dividends on or after January 1, 2017. You are urged to consult your own tax advisors regarding FATCA and the application of these requirements to your investment in our common shares.

THE PRECEDING DISCUSSION OF U.S. FEDERAL TAX CONSIDERATIONS IS FOR GENERAL INFORMATION ONLY. IT IS NOT TAX ADVICE. YOU SHOULD CONSULT YOUR OWN TAX ADVISOR REGARDING THE PARTICULAR U.S. FEDERAL, STATE AND LOCAL AND NON-U.S. TAX

**CONSEQUENCES OF PURCHASING, HOLDING AND DISPOSING OF OUR COMMON STOCK,
INCLUDING THE CONSEQUENCES OF ANY PROPOSED CHANGE IN APPLICABLE LAWS.**

Table of Contents

PLAN OF DISTRIBUTION

The common stock may be sold or distributed from time to time by the selling stockholder directly to one or more purchasers or through brokers, dealers, or underwriters who may act solely as agents at market prices prevailing at the time of sale, at prices related to the prevailing market prices, at negotiated prices, or at fixed prices, which may be changed. The sale of the common stock offered by this prospectus may be effected in one or more of the following methods:

Ordinary brokers transactions;

Transactions involving cross or block trades;

Through brokers, dealers, or underwriters who may act solely as agents;

at the market into an existing market for the common stock;

In other ways not involving market makers or established business markets, including direct sales to purchasers or sales effected through agents;

In privately negotiated transactions; or

Any combination of the foregoing.

In order to comply with the securities laws of certain states, if applicable, the shares may be sold only through registered or licensed brokers or dealers. In addition, in certain states, the shares may not be sold unless they have been registered or qualified for sale in the state or an exemption from the registration or qualification requirement is available and complied with.

The selling stockholder may also sell shares of common stock under Rule 144 promulgated under the Securities Act, if available, rather than under this prospectus. In addition, the selling stockholder may transfer the shares of common stock by other means not described in this prospectus.

Brokers, dealers, underwriters, or agents participating in the distribution of the shares as agents may receive compensation in the form of commissions, discounts, or concessions from the selling stockholder and/or purchasers of the common stock for whom the broker-dealers may act as agent. Aspire Capital has informed us that each such broker-dealer will receive commissions from Aspire Capital which will not exceed customary brokerage commissions.

The selling stockholder and its affiliates have agreed not to engage in any direct or indirect short selling or hedging of our common stock during the term of the Purchase Agreement.

The selling stockholder is an underwriter within the meaning of the Securities Act.

We have advised the selling stockholder that while it is engaged in a distribution of the shares included in this prospectus it is required to comply with Regulation M promulgated under the Securities Exchange Act of 1934, as amended. With certain exceptions, Regulation M precludes the selling stockholder, any affiliated purchasers, and any broker-dealer or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the shares offered hereby this prospectus.

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

This offering as it relates to Aspire Capital will terminate on the date that all shares offered by this prospectus have been sold by Aspire Capital.

Table of Contents

LEGAL MATTERS

Jones Day will pass upon the validity of the securities being offered hereby.

EXPERTS

The consolidated financial statements of Athersys, Inc. appearing in Athersys, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2014, including the schedule appearing therein, and the effectiveness of Athersys, Inc.'s internal control over financial reporting as of December 31, 2014, 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 consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational reporting requirements of the Securities Exchange Act of 1934. We file reports, proxy statements and other information with the SEC. Our SEC filings are available over the Internet at the SEC's website at <http://www.sec.gov>. You may read and copy any reports, statements and other information filed by us at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call 1-800-SEC-0330 for further information on the Public Reference Room.

We make available, free of charge, on our website at <http://www.athersys.com>, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports and statements as soon as reasonably practicable after they are filed with the SEC. The contents of our website are not part of this prospectus, and the reference to our website does not constitute incorporation by reference into this prospectus of the information contained at that site, other than documents we file with the SEC that are incorporated by reference into this prospectus.

INFORMATION WE INCORPORATE BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus the information in documents we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. Any statement contained in any document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in or omitted from this prospectus or any accompanying prospectus supplement, or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein, modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We incorporate by reference the documents listed below and any future documents that we file with the SEC (excluding any portion of such documents that are furnished and not filed with the SEC) under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (1) after the date of the initial filing of the registration statement of which this prospectus forms a part prior to the effectiveness of the registration statement and (2) after the date of this prospectus until the offering of the securities is terminated:

Edgar Filing: ATHERSYS, INC / NEW - Form 424B3

our Annual Report on Form 10-K for the year ended December 31, 2014;

our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2015, June 30, 2015 and September 30, 2015;

our Current Reports on Form 8-K filed on January 29, 2015, March 2, 2015, March 5, 2015, April 17, 2015, June 25, 2015, October 21, 2015, December 18, 2015 and January 13, 2016; and

the description of our common stock set forth in the registration statement on Form 8-A filed on December 6, 2007, and all amendments and reports filed for the purpose of updating that description.

Table of Contents

We will not, however, incorporate by reference in this prospectus any documents or portions thereof that are not deemed filed with the SEC, including any information furnished pursuant to Item 2.02 or Item 7.01 of our current reports on Form 8-K unless, and except to the extent, specified in such current reports.

We will provide you with a copy of any of these filings (other than an exhibit to these filings, unless the exhibit is specifically incorporated by reference into the filing requested) at no cost, if you submit a request to us by writing or telephoning us at the following address and telephone number:

Athersys, Inc.

3201 Carnegie Avenue

Cleveland, Ohio 44115-2634

(216) 367-9495

Attn: Secretary